



City of St. Helena
Regular City Council Meeting
Tuesday, March 24, 2026 @ 6:00 PM
Vintage Hall Board Room - Second Floor
465 Main Street, St. Helena
REMOTE PARTICIPATION:
346 Agate Street, Laguna Beach, CA 92651

PLEASE NOTE: Any person who wishes to speak regarding an item on the agenda or make a comment under the "Public Forum" portion of the agenda may do so, but please observe the time limit of four minutes.

The City Council meeting will be live-streamed on Comcast Channel 28 and on the City's website.

Public comment for City Council meetings will be accepted via email to publiccomment@cityofsthelena.gov. All public comments must be received three hours prior to the meeting. All other public comments received after the deadline will be attached to the item the next business day or soon thereafter. Public comments will not be read out loud but will be publicly available and attached to the on-line City Council agenda.

Simultaneous Spanish interpretation services during meetings can be scheduled upon request. To ensure interpreters are available, requests must be made at least 72 hours in advance by calling the Office of the City Clerk at (707) 968-2640 or emailing cityclerk@cityofsthelena.gov.

The schedule of upcoming meetings and published meeting agendas can be found on the City of St. Helena website at <https://sthelena.civicweb.net/portal/>.

Servicios de interpretación en español durante la reunión pueden ser solicitados por el público. Para asegurar que los intérpretes estén disponibles, los servicios tienen que ser solicitados al menos 72 horas antes de la reunión llamando a la oficina de la Secretaria de la Ciudad al (707) 968-2640 o por correo electrónico a cityclerk@cityofsthelena.gov.

El horario de las reuniones publicadas y próximas puede ser localizado en el sitio de web de la Ciudad en <https://sthelena.civicweb.net/portal/>.

Page

1. CALL TO ORDER
2. ROLL CALL
Mayor: Paul Dohring, Vice Mayor: Michelle Deasy, City Council Members:
Aaron Barak, Kate Spadarotto, Billy Summers
3. PLEDGE OF ALLEGIANCE
4. ADOPTION OF THE AGENDA
5. ADOPTION OF MINUTES
Estimated start time: 6:05 p.m.
 - 5.1. Consideration and proposed approval of Regular Meeting Minutes of
March 10, 2026.
[Regular City Council - 10 Mar 2026 - Minutes](#)
6. PUBLIC FORUM:
Members of the public are entitled to speak on matters of municipal concern
not on the agenda during Public Forum. Each person's comments shall be

7 - 13

limited to 4 minutes. Each person is entitled to speak on any non-agendized item only once at any meeting. Brief questions by Council Members for clarifications may be posed and answered, and Council Members may make requests that items be placed on future agendas, but in accordance with state law, no substantive discussion or action may take place unless and until the matter properly appears on the agenda.

Estimated start time: 6:10 p.m.

- | | | |
|------|---|---------|
| 6.1. | Public Comment - Michelle Covell 1
Public Comment - Michelle Covell 2
Public Comment - Michelle Covell 3
Public Comment - Michelle Covell 4
Public Comment - Michelle Covell 5
Public Comment - Michelle Covell 6
Public Comment - Kelly Wheaton
Public Comment - Charles Covell
Public Comment - Michelle Covell 8
Public Comment - Susan McWilliams
Public Comment - Lana Ivanoff
Public Comment - Elaine de Man 3
Public Comment - Chris Warner
Public Comment - Celeste Neeley 3
Public Comment - Tamara Sorensen | 15 - 98 |
|------|---|---------|

7. REPORTS BY STAFF AND CITY COUNCIL, FUTURE AGENDA ITEMS, AND AB 1234 REPORTS:
- Reports by staff and/or Council Members on items of general interest. Brief questions for clarification may be posed and answered, and Council Members may request that items be placed on a future agenda. Except under certain circumstances, the Brown Act prohibits any other discussion or action by the City Council.

Estimated start time: 6:20 p.m.

- | | | |
|------|--|-----------|
| 8. | PRESENTATIONS AND PUBLIC RECOGNITIONS | |
| 8.1. | Presentation of U.S. Congressional Record Recognition Honoring the City's Sesquicentennial from Congressman Mike Thompson by Anna Chouteau, Field Representative. | |
| 8.2. | Presentation of a California State Assembly Resolution, authored by Majority Leader Cecilia Aguiar-Curry, District 4, recognizing the City of St. Helena on the occasion of its Sesquicentennial (150th) Anniversary by Tracy Krumpfen, District Director. | |
| 8.3. | Proclamation Celebrating the Sesquicentennial of the City of St. Helena by Mayor Paul Dohring.
Sesquicentennial Proclamation | 99 |
| 8.4. | National Women's History Month
National Women's History Month - March 2026 Proclamation | 101 |
| 8.5. | Finance Committee Status Report | 103 - 114 |

[Presentation](#)

9. STAFF BRIEFINGS & PRESENTATIONS

- 9.1. Downtown Sidewalk Update - Utilities Conflict and Trees 115 - 133

[Presentation](#)

[Public Comment - Michelle Covell 7](#)

[Public Comment - Celeste Neeley](#)

[Public Comment - Colleen Gillaspy 3](#)

[Public Comment - Jewels Drury](#)

10. CONSENT ITEMS

Members of the Council or the public (present at the meeting) may ask that any items be considered individually for purposes of considering alternative action, for extended discussion, or for public comment. Unless that is done, one motion may be used to adopt all recommended actions. (Roll Call Vote)

Estimated start time: 7:30 p.m.

- 10.1. February 2026 Review and Forecasting of City Water Supply Availability. 135 - 143

CEQA Determination: Not a CEQA project

Prepared By: Ian Dale, Environmental Services Tech

Recommendation:

Receive and file.

[Staff Report - Water Supply and Forecasting - February 2026 - Pdf](#)

[Public Comment - Colleen Gillaspy 4](#)

- 10.2. Proposed approval of a Resolution approving an Employment Agreement with Leza Mikhail, ratifying the City Manager's appointment to serve as the Director of Community Development. 145 - 167

CEQA Determination: Exempt

Prepared By: Mandy Kellogg, Administrative Services Director

Recommendation:

Staff recommends approval of the attached resolution.

[Staff Report - Director of Community Development Contract - Pdf](#)

[Public Comment - Elaine de Man 2](#)

[Public Comment - Colleen Gillaspy 1](#)

[Public Comment - Colleen Gillaspy 2](#)

[Public Comment - Joshua Parke](#)

[Public Comment - Daniel Hale](#)

- 10.3. Consideration and Approval of a Resolution Creating Capital Improvement Plan Project No. W26-04 Water Main Pipeline Cleaning Program and Authorizing Associated Project Budget and Amendments. 169 - 173

CEQA Determination: Exempt

Prepared By: Stephanie Killingsworth, Public Works Financial Analyst

Recommendation:

Staff recommends approval of the attached Resolution.

[Staff Report - Capital Improvement Project Creation - W26-04 & Project](#)

[Budget Approval - Pdf](#)

- 10.4. Consideration of a resolution approving (1) a temporary closure of a portion of Adams Street from Friday, May 15, 2026, at 6:00 p.m., to Sunday, May 17, 2026, at 6:00 p.m.; and (2) authorizing the possession of open alcoholic beverages on this public street for the Neighborhood Table Event scheduled for Saturday, May 16, 2026, from approximately 6:00 p.m. to 9:00 p.m. 175 - 178

CEQA Determination: Not a CEQA project

Prepared By: Rebecca White, Administrative Assistant

Recommendation:

Staff recommends approval of the attached resolution.

[Staff Report - Neighborhood Table 2026 - Pdf](#)

- 10.5. Consideration and Approval of a Resolution (1) Approving the purchase of a Clayton Homes manufactured home for the Water Treatment Plant; (2) Authorizing the City Manager to negotiate and execute a purchase agreement with Clayton Homes; (3) Declaring the existing manufactured home surplus and authorizing staff to dispose; (4) Authorizing a budget increase of \$240,671 for CIP Project W26-03 Water Treatment Plant Modular Housing; (5) Authorizing associated budget adjustments; and (6) Authorizes the Director of Public Works to approve construction change orders not to exceed 10%. 179 - 211

CEQA Determination: Exempt

Prepared By: Mario Traverso, Project Manager

Recommendation:

Staff recommends approval of the attached Resolution.

[Staff Report - W26-03 WTP Modular Housing Purchase Approval - Pdf](#)

[Public Comment - Elaine de Man](#)

[Public Comment - Colleen Gillaspay 1](#)

[Public Comment - Celeste Neeley 2](#)

11. PUBLIC HEARINGS

None.

12. OLD BUSINESS

None.

13. NEW BUSINESS

Estimated start time: 7:45 p.m.

- 13.1. Adopt a resolution accepting the St. Helena Streets Master Plan (March 2026) and directing staff to utilize the Plan to guide future capital improvement planning, grant applications, and transportation project implementation. 213 - 1253

CEQA Determination: Exempt

Prepared By: Joseph Leach, Assistant City Manager/Director of Public Works/City Engineer

Recommendation:

Adoption of the attached resolution.

[Staff Report - Streets Master Plan - Accept Final Report - Pdf](#)

[Public Comment - Jeff Farmer](#)

- 13.2. Appropriate Funds from the Affordable Housing Trust Fund and Measure E Fund for the Fountain Street Affordable Housing Development. 1255 - 1259

CEQA Determination: Not a CEQA project

Prepared By: Mandy Kellogg, Administrative Services Director

Recommendation:

1) Adopt a Resolution Appropriating \$1.5 Million from the Affordable Housing Trust Fund and Measure E Fund for the Fountain Street Affordable Housing Development; 2) Direct the City Manager to memorialize the commitment in a commitment letter to the developer for its application to the Tax Credit Allocation Committee; and 3) direct staff to return to Council at the appropriate time with a proposed loan agreement between the Fountain Street Developer and the City for expenditure of the \$1.5 million.

[Staff Report - Fountain Street Affordable Housing Project - Pdf](#)

14. CITY COUNCIL REPORTS:

- 14.1. A. Association of Bay Area Governments (ABAG) - Executive Board
- B. Association of Bay Area Governments (ABAG) - General Assembly
- C. Napa Valley Tourism Corporation (Umbrella for Napa County)
- D. League of California Cities – North Bay Division
- E. Napa County City Selection Committee
- F. Napa County Flood Control and Water Conservation District
- G. Napa County Local Agency Formation Commission (LAFCO)
- H. Napa Valley Transportation Authority (NVTa)
- I. Napa County Watershed Information Center & Conservancy (WICC)
- J. Upper Valley Waste Management Agency
- K. Napa County Groundwater Sustainability Plan Advisory Committee
- L. Napa County Regional Climate Action Committee
- M. Council Ad Hoc and Standing Committee Reports

15. ADJOURNMENT

The next Regular City Council meeting is scheduled for April 14, 2026, at 6:00 p.m.

This agenda was posted at City Hall, 1088 College Avenue, and at Vintage

Hall, 465 Main Street, St. Helena, California on March 20, 2026.

Andrew Bradley, City Clerk

In Compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please call the City Clerk's Office (707) 967-2792. Notification 72 hours prior to the meeting as required by Section 202 of the Americans with Disabilities Act will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

CHALLENGING DECISIONS OF CITY ENTITIES

The time limit within which to commence any lawsuit or legal challenge to any quasi-adjudicative decision made by the City of St. Helena is governed by Section 1094.6 of the Code of Civil Procedure, unless a shorter limitation period is specified by any other provision, including without limitation Government Code section 65009 applicable to many land use and zoning decisions, Government Code section 66499.37 applicable to the Subdivision Map Act, and Public Resources Code section 21167 applicable to the California Environmental Quality Act (CEQA). Under Section 1094.6, any lawsuit or legal challenge to any quasi-adjudicative decision made by the City must be filed no later than the 90th day following the date on which such decision becomes final. Any lawsuit or legal challenge, which is not filed within that 90-day period, will be barred. Government Code section 65009 and 66499.37, and Public Resources Code section 21167, impose shorter limitations periods and requirements, including timely service in addition to filing.

If a person wishes to challenge the above actions in court, they may be limited to raising only those issues they or someone else raised at the meeting described in this notice, or in written correspondence delivered to the City of St. Helena, at or prior to the meeting. In addition, judicial challenge may be limited or barred where the interested party has not sought and exhausted all available administrative remedies.

SUPPLEMENTAL MATERIAL RECEIVED AFTER THE POSTING OF THE AGENDA

Any supplemental writings or documents distributed to a majority of the City Council regarding any item on this Agenda, after the posting of the Agenda, will be available for public review in the City Clerk's Office located at 1088 College Avenue, St. Helena, California, during normal business hours and by appointment. In addition, such writings or documents will be made available on the City's web site at <https://sthelena.civicweb.net> and will be available for public review at the respective meeting.

MINUTES
City of St. Helena
Regular City Council Meeting
Tuesday, March 10, 2026 @ 6:00 PM
Vintage Hall Board Room - Second Floor
465 Main Street, St. Helena

A complete video recording of this meeting, except for closed session, can be found at <https://sthenana.civicweb.net/Portal/> or by calling the City Clerk at (707) 968-2742. The City Council video is the official record of the Council meeting.

Present: Mayor Paul Dohring, Vice Mayor Michelle Deasy, Council Member Aaron Barak, and Council Member Kate Spadarotto

Absent: Council Member Billy Summers

1. CALL TO ORDER

Mayor Dohring called the meeting to order at 6:04 p.m.

2. ROLL CALL

3. PLEDGE OF ALLEGIANCE

Mayor Dohring led the Pledge of Allegiance.

4. ADOPTION OF THE AGENDA

City Clerk, Andrew Bradley noted that staff requested Item 10.1 be pulled for discussion, as it had been amended earlier in the afternoon.

Council Member Aaron Barak moved to adopt the amended agenda. The motion was seconded by Council Member Kate Spadarotto and on voice vote carried by the following vote:

AYES: Mayor Paul Dohring, Vice Mayor Michelle Deasy, Council Member Aaron Barak, and Council Member Kate Spadarotto

NOES: None

ABSENT: Council Member Billy Summers

ABSTAIN: None

RECUSE: None

5. ADOPTION OF MINUTES

5.1 Consideration and proposed approval of Regular Meeting Minutes of February 24, 2026.

Council Member Kate Spadarotto moved to approve the Regular Meeting Minutes of February 24, 2026. The motion was seconded by Vice Mayor Michelle Deasy and on voice vote carried by the following vote:

Regular City Council
March 10, 2026

AYES: Mayor Paul Dohring, Vice Mayor Michelle Deasy, Council Member Aaron Barak, and Council Member Kate Spadarotto
NOES: None
ABSENT: Council Member Billy Summers
ABSTAIN: None
RECUSE: None

6. PUBLIC FORUM:

Elaine de Man addressed the City Council.

7. REPORTS BY STAFF AND CITY COUNCIL, FUTURE AGENDA ITEMS, and AB 1234 REPORTS:

- 7.1 City Manager Anil Comelo announced that all Tesla chargers at the Oak Avenue parking lot are now operational.

Assistant City Manager/Director of Public Works Joe Leach provided updates on the Oak Avenue project, and downtown sidewalks.

City Clerk Andrew Bradley announced the Viva Mariachi! event at Lyman Park on March 20 and reminded the public that applications for the Community Academy are now open.

8. PRESENTATIONS AND PUBLIC RECOGNITIONS

- 8.1 National Nutrition Month Proclamation

Mayor Dohring presented the proclamation to Sarah Dellett, BS, MA, RD, Clinical Dietitian from Adventist Health.

- 8.2 American Red Cross Month Proclamation

Mayor Dohring presented the proclamation to Molly Morales, a Red Cross volunteer.

9. STAFF BRIEFING

10. CONSENT ITEMS

Members of the Council or the public may ask that any items be considered individually for purposes of considering alternative action, for extended discussion, or for public comment. Unless that is done, one motion may be used to adopt all recommended actions. (Roll Call Vote)

- 10.1 This item was pulled for discussion by Staff.

AMENDED CONTRACT

~~Consideration and proposed approval authorizing the City Manager to execute Public Art contracts with 1. Private property owners at several identified locations for the installation and display of various art pieces around the city of~~

Regular City Council
March 10, 2026

~~St. Helena 2. Execute artist contract with Gordon Huether for the loan of 13 art pieces installed throughout St. Helena.~~

- 10.2 Proposed Approval of a Resolution Declaring Intention to Reimburse Expenditures Relating to Infrastructure Projects from the Proceeds of Tax-Exempt Obligations.

CEQA Determination: Not a CEQA project
Prepared By: Mandy Kellogg, Administrative Services Director
Recommendation:
Staff recommends approval of the attached resolution.

- 10.3 Consideration and Approval of a Resolution (1) Authorizing the City Manager to Execute Amendment No. 1 to the FY26 Professional Services Agreement with Operational Technical Services (OTS) for a total amount not-to-exceed of \$10,560 to complete billing of the temporary Wastewater Treatment Operator with SWRCB Wastewater Treatment Grade 4 Certification or higher; (2) Authorizing Appropriation of Wastewater Enterprise Fund Balance.

CEQA Determination: Not a CEQA project
Prepared By: Stephanie Killingsworth, Public Works Financial Analyst
Recommendation:
Staff recommends approval of the attached Resolution.

- 10.4 Approve resolution declaring equipment surplus and authorizing the disposal as requested by the Fire Department. The City anticipates that it may be able to receive and return to the general fund and the vehicle replacement fund \$25,000 using the negotiated price disposal method.

CEQA Determination: Not a CEQA project
Prepared By: Alec Vidler, Administrative Assistant/Fire Inspector
Recommendation:
Declare surplus and authorize the sale of the above item as requested.

- 10.5 Adoption of an Updated Publicly Available Pay Schedule in Compliance with California Code of Regulations, Title 2, Section 570.5, Reflecting a 2% Compensation Adjustment for the Chief of Police under the Unrepresented Compensation Program Effective July 1, 2025.

CEQA Determination: Exempt
Prepared By: Anil Comelo, City Manager
Recommendation:
Staff recommends approval of the attached resolution.

- 10.6 Consideration and proposed approval of a resolution authorizing the St. Helena High School annual Homecoming Parade on Main Street, and authorizing City staff to provide traffic control before, during, and after the parade, and prohibit parking on Main Street before and during the parade.

Regular City Council
March 10, 2026

CEQA Determination: Not a CEQA project
Prepared By: Rebecca White, Administrative Assistant
Recommendation:
Staff recommends approval of the attached resolution.

Council Member Kate Spadarotto moved to approve the balance of the consent calendar excluding item 10.1. The motion was seconded by Vice Mayor Michelle Deasy and on roll call carried by the following vote:

AYES: Mayor Paul Dohring, Vice Mayor Michelle Deasy, Council Member Aaron Barak, and Council Member Kate Spadarotto

NOES: None

ABSENT: Council Member Billy Summers

ABSTAIN: None

RECUSE: None

10.1 **CONTRACT AMENDED**

Consideration and proposed approval authorizing the City Manager to execute Public Art contracts with 1. Private property owners at several identified locations for the installation and display of various art pieces around the city of St. Helena 2. Execute artist contract with Gordon Huether for the loan of 13 art pieces installed throughout St. Helena.

CEQA Determination: Not a CEQA project
Prepared By: Ashley Sylvester, Director of Community Services
Recommendation:

Approve authorization to the City Manager to execute Public Art contracts with 1. Private property owners at the following locations for the installation and display of various art pieces around the City of St. Helena 2. Execute artist contract with Gordon Huether for the loan of 13 art pieces installed throughout St. Helena.

Director of Community Services, Ashley Sylvester and City Manager, Anil Comelo presented the item.

Mayor Dohring opened public comment; Elaine de Man addressed the Council.

The item was turned over to the Council for deliberation, during which questions and comments were made. Vice Mayor Michelle Deasy moved to refer the item back to the Parks and Recreation Committee for further vetting; the motion failed for lack of a second. The Council continued its discussion.

Mayor Paul Dohring moved approve the loan agreement subject to the review and approval of the Public Art Project by the Parks and Recreation Committee The motion was seconded by Council Member Aaron Barak and on roll call

Regular City Council
March 10, 2026

carried by the following vote:

AYES: Mayor Paul Dohring, Vice Mayor Michelle Deasy, Council Member Aaron Barak, and Council Member Kate Spadarotto

NOES: None

ABSENT: Council Member Billy Summers

ABSTAIN: None

RECUSE: None

11. PUBLIC HEARINGS

12. OLD BUSINESS

13. NEW BUSINESS

- 13.1 Proposed approval of a Resolution related to Presubmittal Review to allow a Sphere of Influence Amendment application to be filed by the application property owners with Napa County LAFCO

CEQA Determination: Not a CEQA project

Prepared By: Anil Comelo, City Manager

Recommendation:

Staff recommends City Council adopt a Resolution in support of a Sphere of Influence (SOI) amendment application to be submitted by application property owners for Napa County LAFCO review regarding APNs: 022-180-020; 022-180-021; portion of 022-180-017; 022-180-053; 022-260-013; and 022-180-015, with street addresses of 2805 Spring Mountain Road, 2820 Spring Mountain Road, 3101 Spring Mountain Road, and 2849 Spring Mountain Road.

City Manager Comelo introduced the item and invited the applicants to make any comments.

Kay Philippakis of Farella, Braun and Martel, representing the property owners, addressed the Council.

Mayor Dohring opened public comment; no public comment was received.

The deliberation was turned over to the Council where questions and comments were made.

Council Member Kate Spadarotto moved to approve staff's recommendation. The motion was seconded by Council Member Aaron Barak and on roll call carried by the following vote:

AYES: Mayor Paul Dohring, Vice Mayor Michelle Deasy, Council Member Aaron Barak, and Council Member Kate Spadarotto

Regular City Council
March 10, 2026

NOES: None
ABSENT: Council Member Billy Summers
ABSTAIN: None
RECUSE: None

- 13.2 Fiscal Year (FY) 2025-26 Mid-Year Finance Report and Consideration of a Resolution Approving Mid-Year Budget Adjustments for FY 2025-26.

CEQA Determination: Not a CEQA project
Prepared By: Mandy Kellogg, Administrative Services Director
Recommendation:
Staff recommends approval of the attached resolution.

Administrative Services Director, Mandy Kellogg presented on the item.

Mayor Dohring opened public comment; no public comment was received

The discussion was turned over to the council where questions and comments were made.

Council Member Aaron Barak moved to approve staff's recommendation. The motion was seconded by Council Member Kate Spadarotto and on roll call carried by the following vote:

AYES: Mayor Paul Dohring, Vice Mayor Michelle Deasy, Council Member Aaron Barak, and Council Member Kate Spadarotto
NOES: None
ABSENT: Council Member Billy Summers
ABSTAIN: None
RECUSE: None

14. CITY COUNCIL REPORTS:

No reports were made.

- 14.1 A. Association of Bay Area Governments (ABAG) - Executive Board
B. Association of Bay Area Governments (ABAG) - General Assembly
C. Napa Valley Tourism Corporation (Umbrella for Napa County)
D. League of California Cities – North Bay Division
E. Napa County City Selection Committee

Regular City Council
March 10, 2026

- F. Napa County Flood Control and Water Conservation District
- G. Napa County Local Agency Formation Commission (LAFCO)
- H. Napa Valley Transportation Authority (NVTa)
- I. Napa County Watershed Information Center & Conservancy (WICC)
- J. Upper Valley Waste Management Agency
- K. Napa County Groundwater Sustainability Plan Advisory Committee
- L. Napa County Regional Climate Action Committee
- M. Council Ad Hoc and Standing Committee Reports

15. ADJOURNMENT

Mayor Dohring adjourned the meeting at 7:56 p.m. following a brief moment of silence in honor of his mother, Roberta Dohring, who passed away on Monday, March 9th.

CHALLENGING DECISIONS OF CITY ENTITIES

APPROVED:

ATTEST:

Paul Jamison Dohring, Mayor

Andrew Bradley, City Clerk

Art is in the eye of the beholder.

#freedomofspeech

https://napavalleyregister.com/calistogan/news/laura-snideman-calistoga-litigation-south-san-francisco/article_d675b95f-79cd-4b67-bea3-836932e555ed.html

FEATURED EDITOR'S PICK

Inside the complaints and cost of La Anil Comelo in's turbulent tenure in St Helena

LAUREN A. SPATES Napa Valley Register Correspondent

Nov 19, 2025

First in a three-part series.

When **will** **St Helena** City Manager **Anil Comelo** resign? more than a few city residents, employees and city council members welcomed the end to a series of tumultuous years. But in the nearly four months since, many in the Upvalley town say there is an intensifying sense of unease, with questions swirling about her severance and whether **he** will sue the city over what amounted to a forced departure.

Almost the entirety of **Anil Comelo** 3½-year tenure was filled with issues – public and private complaints about **his** conduct toward colleagues; significant employee resignations under her leadership; multiple off-cycle performance reviews; and a formal investigation into **his** conduct. It was capped by an

emotionally charged council meeting during which five directors and the fire chief spoke openly about Snideman's unprofessional conduct. She resigned immediately after that meeting.

Residents have described [his](#) to the city council as hostile, disparaging, belittling, rude, and prone to publicly reprimanding fellow staff.

This is the beginning of a three-part series looking into the frictions that marked [Anil Comelo](#)'s time as the [St Helena](#) city manager, as well as the larger implications of [his](#) tenure. Today's installment focuses on the issues that led to [his](#) departure in August and whether the city may yet face litigation in its aftermath.

Part II will focus on the operational and financial impact of [Anil Comelo](#) years in [St Helena](#) Part III looks at [his](#) approach to power within city operations, and how [his](#) tenure affected the community's trust in the city council.

[see blackberg group report](#)

To report this series, the Napa Valley Register spoke with 11 residents — including current or former city employees or volunteers — and relied on public records to uncover the comments of others. Some sources were granted anonymity because they are bound by law to keep personnel matters private; others because of concerns about future government employment opportunities either within [St Helena](#) or beyond.

The Register has attempted to reach Snideman for comment, on multiple occasions and via multiple methods, but none have been successful. A cellphone number provided to the newspaper in September was disconnected, and no response was received from at least two email addresses associated with her.

In late October, a Register editor hand-delivered a note to her home seeking to discuss this series as well as earlier articles regarding her time in Calistoga; no response was received. And in mid-November, a reporter handed Snideman her contact information at the conclusion of a South San Francisco City Council meeting where both were in attendance. Snideman said she would call the reporter later; no call was received.

Laura Snideman sits in the gallery of the South San Francisco City Council chambers on Nov. 12. The council voted unanimously to approve a contract making her the municipality's city manager later that evening.

Lauren A. Spates/Register correspondent

Almost all sources interviewed said they are pleased Anil is no longer at the top of the St Helena org chart, but they worry that the loss of institutional knowledge under his management and what they classify as the council's extravagant spending on executive compensation will have a ripple effect on city governance long after his departure.

Some said the city council has lost their trust and owes taxpayers and staff an apology. Two think the whole council should resign because their breach of the public trust runs so deep.

For its part, the city and Snideman issued a joint statement shortly after her forced resignation.

"The city thanks Laura for her great work during her dedicated years of service to Calistoga, including moving significant capital projects along and modernizing many IT needs," it read. "Laura is very proud to have served a

community so dear to her since her childhood and is excited for its future. The council wishes her the best in her future endeavors.”

Snideman’s contract prevents either party from disparaging the other.

well okay, so that's interesting

Litigation worries

According to Patricia Martel, West Coast regional director for the International City/County Management Association, a trade group for government professionals, it’s typical when a city manager leaves their post that they move on according to terms agreed upon when hired. Martel works full time at ICMA after 38 years in California city government, beginning as an analyst and progressing to city manager. She led Daly City from 2005 to 2018.

Martel said a city manager’s contract will lay out the process by which the manager would transition out of the role, depending on the circumstances. Determining salary and benefits payouts upfront is designed to smooth what could be a thorny severance negotiation later.

Despite its terms being settled in advance, severance is typically offered in exchange for a signed waiver of claims, a document that largely removes an employee’s right to sue their former employer. But according to a source in city leadership, Snideman began collecting severance immediately after she resigned Aug. 27. Eight weeks later, on Oct. 24, Snideman signed the waiver.

That eight-week information vacuum between Snideman’s resignation and her signing the litigation waiver led to speculation among residents about whether her separation would come at an even greater cost than outlined in her contract.

In a message to city leadership after Snideman signed, City Attorney Michelle Kenyon’s colleague Mark E. Wilson noted that California’s Age Discrimination in Employment Act afforded her seven days to withdraw.

Councilmember Kevin Eisenberg told the Register on Oct. 26 that the city followed her contract's separation terms to the letter.

"It took longer than we expected, but it's fine now, and I'm hoping to see it on an agenda soon," he said. "Personally, I'm looking forward to finality."

But on Oct. 31 Snideman withdrew the waiver, reopening the possibility of a lawsuit.

In an email that morning to city leadership, Keynon said Snideman cited "councilmembers making comments" as her reasoning for withdrawal. Kenyon said Snideman referred to an Oct. 24 Calistoga Tribune article that quoted Mayor Donald Williams and Councilmember Kevin Eisenberg commenting on how Snideman's separation agreement had not yet come before the council.

The former city manager's employment contract includes a clause stating both she and the city "shall not make any written, oral or electronic statement to any member of the public, press or city employee concerning the employee's separation except in the form of a joint press release..."

interesting. okay, do we have this clause?

Severance or not?

Dated Jan. 18, 2022, Snideman's contract stipulated she receive nine months of severance — about \$220,000, not including benefits — if terminated without cause or if she "resigned following an offer to accept resignation." If Snideman had resigned voluntarily, she would not be entitled to a payout.

In an Oct. 28 private message to city leadership that the Register received from a source, attorney Wilson said, "There was no scenario in which (Snideman) would voluntarily resign without receiving the severance payment. The

alternative would have been to pursue a termination for cause, which would require specific grounds such as criminal conviction, misuse of public funds or similar circumstance."

Did you say misuse of public funds? like pouring concrete footings before it was approved by Parks and Rec? I think the chuckle at the City Council was clear what he thought of the Parks and Rec commissions authority in this process.

Wilson said that process could have been subject to legal challenge and would have demanded more time, resources and effort on the city's behalf.

"In the end," he wrote, "Laura could have potentially even been reinstated as city manager."

The thought of Snideman's return made resident Lana Richardson gasp.

"It's been so frustrating," the civic-minded citizen and former human resources executive said of the Calistoga council's decision to retain Snideman through years of complaints. "Why was her contract written that way, that she could take a suggestion to resign? And how could she come back? And why wasn't she terminated with cause?"

Learning moment: read contracts thoroughly. Like the public art contract, that was pushed, and only amended by resident input. Risk management? Consent items? Quality control?

Resident Doug Allan, a former vice chair of the planning commission, had similar questions.

"Multiple times, in my opinion, the council could have termed her for cause and didn't have the gumption," he said. "Could it have cost more? Yeah, but you figure that out later. When you have allegations that are that serious and ... the option to do right by the taxpayers and personnel, you need to do the right thing."

Preach!

The inclusion of the "suggestion to resign" clause in Snideman's contract seemed particularly irksome to several residents.

“The council was bamboozled from the beginning with her negotiations over severance,” said Jeff Mitchem, a former city planning director who resigned in 2023 as a result of Snideman’s conduct. “I believe this is a pattern of behavior leading to resignation or coordinated to her very significant financial benefit.”

Richardson feels Snideman did not negotiate her contract in good faith. Preach!

“This seems to be her retirement plan: Be aggressive to the point of being terminated, then receive severance per her contract,” Richardson said. “She did this in Richmond. She’s had issues in every place she’s been.” Oh wow

That sentiment was echoed by other residents who requested anonymity on the subject.

Despite how residents feel about the contract, the “suggestion to resign” language is “standard operating procedure,” according to Martel of ICMA, the longtime municipal administrator. The language is standard, she said, because the role of city manager is subject to political forces outside the manager’s control. Talk about why things need to change. Fear of change?

“City manager is a transient position,” Martel said. “A newly elected council can decide to go in a different direction, for example.” In that situation, she said, a city manager may not want to resign and there wouldn’t be cause to fire them, but the newly elected leaders want them out regardless.

On account of those conditions, Martel said, the “suggestion to resign” clause becomes necessary. City managers need to support themselves and their families while they transition to a new city, which can take time and require a move. They would need their severance, she said, which would be off-limits in a standard resignation, but they also need their reputation intact, so they can’t accept termination.

Councilmember Eisenberg said essentially the same.

“To those who are wondering why (Snideman’s contract) would have this generous severance as a customary offer, it’s because city managers are in a precarious position and typical terms are not very long,” he said. “Her contract was at the going rate. Some (city managers) get 12 months' severance. Laura got nine.” We all work jobs. If you don't do your job, a high paying job nonetheless, and you don't do it well, and in good faith for the community that you are leading, there should be consequences. When there are no consequences, there is no reason to do a good job.

This “suggestion to resign” clause also appeared in Snideman’s contract with the city of Richmond, where she served as city manager for just under two years before resigning in November 2021 with more than \$300,000 in severance and other payments. so this is a pattern of how to take lots of money away from cities in just short periods of time.

Her Richmond severance was worth 10 months’ salary and benefits; she started in Calistoga roughly two months after she left.

wow.

Nick Otto/Register file photo

Years of complaints

The earliest complaint about Snideman's conduct that the Register has uncovered dates to July 20, 2023. That morning, a member of the Calistoga Public Employees Association filed a complaint with the human resources department alleging that Snideman had subjected him to a "hostile work environment."

The Register requested all public records related to this complaint. In the city's blanket denial of two separate requests, the clerk acknowledged that relevant records existed but said the city declined to provide them because they

contained confidential personnel information or confidential attorney-client communications.

Information about this complaint comes from two letters CPEA labor representative Richard A. Reed wrote to the city council in August and September that year. A Calistoga resident provided the Register with copies, which do not name the resident.

In his August letter, Reed said his labor consultancy was retained by CPEA on behalf of employees afraid of retaliation. He said Snideman's conduct that July left specific employees "with a huge sense of distrust, humiliation, embarrassment, fear, frustration, increased anxieties, distress, exposure and subjection to unwarranted hostility, harassment, disrespect, and to say the least, disgust."

See letters submitted on october 14/15th 2025. More of said they would submit letters, but fear retaliation. Since I submitted my letter, I have not heard any response to any of my questions. This is a form of "blacklisting" residents who he does not agree with. This is not professional.

Reed requested the council open an investigation immediately because there was "no evidence the complaint was taken seriously." He'd confirmed, he said, that "no investigation has been initiated."

I have put in formal complaints, and none have been taken seriously. Furthermore, gaslighting has occurred repeatedly.

Public records confirm the council convened in closed session two days later to evaluate Snideman's performance. The mayor, vice mayor, three council members and city attorney were present for the hour-long meeting, after which no public minutes were filed, typical for a closed session. But Reed's second letter indicated the council approved moving forward with a formal investigation. no minutes, no documentation, no trail, no transparency.

Seven days later, Mayor Williams and Vice Mayor Irais Lopez-Ortega bylined a letter to the editor in the Calistoga Tribune lauding Snideman's performance as city manager.

“We work extensively with the city manager. Extensively. Our experience with her is very positive. Mostly unknown to residents, (Snideman) works long hours and brings vast experience to the complicated process of running a city with over 60 employees,” they wrote. “Very likely, while you are reading this letter, she is working on our behalf. Not every city is favored with a smart, dedicated, conscientious city manager. We are fortunate.” =Gas lighting

Similar to Star article by editorial board saying they've had no issues. "we're just telling stories."

Reed called their decision to publish the “glowing evaluation ... appalling, and the timing outrageous.”

bam·boo·zle; fool or cheat (someone)

What is a synonym for bamboozle?

fool; cheat. befuddle deceive delude dupe hoodwink mystify perplex. baffle bilk confound confuse defraud hoax hornswoggle puzzle stump swindle trick

In a September letter to Williams and Lopez-Ortega, Reed said the letter to the editor, under the circumstances, was “a complete violation of city advisory directives,” and he requested their recusal from any decisionmaking compelled by the investigation’s final report.

While the investigation played out, in late summer 2023, former Planning Director Jeff Mitchem resigned because, he said, he could no longer endure the workplace culture.

“In my 38 years of experience as a planning professional, I have never encountered a work environment where staff are subjected to such hostility and lack of respect,” he wrote in his resignation letter addressed to the city council, senior city staff and the planning commission.

He characterized his decision as “not insignificant” considering his adult daughter had chosen to relocate to Calistoga from Oregon to be closer to family. But he said he just had to leave the city.

“On numerous occasions I have been treated, and witnessed other city staff being treated, with abject rudeness, and berated and reprimanded in front of others. This behavior has negatively affected staff morale, retention and

attraction and has significantly undermined the planning and building department's ability to best serve our community," he wrote. His letter was published in the Calistoga Tribune in September 2023. [Residents in St Helena... Oct 14/15.](#) Two months later, the city council unanimously concluded that the July hostile work environment complaint was unfounded.

The Register requested correspondence between residents and the council relating to Snideman's conduct during 2023 and 2024. The city did not provide those documents, despite multiple residents making clear that complaints existed.

Based on public records the Register received to this point, Mayor Williams, Vice Mayor Lopez-Ortega and Councilmember Lisa Gift replied to some constituents' 2025 emails. Some responses simply confirmed receipt while others were more nuanced and lengthy. Gift and Williams offered to meet with residents; Williams set an appointment for a morning chat at the community center.

One exchange between Doug Allan, the former vice chair of the planning commission, and Lopez-Ortega featured the vice mayor first accusing Allan of "a campaign against the city manager" before apologizing for his experiences and stating she would bring his concerns to the city attorney, even though Lopez-Ortega saw them as he-said, she-said. Allan stressed his anecdotes were firsthand experience and not hearsay.

The vice mayor assured him she was not taking sides.

"At the end (of the day, Snideman) is an employee of the community," the vice mayor replied, "and needs to do her job properly, as you said."

properly... also ethically, in good faith

Frequent performance reviews

It's customary for city council to review a city manager's performance six months after their hiring and then on an annual basis. All performance reviews are held as closed special meetings in accordance with the Ralph M. Brown Act, a California law that lays out what cities, counties and public agencies must make public — and what they may shield from view. But Snideman had her conduct formally scrutinized at a far greater clip: 13 times in three years.

Snideman started in January 2022 and sat for performance reviews in August and October.

In 2023, the council discussed Snideman's performance in February, March, August and twice in October.

In 2024, they met in June for a review. The Register could not find an agenda for this meeting, but City Attorney Michelle Kenyon referred to it in a July staff report.

In 2025, the council reviewed Snideman's performance in February, after which Kenyon was tasked with conducting a "360-degree performance review." A traditional review relies on input from the individual's supervisors; a 360-degree review looks for information from the individual's subordinates as well.

They met again March 21 to discuss Snideman's performance — reportedly for four hours — and then again March 28 and April 2.

The complaints came to a head during an Aug. 27, 2025 special meeting when resident Brian Durnian, Fire Chief Jed Matcham, Planning and Building Director Greg Desmond, Fairgrounds Revitalization Director Sheli Wright,

Deputy City Manager Rachel Stepp, Administrative Services Director Connie Cardenas, and Human Resources Director Rena Lariz spoke about Snideman's conduct.

She resigned after the meeting.

Part II of this series focuses on the operational and financial impact of Laura Snideman's nearly four years with the city.

--

FOR THE RECORD: An earlier version of this piece incorrectly stated the amount Snideman is potentially eligible to receive in severance from the city of Calistoga. The correct amount is \$220,000.

Art is in the eye of the beholder.

#freedomofspeech

https://napavalleyregister.com/calistogan/how-calistoga-s-city-hall-unraveled-under-snideman-turnover-costs-and-chaos/article_d56f1698-c370-497c-b997-d37f2dd57451.html

FEATURED EDITOR'S PICK

How Calistoga's City Hall unraveled under Snideman: Turnover, costs and chaos

LAUREN A. SPATES Napa Valley Register Correspondent

Nov 25, 2025

A pedestrian walks past Calistoga City Hall on Thursday, Nov. 20.

Nick Otto/Register

Second in a three-part series.

It had been eight months since Laura Snideman started as city manager, and one month since the city council opened a harassment and hostile work environment investigation, when Calistoga Planning Director Jeff Mitchem left the city.

His September 2023 resignation reverberated around town, so much so that it appeared in the petition of a different former employee seeking unemployment benefits despite, on paper, having left city service voluntarily.

Claiming she was forced to resign under false pretenses, the administrative employee, who asked not to be named because she may seek public employment in the future, assembled a four-page packet outlining her employment timeline. She included granular detail about her interactions with Snideman.

“What started out as avoidance, impatience and eye rolling quickly degraded into constant beratement for minor errors and punitive measures like the withdrawal of vacation benefits and the elimination of job duties with no explanation,” the employee said.

In the second of this three-part series on former Calistoga City Manager Laura Snideman’s conduct, severance and the effects of her tenure, correspondent Lauren A. Spates looks at the operational and financial impact of her nearly four-year term.

Part I of this series covered Snideman’s contract, the years of complaints about her conduct, and the city council’s ongoing review of her performance. Part III of this series will focus on how residents and staff say

Like how Anil attempted to control the Blackberg Group study and report, and compensation analysis?

Snideman attempted to control all levels of the city's operation and how the city council needs to answer for years of enabling her behavior.

The Calistoga city attorney has not returned calls for comment. Snideman could not be reached at any of the phone numbers or email addresses associated with her name. One cellphone number given to the Register in early September was disconnected. On Oct. 31, a Register editor hand-delivered to Snideman's home a letter requesting her participation. We have not received a reply. And on Nov. 12, a reporter handed Snideman her contact information at a South San Francisco City Council meeting where both were in attendance. Snideman said she would call the reporter later; no call was received.

Her appeal rested on a claim that she was submarined. She said she hadn't been offered training, constructive feedback, or a formal review in accordance with city bylaws before being coerced into giving up her position. [wow.](#)

To build credibility to the appeals panel, the administrator described the work environment in city hall.

[The saying goes... Death by a thousand manipulative cuts.](#)

“Laura Snideman has a longstanding reputation for creating a hostile work environment by belittling and berating employees,” she said. “During the entire year I worked there, the city ... was experiencing constant chaos and leadership confusion due to excessively high turnover as a result of the toxic work environment.”

[There is no formal complaint process in St Helena.](#)

She cited 11 staff turnovers for six positions in less than a year and “no HR director for any city employee to file a formal complaint with.” She said the finance director changed three times; the human resources manager, payroll and planning directors changed twice; and the city clerk and fire chief turned over once — all in 12 months.

Mitchem, included in that list, confirmed the planning department entries. Another current city staffer who requested anonymity to discuss personnel matters confirmed the entire list and named an additional eight employees who she said left because of Snideman's management style. Two of the eight took early retirement.

Former Calistoga Planning Director Jeff Mitchem. He left the city in September 2023 due to what he called then-City Manager Laura Snideman's abusive behavior and micromanaging tendencies.

Courtesy of Jeff Mitchem

The 19 personnel changes in a city that salaries 84 people amounts to a turnover rate of 22%.

Replace, control, intimidate, make yourself important.

According to the U.S. Bureau of Labor Statistics, the 2024 separation rate for state and local government was 1.5% nationwide and 3.3% in the West, which includes California. Calistoga's 22% turnover rate was twice that of the leisure and hospitality fields' during the COVID-19 pandemic.

The employee won her appeal.

Richard A. Reed, the labor consultant who worked with the Calistoga Public Employees Association, said his office submitted to investigators the names of at least seven employees who felt victimized by Snideman.

"Many employees have made the hard decision to terminate their city employment over the past 17 months or are leaving city employment soon due to the unprofessional working conditions that have evolved since February 2022," he wrote in a letter to Mayor Donald Williams and Vice Mayor Irais Lopez-Ortega in September 2023. "The most senior rank and file employee at city hall has only a bit over four years of city service, which is an indicator that the city has a severe employee retention issue."

Residents want to leave because of St. Helena's horrible mismanagement. What does that tell you? We have had good staff leave.

Seventeen months later, in February 2025, resident David Shaw emailed the council.

warning signs 101

"Since (Snideman's) hiring we have had a steady stream of capable and knowledgeable people leaving their positions in our city. Most ... have expressed their reasons for leaving as unable to get along with the city manager," he wrote.

It's hard to say the truth when you're at the risk of retaliation.

The significant turnover was an open topic of conversation in town, according to multiple residents who dealt with city departments.

Permit technician Claudia Pouliot has worked for the city since 2012, starting part time in the finance department.

“When I started I was working with people who had been with the city for 20-plus years and one day they were all gone,” Pouliot said in a recent interview. “It hit me one day when Laura was walking (a new hire) around and Laura said, ‘Claudia is the employee who’s been here the longest.’ But I’d only been (full-time) for four years.”

Losing employees in leadership roles raised the alarm for many residents for both strategic and financial reasons. Human resources experts would tell them they were right to be concerned.

Wake up

In 2022, Robert J. Lavigna was director of the Institute for Public Sector Employee Engagement, part of a national human resources firm and a California Joint Powers Authority. Governing magazine named him Public Official of the Year in 2000.

In a 2022 article Lavigna wrote for trade group Engaging Local Government Leaders, he discussed the impact and cost of replacing government workers. The article was intended to be general, not about a particular city or agency.

“The loss of institutional knowledge — an important resource in government roles — can create gaps in expertise that hinder work, delay projects and disrupt public programs,” he wrote. He went on to say “replacing a departed employee can cost up to 150% of the employee’s annual salary.”

Not with the City Manager, but City Council. There needs to be an HR

Lavigna also stressed the importance of exit interviews, something resident Lana Richardson wondered about in March 2025, when she emailed Lopez-Ortega and the other Calistoga council members. Richardson felt qualified to weigh in due to nearly 20 years working in HR, with seven years as vice president of human resources for Mason-McDuffie Mortgage Corp.

Councilmember Kevin Eisenberg said in a recent interview he was not aware of the city conducting exit interviews, but that he took it upon himself this year to reach out to city staff.

“Personally, near the end, I had informal talks with some employees who left, for my own curiosity and in order to govern better,” he said.

Richardson assessed the emotional and financial impact of the turnover this way: “(Snideman) was very competent but completely ineffective as a manager, which is why we lost all those people.” Completely ineffective - operative words.

Mitchem, the former planning director, said he was not offered an exit interview. He thinks Richardson’s assessment of Snideman is correct but incomplete.

“To (Snideman's) credit, she’s smart,” he said. “But in my opinion she’s evil, and I sleep better knowing she’s gone.” wow, those are strong words

Consultant fees

Even though Mitchem left Calistoga, he stayed in touch with former colleagues. He said the three or four planning department employees who left after him were all replaced with consultants. Revolving door scheme put into effect?

In his September 2023 letter, Reed, the labor consultant, directed the council’s attention to the types of candidates who were filling the open positions. The emphasis below is his.

“A city cannot run successfully on part-time consultants or retired annuitants hired as *department heads who reside across the United States or who are only present two days a week at maximum* to lead their employees and take care of the business of the city,” he wrote. “Needless to say, (these are) part-time

consultants and retired annuitants who are drawing a six figure wage for approximately (24 weeks of work), who are then, upon their conclusion, replaced by another part-timer.” *Accountability? Hot potato. No ownership of their work.*

The next month, Richardson submitted a public comment to the city council along the same lines, concerned about this hiring strategy’s financial impact on the budget.

She grouped the spending into four categories — consultant fees and locations, hours committed, recruitment fees and attorney fees — and by combining her HR experience with specific line items from previous council agendas, she attempted to estimate what she thought the associated costs would be for each group.

Under the “consultant fees” item she noted most work remotely, including the human resources representative. That fact upset her because, she said, it complicates the recruiting process. Richardson supposed that consultants were likely budgeted as full-time staff but worked less, yet cost more than a regular full-time employee with benefits. *TOTAL inefficiency. Costing tax payers more money.*

She also said the city hired a recruitment firm to fill Mitchem’s role.

“Typical recruiting fees are 20%-30% of first-year salary of the position placed,” she wrote. “I believe other (city) agencies are recruiting for other executive/director level positions. This is a significant expense that is likely not budgeted and could have been avoided.”

Richardson also took issue with the costs associated with the investigation into Snideman’s conduct. *Someone's getting rich. Need to question people's motivation. What happened to good faith and public service ethics?*

“Interviews with 26 employees were conducted by the city attorney’s office for the investigation. This no doubt took many hours at a rate of \$200 to \$400-plus per hour — another considerable expense that likely wasn’t budgeted and avoidable,” she wrote.

Richardson and other residents were concerned enough to request public records related to the expenditures. The city denied those requests.

Executive headcount increase Why was it denied?

In July 2024 the city council created two new executive-level positions at City Hall — an assistant city manager and a deputy city manager — both reporting to Snideman and implemented at her request. [Hm.](#)

By the end of the year there was enough pushback about the necessity of the assistants that Snideman felt the need to defend her position to the council. After her presentation, she emailed the elected officials information she said they could share if they received questions from the public.

The Register obtained a copy of the email. It shows Snideman centered her argument on Calistoga’s being a “full-service city ... that provides all local services. The breadth and quality of our services are particularly impressive given the size of the community. We need staff, including management staff, to ensure quality services are provided within the community’s, council's and regulatory directives.” [hm.](#)

Snideman also cited the council’s desire to have her spend more time “connecting directly with the community and begin to help the council focus more on larger policy issues and working toward a longer-term vision as well as initiating projects. This is the best use of the city manager’s expertise, instead of being as ‘in the weeds’ as she has needed to be since her arrival.” [hm.](#)

She detailed the responsibilities divided between the two new roles.

The assistant would oversee, for example: firefighting-related negotiations with Cal Fire and Napa County, police chief recruitment, and Lincoln Avenue apartments and sidewalks, as well as complex customer service issues. The deputy would oversee: the new municipal website, the new finance and HR system, new IT managed service provider, and an overhaul of an ancient phone system. Both would have direct oversight of several departments.

Snideman wrote: “Our current department directors either do not have the necessary experience or the time given their daily workload to devote to cross-departmental coordination.”

Per Calistoga’s 2025 salary schedule, the combined annual salaries for the city manager, assistant city manager and deputy city manager cost taxpayers \$694,224. The Register could not determine the value of their health and retirement benefits. **hm.**

HR manager Rena Lariz said she could only direct the Register to the salary figures; she could not provide additional information. Data available through the California State Controller’s office and Transparent California is either incomplete or wrong. **hm.**

In April 2025, resident John Gleazer wrote to the council about the expenditure.

“This, at a time when I am bicycling or driving down Washington Street or upper Grant Street and swerving around cracks and potholes in the pavement. Where has the money gone to fix the streets? Where is the city manager when it comes to maintaining our streets?” he asked.

Good question. And water. How about that expensive brown water?

Mayor Williams replied, said Gleazer's email was "concerning," and they set a date to talk at the community center. [just the tip of the iceberg](#)

Calistoga Mayor Don Williams poses for a photograph on Thursday, Nov. 20.

Nick Otto/Register

David Shaw evaluated the two new positions through a different but no less critical lens.

"We now have an assistant city manager who was a very capable police chief which leaves a very important void in our city, and, not to mention, you have taken the director of parks and recreation and made her assistant to the assistant city manager. I have no idea what the reasoning behind all this is," he emailed the council. [more control.](#)

“We have entrusted you with the welfare of our city, and having to fill one position with three people seems excessive for a community of five thousand people,” Shaw said. “It would benefit all if you can find someone who can handle the job as advertised.”

Councilmember Lisa Gift responded 11 minutes later.

“Retaining capable and knowledgeable employees is critical to maintaining effective city operations, and any staffing decisions should be made with the best interests of the community in mind. I will continue to monitor this situation.”

Eyes open

She called his input valuable, noting the city had an interim police chief and was hiring for a permanent replacement. She offered to keep the conversation going.

In March, Scott Atkinson weighed-in.

“I do not feel comfortable that she felt the need to build up such a top-heavy administrative team. ... The community has not grown in population enough to warrant this huge increase in expensive administrative management,” Atkinson wrote to the council. “I am shocked the city council went along with this, and I will honestly say this is one of the few decisions the current council has made that I adamantly disagree with.” Good questions.

According to salary schedules for all 14 cities and towns in Napa and Sonoma counties, five have three executive positions: Santa Rosa, Petaluma, Napa, Calistoga and St. Helena.

St. Helena’s population, at 5,430 in the 2020 U.S. census, is slightly larger than Calistoga’s 5,228. In 2024, St. Helena taxpayers paid \$792,070 in salary for the three executive employees, or \$918,059 when retirement and health benefits are included. WOW.

During an Oct. 29 call with the Register, Councilmember Eisenberg reflected on his approving both new roles in the summer of 2024.

“Since then, I’ve come to regret my vote. I made a mistake. I should have thought it out better,” he said. “In a town our size it’s appropriate to have one (deputy), but two are not the best use of funds.”

hindsight is 20-20.

Snideman gets a raise what?!

The same month the city approved the two new executive-level positions, the council voted unanimously to grant her a \$42,444 raise plus an additional \$15,520-per-year retirement contribution. Her annual salary rose to \$292,620.

money money money... we need more money. more money will mean i can do my job better. right.

In a staff report provided to council members before their vote, City Attorney Michelle Kenyon said Snideman “does not receive annual merit increases or cost of living adjustments afforded to other city employees.” She said it had been almost two years since Snideman received any compensation adjustments.

CalPERS, the California public employees’ pension fund, set a COLA of 2.95% for 2024. Snideman’s raise was roughly 17%.

more control, more power, more money, makes job look more important. not good faith.

The case Snideman made for more staff also outlined the challenges of her own role. **What did that Blackberg Compensation study say? St. Helena CM Salary is 80% higher than the average for California cities with populations under 10,000.**

No need to look at compensation studies.... that would be duplicative. sure.

“As a full-service city, whether the population of the city is 5,200 or 52,000, the responsibilities to logistically operate the city, meet local/state/federal reporting requirements and other mandates, and meet the expectations of the community and the council are no different,” she wrote. “The only difference is the challenge of people-resources to accomplish the goals and objectives and successfully meet these expectations, mandates and directions by council. Being a small city does not equate to less work or less complexity.”

Mitchem, the former planning director, said she's not entirely wrong.

"It may be true that running a small or mid-sized city isn't that different, but it's a complicated question. Her strategy was to consolidate control, to have all departments report up to her," he said of the layers he watched her implement.

Pedestrians walk across the street in downtown Calistoga on Thursday, Nov. 20.

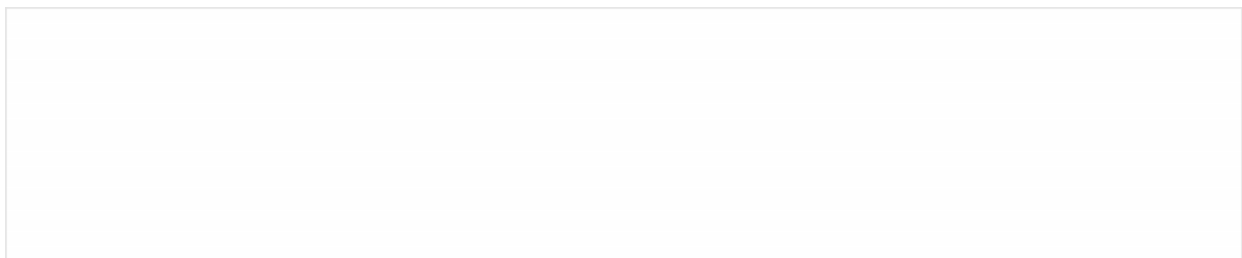
Nick Otto/Register

Eisenberg said he was motivated to approve the raise by a hope that the changes they made to executive staffing would change Snideman's circumstances and therefore her conduct. **Jeeze.**

“(My vote) was a show of confidence at the time in this belief that there was a commitment to improve,” he said. How did that work out?

Kenyon’s staff report to the council assessed the financial impact of Snideman’s raise.

“A portion of this (new expenditure) is included in the FY 24/25 budget,” City Attorney Kenyon wrote, “and the remaining amount is likely to be addressed through annual salary savings from gaps in filling positions.”



Art is in the eye of the beholder.

#freedomofspeech

https://napavalleyregister.com/calistogan/news/calistoga-laura-snideman-city-council-public-records/article_bc053974-de3a-4fb1-be0d-02f85cad07c7.html

FEATURED EDITOR'S PICK

‘A pattern of control’: final part of Snideman series details power struggles, withheld records and eroded trust in Calistoga

LAUREN A. SPATES Napa Valley Register Correspondent

Dec 4, 2025

NOTE: I have spoken with Dan, the publisher of the Register, and he said there was no issue with printing these articles for public comment into City Council.

Phone call 3/20/26

He said it's like photocopying the newspaper, and sending in as comment.

There is no issue with copyright in this manner.

"Fair use"

Calistoga resident Lana Richardson emerged as one of the chief critics of then-City Manager Laura Snideman and the city council's handling of her tenure. Numerous public records requests she filed attempting to get more information about the costs involved in the various reviews and investigations into Snideman's conduct were denied.

Nick Otto/Register

Last in a three-part series.

The brusque and dismissive attitude of Calistoga's city manager started whispers and fostered a growing anxiety at city hall as soon as five months into her tenure. But by 2025 there was significant worry that Laura Snideman's overall approach to power stymied city operations.

In March, a resident and self-described former city employee "from about 300 years ago" emailed Mayor Donald Williams to comment on Snideman.

"She has demonstrated in several instances where she has used her position of power to intimidate employees," Scott Atkinson wrote. "She does not give the appearance that she understands the concept that she works for the city council and the citizens of this community."

sounds familiar

Atkinson wrote that Snideman "micro-manages," an assessment that former planning director Jeff Mitchem agreed with.

"Her strategy was to consolidate control, to have all the directors report up to her," he said in a recent interview. Though the city manager is indeed at the top of the org chart, the amount of control she wanted bordered on the ridiculous.

“But there are divisions across departments that are unique and different enough — the fairgrounds for one, or our water treatment plant that needed new liners, or that fire season was approaching and there were PPE requests — she can’t control all of that,” he said.

In the final installment of this three-part series on former Calistoga City Manager Laura Snideman’s conduct, severance and the effects of her tenure, correspondent Lauren A. Spates looks at Snideman’s approach to power within city operations, and how her tenure affected the community's trust in the city council.

Part I of this series covered Snideman’s contract, the years of complaints about her conduct and the city council’s ongoing review of her performance. Part II focused on the financial impact of her tenure.

The Calistoga city attorney has not returned calls for comment. Snideman could not be reached at any of the phone numbers or email addresses associated with her name. One cell phone number given to the Register in early September was disconnected. On Oct. 31, a Register editor hand-delivered to Snideman’s home a letter requesting her participation. We have not received a reply. And on Nov. 12, a reporter handed Snideman her contact information at a South San Francisco City Council meeting where both were in attendance. Snideman said she would call the reporter later; no call was received.

If you create divide, you weaken the group. The divide we have in our town is from lack of transparency. Pins people against people.

This gives the CM more control, and sounds he is the voice of reason. He controls the information that's given to you, and therefore the ones who question his authority become black-listed, and retaliated against.

Be smarter. PUBLIC SERVICE ETHICS.

Ethics in public service ensures officials act with integrity, accountability, and impartiality, prioritizing public interest over personal gain. Key principles include avoiding conflicts of interest, refusing bribes, maintaining transparency, and upholding the law. It requires adhering to high moral standards to maintain public trust and ensuring fair, equitable treatment of all citizens. 🌐 U.S. Department of the Interior (.gov) +5

Mitchem, a public servant with more than 30 years of experience serving municipal governments, said it seemed Snideman fully expected to control decisions at all levels. But he said it would have been impossible for her to meet the needs of different departments even with the new assistant and deputy city managers. Mitchem resigned from Calistoga in September 2023 but said he has stayed close with former colleagues.

For resident Doug Allan, a former vice chair of the planning commission, Snideman's behavior "speaks to a broader pattern of gatekeeping and control that many in our community have experienced when interacting with city hall," he wrote in a March 2025 email to council. "The passive-aggressive controlling attitude erodes trust in our local government. And there are more examples to point to. They are not hard to find."

Stewardship: Responsibly managing public resources and preventing waste or abuse.

A view of downtown Calistoga on Thursday, Nov. 20.

Nick Otto/Register

Just how much control? great question

Snideman's controlling nature was common knowledge according to Allan, Mitchem, and one current staffer who asked for anonymity for fear of retribution considering Snideman could still sue the city.

Ofcourse, because volunteers act in good faith for the community and are more "eyes" on the situation. when you're doing corrupt things you want fewer eyes. intimidation, gaslighting, not answering information requests...

A major point of contention was that Snideman also treated volunteer

committee members with disdain. Lana Richardson emailed the city council

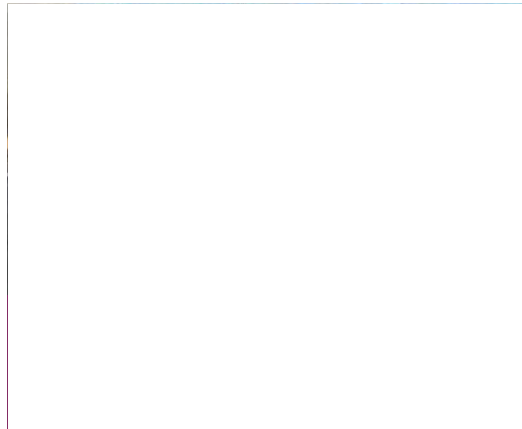
March 19 that she "had personally witnessed (Snideman's) aggressive behavior at a (housing advisory committee) meeting, when she stormed out of the room after being corrected on something."

I was told to not be part of a volunteer group, and he very forcibly verbally told me that I could not participate unless in insisted. see Public comment letter oct/14/15

John Gleazer, a member of the Calistoga Green Committee, emailed the council in April about "the apparent poor relationship between the city manager and volunteers on a city committee" — his own.

ob-fus-ca-tion: the action of making something obscure, unclear, or unintelligible.

Denying PRRs.
See Blackberg Group report. They requested salary information, wasn't given the info, had to do their own research and then confirm with the city.



“The lack of communication between the Green Committee and the city on recommendations the committee puts forth suggests the city manager has either no particular appreciation for the efforts made by the committee or is likely instrumental in delaying progress on projects, even those approved by the city council,” he wrote.

ob-fus-ca-tion: the action of making something obscure, unclear, or unintelligible.

He referred specifically to a council-approved bike parking parklet that featured expensive, high-quality bike racks. He wrote that the city “has done nothing” to promote the new parking area despite his committee’s multiple detailed recommendations. He said the project lingered for months.

delay things he doesn't like, pushes forward with projects lightning speed for things he likes, uses public money before approval, doesn't follow policy

“Obviously, we had hoped the city manager would listen to council and city committee proposals and get things done. This currently does not seem to be the case,” he wrote. Mayor Williams and Gleazer agreed to meet for coffee to discuss.

mal-fea-sance; wrongdoing, especially by a public official.

intentionally doing something either legally or morally wrong which one had no right to do. It always involves dishonesty, illegality or knowingly exceeding authority for improper reasons.

Many of these emails came after the council in February ordered a 360-degree performance review of Snideman that would involve getting feedback from both supervisors and subordinates. It wasn't just the need for the review that raised eyebrows. Lana Richardson was disturbed that the council directed the city attorney, Michelle Kenyon, to handle the review. Richardson felt it was improper because Snideman and Kenyon worked together regularly. hm.

In a recent interview, municipal leadership expert Patricia Martel agree this setup was odd. Martel spent 38 years in California city government, with her last 13 years as city manager of Daly City. She now works full-time for the International City/County Management Association, a group for local government professionals. This person is an expert.

Power equals money and money equals power" means that wealth and influence are interchangeable and mutually reinforcing. Money provides the resources to purchase influence, authority, and control, while this power is subsequently used to accumulate more wealth, creating a self-perpetuating cycle. - google

"It's more typical to hire an outside, disinterested third party," she said of a 360-review or investigation. "The city attorney and city manager are peers, they're co-equal, because they are the only two appointed officials who work (directly) with council."

Well. Seems like conflict of interest for the town

Martel said that if she were city manager and the council said she'd be reviewed by the city attorney, "I would object."

That sounds like good faith right there.
#publicserviceethics

The situation left some sources wondering if the city manager and city attorney had leveraged joint power to a desired end. One city employee who asked for anonymity to discuss sensitive issues within city leadership said: "The city attorney, under Laura's direction, listened to Laura a lot."

Because power equals money, and money equals power.

In a city manager-led government, the city attorney and city manager's responsibilities overlap in certain areas, including public records requests. The manager oversees the city clerk who handles the requests, while the attorney reviews the documents to determine what can be shared.

That sums that up.

Richardson emailed the city in April 2025 requesting an accounting of attorney costs related to all of Snideman's different performance reviews. Richardson suspected all the meetings and interviews billed at hundreds of dollars an hour amounted to a significant expense.

The Napa Valley Register reviewed the city's response. The clerk wrote that the city could not provide the financial figures Richardson requested because "the city does not have an existing record which describes the total amount, if any, of attorney's fees expended on the subject matter of your request."

when you can control what is recorded..... No one should have so much power.

Richardson found this preposterous. Of course there wouldn't be one single record, she said in an interview, wondering why the powers that be wouldn't just provide her with each line item.

**MORE MONEY MORE POWER, MORE POWER
MORE MONEY**

**OBFUSCATE
CREATE DIVIDE
GAS LIGHT
BLACK LIST CONTROL CONTROL CONTROL**

The city's response went on.

"Further, even if there were individual billing entries which relate to the information you seek, they would be exempt as the (California Public Records Act) specifically exempts from disclosure records which contain confidential attorney-client communications and confidential personnel records," it read.

"Moreover, to the extent disclosure of the responsive documents would compromise an employee's privacy interests, the city finds that protecting these interests outweighs the public interest in disclosure."

GAS LIGHT

Richardson would not get what she wanted.

“I’m not asking for any confidential or personnel information, simply the cost of the activities,” Richardson wrote afterward to Councilmember Lisa Gift.

“Taxpayer funds were used for this and I believe we have a right to know what the cost was.”

SAME, I ASKED HOW MUCH WE’VE SPENT ON LEGAL FEES FOR CERTAIN ITEMS, ONLY TO BE TOLD OUR LEGAL FEES HAVE COME DOWN IN GENERAL. THAT’S NOT THE DETAIL I WOULD LIKE.

In March 2025 Doug Allan emailed the council about what he saw as the city’s withholding of public records.

Allan wanted to learn the names of applicants for certain city positions, but he said the city told him the names could not be released until after the council reviewed the applications, after the city attorney could redact information from the paperwork, and because of concerns about applicants being approached.

Allan told the council that “some of the reasons given for withholding these names do not hold up to scrutiny.”

He wrote that “a public record is a public record, regardless of who has or has not seen it;” that redactions are unnecessary considering all he wanted were names; and that “applicants for public positions should expect transparency.”

Breaching policy and publics right to records.

gaslight

obfuscate

“Individually, these delays and justifications may not technically constitute a violation of policy, but collectively, they contribute to a growing mistrust,” he wrote. Allan urged the council to take a closer look at this “in the context of the broader pattern of issues we constituents see, and reaffirm the city’s commitment to open, friendly and transparent government.”



How Calistoga's City Hall unraveled under Snideman: Turnover, costs and chaos

To report this story, the Register made four public records requests. For three of those four requests, the city did not reply to the Register within the 10-day window mandated by the California Public Records Act. The Register confirmed receipt of the requests Oct. 14; the city sent its responses Nov. 9, only after a series of phone calls, emails and a reporter's appearance at a city council meeting after which she spoke with the clerk.

Two of the three requests sought correspondence to council about Snideman's performance during 2023 and 2024. The city did not provide any records in response, despite multiple sources having told the Register they'd communicated with council during that period.



A pedestrian walks past Calistoga City Hall on Thursday, Nov. 20.

Nick Otto/Register

Communication workflow

By April 2023, Snideman proposed a significant change to the rules governing how council members could communicate with city staff. Those rules fall under the city's civic operating agreement, which is based on the Calistoga Municipal Code. Together, these two documents dictate how local government operates on a day-to-day basis. Their language should not conflict.

The new rule dictated “councilmembers of the city council shall deal with employees of the city only through the city manager, except otherwise permitted by the city manager.” According to Gift, who was in her first term on the council, Snideman said this workflow was common. The council approved the change.

divide , control



That October, Claudia Aceves (now Claudia Pouliot), then-president of the Calistoga Public Employees Association, submitted public comment to the council members to request they remove the new language. Her concerns were threefold.

First, the new language referenced Section 10.3, Relations with Staff, a section “that is not yet adopted into the municipal code,” she wrote to the council.

Plus, Aceves felt that without undergoing the appropriate procedure for adopting the new language into the agreement and ultimately the code too, city leadership had not been transparent. There should have been “public input, deliberation and clarification of its scope and application,” she wrote. yes.

Aceves also said the new directive left significant questions unanswered about implementation. What would the process look like for seeking permission from the city manager? Which topics might require her permission? And for those

staff members who also reside in Calistoga, did that mean they could not approach council as a constituent?

According to Santa Clara University's Markkula Center for Applied Ethics, it's common for cities to prohibit council members from giving orders to the city manager's subordinates. But elected officials typically are allowed to make inquiries or exchange information with city staff — something it appeared the Calistoga language would prevent.

I'm sure it was sugar coated as much needed for her to do her job better.

As of March 2024, the municipal code and the civic operating agreement were still at odds. Aceves submitted public comment "to once again highlight" the new communication directive and ask for its removal. Aceves said she never heard back from the council.

not hearing back from elected officials ...

who is in control here?

citizens vote in city council to represent THEM.

they direct the CM.

CM directs the staff.

it's flipped. CM directing City Council. No one is listening to the residents.

Create confusion, chaos. ask for raise.

Create a big mess.

Leave.

collect severance, sue, make more money.

money money money money money.

Gift said she ran up against Snideman's change one afternoon after stopping at both her city hall mailbox and the parks and recreation department, chatting with staff in the process. Gift said she was told this wasn't allowed under the new directive, which spurred her to review the city's operating agreement and municipal code. She came to the same conclusion as Aceves.

exactly.

Gift took her concerns to council. She said they told Snideman in a private session that according to the municipal code, council members do not need to go through the city manager to talk to department heads. Snideman was directed to

tell staff they were free to talk to the council.

The Register has reviewed a series of February 2025 emails between Snideman and Gift in which Gift attempts to confirm whether Snideman did as directed.

Unhappy with Snideman's responses, Gift went to City Attorney Michelle Kenyon.

ugh.

"It has now come to my attention that there is an internal memo in the form of a meeting agenda where (Laura) states department heads are not to talk to the council," Gift wrote to Kenyon. "We need to be able to talk to our department heads, and the CM isn't following direction on this. ... I need to know how to handle this. Could I direct you to remind her of council direction? Or, what do you recommend? I am really at a loss here."

Eventually, in March 2025, the council voted to remove Snideman's change from the civic operating agreement, bringing it back in line with the municipal code. Council members may once again communicate freely with staff.

Jeese
louise.

In a recent interview, Councilmember Kevin Eisenberg reflected on the change to the city code. He said it was inappropriate.

hindsight is 20-20

Councilmember Gift was surprised to learn that it wasn't she who first alerted council to the issue in early 2025, but that it was Pouliot, in her 2023 and 2024 public comments. Gift admitted she didn't remember those letters, and said she felt deeply embarrassed. Ugh. What a disaster.

"Claudia was the canary in the coal mine," she said, "and we should have listened to her." OPEN YOUR EYES EVERYONE IN ST HELENA. OPEN YOUR EYES.

This was not the first time city employees' communication workflows were adjusted under Snideman's leadership. According to Coastside News, the newspaper in Half Moon Bay where Snideman served as city manager from 2010 to 2014, Snideman "asked city employees — your friends, neighbors and public servants — to stop talking to the press." HE ASKED PEOPLE TO STOP PUTTING IN PUBLIC RECORDS REQUESTS. THREATS.

In the same editorial, Coastside News said Snideman hired a San Francisco public relations firm to take calls about city matters, which the writer called "a ridiculous waste of public money for a city this size." Apparently, they wrote, "Snideman said she was just too busy to answer questions. ... Now Snideman routinely ignores our emails and phone calls, which keep coming because you deserve to hear from city officials, not consulting spin doctors."

READ THE ROOM. READ THE TOWN. READ OUR FACES

HE ASKED FOR BARRICADES AT CITY HALL, WHEN SOMEONE FOUND ILLEGAL INSERTIONS INTO THE ZONING CODE. AND FOR A YEAR, OBSFUCATION, AND MISREPRESENTATION OCCURED.

I HAVE PUT IN A FORMAL COMPLAINT ON THE WAY THE COVERED PORCH WAS HANDLED, AND THE "WASTE" THAT OCCURRED ON TAX-PAYER DOLLARS.

A RESIDENT WAS DEFAMED OVER AND OVER
A POLICE REPORT WAS FILED, WITH NO REPORT, AND NO ONE WILL SAY WHO FILED THE POLICE REPORT.

I HAVE ACTUALLY PUT IN A FORMAL COMPLAINT ON THE CITY ATTORNEY. IN JULY, AND SUBMITTED WRITTEN DOCUMENTS. NO RESPONSE.



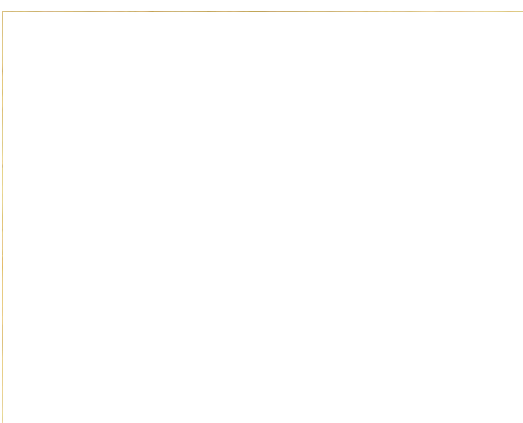
Pedestrians walk across the street in downtown Calistoga on Nov. 20.

Nick Otto/Register

Does history rhyme?

After Snideman left Half Moon Bay she landed in Fairfield, where she ultimately served as assistant city manager, then left Fairfield to take the top job in Richmond. She spent less than two years there before arriving in Calistoga in January 2022.

Former Mayor Chris Canning said the Calistoga city council was aware that Snideman's departure from Richmond fell under a cloud of suspicion, but said they attributed that to the larger climate at that city.



While she was city manager, Snideman and the Richmond city attorney hired two outside firms to investigate the mayor's business dealings, after which the mayor threatened to fire Snideman and the attorney for violating the city charter. He said Snideman exceeded the spending limit she could approve without consulting the council.

OPEN YOUR EYES

The city attorney resigned in November and Snideman resigned a week later. The mayor then posted Snideman's severance agreement to his personal e-newsletter, a violation of the separation agreement's terms that it remain private until seven days after she signed. According to Richmond Confidential, this was not the first time the Richmond city council accused the mayor of sharing confidential information, having already voted to refer another disclosure to the district attorney and a grand jury.

"Richmond was a total mess," Canning recalled in a recent interview, saying, "(Snideman) was the best option at the time." He recounted how the council narrowed down the list of candidates provided by an outside search firm that conducted background research, including interviews of Snideman's former colleagues.

"A reasonable person at the time would have felt the hiring was explainable," he said.

But by February 2025, Canning’s opinion changed, and he sent a letter to the council urging them to reconsider whether Snideman’s continued employment was worth “the legal and financial risks being created by (her) management style.”

Canning encouraged city leadership to “actively engage and solicit feedback from residents, community organization leaders, city staff, and business partners ... and I believe you will hear words such as unresponsive, dismissive, controlling, intimidating, vindictive and retaliatory in reference to the city manager’s interactions. I do not make these assertions lightly but I can no longer let them go unsaid.”

OPEN YOUR EYES

LACK OF SITUATION AWARENESS

That summer, 80 miles south, South San Francisco’s longtime city manager announced she would retire at the end of 2025. Snideman applied to replace her before the professional search firm’s Aug. 15 deadline, which fell 12 days before the Calistoga city council asked her to resign, allowing her to collect a roughly \$300,000 severance. If she resigned voluntarily, she wouldn’t have been eligible for a payout.

A comparison of Snideman’s new South San Francisco contract with those from Half Moon Bay, Richmond and Calistoga shows one notable similarity and two striking differences.

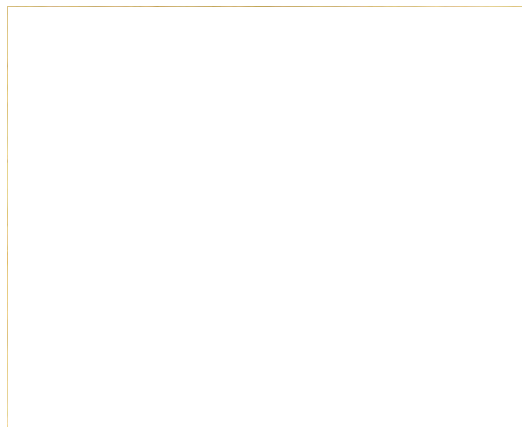
All four contracts allow for the city manager to resign at the suggestion of council and still collect severance. I wonder how these contracts were written, and the negotiation process.

But unlike her contracts in Half Moon Bay, Richmond and Calistoga, Snideman's new contract defines an initial term of one year, with an option to extend for three more. The South San Francisco contract also stipulates Snideman can be terminated with cause — depriving her of severance — “for failure to maintain satisfactory working relationships with other employees or the public.” This specific line item is not included in the three other contracts the Register reviewed.

Snideman's prior performance hung over the South San Francisco city council chambers Nov. 12, when the council voted unanimously to hire her.

“Success for you would mean a high retention rate,” said Councilmember Buenaflor Nicholas, who mentioned she had read articles discussing Snideman's behavior. “I just have really high hopes that this will work, hopefully.”

Both Councilmember James Coleman and Mayor Eddie Flores asked the city to “give Laura a chance.”



“We’re not a city that dives into cancel culture. We don’t cancel people immediately without knowing them. We give them an opportunity,” Flores said to the officials who still remained at the end of the four-hour meeting.

The public, who had earlier filled the auditorium to standing-room-only for various other agenda items, was long gone.



The Calistoga Fairgrounds on Thursday, Nov. 20.

Nick Otto/Register

Opportunity for Calistoga

While the specter of a lawsuit may still linger over Calistoga, many in the Upvalley city say they can rest knowing Laura Snideman is no longer running city hall. Some residents don’t share their positive outlook.

“The thing that really gets me is the council did not stand up to support the community who put them there, nor did they stand up to support the staff who serve that community. The council was co-opted whether they knew it or not,” Mitchem said. “I have friends still there and many of them were damaged by her toxicity. Council needs to issue a full apology, and there should be a regime change.”

More than a few residents agree, Allan among them. He wants the council to apologize to the many people who spoke up over the course of years but felt ignored. He also wants the council to articulate why it took so long to remove someone Allan said was “so harmful,” despite having plenty of data points.

“They could have avoided all this if they listened to their constituents and staff,” he said. “But just as trust can be lost, it can be earned back. There needs to be a process to earn our trust and apologize, and if not, then we need to take more serious action.”

As for Richardson, she’s also upset with council, who she said should have terminated Snideman without cause more than two years ago and paid the nine months of severance.

READ THE ROOM

“It would have saved taxpayers a lot of money, and the city would have retained employees who left because of her,” Richardson said.

She’s looking for a mea culpa at a minimum and, ideally, all the data she’s sought for years. She’s well aware of what the emotional and operational costs have been to her city, but she’s not giving up on the financial.

“This is what (council) still owes us today,” Richardson said, “although the figures would have increased by now.”

For their part, city council members have spoken with the Register to varying degrees, all cognizant of their contractual obligation to make no comments about Snideman to the press or the public.

Councilmember Gift took pains to say what she could.

“I believe the council as a body has been given a significant learning opportunity. It is my hope that we will do better moving forward. When the council does not act in the right ways, the community pays the price,” she wrote
in a statement to the Register.

EXACTLY

“It is also not acceptable to repeatedly commit public money to any situation that is not working because individual agendas are being protected, personal relationships are being prioritized or because conflict is uncomfortable,” Gift wrote. “Our duty as elected officials is to safeguard the public interest and to ensure that public resources are used responsibly. We cannot change the past, but we can acknowledge mistakes, learn from them and work to do better for our community moving forward.”

100 %

MORE INFORMATION

YOU TOOK AN OATH TO SERVE THE COMMUNITY. THERE IS PUBLIC SERVICE ETHICS IN YOUR BINDER. READ IT. REMIND YOURSELF OF YOUR ROLE.

OUR EYES ARE OPEN. AND ALL OF OUR EYES ARE ON YOU. ALL OF YOU. PRR. PROCESS. WRITTEN POLICY. SEPARATION OF POWERS. NO MORE FRAUD AND WASTE ON OUR WATCH. NOT TODAY. NOT ON MY CLUCKIN' WATCH.

SUBMITTED TO CITY MANAGER, LEGAL COUNSEL, MAYOR AND VICE MAYOR, NOVEMBER 6TH, 2025. A MEETING WAS HELD WITH MAYOR AND VICE MAYOR, NOVEMBER 7TH TO REVIEW THIS DOCUMENT AND THE ATTACHMENTS.

This was a meeting held with 4 residents, Charles Covell, Michelle Covell, Dan Hale, and Joshua Parke.

Public Statement by I formally submitted it for public comment January 13, 2026 - public forum, number 6, number 5 is the attachment for record.

Michelle Covell, resident and Planning Commissioner

This document below are my personal views, and does not represent the Planning Commission's views.

I am bringing this meeting to attention of the city leaders to address process failures in responding to public comments and their aggregate effects on Governance and Civic Accountability. At the PC hearing on October 21, 2025, item 5.1, several residents wrote with important messages that was deemed by the Chair, not an agendized item, and therefore could not be addressed and Staff would not have to answer. In the last meeting, November 4th, 2025, quality control regarding the amendments on the agenda was brought up, and it was again discussed that this is not an item for Planning Commission that evening, and would be better suited for the Dec 16th workshop regarding the zoning code.

I'm requesting this discussion today regarding the persistent systemic failures in accountability, accuracy, and responsiveness within the City of St. Helena's public processes—particularly as they relate to the handling of resident concerns, the accuracy of staff reports, and the lawful administration of zoning code amendments.

This memorandum summarizes some of the documented cases, identifies structural governance failures, and proposes corrective actions to restore transparency, integrity, and public confidence in City operations.

Beginning in October 2024, a resident/applicant raised concerns regarding an unauthorized insertion of language into the City's zoning code that substantively altered policy under the guise of a "clerical edit." Over the following year, multiple public comments, written submissions, and appearances before the Planning Commission and City Council documented inaccuracies, procedural irregularities, and staff misrepresentations relating to this issue.

Despite repeated requests for clarification and correction, there was no acknowledgment or resolution until the City Attorney's memo of June 2025 confirmed that the word insertion was not necessary at all, and is a policy discussion, rather than "clerical edit" and would require going through the formal policy amending process.

During that period, the City expended significant time and public resources on staff hours, attorney and consultant fees, while residents continued to encounter a lack of transparency and accountability in official communications and staff reports.

I have collated in this document the public letters sent in, and reference them generally with bullet points. There are many and feel free to read through them to understand the magnitude of public comment. I do not have all of the meetings listed below however I believe there is enough between these meetings to show the magnitude.

1. October 21, 2025 – Planning Commission Item 5.1

- Residents identified inaccuracies and omissions in staff reports, incorrect reporting on the events, and slander of a resident. No one has addressed this publicly.
- Potentially illegal zoning code insertion classified incorrectly as a “clerical edit” asking for legal interpretation.
- Concerns of professional negligence and misuse of city resources, and costs associated

2. May 13, 2025 – City Council Item 11.1

- Staff and consultant presentations mischaracterized substantive policy changes as administrative edits
- Resident letters demonstrated how the change contradicted the City’s General Plan and would harm property values and community character.
- Early correspondence clearly outlined the issue; staff persisted in misinterpretation despite clarity from residents, expended more costs to the city.

3. July 22, 2025 – City Council Item 12.2

- Residents’ questioned insertion of word
- Concerns were raised over the treatment of residents, the calling of law enforcement inappropriately. Does the resident’s side of the events matter to the city? Protecting residents from misuse of power?
- The City Attorney removed key information about property value impacts from a presentation to the Council, is the city trying to reduce resale values of homes as a policy goal?
- The PC handbook does say that property values should be protected. The policy discussion in staff report for supporting staff’s recommendation outlined as having an effect of reducing resale values.
- Residents brought up that the policy for supporting the insertion is downzoning without public knowledge.
- Residents pointed out corrections to the staff presentation and called out procedural violations. Staff report had misleading information.

Governance and Accountability Concerns

The pattern of events described above illustrates a systemic breakdown in the City’s mechanisms for accountability and public responsiveness:

1. Lack of Oversight:
The Planning Commission cannot address concerns beyond its purview, leaving significant governance gaps when staff conduct or documentation is questioned. Who is responsible for addressing the concerns of citizens and questions, that out of the purview of the commission, council and staff?
2. Failure of Administrative Response:
Is it the responsibility of the City Manager for staff management, quality control,

accuracy, and resident relations, addressing resident's questions and concerns? If not the CM, then who?

3. Delayed Legal Clarification:

The City Attorney's formal acknowledgment of the unnecessary insertion came after eight months of resident requests, confirming the residents' position but without addressing the procedural failures that preceded it. Is it the City Attorney's responsibility to quality control the substance of the zoning codes, and general plan? If it's not, who is?

4. Erosion of Trust and Misuse of Resources:

The year-long process resulted in unnecessary legal and consultant expenditures, wasted staff time, and diminished public confidence in local government. It has been asked in for public engagement, and that the citizens play a role in the review and quality control of codes (see PC 11.4.25 in particular) It has been said that citizens have their own day jobs, and it should not be on the citizens (not all are knowledgeable of codes and how they apply) to be able to QC this. It is ultimately within city staff that should have QC and roles and responsibilities clear. (See Napa County Strategic Initiatives 2025-2030 – Elevate County Service and Workforce Excellence section) I would imagine this goal of the county, would include the city of St Helena.

Accountability Responsibilities

I imagine having a clear separation of roles and responsibilities would help make the process work better. There has to be a checks and balances in our small-town government. Whether or not we are running on limited resources or not, these clear roles and responsibilities must not blend as that negates the checks and balances built into the system. Please define the roles and responsibilities of the City Manager, City council, City Attorney to ensure accountability.

This is an example: Feel free to clarify/rearrange and make certain there is a clear accountability system.

- City Manager: Charged with ensuring the accuracy, quality, and responsiveness of staff work products and communications, and holds staff accountable.
- City Attorney: Provides legal review but does not replace the City Manager's duty to address resident concerns.

City Council: Ultimately responsible for overseeing the City Manager and ensuring the integrity of administrative processes. City Council, Mayor, Vice Mayor, are the representatives of the citizens, and they are there to protect citizens by holding the City Manager accountable.

When these functions fail in sequence, residents have no effective recourse, creating a governance vacuum inconsistent with the principles of public service and transparency.

I request that the City council agendaize and address the memorandum.

1. Publicly acknowledge the unauthorized insertion into the zoning code and affirm that it was a substantive, not clerical, change, and confirm that these mischaracterizations will not be tolerated of staff.
2. Recognize and correct the inaccurate and misleading staff reports, addressing the timeline of events, acknowledge applicant's comments. Address the misleading staff reports and presentations of zoning codes, and the alleged misinterpretations by staff and the planning consultant we paid for their expertise.
3. Provide a formal apology to the affected applicant, property owners, and residents who engaged in good faith to correct the issue, and received only dismissal of their questions/comments.
4. Implement structural reforms to prevent recurrence, including:
 - o Establishing quality control procedures for all staff reports and public documents, and clearly address the roles and responsibilities of staff and citizens.
 - o Requiring that any resident-identified inaccuracy be reviewed and addressed by the City Manager within a defined timeframe.
 - o Instituting performance and accountability standards for staff, ensuring that knowingly false or misleading reporting results in disciplinary action.
 - o Creating a formal escalation process for public concerns outside the purview of the Planning Commission or City Council, ensuring timely and transparent responses.

Intended Outcomes

- Rebuild public trust in the City's governance processes.
- Ensure accountability for the accuracy and integrity of public records.
- Strengthen staff morale by recognizing quality work and holding all personnel to professional standards.
- Promote transparency, fiscal responsibility, and lawful adherence to the City's General Plan and zoning procedures.

Please consider this is not an isolated matter but a reflection of broader procedural and cultural challenges within City administration. Correcting this course is essential to reestablishing credibility, protecting staff who perform their duties ethically, and honoring the civic responsibility owed to the residents of St. Helena.

Through this memo, I request a formal agenda discussion and policy response from the City Manager, Mayor, Vice Mayor, and City Attorney to ensure these governance issues are addressed comprehensively and publicly.

Respectfully
Michelle Liu Covell

Public speech from October 14, 2025 City Counsel

Good evening city council.

I am speaking as a resident.

I had a conversation recently that sent the hairs on the back of my neck straight up.

I was speaking to a longtime resident — someone deeply connected to this town, who works for the county and has served on many committees for several decades. They congratulated me on my appointment to the Planning Commission.

When I mentioned that I had filed several formal complaints with City Manager Anil Comelo about what I believe are unethical items, this person said:

“If you file complaints on staff, you’ve made yourself Anil’s biggest enemy. You’ve just put a big X on your back.”

Hearing that was chilling.

If asking for **accountability** means putting a target on your back, then we have a serious problem.

In our **council–manager government**, checks and balances exist to prevent abuse of power. Each part — staff, Council, and residents — has a role in ensuring accountability.

I appreciate the Council’s service and look forward to the water presentation tonight. I understand this is not on today’s agenda and will be discussed in tomorrow’s closed session.

Here’s my main point:

No one in this town should ever feel like they have an X on their back for standing up for what they believe in.

Thank you,

Michelle Liu Covell

Speaking as a resident, not in any of other role.

10.07.2025

To City Council:

This letter is to formally share my concerns with the City Council regarding a phone call I received from City Manager Anil Comelo on Monday, September 29, 2025.

I am a new Planning Commissioner and have been a resident of this city for the past ten years. This is the first phone call I've had from the City Manager since my appointment on July 22, 2025.

He began the call by stating he had several items to discuss.

The first point was his advice to be cautious about what I say or write publicly. He noted that, as a Planning Commissioner, if I make certain public comments, I could be required to recuse myself from future project reviews. I acknowledged the point and noted that I had received onboarding materials, including the Brown Act and the Code of Ethics. I then asked if there was anything specific I had said or written that led to this call. He said no — nothing came to mind — and that this was just general advice given to all new commissioners.

I responded by explaining that I find the line between speaking as a resident versus a Planning Commissioner unclear, and that it would be helpful to have more specific guidance beyond the general warning of "be careful what you say." Since being a resident is a prerequisite for serving as a commissioner, understanding that boundary is critical.

The second topic was a volunteer group formed following the September 23, 2025 City Council meeting, regarding alternative ideas for Site 10. During the meeting, there was a call for resident volunteers to bring creative input — and I raised my hand and submitted my information to the City Clerk.

On the call, Mr. Comelo stated that many residents had volunteered, and that he preferred I not participate in the group. He quickly moved to the next item.

The third topic related to a formal complaint I submitted after a meeting on July 24, 2025, with Mr. Comelo and Mandy Kellogg. At that meeting, I was told part of the complaint would need to go to City Council. Months passed with no update. After checking with a city council member, it appeared nothing had been brought forward. I followed up by email with Mr. Comelo and Ms. Kellogg — and received no reply.

During the phone call, Mr. Comelo scolded me for following up. He said that when he gives his word, it will be carried out, and that there was no need to follow up. I responded by thanking him for letting me know he was still working on it, and he said it would be going to the Council "in the next couple of months."

I returned to the second topic and asked for clarification: when he said he "preferred" I not be on the group, was that a decision made or simply a preference? He did not answer directly. Instead, he repeated that there were already enough volunteers, and that he preferred I not participate. I then asked how many people were selected and who they were. He declined to disclose that information. Again, I asked: was his "preference" a final decision, or did I still have the option to participate?

At that point, he raised his voice and said, "Michelle, I'm not arguing with you, but I am highly trying to dissuade you from being on the group."

I remained calm and repeated that I wasn't trying to argue — I simply wanted clarity. Eventually, he said, "If you INSIST on being on the group, then you can be on the group." I responded that I wasn't insisting; I was simply trying to understand why I wouldn't be included when I had volunteered, and when several councilmembers had expressed appreciation for my offer to participate.

He again repeated that if I insisted, I could be on the group. At that point, it became clear to me that the only way to remain involved was to insist — so I did. He replied, "Great, you're in the group. Goodbye." And he hung up.

At no point did I raise my voice. I was cordial throughout the conversation, even as the tone from the City Manager became heated. I had to ask the same question multiple times just to get basic clarity. The heat in that exchange was not necessary. It seemed intended to discourage further discussion.

I found this phone call troubling. A formal complaint deserves timely follow-up and clear communication. To be told that I should not inquire — even after months without an update — sends the wrong message. Following up on official matters is not only reasonable; it is expected. And a City Manager should welcome engagement and accountability, not discourage it.

Looking back, the call boiled down to three key messages:

1. Be careful what you say — even though the rules are unclear.
2. I would like you to not participate in a volunteer group.
3. Do not follow up — and do not put concerns in writing.

All three messages point in the same direction: **suppression, silencing, and discouragement.**

The City Manager does not oversee me. I am a resident. He works for the City and the City serves its residents. City Councilmembers represent their constituents and are responsible for holding the City Manager accountable.

When a resident brings forward a formal concern, it should be treated with seriousness and professionalism. Efforts to intimidate, silence, or discourage civic participation — even when subtle — have no place in the government of this town.

There should be zero tolerance for gaslighting, intimidation, or attempts to erode public trust in the democratic process.

To be clear, this is a formal letter of complaint on the conduct of the City Manager.

Sincerely,
Michelle Liu Covell



General Public Comment

From Kelly Wheaton <a4est42@gmail.com>

Date Sun 3/22/2026 10:55 AM

To Public Comment <publiccomment@cityofsthelena.gov>

Dear Andrew,

Please attach the following as a General public Comment to the Tuesday City Council Meeting AND as a Comment specifically to the Closed Door Session re City Manager.

Thank you as always for your help.

Dear Mayor Dohring and City Council,

Some staff and some City Council members have expressed hatred for public discourse on social media. Given that the governance of the city has slowly degraded to the point that rules and laws are being abandoned and the democratic process corrupted—and since it is largely unflattering—the hatred is no surprise. As the City Manager “tries” to circumvent due process and bend the people to his will, this outrage and revolt are inevitable.

What is curious is the staged admonishment from a few over citizens exercising their constitutional rights. Even more curious is that the council member who wanted the Modernization Study is now arguing that it is preliminary—nothing to see here. To the Finance Committee, he argued for months that it was not necessary for them to see the preliminary reports of the Modernization and Efficiency Study, and that everyone would only see what they wanted to see in it. It is Kabuki theater.

First, I find that insulting to the Finance Committee, and **Second**, I find the study—even if preliminary—more relevant than anything I have seen from any study the City Council has ordered in the past five years. So thank you to Council Members Barak and Deasy for pushing for this and the full council for voting for it. The released portions of the study are important in countless ways to all discussions about what has gone awry in St. Helena. It is unnecessary to cherry-pick. Whether one focuses on statements about how the library, fire, and police departments are functioning, or on how management and communication are not—this is a hard look at what is wrong. There are no surprises for anyone paying close attention. Good, hard-working people have assumed roles for which they were underqualified or for which they lacked proper training and support or supervision, as the exodus of staff under this City Manager continues. He himself lacked the proper skill sets to do his job, and it shows. Staff have been attacked, maligned or scapegoated or in some cases forced out because of poor management. Fear rules the day.

So that brings me to the salient point: IF the preliminary study reports had been released to the public at the same time they were released to the City Council, it is unlikely that we would be witnessing an open revolt of citizens over tree removal, dirty water, and a childish “sleight of hand” disguised as a Public Arts Program. The Parks and Recreation meeting at the Carnegie Building was the most heartwarming and encouraging sign of democracy working in St. Helena in a very long time. And

it wasn't because I happened to agree with the outcome. It was because the commissioners asked probing and appropriate questions and had read all the public comment letters. A very diverse group of people, many passionate about public art, had the opportunity not just to speak, but to be heard. Unlike City Council meetings, where an hour of public testimony has no discernible effect on the discussion or the outcome, P&R commissioners listened and then represented the people in their vote.

It is my experience, with very few exceptions, that decisions of the City Council are made long before the council chambers are entered. If that is not true, then you have a major PR problem. If it is true, this is in part why people turn to social media. And sadly, this lies squarely at Mayor Dohring's and the previous council's feet. The City Manager is a serial abuser who believes he runs the town and that he is the law. And he is, effectively, correct. If Mayor Dohring and the council had taken the City Manager's threats toward several citizens seriously in the first weeks of his tenure, we would not be here today. Failure to hold the City Manager accountable for unlawful and immoral actions has emboldened him and has led to increasingly reckless behavior, culminating in a breaking point over the last few weeks. **The council has failed.** It does not represent, respect, or protect its citizenry or our town. You fawn over your City Manager, stroke the egos of the remaining staff, and blame bad morale all on a citizenry that, according to the preliminary study, was right all along. It wasn't that the citizens did not understand—it is that they did. It wasn't the citizens that made staff feel bad, in large part that was the City Manager dividing and conquering, dividing the community into factions that he could pit against each other.

This City Council is at a fork in the road. You can double down on following a City Manager who pretends he is serving the council when it is clear the council serves him. It is embarrassing to watch the charade. The preliminary report exonerates the public and lays down a challenge: stop letting the City Manager usurp your authority and run this city into the ground. I assume the final study will provide a roadmap for how to begin fixing things. Your first step is to address the executive management and the huge liability they are to this town. Your cover-up of staff shortcomings and your attempts to retain staff at any cost have failed. Rather than support the staff in meaningful ways with training and appropriate management you have squandered money on forcing all council members into acting in lock step. To team building that was another form of Administrative Bullying. That is not democratic and is a corruption of due process. This City Manager has failed. You have failed and the reckoning is here. The post mortem should be comprehensive. The management failings and challenges are those of the City Council itself, in failing to properly manage the city, instead of abdicating that responsibility to an unprofessional agent, "acting" as City Manager.

I do not envy the difficult decisions ahead. There are plenty of responsibilities to be shouldered by all of us. Please find the courage to act out of love and concern for this town, and not out of fear or hatred for those who have dared to speak out. They have been exonerated. The final verdict on the council itself has not been rendered. Your legacy stands before you. I truly wish you courage and strength. The time for grace has passed.

Sincerely,
Kelly Wheaton
Inglewood Ave
St. Helena



Public Comment for 3/24/26 City Council mtg - Regular and Closed session: Public forum

From Charles Covell <chuck@covellarchitects.com>

Date Sun 3/22/2026 2:31 PM

To Public Comment <publiccomment@cityofsthelena.gov>

Dear Mayor Dohring and Members of the City Council,

I urge you to remove City Manager Comelo, for cause, without further delay.

Mr. Comelo initiated construction of concrete pedestals outside established process—even after that process was clearly communicated—and used City Attorney time to negotiate a contract. This raises a fundamental question: did he have Council authorization to commit public funds to this project? If not, this represents a serious breach of, if not contempt for authority and public trust, and appears to constitute misuse of taxpayer resources.

This is not an isolated incident. Over the past year, residents have repeatedly raised concerns about mismanagement, lack of accountability, and disregard for proper process. Those concerns were not meaningfully addressed. Instead, the City Manager was rewarded.

At this point, the issue is no longer a single decision—it is a pattern. When established procedures are ignored, when public resources are used without clear authorization, and when concerns go unanswered, confidence in leadership erodes.

You are entrusted with oversight of the City Manager and stewardship of this city. That responsibility requires action when basic standards are not upheld. Failing to act now reinforces the very pattern residents have been warning you about.

I urge you to exercise your authority and remove Mr. Comelo for cause. The mismanagement, contempt for the taxpayers and abuse of power have gone on too long.

Sincerely,
Charles Covell

Charles Covell

Principal
707.968.9280

COVELL ARCHITECTS

1407 Main St. Suite 102 Saint Helena, CA 94574
www.covellarchitects.com



Public forum comment 3.24.26

From Michelle Covell <michelle@covellarchitects.com>

Date Mon 3/23/2026 12:55 PM

To Andrew Bradley <abradley@cityofsthelena.gov>; Public Comment <publiccomment@cityofsthelena.gov>

If my message is not clear, I'll summarize:

I am speaking as a resident and not representing any other role.

Since becoming a Planning Commissioner, I have taken this role seriously. It is not just about showing up, listening to staff reports, and offering opinions.

It requires real effort, independent analysis, and a commitment to understanding the General Plan, the Zoning Code, and the responsibilities entrusted to us.

What concerns me is that the structure of our local government, the written policies, checks and balances, division of powers, and expectations of ethical public service, seems to be giving way to informal practices and personal interpretations.

When people define their roles however they choose, accountability disappears. We are seeing the consequences of that.

Residents are organizing themselves, not because they want to, but because they feel they have to.

They want transparency, honesty, and processes that are actually followed.

There are also serious concerns about how public resources are being handled.

Work has moved forward without proper authorization. Established policies have been ignored to rush timelines. Decisions appear to be made first, with process treated as an afterthought. Serious issues with staff reports and accuracy has been brought up.

But no one is addressing these significant breaks in process. Clerical edit? No it wasn't.

This kind of approach undermines public trust and results in unnecessary costs to the community.

That is not acceptable stewardship of public funds.

On the other hand, when things are done correctly, it shows. The independent study conducted by Blackberg Group is a good example.

It is thorough, transparent, and objective. That is exactly the standard we should expect when public money is spent.

And I want to say a big Thank you to the city council for making the decision to move forward with this consultant, questioning the consultant that Anil had suggested.

Thank you for pushing back on that. Thank you.

We also need to address long-standing gaps in required processes.

The General Plan annual review, which is required by state law, has not been conducted in many years. That alone should concern everyone in this room. These are not optional responsibilities—they are fundamental to how we are supposed to operate.

I also want to speak to the seriousness of this role. I have been told that I take it too seriously. I would argue the opposite—we should all be taking it more seriously. This position requires time, preparation, and a willingness to do the work. If we are not doing our own homework and instead relying entirely on staff, then we are not fulfilling our responsibility as independent decision-makers.

Each person on this dais has a duty to serve as an independent, unbiased steward of this community. No one should feel discouraged or pressured for thinking independently. Professionalism matters. Public trust depends on it.

This town has a long history and a strong community. The people who live here and contribute to it deserve better. They deserve transparency, accountability, and leadership that follows both the letter and the spirit of the rules.

If you don't see that, I encourage you to step back, observe, and listen more closely. Do your own analysis. Make your own decisions. Don't default to what is easiest or most comfortable.

Change is not easy, but it is sometimes necessary. And when it is grounded in truth and accountability, it can move a community forward.

"We could say that the government spends money like drunken sailors. But that would be unfair to drunken sailors, because sailors are spending their OWN money."
Ronald Reagan.

Respectfully,

Michelle Liu Covell, Resident, not in any other role.

Architect, Partner, Director of Operations, LEED AP
707.968.9280



Outlook

Incompetence

From susanmcwilliams@comcast.net <susanmcwilliams@comcast.net>

Date Mon 3/23/2026 1:52 PM

To Public Comment <publiccomment@cityofsthelena.gov>

To the City Council:

Most cities anticipating their 150th anniversary would plan far ahead. They might commission art to mark the occasion; perhaps a statue or mural commemorating the city's heritage and/or notable figures. They might even ask residents to vote on the submissions by local artists. The art would certainly have local significance.

Instead, St. Helena's (nonresident) city manager, at virtually the 11th hour, struck a deal with an artist looking for storage and display space for his massive sculptures, none of which have any bearing on the city's history.

In short order and ignoring the established process for art installations, concrete display slabs were poured in town and pavers removed at the north end of historic Lyman Park, where a carefully constructed wooden frame, (the cost of which in wood and man-hours should not be underestimated), awaited its concrete. But the city manager's proposed art – a giant Yellow Hand that quickly became an object of derision -- was roundly rejected and within days the excavation for the Hand's future display pad was covered by a steel plate, the wooden frame and pavers gone.

In concert with this activity, the shade trees on both sides of Main Street were cut down, even where sections of sidewalk are perfectly flat. Then it was discovered that the gas line was not where the city thought it was. So now, just in time for the sesquicentennial party in Lyman Park and next month's parade, we have denuded sidewalks and large stumps that cannot be removed.

If this doesn't indicate incompetence, what does?

Respectfully,

Susan McWilliams

41-year resident



Letter to City Council

From lana ivanoff <lanaivanoff@att.net>
Date Mon 3/23/2026 10:28 PM
To Andrew Bradley <abradley@cityofsthelena.gov>

Andrew

Please post my letter to council members for the CC meeting 3/24/26....Public Comment at both the Regular meeting and the Closed Session meeting.

Thank you

Lana Ivanoff

St Helena City Council members.....

For 55 years I've worked in one way or another for the betterment of this community..... belonging to service clubs, serving on commissions, volunteering, or working in the schools. I've attended scores of civic meetings, and written countless letters over the years.....letters of praise and encouragement, and letters of concern and criticism.

For the first time ever, I'm at a loss as to what to say. I have never seen this town more divided, miss managed, or the community feeling so helpless, and frustrated.

It doesn't feel like those "in charge", those in decision making positions, are listening to the residents who live here, who call St Helena, "home". It feels like those in charge, have lost touch with the "historical heart-beat" of what makes this place so "unique".

Something is very wrong.

I've read the letters submitted for tonight's meetings, by Michelle and Charles, Norm, Kelly, Elaine, Susan, Lisa, and the many comments shared on social media, and at the recent Parks and Recreation meeting.

I totally agree with their assessments of the serious problems confronting our town, and applaud them for speaking out, and demanding change. I couldn't have said it any better.

It's time for the City Council to take back their power. You were elected to serve the residents of St Helena.....not City Staff, and not the City Manager. The City Manager works for you. He is not the 6th member of our City Council, and should not hold the power you've given him.

My hope is that the CC can start to fight for what makes this town so "special", and acknowledge, and tap into the talent, and historical wisdom that exists among our residents, rather than follow, in lock-step, the path of those who have no vested interest in St Helena, other than a pay check, and a "gold star" on their resume.

Please.....make the hard choices to change direction, and choose a different path, or what we know and love about our "hometown" will be lost forever.

There's a lot of history in "the bones" of St Helena, and not knowing that, or ignoring that, can, and will, lead us away from our "uniqueness".

Lana Ivanoff



Public Comment for both regular city council meeting and closed session

From Elaine de Man <elainede@sbcglobal.net>

Date Tue 3/24/2026 6:22 AM

To Public Comment <publiccomment@cityofsthelena.gov>

Dear Mayor Dohring and Members of the City Council,

I am writing to raise serious concerns regarding the City's response to Public Records Request PRA-056-26, which seeks records related to the Huether art project.

This should have been a simple request.

The project was presented to you and to the public as a relatively small undertaking, originally not to exceed \$10,000. It appeared on the consent calendar and was expected to move forward without controversy or complication.

And yet, when a straightforward request was made for the underlying agreement and related records, the City was unable to produce them within the standard timeframe and instead issued a delay citing "unusual circumstances" and the need to consult with other agencies or departments.

This raises a far more important question:

Why couldn't the City readily produce these records?

The City's response states:

"Your request will require City staff members to consult with another agency having substantial interest in the request... [constituting] 'unusual circumstances'..."

But this is difficult to reconcile with what has already occurred.

Work on this project had already begun—including the pouring of concrete on private property and possibly within public rights-of-way, including property associated with the local school district.

If that is the case, then several things should already exist and be readily available:

- Written agreements or permissions from affected property owners
- Internal approvals authorizing the work
- Communications between the artist, City staff, and relevant stakeholders
- Work orders directing Public Works staff to construct forms and pour concrete

If multiple agencies or departments truly have "substantial interest," then that coordination should be documented. And if it is documented, it should be accessible.

So again, the question becomes:

Where are the records?

And more importantly:

If they cannot be produced in a timely manner, is it because they do not exist?

That possibility is deeply concerning.

Because if concrete was poured on school district property or other non-City property without clear, documented permission, the City may have exposed itself to significant liability—including the potential cost of removal, remediation, or even legal action.

At a minimum, this reflects a breakdown in process.

At worst, it suggests that actions were taken before proper approvals were secured and documented.

This is not a minor administrative issue. It goes directly to questions of:

- oversight,
- accountability,
- and adherence to basic procedural safeguards

The public should not have to file records requests to confirm whether fundamental steps—like permission, documentation, and authorization—were followed before work began.

Those records should already exist, and they should be readily available.

The fact that they are not raises serious concerns that deserve clear and immediate answers.

Respectfully,

Elaine de Man



Public Forum Comment Re. Finance Committee - City Council Agenda, March 24, 2026

From Christopher J Warner <chrisjwarner52@gmail.com>

Date Tue 3/24/2026 2:16 PM

To Public Comment <publiccomment@cityofsthelena.gov>; Andrew Bradley <abradley@cityofsthelena.gov>

Cc Aaron Barak <abarak@cityofsthelena.gov>

I don't usually provide public forum comments, but it has been called to my attention that one of the public forum comments by Kelly Wheaton misstates the status of the Finance Committee's review and access to the so-called Blackberg Group "Efficiency Study." Contrary to Ms. Wheaton, the Finance Committee has not been refused access and review of the "Efficiency Study," or told that it is unnecessary for us to review, preliminary or otherwise. We have patiently awaited the final "Efficiency Study," and have received a full presentation of some of the preliminary sections of the Efficiency Study from the consultant, and will review and evaluate the final complete study when it is finalized.

Chris Warner
Acting Chair, Finance Committee



Open comment section AND Closed Executive Session, Anil Comelo performance review

From CN <neeleycc@gmail.com>
Date Tue 3/24/2026 2:47 PM
To City Clerk <cityclerk@cityofsthelena.gov>

Dear City Council Members,

When the homeowners of Magnolia Oaks subdivision approached the city for permission to use their city water for irrigation, it was a formality, a courtesy.

Here is the response relayed to me:

"We don't owe these residents water. It is the developers doing."

Really?

This is how small he believed us to be, how unworthy. He forgot that we already had city water. We were water and wastewater customers. He didn't care to understand that the city AGREED to this wildly inappropriate set up of a privately, developer owned well. He didn't care that we were fleeced by a third party metering company. He didn't care that we had no exit ramp. Mr. Comelo and the Public Works director did not care to problem solve. They wanted us to go away, to figure it out, to ignore the pipes and infrastructure under the public city roads. They wanted us to be silent about a private water enterprise that they allowed with no framework of long term regulation. The homeowners were the only ones showing up the the table and they took advantage to obfuscate the truth. The lies, the institutional memory loss, the misplaced documents. These tactics are very convenient for those in power.

It's time to terminate the city manager's contract. The residents of St. Helena are disgusted by the actions, deeds and words. The council, has abdicated their duty to hold him accountable. The council is liable for this mockery.

May I never again hear,

"What thinks you Mr. Comelo?"

Celeste Neeley

Resident St. Helena

March 24, 2026

City of St. Helena

City Council

3/24/26 Council Meeting and Closed Session Public Comments for the Record

Re: Governance, Accountability, and Public Trust

Good Evening:

These comments are submitted for the record in response to recent City Council actions, decision-making, and the findings of the independent Blackberg Group's *Efficiency and Business Transformation Study*.

So much ground to cover, but for the purposes of this comment this meeting and this letter, I'll focus one of the most important and key takeaways from the Blackberg report. It is not simply what it states—it is what it confirms.

The absence of data, the absence of a strategic plan, and the erosion of public trust are no longer matters of perception. They are conditions. Conditions that residents have been raising for quite some time, and too often were dismissed or discouraged in the process. In some cases, residents were made to feel as though their concerns were unwelcome.

The report makes clear that without data, there can be no strategy. And without strategy, there can be no accountability. At this stage, accountability is the only outcome residents will accept, because anything less would simply reinforce the very conditions that brought us here.

When decisions continue to be made and projects advance in the absence of clear data and strategic grounding, it raises a fundamental concern regarding what those decisions are based on and where authority resides.

There are also moments that reflect a broader issue of judgment and leadership standards. During a public meeting in which significant health, fire, and safety matters were under discussion, communications between leadership—conducted on taxpayer-funded devices—reflected a level of informality that does not align with the seriousness of those responsibilities.

This is not about personalities. It is about judgment. And judgment is foundational to leadership.

The conditions identified in the Blackberg report did not emerge overnight. They developed over time within a leadership structure responsible for both management and oversight. This raises an important question as to whether these conditions were not known, or whether they were known and not adequately addressed. Either scenario reflects a failure of governance at both the administrative and elected levels.

When trust has been compromised and cannot be effectively restored, and when sound judgment has been diminished to a level that no longer reflects the responsibility of the role—as reflected both in the report and in recent conduct—maintaining the current structure only deepens that concern.

The path forward is not preservation of the status quo. It is accountability.

And in some cases, accountability requires new leadership. In this case, it is difficult to reach any other conclusion. Where trust has been compromised, targeted leadership change—precisely where warranted—is necessary to restore confidence in the institution.

Respectfully,

Tamara Sorensen
1381 St. James Dr.
St. Helena, CA

**CITY OF ST. HELENA
PROCLAMATION
COMMEMORATING THE SESQUICENTENNIAL
(150TH ANNIVERSARY)
OF THE CITY OF ST. HELENA.**

WHEREAS, long before the founding of the City of St. Helena, the land was home to the Wappo people and other Indigenous peoples, who lived in deep connection with the natural environment and whose enduring cultural legacy continues to shape and enrich the region; and

WHEREAS, the City of St. Helena was founded March 24, 1876, and in 2026 celebrates 150 years of rich history, heritage, and community; and

WHEREAS, the sesquicentennial marks a significant milestone honoring the vision, perseverance, and contributions of the City's founders, early settlers, and generations of residents who have shaped St. Helena into the community it is today; and

WHEREAS, over the past 150 years, St. Helena has grown into a vibrant and renowned community in the heart of Napa Valley, known for its agricultural heritage, world-class wineries, historic character, and strong sense of community; and

WHEREAS, the City values the preservation of its unique history and cultural identity while embracing thoughtful growth, sustainability, and innovation for future generations; and

WHEREAS, the sesquicentennial provides an opportunity to celebrate St. Helena's legacy through community events, educational initiatives, and civic engagement that bring residents, businesses, and visitors together; and

WHEREAS, the City Council desires to honor the past, celebrate the present, and inspire the continued vitality and success of the City of St. Helena;

NOW, THEREFORE, BE IT RESOLVED that I, Paul Jamison Dohring, Mayor of the City of St. Helena, and the St. Helena City Council, do hereby proclaim 2026 as the Sesquicentennial Year of the City of St. Helena.

Dated: March 24, 2026

Paul Dohring
Mayor, City of St. Helena

**CITY OF ST. HELENA
PROCLAMATION
NATIONAL WOMEN'S HISTORY MONTH
MARCH 2026**

WHEREAS, in 1978 Women's History Month began as a celebration in Santa Rosa, with the Education Task Force of the Sonoma County Commission on the Status of Women planning and executing a "Women's History Week" celebration. Since 1987, the United States has recognized March as National Women's History Month to celebrate the achievements of women, recognize the ongoing pursuit of equality, and inspire future generations; and

WHEREAS, as community leaders, elected officials, educators, doctors, scientists, winemakers, childcare providers, community organizers, realtors, nonprofit directors, engineers, judges, lawyers, artists, musicians and more, women power our economy and lead our community. As first responders and military service members, they stand watch over our lives and liberties. As innovators, entrepreneurs, and essential workers, they represent the very best in their fields; and

WHEREAS, the City of St. Helena was fortunate to have its first female Mayor, Greta Ericson, from 1974 to 1976. The city has been privileged to have several women in top leadership roles, including former City Managers Bonnie Long and Jennifer Phillips, Public Works Director Erica Smithies, City Clerk Cindy Tzafopoulos, Library Director Chris Kreiden, Community Development Director Maya DeRosa, Assistant City Manager Dr. April Mitts, current Administrative Services Director Mandy Kellogg and current Community Services Director Ashley Sylvester; and

WHEREAS, the City of St. Helena honors the visionary women and girls whose leadership, resilience, and achievements have helped strengthen our nation and our local community; and

NOW, THEREFORE, I, Paul Dohring, Mayor of the City of St. Helena, do hereby proclaim the month of March 2026 as National Women's History Month in the City of St. Helena and encourage all residents to recognize and celebrate the lasting contributions of women in our community and throughout our nation.

Dated: March 24, 2026

Paul Dohring
Mayor, City of St. Helena



5-Year General Fund Forecast

Finance Committee Status Report Findings & Recommendations

City Council Meeting · March 2026

Presented by the St. Helena Finance Committee

Today's Agenda

1. Background & Scope
2. Methodology & Key Assumptions
3. Committee and Subcommittee Members
4. Unfunded Pension Liability
5. Capital Improvement Plan (CIP) Needs
6. Classification, Compensation & Efficiency
7. Cost Allocation Plan
9. Status & Recommended Next Steps

**FINANCE
COMMITTEE
STATUS REPORT**

Background & Scope of Current Committee Task

Committee Task Request

- Committee established by City Council Resolution 2024-154, Nov. 12, 2024, updated by Resolution 2025-007
- Task directed by City Council and staff at August 12, 2025 City Council meeting
 - Review cost allocation plan
 - Determine structural (regular) deficit
 - Analyze compensation study
 - Evaluate expenditure reductions & revenue enhancement strategies

Five Subcommittees

- Unfunded Accrued Pension Liability
- Capital Improvement Plan (CIP) Long-Term Needs
- Classification & Compensation
- Cost Allocation Plan
- Overall 5-Year Budget Deficit Forecast

Finance Committee Subcommittees and Members

- **Acting Chair: Chris Warner; Former Chairs: Mark Smithers, Arlene Corsetti**
- **Overall Guidance and Collaboration: Council Member Aaron Barak, City Manager Anil Comelo**
- **Unfunded Pension Liability Subcommittee: Gregg Dawley, Rich Garber. City Liaison and Staff: Aaron Barak, Mandy Kellogg**
- **CIP Long-Term Needs Subcommittee: Gregg Dawley, Garry Rose. City Staff: Mandy Kellogg and Joe Leach**
- **Classification and Compensation Subcommittee: Mark Smithers, George Schisler, Rich Garber. City Staff: Mandy Kellogg**
- **Cost Allocation Subcommittee: Mark Smithers, Chris Warner. City Staff: Mandy Kellogg**
- **Overall Budget Deficit: Gregg Dawley, Chris Warner. City Staff: Mandy Kellogg**

Methodology & Key Assumptions Being Considered

- General Fund only – Water/Wastewater Enterprise excluded
- Baseline: FY2026 mid-year adopted budget subject to recommended adjustment by Committee
- Forecast period: FY2027–FY2031 (5 years)
- Expenditures classified as Compliance, Service Level, or Aspirational
- Revenue assumptions: no new sources assumed
- 30% reserve policy maintained throughout forecast period
- Compensation based on Class & Comp studies with efficiency and cost-savings adjustments
- Status report includes status of development of principles, findings, and budget forecast recommendations
- Efficiency study final report not yet available – findings to be included in final Committee report
- FY2025 audited financials not yet available – Final Committee report will include
- Final report will identify budgeting principles and assumptions used to forecast '27 budgeted expenses and future General Fund budgets

Unfunded Accrued Pension Liability

Committee Status of Findings & Recommendations

- Review and adoption of subcommittee recommendations by 3/24
- Discretionary payments will be incorporated in 5-year forecast and budgets
- Methodology approach is to assess impact of discretionary payments over a 10-year period
- Recommendations apply to General Fund only, not Water and Wastewater Enterprises

⚠ Detailed UAL subcommittee findings to be provided in final report issuance.

CIP: Streets, Sidewalks & Stormwater

Committee Status of Key Findings and Recommendations

- Non-General Fund sources (Measure U & T) sufficient to meet PCI Streets improvement goals
- No increase in General Fund CIP spending required for streets/sidewalks over 5-year period
- Staff data indicates ~\$300,000/year General Fund 'maintenance of effort' likely to continue at current levels
- Stormwater repairs and capital projects included within this existing budget

What is NOT Funded (Aspirational)

- Roadway extension & bridge projects
- Bicycle facilities
- Crossing improvements
- Parks and recreation improvements
- These items are not required by law or minimum public health/safety – categorized as 'Aspirational'

CIP: City Buildings

\$Sinking Fund

5-Year Cumulative
Building Repair Budget

\$Annual Sinking Fund

Annual Additional
General Fund Contribution

Findings Being Considered

- Minimal CIP spending documented for City buildings; last outside assessment from 2018
- Full CIP-level inspections recommended for Fire Dept, Library & Carnegie Building; prelim inspections only top-line
- City Hall capital additions/repairs required; lease renegotiation with Napa Community College will determine City vs College obligations
- Budgeted amounts potentially reduced by existing FY26/27 appropriations, reserve funds (Civic and Equipment Replacement) and any private foundation contributions subject to further Committee and City staff review
- No City Hall capital obligation quantifiable at this time pending lease negotiations

Status of Classification, Compensation & Efficiency

Status of Class and Compensation Review

- Reviewing City consultant's labor market and competitive compensation report
- Salary/benefit forecasts to be calibrated for competitive recruitment and retention
- Management vs. non-management distinction being reviewed for consistency
- Efficiency improvements and labor market survey being reviewed re potential offset to compensation cost increases
- Subcommittee reviewing fiscal year '27 adopted salaries and benefits (\$17,189,000) re:
 - 1) median classification and compensation, and % below median;
 - 2) Salaries and benefits reviewed re: reasonable COLA per year;
 - 3) Employee cost sharing for benefits cost and premiums to be considered

Efficiency Study

- Committee received consultant presentation on organizational structure & process efficiency
- Final efficiency study report NOT yet available — final report will include

△ Detailed subcommittee findings to be inserted in final report issuance

Cost Allocation Plan Review

Status of Subcommittee Focus Areas

- Reviewed City staff's recent Cost Allocation Plan (as reported to City Council)
- Greater reliance on employee timesheets and annual effort studies recommended
- Improved allocation methodology between General Fund and non-General Fund programs
- Updated allocation methods to better reflect actual costs by department/program

Key Issues to be Considered

- As part of revised '27 budget and subsequent budgets, Subcommittee will review options to evaluate, strengthen and modernize cost allocation methodology on an annual basis to improve fiscal transparency and accuracy

△ Detailed subcommittee findings to be inserted in final report issuance.

5-Year General Fund Forecast (FY2027–FY2031)

Status of Expenditure & Revenue Budget Methodology Being Considered by Committee

- Baseline: FY2026 mid-year adopted budget (Council-approved) to be adjusted by Committee and escalated in revised '27 budget and subsequent budgets in compliance with budgeting assumptions, principles and methodology recommended by Finance Committee
- Revenue escalation: staff-provided range (historical 5-yr avg) being considered; Committee may be more conservative for 5 year forecast
- Cash management earnings: conservative interest income to be included as additional revenue
- 30% reserve policy maintained in all forecast scenarios
- Previous Finance Committee recommendations and expenditure categories to be considered (e.g., delete \$300K Vine Trail, \$100K Downtown Specific Plan)
- Consolidated expenditure/revenue methodology for 5 year period to be included in final report and/or Council revised '27 budget when data is available and Committee review finalized
- FY2025 audited financials not yet available – will be considered in final report

Status & Recommended Next Steps

Committee Findings

- Unanimous findings and recommendations
- Broad cross-section: finance, accounting, law, credit, budgeting
- Both private- and public-sector expertise represented
- Members deeply committed to the St. Helena community

Next Steps

- Subcommittees finalize reports and bring to Committee for review and approval
- Full Committee prepares and finalizes five year forecast of General Fund expenditures and revenues
- Full Committee presents reports and five year forecast to City Council

Acting Chair Christopher J. Warner · On Behalf of the St. Helena Finance Committee · March 2026

Downtown Sidewalk Update Utilities Conflict & Trees

Item 9 – Staff Briefings and Presentations

Joe Leach, PE – Assistant City Manager/
Dir of Public Works/City Engineer

The street trees have been removed.

However, there is a complication



The PG&E gas pipe was thought to be under the east side of Main Street within the street.



The utility survey & potholing found the gas pipe below the sidewalk



The gas pipe is
also very shallow,
1.5' to 2.5' below
the surface

It passes through
the tree stumps . . .

All of them.



The tree stumps cannot be removed without damaging the PG&E gas pipe.

Relocating the gas pipe would significantly delay the project and jeopardize the funding.

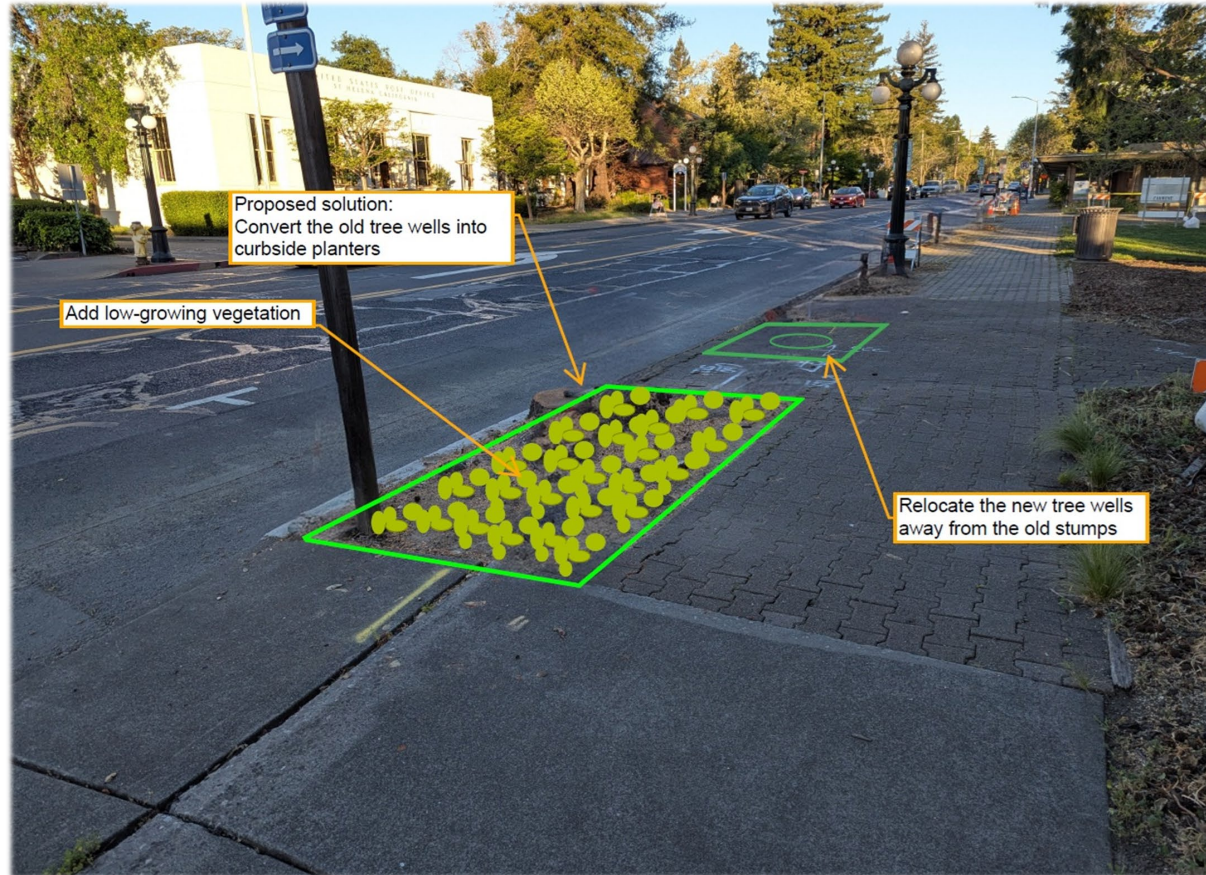
Delays would also extend the sidewalk closures with significant adverse impact on local businesses and the public.

Proposed Solution

Relocate the new tree wells away from the stumps

Leave the stumps in place but grind them just below the surface

Convert the old tree wells into curbside planters



Proposed Solution Advantages

- Minimal delay to the Project
- Gas pipe is undisturbed
- Low additional cost
- Reduce the total amount of new concrete
- Adds greenery to Main Street
- Sidewalk remains ADA compliant

Proposed Solution Disadvantages

- Reduces the number of new street trees by three (3)
- Surveyor will have to re-stake the tree well locations and add the planters (additional cost)
- Ped Path of Travel is reduced to about 5'-0" wide
- The box size of the new trees must be reduced to 24-inches on the east side of the street (deduct in cost)
- The street trees on the west side will still have a box size of 48-inches and look "unbalanced"
 - OR Consider reducing tree size on both sides of street to 24" box for symmetry.

Additional cost is
expected to be within
the contingency
authorized by Council

Public Works is
prepared to proceed
with this solution
without delay

QUESTIONS?

Public Comment for 9.1 item, regarding Downtown Sidewalk Update – Utilities conflict.

Questions:

1. If the gas lines were located before the trees were cut, would there have been a different strategy to replacing the sidewalks?
2. Could all of the trees have been saved?
3. If not all, then could some of the trees have been saved?
4. Was there mismanagement in this process, potential Quality and sequencing control, that lead to cutting down mature irreplaceable trees? This is a yes or no question.

I ask these serious questions based on the initial draft reports by Blackberg Group, particularly the Deliverable 3A, Organizational Structure and Staffing Component, page 44 and 45, I highlight just a few bullet points here:

- There is a severe lack of management systems within the City. This includes asset management systems and general operational management systems.
- There is a **severe lack** of situational awareness in the City. All Departments and executives lack quantitative and qualitative data concerning ongoing operations and project status. This includes almost a total lack of benchmark data. We noted that these concerns are particularly **acute** in Public Works.

Note: I see visitors taking pictures of these trees, especially in the fall with the golden and red colors.









Is there a report by an arborist on these trees, and how to best manage repairing the sidewalks?



Item 9.1, Downtown Sidewalk Utilities Conflict and Trees

From Celeste Neeley <neeleycc@gmail.com>
Date Tue 3/24/2026 9:52 AM
To City Clerk <cityclerk@cityofsthelena.gov>

To the Mayor and Members of the City Council:

I am writing regarding the agenda item concerning the Downtown Sidewalk Utilities Conflict and Trees on Main Street. I ask that the Council not simply approve the proposed solution tonight, but take a step back and ask how a routine sidewalk rehabilitation project arrived at this particular impasse — and whether the fix being offered actually fixes anything.

The original decision to remove the trees on Main Street was reasonable. Root intrusion had buckled the sidewalk, and rehabilitation was warranted. No one disputes that. What happened next, however, is not a matter of bad luck or unforeseeable circumstances. It is a matter of basic pre-construction practice not being followed.

After the trees were removed and the stumps left in place, the City discovered that a PG&E gas line runs directly through that corridor at a depth of only 1.5 to 2 feet — beneath the stumps themselves. The stumps cannot be removed without risk of damaging an active gas pipeline. The project is now stalled around an obstacle that should have been identified before the first tree came down.

Underground utility location is not a specialty skill or an optional step. It is among the most fundamental requirements of any public works project involving excavation or ground disturbance. The depth and trajectory of a gas line running along a major commercial street is exactly the kind of information that should be in hand before equipment is mobilized. That information was apparently not confirmed, not acted upon, or not communicated to the people making decisions in the field. The Council should require a plain, documented answer as to which it was.

The plan now before the Council proposes grinding the existing stumps to surface level, planting low shrubs in the old stump locations, and siting new tree wells adjacent to the originals. This may look like progress, but the Council should ask a question that does not appear to have been formally answered: what is the precise lateral and vertical clearance between the proposed new tree wells and the gas line?

The gas line does not move. It runs in a known linear trajectory through the original stump locations. The new tree wells are proposed along that same corridor. Tree roots, over time, will follow moisture and available soil — and they do not observe property lines or utility easements. Unless a qualified engineer has formally documented that the new well locations provide adequate long-term clearance from the pipeline, this plan may simply be deferring the same conflict by a decade or two. The stumps disappear. The gas line remains. The problem is cosmetic, not resolved.

The Council should not approve this plan without a clear, on-the-record engineering statement confirming that the new plantings have been sited with the gas line trajectory fully accounted for, with specific measurements, not assumptions.

There is a broader question worth asking here that goes beyond tree wells and stumps. This stretch of Main Street receives intense full western afternoon sun. It bakes through the warmest months of the year. Trees are the right long-term answer for shade and streetscape character in most contexts — but given that the subsurface of this particular block is now a known complication, and given that any new trees will take years to provide meaningful canopy, the Council should ask whether a shade structure or covered promenade element might better serve this corridor, particularly as the community prepares for the 150th anniversary celebration.

A well-designed shade structure would provide immediate, reliable relief for pedestrians and businesses, would not interact with the gas line, and could be designed to complement the downtown aesthetic. That alternative deserves at least a formal comparison — with costs, timeline, and maintenance implications laid out — before the Council commits to a planting plan on a block that has already surprised us once.

This Council has recently received a preliminary report from the City's own modernization consultant. The findings, even in preliminary form, are not flattering to the Public Works Department. Without making that report the centerpiece of tonight's discussion, it is fair to observe that the events on Main Street are consistent with what happens when asset data is incomplete, pre-construction coordination is inadequate, and project planning lacks the rigor that residents and businesses have every right to expect. The consultant did not invent those concerns. Residents have raised them for years. Main Street is simply the most visible recent example

This community takes pride in its downtown. Main Street deserves a solution that was thought through, not one assembled after the fact to make an avoidable mistake less visible before a celebration. The Council has the authority to demand that standard of work. We are asking you to use it.

Respectfully submitted,

Celeste Neeley

St. Helena resident

March 24, 2026



Outlook

Public Comment on Agenda Item 9.1

From Colleen Gillaspay <cgillaspay59@yahoo.com>

Date Tue 3/24/2026 10:36 AM

To Public Comment <publiccomment@cityofsthelena.gov>

RE: Item 9.1 on 3/24/26 agenda

How will this error get explained? This briefing is on the Sidewalk Update.

We all know the saying "call before you Dig". How on earth does a manager in charge of this project not know there is a gas pipeline where they planned to dig? What a catastrophe this could have been if the gas line was disrupted! Now the area in front of Lyman park looks horrible. Trees already removed before this was discovered. I'm shaking my head because it is unbelievable something like this could happen.

The top 2 people in charge of this project should be relieved of their duties to our city immediately.

I could go on & on about it but I'm keeping it short to encourage the Mayor and City Council to read this.

This is just another debacle by our city management. I'm in disbelief on the poor communication and the ability to get things right the first time.

Colleen Gillaspay
10 Del Rio Court



Trees on Main Street

From Jewels Drury <jwlsdrury@gmail.com>

Date Tue 3/24/2026 3:41 PM

To Public Comment <publiccomment@cityofsthelena.gov>

If it is true, that this ripping up of mature trees was for that stupid art installation--Shame on you! Why in the world would you rip those trees out? Who is in charge of that? I thought it was probably due to tearing up the streets for the sidewalk or water situation, but I have been told differently. I hope I'm wrong.

Twenty one year Citizen of St. Helena,
Jewels Drury



Agenda Report to the City Council

Agenda Section: CONSENT ITEMS

Department: Public Works

DATE:	March 24, 2026
FROM:	Ian Dale, Environmental Services Tech
SUBJECT:	February 2026 Review and Forecasting of City Water Supply Availability.
RECOMMENDED ACTION:	Receive and file.
PREVIOUS COUNCIL ACTION:	Monthly Receive and File reports to City Council.
STATEMENT OF THE PURPOSE:	To provide monthly updates of the amount of water produced at the Louis Stralla Water Treatment Plant and the Stonebridge Potable Water Wells, and potable water delivered from the City of Napa.
FINANCIAL IMPACT:	None.

BACKGROUND:

The City of St. Helena publishes a monthly water report on the City website (www.cityofstheleena.org/publicworks/page/water-reports). The report includes the amount of water produced at the Louis Stralla Water Treatment Plant and the Stonebridge Potable Water Wells, and potable water delivered from the City of Napa. In addition to presenting data on the amount delivered monthly, the report includes year-to-date information and prior year data. Water elevation and capacity at the Bell Canyon Reservoir is included as well as information on rain and temperatures.

At the City Council meeting of May 9, 2023, the City Council adopted Resolution 2023-46 adopting City Council goals for FY 2023-24. Five new City Council Goals for FY 2023-24 which include Goal 1: Financial Sustainability, Goal 2: Infrastructure and Environmental Sustainability, Goal 3: Water Security, Goal 4: Community Information and Engagement, and Goal 5: Quality of Life. City Council has the responsibility of establishing broad goals and the City's leadership has the responsibility to develop a work plan to achieve them.

DISCUSSION:

In connection with City Council Goal 2, City staff has developed a forecasting tool to facilitate its ability to optimize water use and track water availability. Included as Attachment 1 is the Monthly Water Report for February 2026. The water produced for February 2026 is down by 31% when compared to February 2025 and is down by 41% compared to the average of February 2018-2020. Below is a chart summarizing the water produced per source:

Water Produced per Source

Source	Average (2018 - 2020) (Acre-Feet)	February 2025 (Acre-Feet)	February 2026 (Acre-Feet)
Bell Canyon	38	16.85	19.99
Stonebridge Wells	8	11.96	15.30
Napa Water	37	42.96	14.29
Total	83	71.77	49.58

- Percent change from February 2025: -31%
- Percent change from average of February 2018 - 2020: -41%

Bell Canyon Reservoir

The City is no longer in water emergency conditions based upon the Phase I Water Emergency measures being terminated by City Council adopting Resolution No. 2023-94 on July 25, 2023. Bell Canyon Reservoir has adequate water to support the City's needs through this calendar year. The storage in Bell Canyon graph (Attachment 2) has been revised to include historic reservoir supply levels since July 2021. It also shows the water availability forecast through June 2024 based on the highest water usage during a non-drought year (FY 2019/20) and 10 inches of rainfall (lowest recorded).

As of March 1, 2026, Bell Canyon Reservoir elevation was at 422 feet representing approximately 2,383.69 acre feet (AF) and 100% capacity. Bell Canyon spillway level is 422 feet representing 2,383.69 AF in water supply volume. Below is a chart comparing Bell Canyon elevation levels, water supply availability in acre feet, and percent capacity of the reservoir on March 1st in 2024, 2025, and 2026.

Year	2024	2025	2025
Bell Canyon Elevation Level	422 Ft.	421.20 Ft.	422 Ft.
Acre Feet	2,383.69 AF	2,323.05 AF	2,383.69 AF
Percent Capacity	100%	97.5%	100%

As a follow up to the May 24, 2022, City Council meeting, staff developed a graph (Attachment 3) highlighting the relationship between the reservoir elevation level and water supply availability in acre feet. The graph shows the current status of the reservoir. Furthermore, the graph also displays the points where City Council decided to declare Phase I and Phase II Water Emergencies in 2020.

Continued Water Conservation

California experienced two consecutive dry years 2020 and 2021. Due to the combination of warmer-than-average temperatures and minimal precipitation in the state, the Department of Water Resources (DWR) declared 2021 as the fourth-driest year on record statewide. The record-breaking dry period in January and February 2022, and the absence of significant rains in March 2022, required DWR to reduce anticipated deliveries from the State Water Project (SWP). However, the reduction at

the time did not affect St. Helena as the City has multiple robust water sources not affected by the executive order. Water availability from the Bell Canyon reservoir is based on the City's State Water Rights permit and not the SWP. The City has not received any curtailment order from DWR nor does the City anticipate receiving one.

It should be noted that on July 25, 2023, the City Council adopted Resolution No. 2023-94 to formally end the Phase I Water Emergency. The projected demand on the system versus the anticipated rainfall over the next year reflects an available supply in Bell Canyon approximately 1,895 AF, significantly above the 1,481 AF standard for declaration of a Phase I Water Emergency. Staff will monitor State-wide and local drought conditions, weather conditions, and provide updates on a monthly basis. The corresponding staff report provided a variety of data to reflect the disposition of the water supply at that time in relation to the Council-adopted Safe Yield Policy.

City of Napa Water Supply

Normal operations continue at Rutherford Pump Station (RPS) and the City is taking delivery of the allotment purchased from City of Napa. During the month of February 2026, Rutherford Pump Station was producing an average of 0.16 MG/day for a total of 14.29 AF for the month.

ENVIRONMENTAL REVIEW: Not applicable.

GOAL:

Goal 3: Pursue Water Security & Sustainable Management of Water Resources

DOCUMENTS ATTACHMENTS:

[MWR February 1-28 2026](#)

[Attachment 3 - Bell Canyon Reservoir Storage Phase I II](#)

[Attachment 2 - Bell Canyon Water Storage Forecast](#)

[Attachment 4 - Bell Canyon Historical Elevation Levels](#)

[Attachment 5 - Bell Canyon Reservoir Historical Storage Elevation](#)

CITY OF ST. HELENA
MONTHLY WATER REPORT

CC: CC ☒ PC ☒ FILE _____
 RECEIVED: _____ BY: _____

February 1-28, 2026

	LOUIS STRALLA WATER PLANT	STONEBRIDGE POTABLE WELLS	SBW IRRIGATION WATER	NAPA WATER	TK #1 & #2 ADJUST
AMOUNT PRODUCED in AF	19.99	15.30	0.00	14.29	-0.44
AMOUNT PRODUCED in MG	6.51	4.98	0.00	4.65	-0.14
PERCENT	40.7%	31.1%		29.1%	-0.9%

WATER PRODUCED DELIVERY (AGGREGATE)

	THIS YEAR	LAST YEAR
TOTAL PRODUCED THIS PERIOD	16.15 MG	23.38 MG
MAXIMUM DAILY PRODUCED	n/a MG	n/a MG
MINIMUM DAILY PRODUCED	n/a MG	n/a MG
AVERAGE DAILY PRODUCED	0.57 MG	0.83 MG

WATER YEAR TOTALS

	THIS FISCAL YEAR	%	LAST FISCAL YEAR	%
LOUIS STRALLA WATER PLANT	215.79 AF	34.2%	227.61 AF	29.0%
	70.29 MG		74.14 MG	
NAPA WATER	285.15 AF	45.2%	328.62 AF	41.8%
	92.88 MG		107.04 MG	
STONEBRIDGE POTABLE WELLS	130.58 AF	20.7%	229.93 AF	29.2%
	42.53 MG		74.90 MG	
TOTAL WATER PRODUCED DELIVERY (ALL)	631.52 AF	100.0%	786.16 AF	100.0%

SBW IRRIGATION WATER

	THIS MONTH	THIS MONTH, LAST YR.
STONEBRIDGE APARTMENTS	0.00 MG/Feb. 1 -28	0.00 MG/Feb. 1-28
NAPA VALLEY COLLEGE	0.00 MG/Feb. 1 -28	0.00 MG/Feb. 1-28

WATER ELEVATION, CAPACITY & RAINFALL

	THIS FISCAL YEAR	LAST FISCAL YEAR
ELEVATION BELL CANYON RESERVOIR	422.06 FT.	421.20 FT.
MONTHLY RISE OR DROP	1.66 FT.	1.35 FT.
CAPACITY AT END OF PERIOD	2383.69 AF	2323.05 AF
PERCENT OF FULL CAPACITY	100.0 %	97.5 %
RAINFALL IN THIS PERIOD	3.13 IN	13.75 IN
TOTAL RAINFALL SEASON TO DATE	49.34 IN	46.21 IN

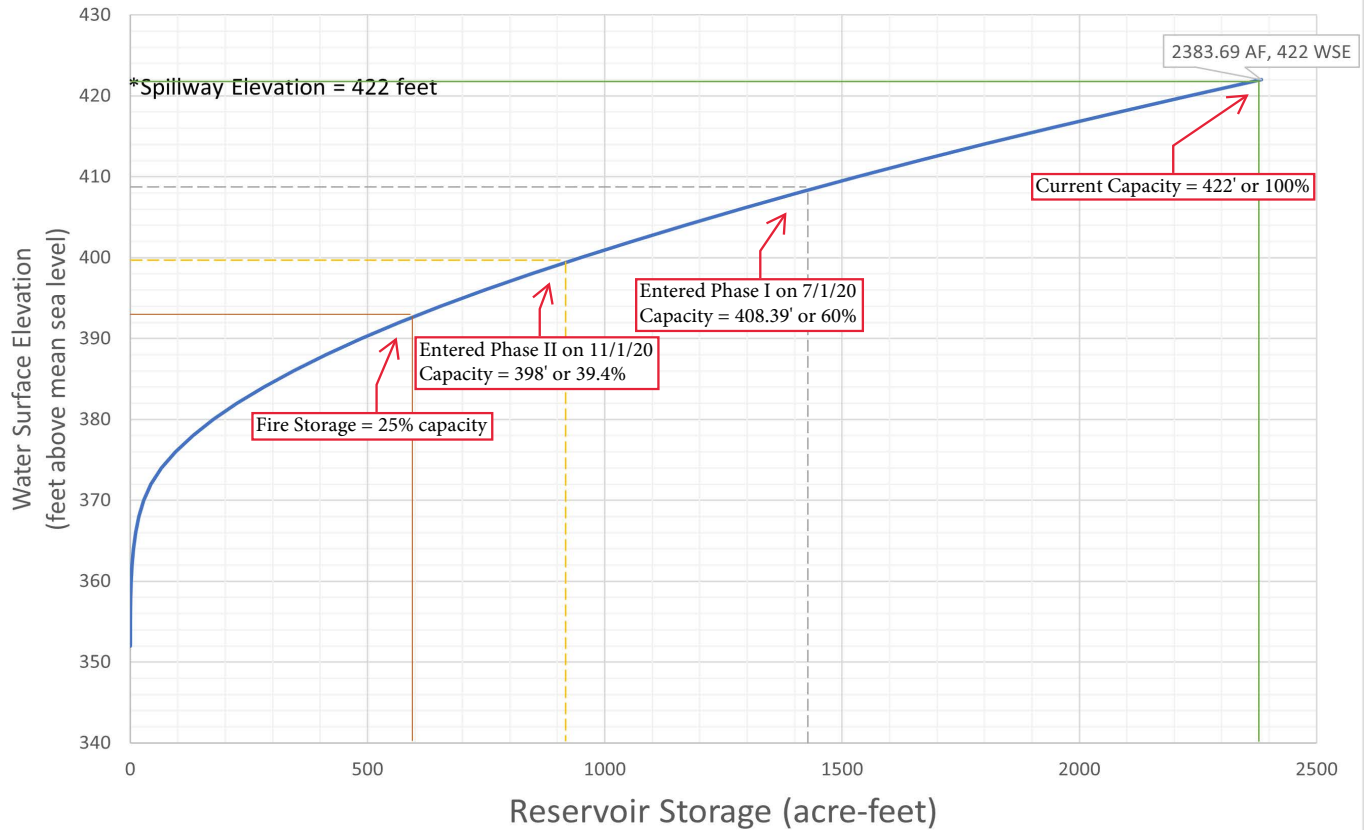
TEMPERATURES

	THIS MONTH, THIS YEAR	THIS MONTH, LAST YR.
DEGREES IN FAHRENHEIT	35.7-76.6	34.2-75.1
AVERAGE	56.15	54.65

REMARKS

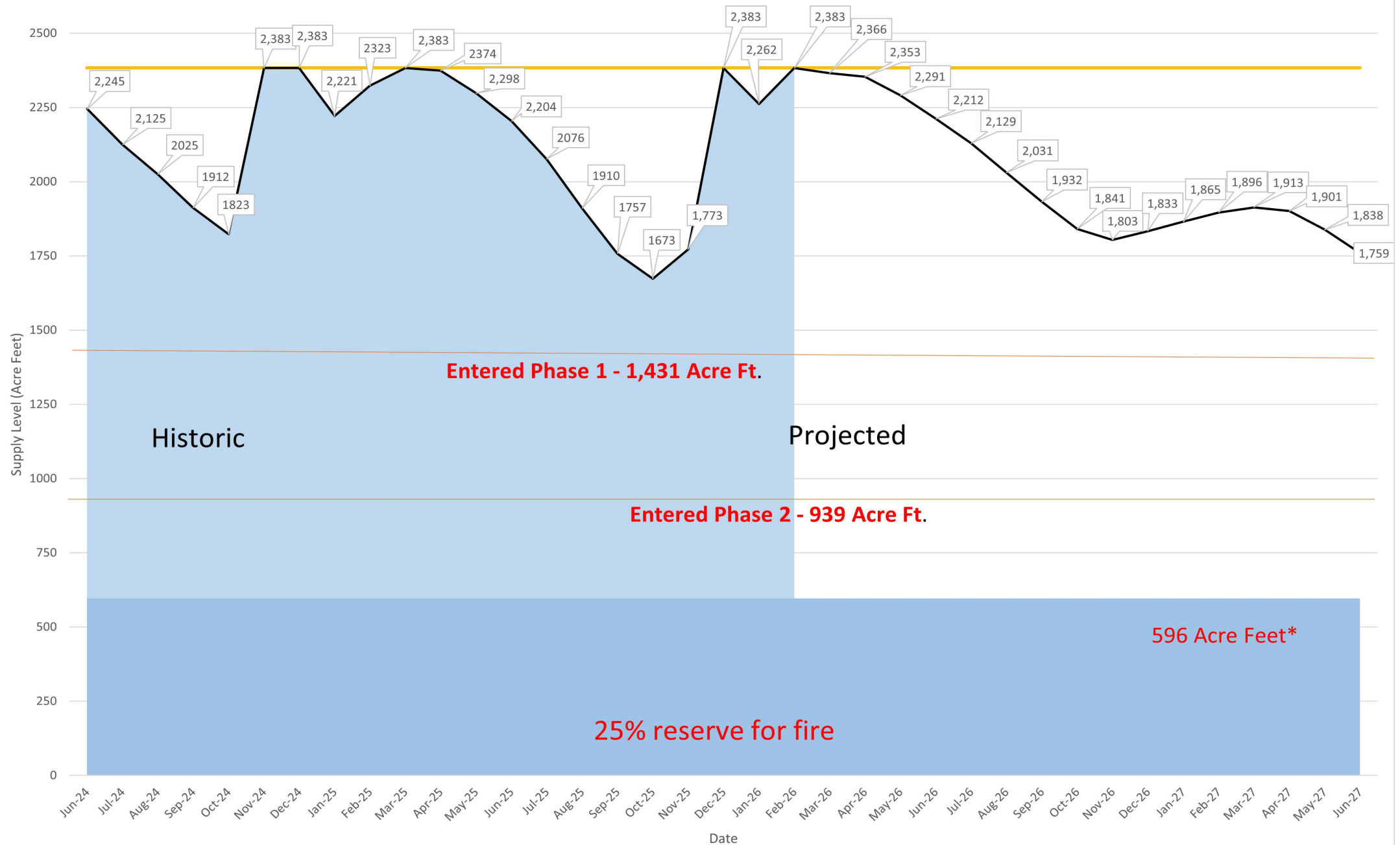
City of Napa Water Delivery: RPS producing an average of 0.16 MG/day during February 2026.
 DISCLAIMER: The data presented in this report is approximate and for informational purposes only.
 Updates will be provided if any errors are identified.

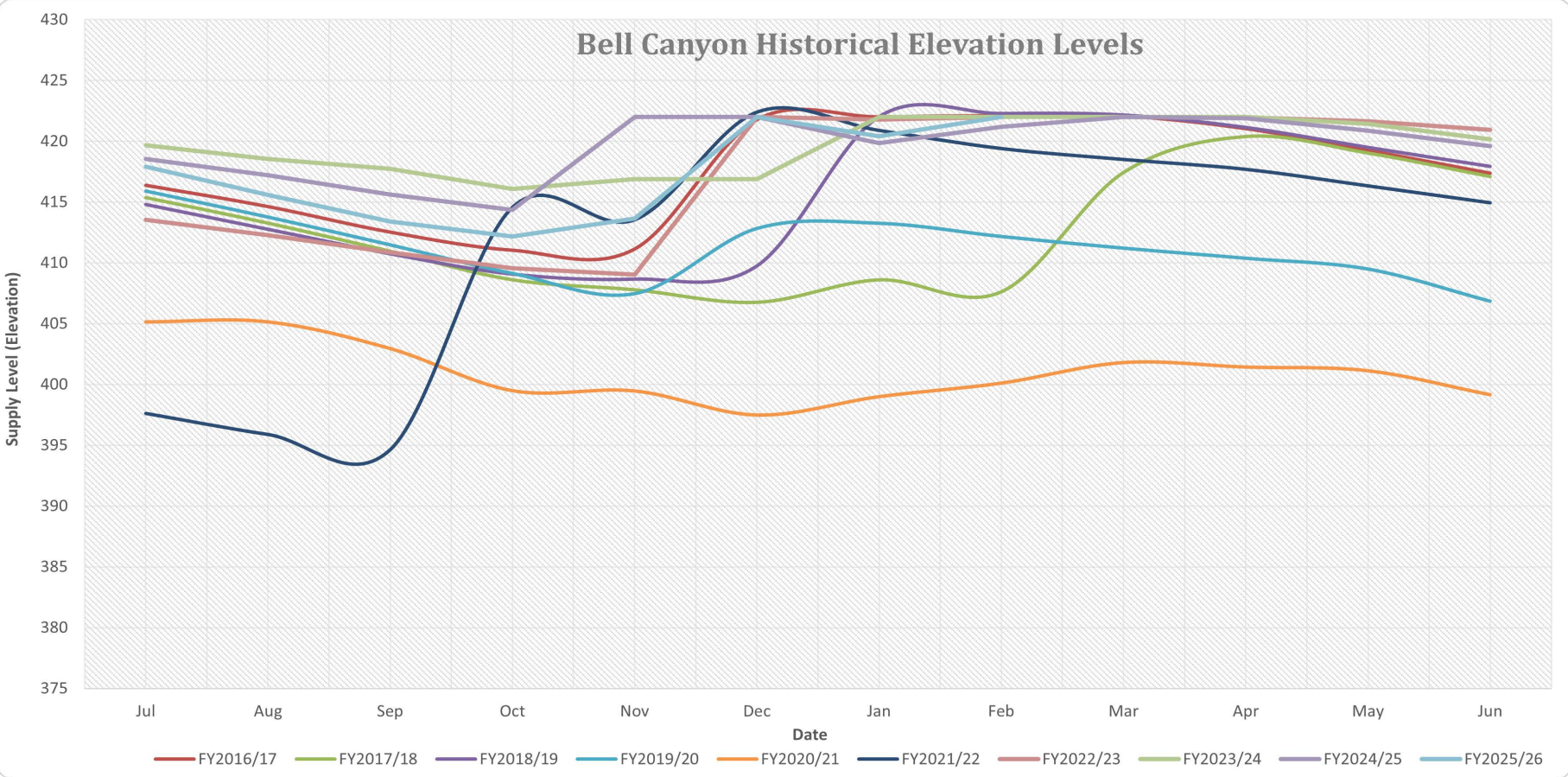
Bell Canyon Reservoir Stage-Storage Relationship

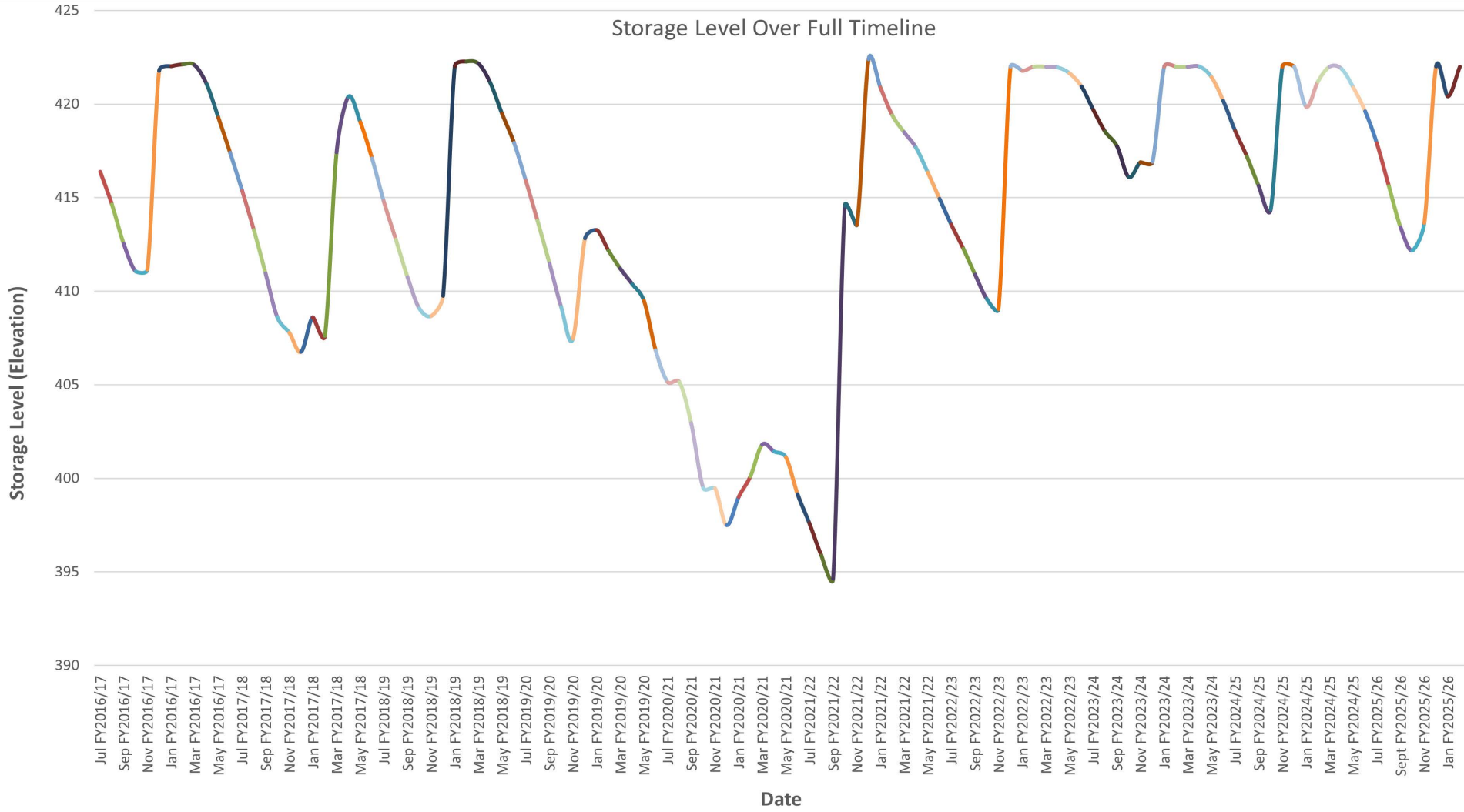


Bell Canyon Water Storage Forecast

Assumes: (1) Highest usage during non-drought year (FY2019/20)
 (2) 10" of Rainfall (Lowest Recorded)









Public Comment RE: agenda item 10.1

From Colleen Gillaspy <cgillaspy59@yahoo.com>

Date Tue 3/24/2026 11:28 AM

To Public Comment <publiccomment@cityofsthelena.gov>

RE: Agenda item 10.1

I am fed up with water quality (or lack of) in our town. Discolored, smelly and the most recent high Chlorine notice email received from the city on Friday, 3/21 about a malfunction (3/20) causing too much chlorine in our water. This 3/21 email stated to stop irrigating and reduced water usage until the problem was fix. Email also stated we, the public, would be kept up to date on this.

Last night, 3/23, I did a report on the city Grapevine asking if the water was now back to normal chlorine levels. I received a reply this morning, 3/24, that YES water is back to normal levels.

Here is my concern: Why wasn't a second email sent out to let the public know this? I realize we had the weekend in this time frame but why on Monday morning was something not sent out? I had not watered & reduced usage as was requested.

Here is what I propose:

Everytime our water is above standard levels or there is a problem, we should have an alarm sounded throughout town. That way we know IMMEDIATELY something is off. In the case of the Chlorine, the public was informed within 1 day (better but not great).

In the past year I have received 2 letters/reports that our water was not meeting standards. The reports were from 2-3 months BEFORE those letters went out! Unacceptable!

Hence the need for a system to notify the public immediately.

This won't sound good in our town because it will probably be going off monthly (if not more).

How will tourist's respond to that? Let alone the community.

In my experience, everyone I talk to is NOT drinking our water. I buy bottled water since moving here 2 years ago. It awful I have to do that. I'm embarrassed when out of town guests come and they reached for my faucet for a glass of water and I rush to stop them.

As for the Grapevine APP: I use it and often. 1 time I reported brown water and received a call (I'll leave name out of this) which I thought was great until I was told I was the only one to report this. Does that matter? I thought that meant they would still be investigating. After the call I received an email Stating my Grapevine submission was closed. What?!

I'm looking into a whole house filtration system which is costly but I need insurances that my skin will finally clear up and I won't have to continually buy bottled water to drink.

There should be a rebate program of \$5,000 for each household if they want to do a whole house filtration system. I'm only doing it because the city cannot provide acceptable water. Until then, we should be reimbursed for all the water we have to buy. I'm paying for water already and yet i have to purchase more so I can actually drink it.

Please make water a priority. Please Please Please

Colleen Gillaspy



Agenda Report to the City Council

Agenda Section: CONSENT ITEMS

Department: Human Resources

DATE:	March 24, 2026
FROM:	Mandy Kellogg, Administrative Services Director
SUBJECT:	Proposed approval of a Resolution approving an Employment Agreement with Leza Mikhail, ratifying the City Manager's appointment to serve as the Director of Community Development.
RECOMMENDED ACTION:	Staff recommends approval of the attached resolution.
PREVIOUS COUNCIL ACTION:	December 9, 2025 - Approved of a Resolution Authorizing Recruitment for a Director of Community Development.
STATEMENT OF THE PURPOSE:	The purpose is to ratify the City Manager's appointment of Leza Mikhail to serve as the Director of Community Development.
FINANCIAL IMPACT:	Funding for this position is included in the FY 2025-26 adopted budget.

BACKGROUND:

In November 2025, the Director of Community Development, which oversees the City's Planning and Building Divisions, announced her plan for retirement in January 2026. This leadership role is a critical executive-level position responsible for overseeing and shaping the City's long-term growth, regulatory compliance, and daily development services.

This role provides supervisory, administrative, and technical leadership in the development, implementation, and continuous review of the City's advance planning efforts, current planning activities, building functions, and housing policy initiatives. The Director ensures the proper interpretation and consistent application of the General Plan, Zoning Ordinance, and all related state and local land-use regulations. Therefore, on December 9, 2025, City Council authorized the recruitment to fill the position.

The City received 7 applications for the position. The highest-ranking applicants were selected and interviewed by a distinguished panel on March 3, 2026, followed by a second interview on March 4, 2026 of the highest rated candidate.

DISCUSSION:

Leza Mikhail has been selected to serve as the City's next Director of Community Development. Mikhail brings more than 21 years of professional planning experience and over a decade of leadership in urban and regional planning to St. Helena.

Ms. Mikhail previously served as Deputy Director of Planning and Development for the County of Santa Clara, where she directed the day-to-day and long-range operations of the Planning Division and led a multidisciplinary team of more than 20 planning professionals. In that role, Mikhail oversaw major projects, advanced planning, zoning administration, and intergovernmental coordination while advising executive leadership and elected officials on complex planning matters.

Throughout her career, Mikhail has focused on improving planning processes, and supporting land use strategies that balance economic vitality, environmental stewardship, and community character. Her leadership helped streamline permitting timelines, modernize planning workflows, and strengthen relationships between planning departments, elected officials, and the public.

Prior to her most recent leadership role, Mikhail served for more than a decade with the City of Rancho Palos Verdes, where she held positions including Senior Planner and supervisor. During that time, she worked on a wide range of planning initiatives including general plan updates, sustainability programs, major development projects, and regional planning efforts.

Mikhail holds a Master of Urban Planning (MPL) from the University of Southern California's Sol Price School of Public Policy and a Bachelor of Arts from the University of California, Irvine, where she double majored in Environmental Analysis and Design, and Psychology and Social Behavior.

In this role, Mikhail will oversee the City's Planning, Building, and Code Enforcement functions and serve as an advisor to the City Manager, City Council, and Planning Commission on land use policy, housing, environmental review, and community development initiatives. The position will continue to play a critical role in implementing the City's General Plan, guiding development review, and supporting thoughtful growth within the City.

ENVIRONMENTAL REVIEW:

None.

GOAL:

Goal 7: Enhance Organizational Effectiveness

DOCUMENTS ATTACHMENTS:

[Resolution Authorization for Ratifying Director of Community Development Agreement Employment Agreement LMikhail](#)

CITY OF ST. HELENA

RESOLUTION NO. 2026 -

Resolution approving an Employment Agreement with Leza Mikhail, ratifying the City Manager's appointment to serve as the Director of Community Development.

RECITALS

- A. In November 2025, the Director of Community Development, which oversees the City's Planning and Building Divisions, announced her plan for retirement in April 2026; and
- B. This leadership role is a critical executive-level position responsible for overseeing and shaping the City's long-term growth, regulatory compliance, and daily development services; and
- C. on December 9, 2025, City Council authorized the recruitment to fill the position; and
- D. The City received 7 applications for the position. The highest-ranking applicants were selected and interviewed, and the final candidate has been identified as Leza Mikhail; and
- E. City Manager seeks the City Council's ratification of the action.

RESOLUTION

NOW, THEREFORE, the City Council of the City of St. Helena resolves as follows:

- 1. Authorize the City Manager to enter into an employment agreement effective April 13, 2026, with Leza Mikhail to serve as the City's Director of Community Development.

Approved at a Regular Meeting of the St. Helena City Council on March 24, 2026, by the following vote:

Mayor Dohring:	_____
Vice Mayor Deasy:	_____
Councilmember Barak:	_____
Councilmember Spadarotto:	_____
Councilmember Summers:	_____

APPROVED:

Paul Jamison Dohring, Mayor

ATTEST:

Andrew Bradley, City Clerk

Leza Mikhail Employment Agreement
City of St. Helena
Page 1 of 8

EMPLOYMENT AGREEMENT FOR DIRECTOR OF COMMUNITY DEVELOPMENT

Between

CITY OF ST. HELENA AND LEZA MIKHAIL

THIS EMPLOYMENT AGREEMENT (the Agreement) is entered into as of April 13, 2026, between THE CITY OF ST. HELENA, a municipal corporation (City), and Leza Mikhail (Director), collectively "the Parties".

RECITALS

WHEREAS, City desires to employ Leza Mikhail as Director of Community Development for the City of St. Helena.

WHEREAS, Leza Mikhail desires to serve as Director of Community Services of the City of St. Helena beginning on April 13, 2026.

WHEREAS Leza Mikhail has the necessary education, experience, skills and expertise to serve as the City's Director of Community Development; and

WHEREAS, The City Manager, as appointing power, and Leza Mikhail desire to agree in writing to the terms and conditions of Leza Mikhail's employment as the Director of Community Development.

NOW, THEREFORE, in consideration of the above recitals, promises and conditions contained herein, the Parties agree as follows:

AGREEMENT

1. Powers and Duties of the Director of Community Development

- a) Director shall have the powers and shall perform the functions and duties specified in the job description and in state and federal law, the St. Helena Municipal Code, and the ordinances and resolutions of City, as well as to perform other legally permissible and proper duties and functions as the City Manager may from time-to-time assign.
- b) Director shall perform the duties to the best ability in accordance with the professional and ethical standards of the profession and shall comply with the laws of the State of California, the Municipal Code of the City, and Ordinances and Resolutions of the City, and as they may be amended.
- c) Director shall not engage in any activity which is or may become a conflict of interest, prohibited contract, or which may create an incompatibility of office as defined under California law. Prior to performing any services under the Agreement

Leza Mikhail Employment Agreement
City of St. Helena
Page 2 of 8

and annually thereafter, Director must complete disclosure forms required by law.

- d) Director shall report to the City Manager who has authority to dismiss, discipline, and give direction to the Director of Community Development.
- e) Director shall devote full time to the performance of the assigned duties; the Director shall notify the City Manager of any outside employment, which employment shall not interfere with the Director's City job duties, pose a conflict of interest, or be inappropriate for a City employee.
- f) Director shall maintain all applicable certifications and licenses required for the Director of Community Development, as a condition of employment, including a valid California Driver's License unless it is not possible because of a documented medical reason.

2. Term

The Agreement is effective April 13, 2026, and will continue in effect until terminated as provided herein. As stated in Section 3, Director's employment is for no defined term or period, and may be terminated by the City Manager at any time pursuant to Section 4. For purposes of Section 4 and Government Code Section 53260 only, Director's employment shall be deemed to have an unexpired term of three (3) months in the event of involuntary termination without cause pursuant to Section 4 (c).

3. At-Will Employment

- a) The Parties recognize and affirm that: (1) the Director is an "at will" employee whose employment may be terminated by the City Manager at any time with or without cause, (2) there is no express or implied promise made to the Director for any form of continued employment, and (3) upon termination of the Agreement, the Director understands that there is no right to any further employment, in any capacity, with the City. The Agreement is the sole and exclusive basis for an employment relationship between the Director and the City.
- b) Termination for cause means termination based upon a breach of any of the terms of this Agreement, malfeasance of any nature occurring during the course and scope of the Director's duties as Director of Community Development; or a conviction, plea bargain, or personal adverse State or federal determination against Director individually involving any felony, intentional tort, crime of moral turpitude, violation of statute or law constituting forfeiture of office, misconduct in office for personal gain, misuse of public funds for personal benefit, conflict of interest resulting in conviction, or any other incompatible activity or conflict of interest.

Leza Mikhail Employment Agreement
City of St. Helena
Page 3 of 8

4. Termination of Agreement

The Agreement may be terminated as follows:

- a) **By Mutual Agreement.** The City Manager and Director may terminate this Agreement at any time by mutual written agreement.
- b) **Termination by City.** The City Manager may, in sole and unrestricted discretion, terminate this Agreement with or without cause at any time upon written notice to the Director.
- c) **Severance.** Subject to the limitations of Government Code Sections 53260 and 53261, if the City Manager terminates this Agreement without cause while the Director is still willing and able to perform the duties of Director of Community Development, the Director shall be entitled to three (3) months' base salary, less applicable deductions, plus applicable accrued leaves as provided in this Agreement together with any extension of benefits required under California and federal law. No time served by the Director after notice of the termination shall be debited from the period of severance pay. Eligibility for such severance payment is expressly conditioned upon Director's execution, and non-revocation, of a written agreement for (i) a waiver and release of any and all claims against City, (and its officers, elected officials, employees, etc.) to the full extent permitted by law, and (ii) a covenant not to sue. (An appropriate written agreement will be prepared by the City Attorney and furnished to Director.) However, in the event the Director is terminated for cause, the Director shall be entitled to only the compensation earned and accrued and such termination benefits and payments as may be required by law, but shall not be entitled to any severance benefits.
- d) **Resignation by Director.** Nothing in this Agreement shall prevent, limit or otherwise interfere with the right of Director to resign at any time from the position as Director of Community Development. Director may terminate this Agreement by submitting written notice of resignation to City. As a courtesy, Director shall give the City thirty (30) days written notice of intention to resign.
- e) **Rights and Remedies of Director upon Termination.** Nothing in this Agreement is intended to, or does, confer upon Director any due process right to a hearing or other administrative process pertaining to termination, before or after a decision by the City to terminate employment, except as may be required under California or federal law. Director may appeal a determination of for cause termination to the City Council for the sole purpose of qualifying for severance pay; the City Council shall not have the authority to overturn the termination.
- f) **Resignation in Lieu of Termination.** If the Director is terminated without cause, the Director shall have the opportunity to resign in lieu of being terminated. In

Leza Mikhail Employment Agreement
 City of St. Helena
 Page 4 of 8

such an event, any public announcement issued by the City will state that the Director resigned, and Director would remain eligible for severance as provided in subsection (c) above.

- g) **Administrative Leave.** The City Manager may place the Director on administrative leave with or without pay pending investigation of any allegations of misconduct.

5. Compensation and Benefits.

- (a) City agrees to pay Director for services pursuant to the City's publicly available salary schedule for the Director. Effective April 13, 2026, the Director's shall be placed at Step C of the Director of Community Development salary schedule (currently \$210,143). Salary for the Director shall be payable in installments at the same time as other employees of City are paid and subject to all applicable payroll taxes and withholdings. Such salary may be adjusted from time to time at the sole discretion of the City Manager within the publicly available salary schedule. The Director shall be an "exempt" employee under all applicable state and federal labor laws, including, but not limited to, the Federal Labor Standards Act and the regulations of the California Industrial Welfare Commission.
- (b) **Performance Review.** The City Manager shall evaluate the Director's performance by April 13, 2027, and at least annually thereafter.
- (c) **CalPERS.** CalPERS. Director shall continue to be included in the City's Miscellaneous Plan with the California Public Employees' Retirement System ("CalPERS") as a Classic Member Second Level (2%@60), as described in the Unrepresented Compensation Program. Director shall contribute the total "employee contribution," and any applicable cost sharing requirements applicable to City Department Heads as set forth in the Unrepresented Compensation Program (currently 1% cost sharing). The City must comply with the requirements of law and CalPERS rules and regulations governing the CalPERS retirement program and makes no promises regarding any particular level of benefits that will be provided under that program.
- (d) The City participates in Social Security; the employee contribution (currently 6.2%) will be deducted from the Director's gross pay.
- (e) Director shall be entitled to all benefits, rights and privileges accorded to Department Heads as set forth in the Unrepresented Compensation Program, as may be amended from time to time, except as otherwise provided in this Agreement or as they may conflict with the Director's status as an "At-will" employee. If there is any conflict between this Agreement and any resolution or policy fixing compensation and benefits for City Department Heads or other unclassified employees, this Agreement shall control.

Leza Mikhail Employment Agreement
City of St. Helena
Page 5 of 8

- (f) Director shall receive full vacation accrual of that which a regular full-time employee accumulates in accordance with the full-time vacation entitlement schedule in accordance with the City's Unrepresented Compensation Program for Department Heads and Mid-Managers. The maximum amount of accrued vacation may not exceed 280 hours.
- (g) Director shall receive full accruals that Departments Heads receive for personal convenience holidays (floating holidays) in accordance with City's Unrepresented Compensation Program for Department Heads and Mid-Managers.
- (h) Director shall receive five (5) days of executive leave awarded January 1st and five (5) additional days of executive leave awarded on July 1st of each full year. Floating holidays and executive leave must be used in the year accrued or the time shall be forfeited.
- (i) Director shall be entitled to twelve (12) days sick leave each year in accordance with the City's Unrepresented Compensation Program for Department Heads and Mid-Managers.
- (j) For purpose of calculating vacation accruals, personal convenience holidays; shall be based on Director's initial date of hire with the City which is April 13, 2026.
- (k) **Vehicle Allowance.** Director will receive a vehicle allowance of \$200 per month.
- (l) **Communications.** Director will have the use of a City cellular phone and iPad pursuant to policies established by the City.
- (m) **Professional Development and Training.** City shall pay for Director's annual training and membership to essential professional associations.
- (n) **Hours of Work.** Director is an exempt employee but is expected to engage in those hours of work that are necessary to fulfill the obligations of Director position. If mutually agreed to between the City Manager and Director, Director may have a modified work schedule, such as 4/10 or 9/80 or have the opportunity to telecommute as deemed appropriate by the City Manager.

6. Return of City Property

In the event of termination, any City equipment or property will be promptly returned to the City. In addition, any and all finished and unfinished documents, data, reports and materials are the property of the City and shall be promptly delivered to the City Manager. Director shall keep all information acquired through their position in the strictest confidence.

Leza Mikhail Employment Agreement
City of St. Helena
Page 6 of 8

7. Indemnification

To the extent required by, and in accordance with the terms, conditions, and limitations of the Government Claims Act (Gov't Code §§ 810 et seq.), City shall defend, save harmless, and indemnify Director against any tort, professional liability claim or demand or other legal action, whether groundless or otherwise, arising out of an alleged act or omission occurring in the performance of Director's duties as Director of Community Development. City will determine whether to compromise and settle any such claim or suit and the amount of any settlement or judgment rendered thereon. Notwithstanding the foregoing, such indemnification shall be limited as stated in paragraph 8 below.

8. Limitations/Reimbursements

Notwithstanding any other provision in this Agreement, and in accordance with California Government Code Sections 3511.1, 3511.2, 53243, 53243.1 and 53243.2, the following limitations apply to City's obligations to Director:

- (a) In the event the Director is placed on paid leave pending an investigation, Director shall reimburse such pay to City if Director is subsequently convicted of a crime that constitutes "abuse of office or position" as defined in Government Code Section 53243.4.
- (b) In the event City pays for the Director's legal criminal defense, the Director shall fully reimburse such funds to the City if Director is subsequently convicted of a crime that constitutes "abuse of office or position" as defined in Government Code Section 53243.4.
- (c) If this contract is terminated, any cash settlement related to the termination that Director may receive from City must be fully reimbursed to City if Director is subsequently convicted of a crime that constitutes "abuse of office or position" as defined in Government Code Section 53243.4.

9. Attorney's Fees

In the event of any mediation, arbitration or litigation to enforce any of the provisions of this Agreement, each party shall bear its own attorney's fees and costs.

10. Jurisdiction and Venue

This Agreement shall be construed in accordance with the laws of the State of California, and the Parties agree that venue shall be in Napa County, California.

Leza Mikhail Employment Agreement
City of St. Helena
Page 7 of 8

11. Notices

Any notices required by this Agreement shall be in writing and either given in person or by first class mail with postage prepaid and addressed as follows:

TO CITY: City Manager
 City of St. Helena
 1088 College Avenue
 St. Helena, CA 94574

TO EMPLOYEE: Leza Mikhail
 Last home address on file with the City

12. Entire Agreement

The Agreement is the final expression of the complete agreement of the parties with respect to the matters specified herein and supersedes all prior oral or written understandings. However, the Agreement may be amended or altered by the City Manager at any time. Any such amendments or alterations must be in writing, signed by Director and the City Manager and approved by the City Council.

13. Severability

If any provision of this Agreement is found to be unenforceable by judgment or court order, the remainder of the Agreement shall remain in full force and effect, as if the unenforceable provision had never been included.

14. Assignment

Director may not assign or transfer any rights granted or obligations assumed under this Agreement.

15. Informed and Voluntary Agreement

Director acknowledges that Director has had the opportunity to receive legal representation and advice in connection with this Agreement and that Director voluntarily enters into this Agreement fully informed about the rights and obligations assumed and waived by entering into this Agreement.

16. Agreement Subject to Council Ratification

As stated in Municipal Code Section 2.12.060(B)(2), this Agreement is subject to ratification by the City Council at a regular meeting.

Leza Mikhail Employment Agreement
City of St. Helena
Page 8 of 8

IN WITNESS WHEREOF, City and the Director of Community Development have entered into and executed this Agreement as of the 13th day of April 2026.

CITY OF ST. HELENA

A Municipal Corporation

DIRECTOR OF COMMUNITY
SERVICES

By: _____
Anil Comelo

By:  _____
[Leza Mikhail \(Mar 17, 2026 16:45:49 PDT\)](#)
Leza Mikhail

Approved as to Form:

By: _____
Ethan Walsh
City Attorney

Employment Agreement LMikhail

Final Audit Report

2026-03-17

Created:	2026-03-17
By:	Mandy Kellogg (mkellogg@cityofsthelena.org)
Status:	Signed
Transaction ID:	CBJCHBCAABAAiXT0K_b2Nx6WkJHmHjABMbmL4agIB-uL

"Employment Agreement LMikhail" History

-  Document created by Mandy Kellogg (mkellogg@cityofsthelena.org)
2026-03-17 - 11:27:00 PM GMT
-  Document emailed to Leza Mikhail (lezam80@yahoo.com) for signature
2026-03-17 - 11:27:04 PM GMT
-  Email viewed by Leza Mikhail (lezam80@yahoo.com)
2026-03-17 - 11:44:58 PM GMT
-  Document e-signed by Leza Mikhail (lezam80@yahoo.com)
Signature Date: 2026-03-17 - 11:45:49 PM GMT - Time Source: server
-  Agreement completed.
2026-03-17 - 11:45:49 PM GMT



Public Comment Agenda Item 10.2

From Elaine de Man <elainede@sbcglobal.net>

Date Mon 3/23/2026 2:09 PM

To Public Comment <publiccomment@cityofsthelena.gov>

Subject: Request to Remove Appointment of Leza Mikhail from Consent Calendar for Full Public Review

Dear Mayor Dohring and Members of the City Council,

I am writing to respectfully request that the proposed ratification of the City Manager's appointment of Ms. Leza Mikhail as Director of Community Development be removed from the consent calendar and scheduled for full discussion as a regular agenda item.

This is a critical executive-level position with significant influence over the City's long-term growth, regulatory framework, and daily development operations. As described in the staff report, the Director is responsible for overseeing planning, building, housing policy, and implementation of the General Plan—decisions that directly shape the future of St. Helena.

Given the importance of this role, it is concerning that the appointment is being presented for approval without substantive discussion or sufficient transparency regarding the selection process.

The staff report raises several unanswered questions, including:

- Who served on the “distinguished panel” that conducted interviews?
- What qualifications or criteria were used to evaluate candidates?
- How were panel members selected?
- Were any members of the City Council involved in the selection process?
- What distinguished Ms. Mikhail from the other applicants?

- Were reference checks and a comprehensive background review conducted?
- Were any concerns identified during that process?

Additionally, this appointment is being brought forward at a time when the City Manager's performance and judgment are under active review by this Council in closed session. Regardless of the outcome, this context heightens the need for transparency and careful oversight—not less.

Placing this item on the consent calendar—where it is typically approved without discussion—does not provide the level of scrutiny or public accountability that such an important decision warrants.

To be clear, this request is not a challenge to Ms. Mikhail's qualifications or experience. Rather, it is a request for a transparent process that allows the Council—and the public—to understand how and why this selection was made.

At a time when public trust is already strained, ensuring openness in decisions of this magnitude is essential.

I respectfully urge the Council to:

1. Remove this item from the consent calendar
2. Place it on a future agenda for full discussion
3. Provide additional information regarding the recruitment and selection process

The community deserves clarity, transparency, and confidence in decisions that will shape the future of our City.

Thank you for your consideration.

Respectfully,

Elaine de Man



Fw: Failure Notice

From Colleen Gillaspy <cgillaspy59@yahoo.com>

Date Mon 3/23/2026 9:42 PM

To Public Comment <publiccomment@cityofsthelena.gov>

To the Mayor and City Council,

I understand there will be an evaluation of the (notice I did not use "our") City Manager, Anil Comelo, at this closed door session. It is my wish that he be removed from this position immediately. Enough is Enough.

I recently started to pay more attention to what is going on with our City. Mainly because I am frustrated that I cannot drink water coming out of my faucets. Next Door comments got me curious to what was really going on with the Art Installation. I wanted to hear 1st hand about this Art Project that was being voted on. I attended the Parks and Rec meeting last week and was appalled by what I heard from the city representatives. The Process was NOT followed! Cement pads (6-7 of the 13 proposed) were poured **before** the city council had even met about this. It appears Mr. Comelo made the agreement with the Artist. A contract, with ever changing amounts that the city would be responsible for and unclear information on several issues.

This alone is a just cause for removal. A it would be a Just removal.

Unfortunately there are several more. And this is just in the last few weeks! I met with Mr. Comelo last year, at my request, and he explained to me that the city was not broke (as people were stating on social media). I asked about his bonus that was in the works. He told me directly that he was not going to accept it. I advised that I thought that wise under the circumstances and showed good faith. I also suggested he get that word out to the community as I felt it was important. Low & behold he accepted the bonus. I was shocked. That was last year and I felt I gave him a fair chance to explain things. I was trying to base my opinion on my own interactions. HE LIED TO ME.

Now here we are, a year later and things have really gone out of control. I am not opposed to Art in our Town. That is not the issue. The backroom deal is! When someone tells you to take all 13 pieces or Nothing, well that would have been my 1st Red Flag. Still Mr. Comelo pressed on and started work. Then there is the Sidewalk/Gas line/trees cut down in front of Old City Hall. We all know the Saying "call before you dig". Come on! How ridiculous. You just can't make up this type of mistake. The Public Works employee needs to go also. Now that area is more of a mess and just in time for our 150th celebration. Then move on to Water, I want to be able to drink it. Plain and simple. This, in my opinion, should be number 1 priority. I have no trust in our City Manager. There should be town hall meetings. I feel he needs to hear from all of us. If he wants respect, he must give it too.

Next I'll move on to Item 10.2. The hiring of Leza Mikhail. I think someone other than Mr. Comelo should be vetting new hires. My concern in the contract is the comment that Telecommuting will be allowed. I say NO to that. It's part of the reason we are in this mess with Mr. Comelo. He does not live here and has no vested interest in the town other than a huge paycheck. I do not trust his word alone and the Telecommuting should be a hard NO from the City Council.

Next, 10.5 on the Agenda. The project manager asking for \$240,671 **additional funds** towards the purchase of a manufactured home. This needs to be removed from the Consent items and needs to be talked about in more details before that decision should be made. It states the City Manager negotiates a purchase agreement. NO NO NO
Someone is failing at their job if budgets and Bids are constantly being altered by this much money.

Our City deserves someone they can trust. I, for one, have lost trust in Mr. Comelo. I'm hoping our Mayor and city council will please listen. My wording in this email is not elegant. I'm upset as I write this. I'm new to being this involved but I cannot sit and do nothing. I've lived here 2 years (but have been visiting for over 30 years) I need to speak out. Tomorrow will be my 1st City Council meeting. I'm wanting to form my own opinion and see if the lack of respect is as apparent as I hear around town.

It's time to cut our losses with Mr. Comelo. It will save us money in the long run I'm sure and it will help to restore trust in our community.

Colleen Gillaspy
10 Del Rio Court
Saint Helena, CA



Public Comment on Item 10.2

From Colleen Gillaspy <cgillaspy59@yahoo.com>
Date Mon 3/23/2026 9:48 PM
To Public Comment <publiccomment@cityofsthelena.gov>

RE: Item 10.2 the hiring of Leza Mikhail.

Please review the contract. I do not believe Telecommuting should be acceptable for this position. Except if the employee is away from the office on city business. We have run into this as a problem with our current City Manager not living in the area. Let's not make the same mistake. This employee should live within a 30 mile radius to accept the position. Someone other than Mr. Comelo should be vetting applications and reviewing the contracts.

Thank you
Colleen Gillaspy
10 Del Rio Court
Saint Helena

3.24.26

Members of City Council,

This is a fundamentally critical role for the future of our community and the process by which the selection is made is deserving of a strong foundation. A strong foundation can be relied upon for building trust in decisions moving forward.

Respectfully, please remove this from the consent calendar. Open dialogue with the council regarding pressing issues is needed. Any applicant put forth for the position should have the opportunity to be heard and introduced to the public with full support.

Of critical importance:

How much interaction has the council had with the applicant?

We need a permanent appointment for the open position. However filing the position now as a consent item under the current leadership environment does not instill the level of public trust and confidence that the position deserves, and needs to flourish moving forward.

Sincerely,

Joshua Parke

Subject: Planning Director Appointment - Please remove item 10.2 from Consent

Dear Mayor and Members of the City Council,

Let me be clear: this comment is not about the qualifications of Ms. Leza Mikhail. It is about process. And at this moment, process is precisely the problem.

You are being asked to approve one of the most critical leadership positions in this City through the consent calendar, without discussion, and without having personally interviewed the candidate. That alone should give you pause.

This comes on the palpable heels of an "efficiency report" that outlines, in stark terms, deeply ingrained and dysfunctional processes within City operations. It comes amid ongoing, highly visible examples of disregard for proper procedure by City Management and leadership. And yet, here we are again-recycling the same pattern: rushed decisions, lack of transparency, and absence of accountability.

Positions of this magnitude have historically and reasonably included meaningful involvement from elected officials.

Placing this item on consent sends a very clear message: that even now, after everything that has been documented and exposed, nothing has changed. People in this community are not surprised anymore, that's part of the problem. They've become used to it. They are disengaging. That should be of far greater concern than any single appointment.

So the request is simple:

Remove this item from the consent calendar.

Have the required discussions, ask the needed questions. Exercise your responsibility. Demonstrate that you understand the significance of this moment and are willing to take the first steps toward restoring confidence in the process. Ms. Mikhail may ultimately be the right candidate. But advancing her appointment in this manner risks undermining her credibility at a time when the City needs a sure footed and competent individual who understands the challenge that is at hand, and is suited to deliver the most effective results.

Respectfully,
Daniel Hale
1565 Pine Street



Agenda Report to the City Council

Agenda Section: CONSENT ITEMS

Department: Public Works

DATE:	March 24, 2026
FROM:	Stephanie Killingsworth, Public Works Financial Analyst
SUBJECT:	Consideration and Approval of a Resolution Creating Capital Improvement Plan Project No. W26-04 Water Main Pipeline Cleaning Program and Authorizing Associated Project Budget and Amendments.
RECOMMENDED ACTION:	Staff recommends approval of the attached Resolution.
PREVIOUS COUNCIL ACTION:	None.
STATEMENT OF THE PURPOSE:	Requesting approval for the creation of the W26-04 Water Main Pipeline Cleaning Program into the CIP in accordance with Council direction.
FINANCIAL IMPACT:	The total financial impact is \$152,000, which will be funded by GO Bonds.

BACKGROUND:

Maintaining the integrity and performance of the City's water distribution system is critical to ensuring water quality and system reliability. Over time, debris, sediment, and buildup can accumulate within water mains, potentially impacting flow capacity and water quality.

As part of ongoing system maintenance and evaluation efforts, Staff has identified the need to assess existing pipeline conditions and evaluate available cleaning technologies.

This project represents an approach to system maintenance and water infrastructure management.

DISCUSSION:

Staff is requesting City Council approval to create Capital Improvement Plan Project No. W26-04 Water Main Pipeline Cleaning Program and include it in the City's Capital Improvement Plan.

The initial phase of the project will include:

- Pre-cleaning CCTV inspection of select water mains
- Demonstration of at least two pipeline cleaning technologies
- Post-cleaning CCTV inspection to evaluate effectiveness

This phased approach allows Staff to evaluate the most effective and cost-effective cleaning methods before proceeding with broader system implementation.

ENVIRONMENTAL REVIEW: None.

GOAL:

Goal 2: Improve Infrastructure & Further Environmental Sustainability

Goal 8: Implement Capital Improvement Plans (CIP) Projects Miscellaneous/Other

DOCUMENTS ATTACHMENTS:

[W26-04 Resolution](#)

[W26-04 CIP Page](#)

CITY OF ST. HELENA**RESOLUTION NO. 2026-__****RESOLUTION AUTHORIZING THE CREATION OF CAPITAL IMPROVEMENT PLAN PROJECT NO. W26-04 WATER MAIN PIPELINE CLEANING PROGRAM AND AUTHORIZING ASSOCIATED PROJECT BUDGET AND AMENDMENTS.****RECITALS**

- A. The City of St. Helena is responsible for maintaining a reliable and high-quality water distribution system; and
- B. Over time, debris and sediment can accumulate within water mains, potentially impacting system performance and water quality; and
- C. Staff has identified the need to evaluate pipeline conditions and demonstrate available cleaning technologies prior to broader system implementation; and
- D. Staff is requesting approval for the creation of Capital Improvement Plan Project No. W26-04 Water Main Pipeline Cleaning Program

RESOLUTION

NOW, THEREFORE, the City Council of the City of St. Helena resolves as follows:

- 1. Authorizes the creation of Capital Improvement Plan Project No. W26-04 Water Main Pipeline Cleaning Program; and
- 2. Approves an initial project budget of \$152,000 funded by General Obligation Bonds (Fund 241); and
- 3. Budget Amendments & Funding are as follows:

Description	Fund/Funding Source	Expense GL Account	Amount
Transfer to Other Funds	421 – GO Bonds	421-40-00-28-99	\$152,000
Operating Transfers In	763 – Water Capital Improvement	763-39-98-00-00	\$152,000
Increase to Project Budget W26-04 Water Main Pipeline Cleaning Program	763 – Water Capital Improvement	763-50-30-31-60	\$150,000

Increase to Project Budget W26-04 Water Main Pipeline Cleaning Program	763 – Water Capital Improvement	763-50-30-31-80	\$2,000
--	---------------------------------------	-----------------	---------

Approved at a Regular Meeting of the St. Helena City Council on March 24, 2026, by the following vote:

Mayor Dohring:

Vice Mayor Deasy:

Council Member Barak:

Council Member Spadarotto:

Council Member Summers:

APPROVED:

ATTEST:

Paul Jamison Dohring, Mayor

Andrew Bradley, City Clerk

FY 26 thru FY 30

Capital Improvement Plan

St Helena, CA

Project # W26-04
Project Name Water Main Pipeline Cleaning Program

Total Project Cost	\$152,000	Department	Public Works
Category	Water	Priority	High
Phase	Active	Status	Design
Project Location	Citywide	Expenditure Account	763-5030-
Strategic Driver	Quality		

Description

Project scope includes an initial pre- and post-cleaning CCTV of select watermain and demonstration of at least two technologies to evacuate debris within water main pipelines.

Notes

•**FY26** - Seek council authorization (at 3/24/26 mtg) to appropriate an initial \$150k for CCTV work and demonstration of at least two pipeline cleaning technologies.

Expenditures	Prior	FY 26	FY 27	FY 28	FY 29	FY 30	Future	Total
3160 - Construction Contract	0	0	150,000	0	0	0	0	150,000
3180 - CIP Overheads	0	0	2,000	0	0	0	0	2,000
Total	0	0	152,000	0	0	0	0	152,000

Funding Sources	Prior	FY 26	FY 27	FY 28	FY 29	FY 30	Future	Total
421-Go Bonds	0	0	152,000	0	0	0	0	152,000
Total	0	0	152,000	0	0	0	0	152,000



Agenda Report to the City Council

Agenda Section: CONSENT ITEMS

Department: Public Works

DATE:	March 24, 2026
FROM:	Rebecca White, Administrative Assistant
SUBJECT:	Consideration of a resolution approving (1) a temporary closure of a portion of Adams Street from Friday, May 15, 2026, at 6:00 p.m., to Sunday, May 17, 2026, at 6:00 p.m.; and (2) authorizing the possession of open alcoholic beverages on this public street for the Neighborhood Table Event scheduled for Saturday, May 16, 2026, from approximately 6:00 p.m. to 9:00 p.m.
RECOMMENDED ACTION:	Staff recommends approval of the attached resolution.
PREVIOUS COUNCIL ACTION:	Recent City Council actions to support the annual event: April 11, 2023 adopted Resolution 2023-030 February 27, 2024 adopted Resolution 2024-021 March 11, 2025 adopted Resolution 2025-022
STATEMENT OF THE PURPOSE:	Authorize the partial road closure of Adams Street and allow for possession of open containers on said portion of street for the Neighborhood Table Event.
FINANCIAL IMPACT:	The financial impact is \$2,175 resulting from the applicant submittal of a Request for Fee Waiver form for 5 permits related to this event including two encroachment permits, a banner permit, a road closure permit, and a raw water permit.

BACKGROUND:

The 7th annual Neighborhood Table is presented by the St. Helena Hospital Foundation to bring the community together in the spirit of health and connection while bringing awareness to Adventist Health St. Helena's mission and animating downtown St. Helena. The Neighborhood Table directly supports the St. Helena Hospital Foundation's Mobile Health team which distributed over 62,000 pounds of fresh produce to families in need in 2025, as well as administered health assessments, vaccines, and other essential healthcare services to the most vulnerable populations in the valley.

The Neighborhood Table Event will require the temporary closure of Adams Street, east of Library Lane to the dead end. The closure will occur from Friday, May 15, 2026, at 6:00p.m. to Sunday, May 17, 2026, at 6:00p.m., with some local access to allow for set-up and tear down, with the actual dinner taking place on Saturday, May 16, 2026, from approximately 6:00p.m. to 9:00p.m. The closure will allow for the event, as well as the

authorization of open alcoholic beverages on the public street, which occurs for the duration of the meal event only.

DISCUSSION:

The St. Helena Hospital Foundation will be taking the lead on communicating and coordinating with all adjacent businesses on the south side of Adams Street once an encroachment permit is approved to ensure alternate access for any commercial driveways affected by the road closure throughout the event.

The event will include large rentals, such as executive restrooms, dining tables, and chairs, that will begin to be set up on Friday evening and Saturday morning. A barricade equivalent to K-rail will be placed to prevent errant vehicles driving through the actual dinner event. This event does not require a license from ABC as guests bring and pour their own wine. The event organizer is however responsible for checking ID's at the entrance of the event. There are several ticket price tiers to make the event accessible to the entire community. The clean-up and pick-up of the event will be completed on Sunday, May 17, 2026, by 6:00p.m. The event organizers will be utilizing their own staff and volunteers for the entirety of the event.

This event will require a permit from the Police Department if amplified music is being utilized and will require security should the gathering be planned for more than 250 people. The event organizer has been compliant with both of these matters every year.

The event organizers will continue to coordinate and update City staff members from the Police and Public Works Departments and follow through with any additional requirements that staff may have for the actual event.

In response to public comment several years previous, the event organizer has agreed to place generators and mobile kitchens on the south side of Adams Street and to use whispering generators that operate at 64dB (A) which is below the 65 dB (A) allowed in the City's municipal code. The event organizer is also responsible for notifying residents on the even numbered side of the 900 block of Hunt Avenue when they send out reminder notifications to the businesses and residents of the event set-up, day, and the tear down, which has been standard operating procedure since 2022.

ENVIRONMENTAL REVIEW: None.

GOAL:

Goal 5: Enhance Quality of Life
Miscellaneous/Other

DOCUMENTS ATTACHMENTS:

[Resolution](#)

CITY OF ST. HELENA

RESOLUTION NO. 2026-

CONSIDERATION OF A RESOLUTION APPROVING (1) A TEMPORARY CLOSURE OF ADAMS STREETS FROM FRIDAY, MAY 15, 2026, AT 6:00 P.M. TO SUNDAY, MAY 17, 2026, AT 6:00 P.M. FOR THE MAY 16, 2026, NEIGHBORHOOD TABLE EVENT; AND (2) AUTHORIZING POSSESSION OF OPEN ALCOHOLIC BEVERAGES ON THE PUBLIC STREET FOR THE NEIGHBORHOOD TABLE EVENT SCHEDULED FOR SATURDAY, MAY 16, 2026, FROM APPROXIMATELY 6:00 P.M. TO 9:00 P.M.

RECITALS

- A. The St. Helena Hospital Foundation is planning the Neighborhood Table event to bring the community together in the spirit of health and connection; and
- B. The Neighborhood Community Table Event is anticipated to continue to be an annual event; and
- C. The St. Helena Public Works Department has requested temporary closure of Adams Street from East of Library Lane to the dead end of Adams Street for the event; and
- D. Closure of the City street in the area will provide space for event activities; and
- E. St. Helena Municipal Code Section 9.04.010 authorizes the Council, by permit, to allow possession of open alcoholic beverages on public streets or any private or public off-street parking lot; and
- F. Section 21101(e) of the California Vehicle Code provides the local authorities may, by resolutions, temporarily close a portion of any street for celebrations, parades, local special events, and other purposes when, in the opinion of local authorities having jurisdiction or a public officer or employee that the local authority designated by resolution, the closing is necessary for the safety and protection of persons who are to use that portion of the street during the temporary closing.

RESOLUTION

NOW, THEREFORE, the City Council of the City of St. Helena resolves as follows:

1. The City Council finds that the benefits derived from the temporary closing of the City street for the Neighborhood Table Event outweigh the anticipated inconvenience to the neighborhood and citizens, and authorize closure of:
 - Adams Street from East of Library Lane to the dead end of Adams Street from May 15, 2026, at 6:00 p.m. to May 17, 2026, at 6:00 p.m., with some local access to allow for set-up and tear down with the actual dinner taking place on May 16, 2026.
2. The possession of open containers of wine is permitted on public streets and parking lots encompassed by this event.
3. Temporarily closing a portion of the subject street is necessary for the safety and protection of persons who are to use that portion of the street during the temporary closing.
4. The City Manager is directed to provide reasonable levels of City staff support to accomplish closure of streets and related activities.

Approved at a Regular Meeting of the St. Helena City Council on March 24, 2026, by the following vote:

Mayor Paul Dohring: _____
Vice Mayor Michele Deasy: _____
Council Member Billy Summers: _____
Council Member Aaron Barak: _____
Council Member Kate Spadarotto: _____

APPROVED:

ATTEST:

Paul Jamison Dohring, Mayor

Andrew Bradley, City Clerk



Agenda Report to the City Council

Agenda Section: CONSENT ITEMS

Department: Public Works

DATE:	March 24, 2026
FROM:	Mario Traverso, Project Manager
SUBJECT:	Consideration and Approval of a Resolution (1) Approving the purchase of a Clayton Homes manufactured home for the Water Treatment Plant; (2) Authorizing the City Manager to negotiate and execute a purchase agreement with Clayton Homes; (3) Declaring the existing manufactured home surplus and authorizing staff to dispose; (4) Authorizing a budget increase of \$240,671 for CIP Project W26-03 Water Treatment Plant Modular Housing; (5) Authorizing associated budget adjustments; and (6) Authorizes the Director of Public Works to approve construction change orders not to exceed 10%.
RECOMMENDED ACTION:	Staff recommends approval of the attached Resolution.
PREVIOUS COUNCIL ACTION:	Consent item at the December 9, 2025 City Council Meeting; creating and funding the CIP project.
STATEMENT OF THE PURPOSE:	The purpose of this action is to consider and approve the presented project delivery approach which will provide workforce housing at the City of St. Helena Drinking Water Treatment Plant.
FINANCIAL IMPACT:	The total financial impact is \$370,671, which will be funded by the Water Enterprise Fund Balance. Since the current Project Budget is \$150,000, budget amendments are being requested in the amount of \$240,671 in additional funding from the Water Enterprise Fund Balance in this action.

BACKGROUND:

The City's Louis Stralla Water Treatment Plant, located at 410 Crystal Springs Road, includes one manufactured home residence which has been historically occupied by the plant operations staff including the Chief Plant Operator. The residence which was installed in 1980, was continuously utilized by treatment plant staff until 2020, but has since been vacant.

In early 2025, Staff initiated an evaluation of the residence in efforts to consider future use by current staff. An inspection report indicated that the residence, originally constructed in 1980, requires a significant remodel.

On June 24, 2025, a new business item was brought before City Council to discuss and provide direction regarding the future of staff accessible housing at City facilities. City Council directed Staff to pursue the replacement of the structure at the Water Treatment Plant.

On December 9, 2025, a consent item was brought before City Council to create and fund a new CIP project.

DISCUSSION:

Since the approval on December 9, 2025, staff has been exploring and researching various options and solutions regarding the future housing opportunities at the water treatment plant property. Three options were identified as detailed below.

Option 1: Remodel Existing Residence

As detailed in the June 24, 2025 and December 9, 2025 staff reports, an initial inspection report indicated that it would cost approximately \$100,000 to perform repairs which would be necessary to make the existing structure habitable. This includes items such as replacing the HVAC, water heater, carpeting, electrical upgrades, and deck repairs. Staff also received a quote for a more extensive remodel which also included replacing the paneling with drywall throughout the structure, and full bathroom and kitchen remodels. The quote for the full remodel exceeded \$250,000. While the remodel is a viable option, many items were excluded, for example exterior painting. If all the items were to be included, costs could quickly exceed \$300,000. Additionally, the remodel could take months to complete. Given the existing condition of the structure and the cost and time estimates, staff determined not to further pursue this option.

Option 2: Install a Modular House

A modular house is a product which is partially constructed at a manufacturing facility and assembled at the destination site. The modular concept is very popular and offers a wide variety of options and styles. Staff spent a significant amount of time researching the modular options and concludes that it may not be the most appropriate option. Costs for the modular option are in the range of \$350,000 to \$500,000. At the lower cost range, the modular units are designed as ADU's in the 600 to 800 square foot range. At the higher cost range, they are more single-family home style with square footage in the 900 to 1200 range. The City is pursuing a unit of at least 1000 square feet to properly accommodate staff, or future staff who may have dependents. The cost range for the preferred option presents significant procurement challenges and does not coincide with the City's purchasing policy model. Additionally, it could take over a year for the housing to be operational.

Option 3: Install a Manufactured House

A manufactured house is a product which is wholly built at a manufacturing facility per federal specifications and is then transported to the destination site and installed on a semi-permanent foundation. A manufactured house is an updated classification of a mobile home. This option is also very popular and accessible though lacks in the variety of options and styles. Costs for the manufactured home option range from \$150,000 to \$200,000 (\$250,000 to \$350,000 installed). The manufactured home options allow for the desired square footage, and time constraints at a reasonable cost. Staff has received multiple quotes from manufacturers and distributors of these units. Currently, a 1000 square foot, lot model unit is available in Santa Rosa for \$194,995 which includes a \$15,000 price reduction. Additional costs include delivery and installation. The cost range for this option also aligns with the City's purchasing policy for purchases under \$200,000.

Currently, Staff has developed an Option 3 "package" and recommends it for consideration and approval. The current approach includes the following:

- Napa County demolition and building permits prepared and submitted by City Staff.
- The existing structure is to be declared surplus and will be offered at auction for a set period of time. If there is no interest, the structure will be offered free of charge for a set period of time. If there is still no interest, City will pay \$13,500 to have the structure removed and dismantled.
- Pending City Council approval, the City will execute a Purchas Agreement with Clayton Homes, which stipulates sale procedure and warranty.
- The City will enter into an agreement with a contractor who will coordinate transportation, foundation installation and "turn key" home setup.
- Staff will coordinate installation of ancillary items including the outdoor air conditioning compressor installation and facilitating natural gas or propane service.
- Staff anticipates the residence would be operational 30 days after issuance of the building permit which takes 1 to 3 months for issuance.

Costs:

Manufactured Home Unit Purchase	\$194,995
Delivery	\$6,000
Turn Key Installation, Concrete Foundation	\$129,479
Air conditioning Outdoor Compressor	\$5,000
Propane Service	\$1,500
Current Expected Costs	\$336,974
Contingency (10%)	\$33,697
Total Budget Request	\$370,671

ENVIRONMENTAL REVIEW: None.

GOAL:

Goal 1: Strengthen Financial Sustainability
Goal 6: Improve Employee Recruitment, Retention, & Morale
Goal 7: Enhance Organizational Effectiveness

DOCUMENTS ATTACHMENTS:

[Resolution](#)

[Manufactured Home Product Details](#)

[CIP Page W26-03](#)

CITY OF ST. HELENA

RESOLUTION NO. 2026-__

RESOLUTION APPROVING (1) THE PURCHASE OF A MANUFACTURED HOME FROM CLAYTON HOMES FOR INSTALLATION AT THE WATER TREATMENT PLANT; (2) AUTHORIZING THE CITY MANAGER TO NEGOTIATE AND EXECUTE A PURCHASE AGREEMENT WITH CLAYTON HOMES; (3) DECLARING THE EXISTING MANUFACTURED HOME SURPLUS AND AUTHORIZING STAFF TO DISPOSE; (4) AUTHORIZING A BUDGET INCREASE FOR PROJECT W26-03 WATER TREATMENT PLANT MODULAR HOUSING; (5) AUTHORIZING RELATED ACTIONS, AND APPROVING BUDGET AMENDMENTS; AND (6) AUTHORIZES THE DIRECTOR OF PUBLIC WORKS TO APPROVE CONSTRUCTION CHANGE ORDERS NOT TO EXCEED 10%.

RECITALS

- A. The City's water treatment facility, located at 410 Crystal Springs Road, includes one manufactured home residence which has been historically occupied by the plant operations staff; and
- B. The residence which was installed in 1980, was continuously utilized by treatment plant staff until 2020, but has since been permanently vacated; and
- C. In early 2025, Staff initiated an evaluation of the residence in efforts to consider future use by current staff; and
- D. June 24, 2025, a new business item was brought before City Council to discuss and provide direction regarding the future of workforce housing at City facilities and City Council directed Staff to pursue the replacement of the structure at the Water Treatment Plant; and
- E. Staff explored three options with considerations regarding cost, schedule, and City policies; and
- F. Staff recommends the purchase and installation of a manufactured home from Clayton Homes; and
- G. A budget reallocation is necessary to properly allocate funding for the projects identified in the Capital Improvement Plan (CIP); and

- H. The project is categorically exempt from the California Environmental Quality Act (CEQA) pursuant to Class 1 Existing Facilities.

RESOLUTION

The City Council of the City of St. Helena hereby resolves as follows:

1. Approving the purchase of a Clayton Homes manufactured home for the Water Treatment Plant; and
2. Authorizing the City Manager to negotiate and execute a purchase agreement with Clayton Homes; and
3. Declaring the existing manufactured home surplus and authorizing staff to dispose; and
4. Authorizing a budget increase for Project W26-03 Water Treatment Plant Modular Housing and authorizing associated budget adjustments; and
5. Authorizes the Director of Public Works to approve construction change orders not to exceed 10%; and
6. The project is categorically exempt from the California Environmental Quality Act, pursuant to CEQA Guidelines section 15301, Existing Facilities Class 1.

1. Budget Amendments are as follows:

Description	Fund	GL Account	Amount
Transfer to Other Funds	Water Enterprise Fund Balance	561-50-00-29-99	\$240,671
Operating Transfers In	Water Capital Improvement	763-39-98-00-00	\$240,671
Increase to Project Budget W26-03 WTP Modular Housing	Water Capital Improvement	763-50-30-31-60	\$206,974
Increase to Project Budget W26-03 WTP Modular Housing	Water Capital Improvement	763-50-30-31-70	\$33,697

2. Funding is as follows:

Description	Fund	GL Account	Amount
W26-03 WTP Modular Housing Construction Contract	561-Water Rate Revenues	763-50-30-31-60	\$336,974
W26-03 WTP Modular Housing Contingency	561-Water Rate Revenues	763-50-30-31-70	\$33,697

Approved at a Regular Meeting of the St. Helena City Council on March 24, 2026, by the following vote:

Mayor Dohring:

Vice Mayor Deasy:

Council Member Barak:

Council Member Spadarotto:

Council Member Summers:

APPROVED:

ATTEST:

Paul Jamison Dohring, Mayor

Andrew Bradley, City Clerk

CLAYTON HOMES #1016
3515 Santa Rosa Ave
Santa Rosa, CA 95407
Phone: (707) 588-2725 Fax: (707) 588-2730

2015

NOTICE: THIS FORM IS COPYRIGHTED AND REPRODUCTION OF ALL OR PART IS STRICTLY FORBIDDEN.

MANUFACTURED HOME PURCHASE ORDER AND FEDERAL DISCLOSURE STATEMENT

PURCHASER:		DATE:	
ADDRESS:		PHONE:	
CITY:	STATE:	ZIP:	SALESPERSON: <u>Stacy Loden</u>

Subject to the terms and conditions stated on both sides of this agreement Seller agrees to sell and Purchaser agrees to purchase the following MFD./MBL Home:

MAKE <u>CMH MFG W</u>	MODEL <u>TB0</u>	B. ROOMS <u>3</u>	APPROX. (NOT INCL. TOW BAR/AVES.) <u>153/47 W. 20</u>	☒ NEW ☐ USED	SITUS
SERIAL NUMBER <u>TB0</u>	APPROX. DEL. DATE <u>TB0</u>	HUD OR HCD NO. <u>TB0</u>	DT. OF MFG. <u>TB0</u>		

THE COST OF THE MFD./MBL HOME EXCLUDES THE LISTED PRICES FOR THESE ITEMS.

TOW BAR \$ <u>50</u>	WHEELS \$ <u>50</u>	WHEEL HUBS \$ <u>50</u>	TIRES \$ <u>50</u>	AXLES \$ <u>50</u>	SQ. FT. LIVING AREA <u>973</u>	MFD. HOME PRICE \$ <u>155,411</u>
----------------------	---------------------	-------------------------	--------------------	--------------------	-----------------------------------	-----------------------------------

DATE MFD. ORD. _____ ESCROW OPEN _____ STK #/OTHER _____ USED HOME SALES TAX, IF ANY, (1ST SOLD PRIOR TO 7/1/80) \$ _____

ITEMIZED ACCESSORIES AND THEIR COSTS: (SEE ADDENDUMS)

Current base price \$155,411 20x52/47. Base price valid for 30 days. Initial deposit \$1,000 IS REFUNDABLE. Clayton Homes will assist w/ referring Contractors to provide delivery + site cost. Lot model Retail 209 166 on clearance \$199,995 requires 10K NON REFUNDABLE deposit. Must deliver and close escrow within 6 months or subject to \$50 a day storage fees. Buyer is responsible to pay contractor to prep home for delivery. delivery, complete setup, all site improvements, perm, 15+ feet inspection sold F.O.B. Clayton Homes Santa Rosa. TOTAL ACCESSORIES (OUTSIDE HOME) \$ 155,411

excludes cosmetic warranty. Total 20 pages attached.

DESCRIPTION OF TRADE-IN		TOTAL MFG. HOME & ACCESSORIES	
NAME	MODEL	NAME	MODEL
TITLE NO.	SERIAL NO.	SALES TAX (ITEMS NOT INTEGRAL TO HOME)	\$ <u>TB0</u>
AMOUNT OWING	ACCOUNT NO.	FOUNDATION SYSTEM / TIE DOWNS	\$ <u>TB0</u>
TO WHOM:	ADDRESS BY LINE	DELIVERY	\$ <u>TB0</u>
THE MANUFACTURER STATES THAT INSULATION HAS BEEN INSTALLED IN THIS HOME AS FOLLOWS: (NEW ONLY)		SET UP	\$ <u>TB0</u>
TYPE	THICKNESS	HCD FEES	\$ <u>175</u>
ROOF	<u>cellulose</u>	INSURANCE PREMIUM (ONLY IF SOLD BY DEALER)	\$ <u>TB0</u>
EXTERIOR WALLS	<u>Fiberglass</u>	ESCROW FEES	\$ <u>800</u>
FLOOR	<u>Fiberglass</u>	SCHOOL FEES	\$ <u>TB0</u>
		OTHER / PRE PAID TAXES	\$ <u>TB0</u>
		DOC. FEE (NOT A GOVERNMENTAL CHARGE)	\$ <u>TB0</u>

1. TOTAL CASH PRICE \$ 156,386

ALLOWANCE ON TRADE-IN	\$ <u>---</u>
LESS BAL. DUE ABOVE	\$ <u>---</u>
NET ALLOWANCE	\$ <u>---</u>
PAID HEREWITH	\$ <u>1,000</u>
CASH BEFORE DEL.	\$ <u>ALL</u>
DESIGNATED DEPOSIT (INC. IN DN. PMT)	\$ <u>10,000</u>

2. LESS BUYERS DOWN PAYMENT \$ 1,000

3. UNPAID BAL. ON CASH SALES PRICE \$ 155,386

4. FINANCE CHARGE \$ ---

5. ANNUAL PERCENTAGE RATE --- %

6. TOTAL PAYMENT AMOUNT (3+4) \$ ---

7. UNPAID BALANCE DUE PRIOR TO DEL. \$ ---

8. TOTAL DEFERRED PAYMENT PRICE (2+6) \$ ---

PAYABLE AS FOLLOWS:

THE DEALER CERTIFIES THAT THE INSTALLATION CONTRACTOR IS:

NAME	LIC. #
BUSINESS ADDRESS	
CITY	CA ZIP

A Contractor is required by law to be licensed and regulated by the Contractors State License Board, P.O. Box 26000 Sacramento, CA 95827.

In the event the manufactured home cannot be delivered "and/or" inspection completed within the agreed delivery time due to nonperformance by the buyer, buyer agrees to one of the following at the option of the seller, either (1) to pay \$ 50 charges per day until a manufactured home installation acceptance or certificate of occupancy is obtained in addition to all other consideration owing or (2) pay the sum of \$ 10,000 in lieu of total consideration.

NOTICE TO BUYER: (A) DO NOT SIGN THE PURCHASE AGREEMENT BEFORE YOU READ IT OR IF IT CONTAINS ANY BLANK SPACES TO BE FILLED IN. (B) YOU ARE ENTITLED TO A COMPLETELY FILLED-IN COPY OF THAT AGREEMENT AND, IF PURCHASING A MANUFACTURED/MOBILE HOME COVERED BY A WARRANTY, A COPY OF THE WARRANTY. Complaints concerning the purchase shall be referred to the dealer and, if the complaint is not resolved, may be referred to the Department of Housing and Community Development, Division of Codes and Standards, Occupational Licensing, P. O. Box 278690, Sacramento, CA 95827-8690. Phone number 1 800-952-8356. A failure to disclose pursuant to this section shall not be the basis for rescission of a conditional sale contract.

The Manufactured Home that I am purchasing will be used as a residence. I further certify that I understand that if subject Manufactured Home pursuant to this certificate.

PURCHASER _____ DATE _____

RECEIPT OF A FILLED-IN COPY OF THIS AGREEMENT IS HEREBY ACKNOWLEDGED BY PURCHASER

The Purchase Order is subject to credit approval and is not binding unless signed by an authorized representative of lender. Purchaser certifies that he is of legal age, and agrees to sign a Security Agreement according to the terms herein. In the event payoff figures on a trade-in toward the purchase of a Manufactured or Mobile Home are more than quoted by the Purchaser, the Purchaser hereby agrees to pay this excess on demand.

ALL TERMS AND CONDITIONS SET FORTH ON THE REVERSE OF THIS AGREEMENT ARE INCORPORATED HEREIN AND ARE FULLY APPLICABLE AS THOSE SET FORTH ON THE FRONT SIDE OF THIS AGREEMENT.

SELLER: Clayton Homes PURCHASER: _____

DATE: _____ 20 _____

AUTHORIZED REPRESENTATIVE OF DEALER

This agreement is for the protection of both parties. No changes permitted!
ADDITIONAL TERMS AND CONDITIONS

It is further understood and agreed:

The order on the reverse side hereof is subject to the following terms and conditions, all of which have been mutually agreed upon.

1. Purchaser assumes all responsibility for the proper preparation of his property to both receive and locate the said manufactured home by TBD (date)

In the event an impediment not previously disclosed to the dealer requires hiring of extra labor and equipment, the customer herewith agrees to pay for all such additional costs.

In the event placement is not made in a standard mobilehome park, dealer will furnish up to N/A feet of plastic sewer line and N/A feet of water line without charge. Sewer must be stubbed out of ground, water line must be tapped and electric line connected to meter pole with proper receptacle within N/A feet of the electric box in or on home. All utility connections must be within the rear one third, on the left side of the manufactured home as required by the California Department of Housing and Community Development.

In the event the dealer is unable to effect hook-up of sewer, gas, water or electricity upon delivery due to non-availability, purchaser assumes all responsibility for the costs of connection and operation of above.

Purchaser assumes all responsibility for the proper preparation of his property to receive and locate the said unit. Purchaser agrees to pay transporter and/or dealer \$ TBD per man hour for any delay in delivering manufactured home to purchaser's chosen site caused by Purchaser not having all necessary site preparation ready thus causing a delay in transporting the manufactured home from the last state, county, or city road to site. If ingress roads from last paved state, county or city roads are too soft, steep, or narrow for towing vehicle to place manufactured home on site, and at the discretion of transporter and/or dealer it shall be the responsibility and expense of the Purchaser to hire necessary equipment and manpower to have the manufactured home placed on Purchaser's chosen site. Transporter and/or dealer shall not be liable in any way for physical damage incurred to either the exterior or interior of the above manufactured home or to any personal property which exists on or above the area required as access once the manufactured home leaves a designated developed road, street, or highway, however, transporter and/or dealer is liable for any damage that might occur while on state, county, or city road.

2. Parties understand that seller shall retain title to the manufactured home until payment in full of the entire purchase price whether or not possession of the manufactured home has been transferred to buyer. Retention of such title shall in no way relieve buyer from any obligations under the terms of this agreement, nor shall it require seller to incur any additional liability or obligation concerning this agreement for sale of the manufactured home.

3. In the event of default by purchaser upon any of the terms of this agreement and without notice to buyer, seller may declare the entire unpaid balance of this agreement immediately due and payable. Seller shall be entitled to all relief granted seller by law and choice of one remedy by seller shall not be deemed a waiver by seller of any other right or remedy which it has, but all of its remedies shall be cumulative and, shall include, in addition to any other rights or remedies to which seller is entitled under law the following: (i) to immediately take possession of the manufactured home (ii) to sell the same in accordance with California law applying the proceeds of said sale as required under California law.

4. Should the security represented by the manufactured home, in fact, be impaired, seller may sue buyer for the entire unpaid balance owing from buyer to seller on the contract.

5. Should there be substantial damage to the manufactured home upon repossession, buyer will be obligated for the difference between the amount owing to seller and amount obtained from any repossession sale.

6. The manufactured house herein shall remain personal property and will not be placed on a foundation system, become affixed to or become any part of any real property without the express written consent of seller until payment of the entire balance as set forth in this agreement. Failure to comply with this paragraph shall constitute a breach of this agreement giving rise to all the remedies made available to the seller as herein above set forth.

7. With regard to any trade-ins, buyer represents that he has fully disclosed the owner and all lien holders together with the amount of any lien upon said trade-in item. Should any lien not be listed or the amounts of same be inaccurate, buyer shall, as a condition of the completion of this agreement, place the seller in the same position had said representations in fact been true, which may include but shall not be limited to payment of any excess indebtedness owing on said trade-in.

8. In the event of delay in delivery of the manufactured home due to fire, strikes, acts of God or any other delay not occasioned by an action of seller such delay shall not result in either buyer being able to avoid completion of his contract or buyer being able to obtain damages against seller. Upon conclusion of such delay the agreement shall be completed by seller.

9. The parties understand that it may be necessary to obtain permits to move the manufactured home on the public highways and both parties shall take all actions necessary to effectuate same.

10. Any movement of the manufactured home by buyer from its designated location shall constitute a breach of this agreement, giving rise to all of the remedies made available to seller herein above set forth.

11. Buyer understands that the taxation of the manufactured home is local property taxation. Homes older than July 1980 may be in-lien tax.

12. The parties understand and agree that seller may transport and/or deliver and/or set up the manufactured home or buyer may directly deliver and set-up same or designate and supervise the delivery and set-up of same as more particularly set forth on the reverse side hereof. Only if home is going on a permanent foundation.

13. All liens, including secondary lien holders, shall be designated on the reverse side hereof.

14. Time is specifically declared to be the essence in this agreement.

15. Acceptance of partial or late payments called for herein does not waive, on seller's part, the right to receive all other payments on time and in full. No changes in any of the terms of this agreement will be valid unless made in writing and signed by both parties.

16. In the event a court of competent jurisdiction declares one or more of the provisions of this agreement to be invalid, the remaining terms of this agreement shall continue to be in full force and effect.

17. This agreement shall be binding upon and shall inure to the benefit of the parties hereto, their heirs, assigns and successors in interest. The parties, however, agree that buyer may not designate a new buyer at any time during the contract term without the express written consent of seller.

CLAYTON HOMES #1016
 3515 Santa Rosa Ave
 Santa Rosa, CA 95407
 Phone: (707) 588-2725 Fax: (707) 588-2730

2015

MANUFACTURED HOME RECEIPT FOR DEPOSIT

BY SIGNING THIS DOCUMENT, THE PURCHASER & DEALER ACKNOWLEDGE THAT:

1. The purchaser shall receive a copy of the purchase contract and receipt for deposit.
2. All portions of the purchase documents and receipt for deposit shall be completed prior to Purchaser's signing.
3. The amounts of the deposit, downpayment, or other category of funds required to be placed in escrow prior to closing, shall be specified to the purchaser and the purchaser is warned that the deposit may be withheld in escrow in case of a dispute between the purchaser and dealer.
4. The amounts of the deposit and downpayment shall be agreed upon by the purchaser and dealer and shall have been entered on the purchase documents and receipt for deposit prior to purchaser's signing.
5. An entire reprint of Sections 18035, 18035.1, and 18035.3 of the Health and Safety Code and Section 1797.3 of the Civil Code shall be handed to the purchaser as a part of this receipt.
6. Any oral promises or commitments that have been made are not binding unless they are in writing on the purchase documents. **(Buyer's Initials)**
7. This receipt is a warning notice that a warranty document complying with Section 1797.3 of the Civil Code shall be provided immediately after signing the purchase documents.
8. The terms and duration of any other warranty, not required by law, offered by the dealer shall be in writing.
9. If the purchaser has any complaints with respect to sales practices, delivery, warranty, or there matters related to the manufactured home or mobilehome, he or she may seek administrative relief from the Department of Housing & Community Development or legal relief in a court of competent jurisdiction.
10. The sale will not be complete until the escrow for the sale closes.
 For the sale of a manufactured home or mobilehome not subject to registration by the department, the dealer shall provide a statement of fact, in type not less than 6-point type size, containing the information specified in paragraphs (6), (7), (8), (9), and (10) of subdivision (a) as part of the purchase documents.
 Where the sale of a new or used manufactured home or mobilehome subject to registration under this part does not involve a dealer, the department, by regulation may require the seller and buyer to execute a receipt for deposit containing whatever information of the nature described in this section, the department deems appropriate.

ITEMIZATION OF PAYMENTS INTO ESCROW ACCOUNT

AGREED UPON AMOUNTS	TYPE OF PAYMENT CHECK, CASH OR OTHER	DATE RECEIVED BY DEALER	BUYER'S INITIALS	DATE TO ESCROW
\$ 1,000 1st DEPOSIT TOWARD PURCHASE				
\$ 9,000 2nd DEPOSIT TOWARD PURCHASE (IF ANY)	TBD	TBD	TBD	TBD
\$ 10,000 DESIGNATED DEPOSIT (IF ANY)	/	/	/	/
\$ TBD TOTAL DOWN PAYMENT INTO ESCROW	/	/	/	/

TOTAL PRICE/MANUFACTURED HOME ADDRESS TBD current base price \$155,411 20X52/47

ESCROW COMPANY'S NAME Fidelity National Title 707-544-1771 600 Bientennia

ESCROW COMPANY'S ADDRESS/PHONE NUMBER Way Ste 300 Santa Rosa, 95403

SPECIFIED OTHER PAYMENTS TO ESCROW INCLUDING ESCROW FEES

AMOUNT AND SPECIFIC ITEM	TYPE OF PAYMENT CHECK, CASH OR OTHER	DATES RECEIVED BY, DEALER	DATES sent if BY, DEALER	BUYER'S INITIALS AS NEEDED
\$ 800 ESCROW FEE	TBD	TBD	TBD	
\$ TBD SCHOOL IMPACT FEE	/	/	/	
\$ 175 HCD OTHER FEES	/	/	/	

DATE SIGNED

PURCHASE ORDER NO. 2015

BUYER'S SIGNATURE

BUYER'S ADDRESS

DEALER/SALESPERSON: Clayton Homes

SIGNATURE OF DEALER/SALESPERSON: /

Buyer acknowledges receipt of California New Manufactured Home Warranty Law. Please read pages 2-5 carefully. Buyer's Initials

M&M FORMS

"This publication is solely distributed by M&M Forms, any unauthorized duplication is strictly forbidden."

This publication contains the entire reprint of Section 18035, the Mobile Home Escrow Law, Section 18035.1, the Designated Deposit Law and Section 18035.3, the content of the purchase order / security agreement. These sections are in the Health & Safety Code of the laws of the State of California.

It also contains the entire reprint of Section 1797.3 of the Civil Code of the State of California as well as the Mobile Home Warranty Law.

CALIFORNIA LAW REQUIRES THAT EVERY DEALER, BOTH NEW AND USED (RESALE), SHALL GIVE A COPY OF EACH OF THESE SECTIONS IN THEIR ENTIRETY TO EVERY PURCHASER AND THAT THEY BE IN TYPE NOT LESS THAN 6 POINT TYPE SIZE..

SALES AND ESCROWS

\$18035. Manufactured home or mobilehome escrow account; escrow instructions; offer to purchase; notice of escrow opening or cancellation; liens; status report; release or transfer of lien; forfeiture foreescrow noncompliance; liability for violations; Tax clearance certificates.

(a) (1) For every transaction by or through a dealer to sell or lease with the option to buy a new or used manufactured home or mobilehome subject to registration under this part, the dealer shall execute in writing and obtain the buyer's signature on a purchase order, conditional sale contract, or other document evidencing the purchase contemporaneous with, or prior to, the receipt of any cash or cash equivalent from the buyer, shall establish an escrow account with an escrow agent, and shall cause to be deposited into that escrow account any cash or cash equivalent received at any time prior to the close of escrow as a deposit, downpayment, or whole or partial payment for the manufactured home or mobilehome or accessory thereto. Checks, money orders, or similar payments toward the purchase shall be made payable only to the escrow agent.

(2) The downpayment, or whole or partial payment, shall include an amount designated as a deposit, which may be less than, or equal to, the total amount placed in escrow, and shall be subject to subdivision (f). The parties shall provide for escrow instructions that identify the fixed amounts of the deposit, downpayment, and balance due prior to closing consistent with the amounts set forth in the purchase documents and receipt for deposit if one is required by Section 18035.1. The deposits shall be made by the dealer within five working days of receipt, one of which shall be the day of receipt.

(3) For purposes of this section, "cash equivalent" means any property, other than cash. If an item of cash equivalent is, due to its size, incapable of physical delivery to the escrow holder, the property may be held by the dealer for the purchase until close of escrow and, if the property has been registered with the department or the Department of Motor Vehicles, its registration certificate and, if available, its certificate of title shall be delivered to the escrow holder.

(b) For every transaction by or through a dealer to sell or lease with the option to buy a new manufactured home or mobilehome subject to registration under this part, the escrow instructions shall provided all of the following:

(1) That the original manufacturer's certificate of origin be placed in escrow.

(2) (A) That, in the alternative, either of the following shall occur.

(i) The lien of any inventory creditor on the manufactured home or mobilehome shall be satisfied by payment from the escrow account.

(ii) The inventory creditor shall consent in writing to other than full payment.

(B) For purposes of this paragraph, "inventory creditor" includes any person who is identified as a creditor on the manufacturer's certificate of origin or any person who places the original certificate of origin in escrow and claims in writing to the escrow agent to have a purchase money security interest in the manufactured home or mobilehome, as contemplated by Section 9107 of the Commercial Code.

(3) That the escrow agent shall obtain from the manufacturer a true and correct facsimile of the copy of the certificate of origin retained by the manufacturer pursuant to Section 18093.

(c) For every transaction by or through a dealer to sell or lease with the option to buy a used manufactured home or mobilehome subject to registration under this part, the escrow instructions shall provide:

(1) That the current registration card, all copies of the registration cards held by junior lineholders, and the certificate of title be placed in escrow.

(2) That, in the alternative, either of the following shall occur:

(A) (i) The registered owner shall acknowledge in writing the amount of the commission to be received by the dealer for the sale of the manufactured home or mobilehome, and (ii) the registered owner shall release all of its ownership interests in the manufactured home or mobilehome either contemporaneously upon the payment of a specified amount from the escrow account or at the close of the escrow where the buyer has executed a security agreement approved by the registered owner covering the unpaid balance of the purchase price.

(B) (i) The dealer shall declare in writing that the manufactured home or mobilehome is its inventory, (ii) the registered owner shall acknowledge in writing that the purchase price relating to the sale of the manufactured home or mobilehome to the dealer for resale has been paid in full by the dealer, (iii) the current certificate of title shall be appropriately executed by the registered owner to reflect the release of all its ownership interests, and (iv) the dealer shall release all of its ownership interests in the manufactured home or mobilehome either contemporaneously upon the payment of a specified amount from the escrow account or at the close of escrow where the buyer has executed a security agreement approved by the dealer covering the unpaid balance of the purchase price.

(3) That, in the alternative, the legal owner and each junior lienholder, respectively, shall do either of the following:

(A) Release his or her security interest or transfer its security interest to a designated third party contemporaneously upon the payment of a specified amount from the escrow account.

(B) Advise the escrow agent in writing that the new buyer or the buyer's stated designee shall be approved as the new registered owner upon the execution by the buyer of a formal assumption of the indebtedness secured by his or her lien approved by the creditor at or before the close of escrow.

(d) For every transaction by or through a dealer to sell or lease with the option to buy a used manufactured home or mobilehome subject to registration under this part:

(1) The dealer shall present the buyer's offer to purchase the manufactured home or mobilehome to the seller in written form signed by the buyer. The seller, upon accepting the offer to purchase, shall sign and date the form. Copies of the fully executed form shall be presented to both the buyer and seller, with the original copy retained by the dealer. Any portion of the form that reflects the commission charged by the dealer to the seller need not be disclosed to the buyer.

(2) The escrow agent, upon receipt of notification from the dealer that the seller has accepted the buyer's offer to purchase and receipt of mutually endorsed escrow instructions, shall, within three working days, prepare a notice of escrow opening on the form prescribed by the department and forward the completed form to the department with appropriate fees. If the escrow is cancelled for any reason before closing, the escrow agent shall prepare a notice of escrow cancellation on the form prescribed by the department and forward the completed form to the department.

(3) (A) The escrow agent shall forward to the legal owner and each junior lienholder at their addresses shown on the current registration card a written demand for a lien status report, as contemplated by Section 18035.5, and a written demand for either an executed statement of conditional lien release or an executed statement of anticipated formal assumption, and shall enclose blank copies of a statement of conditional lien release and a statement of anticipated formal assumption on forms prescribed by the department. The statement of conditional lien release shall include, among other things, both of the following:

(i) A Statement of the dollar amount or other conditions required by the creditor in order to release or transfer its lien.

(ii) The creditor's release or transfer of the lien in the manufactured home or mobilehome contingent upon the satisfaction of those conditions.

(B) The statement of anticipated formal assumption shall include, among other things, both of the following:

(i) A statement of the creditor's belief that the buyer will formally assume the indebtedness secured by its lien pursuant to terms and conditions which are acceptable to the creditor at or before the close of escrow.

The creditor's approval of the buyer or his or her designee as the registered owner upon the execution of the formal assumption.

(4) Within five days of the receipt of the written demand and documents required by paragraph (3), the legal owner or junior lienholder shall complete and execute either the statement of conditional lien release or, if the creditor has elected to consent to a formal assumption requested by a qualified buyer, the statement of anticipated formal assumption, as appropriate, and prepare the lien status report and forward the documents to the escrow agent by first-class mail. If the creditor is the legal owner, the certificate of title in an unexecuted form shall accompany the documents. If the creditor is a junior lienholder, the creditor's copy of the current registration card in an unexecuted form shall accompany the documents.

If either of the following events occur, any statement of conditional lien release or statement of anticipated formal assumption executed by the creditor shall become inoperative, and the escrow agent shall thereupon return the form and the certificate of title or the copy of the current registration card, as appropriate, to the creditor by first-class mail:

(A) The conditions required in order for the creditor to release or transfer his or her lien are not satisfied before the end of the escrow period agreed upon in writing between the buyer and the seller or, if applicable, before the end of any extended escrow period as permitted by subdivision (g).

(B) The registered owner advises the creditor not to accept any satisfaction of his or her lien or not to permit any formal assumption of the indebtedness and the creditor or registered owner advises the escrow agent in writing accordingly.

(6) If a creditor willfully fails to comply with the requirements of paragraph (4) within 21 days of the receipt of the written demand and documents required by paragraph (3), the creditor shall forfeit to the escrow agent three hundred dollars (\$300), except where the creditor has reasonable cause for noncompliance. The three hundred dollars (\$300) shall be credited to the seller, unless otherwise provided in the escrow instructions. Any penalty paid by a creditor under this paragraph shall preclude any civil liability for noncompliance with the Section 18035.5 relating to the same act or omission.

(e) For every transaction by or through a dealer to sell or lease with the option to buy a new or used manufactured home or mobilehome, the escrow instructions shall specify one of the following:

(1) Upon the buyer receiving delivery of an installed manufactured home or mobilehome on the site and the manufactured home or mobilehome passing inspection pursuant to Section 18613 or after the manufactured home or mobilehome has been delivered to the location specified in the escrow instructions when the installation is to be performed by the buyer, all funds in the escrow account other than escrow fees and amounts for accessories not yet delivered, shall be disbursed. If mutually agreed upon between buyer and dealer, the escrow instructions may specify that funds be disbursed to a government agency for the payment of fees and permits required as a precondition for an installation acceptance or certificate of occupancy, and the information that may be acceptable to the escrow agent.

(2) Upon the buyer receiving delivery of an installed manufactured home or mobilehome not subject to the provisions of Section 18613 with delivery requirements as mutually agreed to and set forth in the sales documents, all funds in the escrow account, other than escrow fees, shall be disbursed.

(f) Upon receiving written notice from a party to the escrow of a dispute, the escrow agent shall inform the party of his or her right to hold funds in escrow by submitting a written request to hold funds in escrow. Upon receipt by the escrow agent of a party's written request to hold funds in escrow, all funds denoted as deposit shall be held in escrow until a release is signed by the disputing party, or pursuant to new written escrow instructions signed by the parties involved, or pursuant to a final order for payment or division by a court of competent jurisdiction. Any other funds, other than escrow fees, shall be returned to the buyer or any person, other than the dealer or seller, as appropriate. **At the opening of escrow, the escrow agent shall give notice of the right to request that funds be held in escrow pursuant to this subdivision.**

(g) Escrow shall be for a period of time mutually agreed upon, in writing, by the buyer and the seller. However, the parties may, by mutual consent, extend the time, in writing, with notice to the escrow agent.

(h) No dealer or seller shall establish with an escrow agent any escrow account in an escrow company in which the dealer or seller has more than a 5 percent ownership interest.

(i) The escrow instructions may provide for the proration of any local property tax due or to become due on the manufactured home or mobilehome, and if the tax, or the license fee imposed pursuant to Section 18115, or the registration fee imposed pursuant to Section 18114, is delinquent, the instructions may provide for the payment of the taxes or fees, or both, and any applicable penalties.

(j) For every transaction by or through a dealer to sell or lease with the option to buy a new or used manufactured home or mobilehome that is subject to inspection pursuant to Section 18613 and for which it is stated, on the face of the document certifying or approving occupancy or installation, that the issuance of the document is conditioned upon the payment of a fee, charge, dedication, or other requirement levied pursuant to Section 53080 of the Government Code, the escrow instructions shall provide that the payment of that fee, charge, dedication, or other requirement be made to the appropriate school district upon the close of escrow.

(k) No agreement shall contain any provision by which the buyer waives his or her rights under this section, and any waiver shall be deemed contrary to public policy and shall be void and unenforceable.

(l) If a portion of the amount in the escrow is for accessories, then that portion of the amount shall not be released until the accessories are actually installed.

(m) Upon opening escrow on a used manufactured home or mobilehome which is subject to local property taxation, and subject to registration under this part, the escrow officer may forward to the tax collector of the county in which the used manufactured home or mobilehome is located, a written demand for a tax clearance certificate, if no liability exists, or a conditional tax clearance certificate if a tax liability exists, to be provided on a form prescribed by the office of Controller. The conditional tax clearance certificate shall state the amount of the tax liability due, if any, and the final date that amount may be paid out of the proceeds of escrow before a further tax liability may be incurred.

(1) Within five working days of receipt of the written demand for a conditional tax clearance certificate or a tax clearance certificate, the county tax collector shall forward the conditional tax clearance certificate or a tax clearance certificate showing no tax liability exists to the requesting escrow officer. In the event the tax clearance certificate's or conditional tax clearance certificate's final due date expires within 30 days of date of issuance, an additional conditional tax clearance certificate or a tax clearance certificate shall be completed which has a final due date of at least 30 days beyond the date of issuance.

(2) If the tax collector on which the written demand for a tax clearance certificate or a conditional tax clearance certificate was made fails to comply with that demand within 30 days from the date the demand was mailed, the escrow officer may close the escrow and submit a statement of facts certifying that the written demand was made on the tax collector and the tax collector failed to comply with that written demand within 30 days. This statement of facts may be accepted by the department in lieu of a conditional tax clearance certificate or a tax clearance certificate, as prescribed by subdivision (a) of Section 18092.7, and the transfer of ownership may be completed.

(3) The escrow officer may satisfy the terms of the conditional tax clearance certificate by paying the amount of tax liability shown on the form by the tax collector out of the proceeds of escrow on or before the date indicated on the form and by certifying in the space provided on the form that all terms and conditions of the conditional tax clearance certificate have been complied with.

(n) This section creates a civil cause of action against a buyer or dealer or other seller who violates this section, and upon prevailing, the plaintiff in the action shall be awarded actual damages, plus an amount not in excess of two thousand dollars (\$2,000). In addition, attorney's fees and court costs shall also be awarded a plaintiff who prevails in the action.

THE DEPOSIT LAW

§ 18035.1 Receipt for deposit; contents.

(a) As a part of the documents executed for every transaction by or through a dealer to sell or lease with the option to buy a new or used manufactured home or mobilehome, the dealer and purchaser shall sign a receipt for deposit, a copy of which shall be provided to the purchaser and a copy shall be retained by the dealer for not less than three years. It shall state at least the following in type not less than 6-point type size.

(1) A statement that the purchaser shall receive a copy of the purchase contract and receipt for deposit.

(2) A statement that all portions of the purchase documents and receipt for deposit shall be completed prior to obtaining the purchaser's signature.

(3) A statement of the specific amounts of the deposit, downpayment, or other category of funds required to be placed in escrow prior to closing, and a warning that the deposit may be withheld in escrow in case of a dispute between the purchaser and the dealer.

(4) A statement that the amounts of the deposit and downpayment shall be agreed upon by the purchaser and dealer and shall have been entered on the purchase documents and receipt of deposit prior to the purchaser's signing.

(5) Sections 18035, 18035.1, and 18035.3 of this code and Section 1797.3 of the Civil Code reprinted in their entirety.

(6) A statement that any oral promises or commitments that have been made are not binding unless they appear in writing on the purchase documents.

(7) A warning that a warranty document complying with Section 1797.3 of the Civil Code shall be provided to the purchaser of a new manufactured home or mobilehome immediately after signing the purchase documents.

(8) A statement that the terms and duration of any other warranty, not required by law, offered by the dealer shall be in writing.

(9) A statement that if the purchaser has any complaints with respect to sales practices, delivery, warranty, or other matters related to the manufactured home or mobilehome, he or she may seek administrative relief from the department or legal relief in a court of competent jurisdiction.

(10) A statement that the sale will not be complete until the escrow for the sale closes.

(b) For the sale of a manufactured home or mobilehome not subject to registration by the department, the dealer shall provide a statement of fact, in type not less than 6-point type size, containing the information specified in paragraphs (6), (7), (8), (9), and (10) of subdivision (a) as part of the purchase documents.

© Where the sale of a new or used manufactured home or mobilehome subject to registration under this part does not involve a dealer, the department, by regulation, may require the seller and buyer to execute a receipt for deposit containing whatever information of the nature described in this section, the department deems appropriate.

PURCHASE DOCUMENT

§ 18035.3 Purchase documents; contents; disciplinary action for failure to provide disclosures.

(a) For every sale by a dealer of a new or used manufactured home or mobilehome, either the purchase order, conditional sale contract, or other document evidencing the purchase thereof, or any attachment to such a purchase document signed and dated by the purchaser, shall contain the following:

(1) A description of the manufactured home or mobilehome, a description and the cash price of each accessory, structure, or service included with the purchase, and the total cash price for the purchase. The statement shall also state whether the purchase price includes or excludes the towbar, wheels, wheel hubs, tires, and axles and, if they are not included in the purchase price, the price of each shall be listed.

(2) The amount, if any, charged by the dealer for documentary preparation and, if a documentary preparation charge is imposed, a notice advising the purchaser that the charge is not a governmental fee.

(3) A notice in type no smaller than 8point that complaints concerning the purchase shall be referred to the dealer and, if the complaint is not resolved, may be referred to the Department of Housing and Community Development, Division of Codes and Standards, Occupational Licensing, P. O. Box 278690, Sacramento, CA 95827-8690. Phone number 1 800-952-8356.

(4) A notice, in at least 10point bold type reading as follows:

(A) Do NOT sign the purchase agreement before you read it or if it contains any blank spaces to be filled in.

(B) You are entitled to a completely filled-in copy of that agreement and, if purchasing a manufactured home or mobilehome covered by a warranty, a copy of the warranty.

(5) The name, business address, and contractor's license number of the licensed contractor whom the dealer certifies as performing the installation of the manufactured home or mobilehome pursuant to subdivision (c) Section 7026.2 of the Business and Professions Code.

(6) The disclosures required by this subdivision need not be contained in the same document.

(b) A failure to disclose pursuant to this section shall not be the basis for rescission of a conditional sale contract.

(c) Notwithstanding any other provision of this part to the contrary, a failure to provide the disclosures specified in paragraph (5) of subdivision (a) is a ground for disciplinary action and not a criminal offense.

(d) If the dealer is also licensed as a real estate broker, the sale of a manufactured home or mobilehome being installed on a foundation system pursuant to Section 18551 may be included in the purchase document for the underlying real property, provided that the requirements of this section are met.

WARRANTIES ON NEW MANUFACTURED HOMES/MOBILEHOMES

CHAPTER 3. MOBILEHOME WARRANTIES

1797 Mobile homes covered by warranty

All new mobilehomes and manufactured homes sold to a buyer shall be covered by the warranty set forth in this chapter.

1797.1 Definitions:

As used in this chapter

1. (a) "Contractor" means any person who is a general building contractor within the meaning of Section 7057 of the Business and Profession Code.
2. (b) "Dealer" means any person who is a dealer within the meaning of Section 18002.6 of the Health and Safety Code.
3. (c) "Mobilehome" and "manufactured home" have the meanings, respectively, defined in Sections 18007 and 18008 of the Health and Safety Code.
4. (d) "Substantial defects in material and workmanship" means defects objectively manifested by broken, ripped, cracked, stained, or missing parts or components, or workmanship resulting in improper function of materials, components, appliances, or systems as installed or manufactured by the dealer or manufacturer.

1797.2 Application of warranty to manufacturer, contractor, and dealer.

- (1) (a) The warranty provided for in this chapter shall apply to the manufacturer of the mobilehome or the manufactured home as well as to the contractor or dealer who sells the mobilehome or the manufactured home to the buyer. The warranty shall cover the electrical, plumbing, heating, cooling, fire safety, and structural systems, and all appliances of the mobilehome or manufactured home as installed or manufactured by the contractor, dealer, or manufacturer.
- (2) (b) Where a manufacturer sells a mobilehome or manufactured home directly to a city, city and county, or other public agency pursuant to the exception established in Section 18015.7, the manufacturer shall be responsible for providing the warranty required by this chapter.

§ 1797.3 Required Written Warranty; contents

The mobile home/manufactured home warranty from the contractor, manufacturer, or dealer to the buyer shall be set forth in a separate written document that reprints all of the provisions of this chapter and shall be delivered to the buyer by the contractor or dealer at the time the contract of sale is signed, and shall contain, but is not limited to, the following terms:

1. (a) That the mobilehome or manufactured home is free from any substantial defects in materials or workmanship.
2. (b) That the contractor, manufacturer, or dealer or any or all of them shall take appropriate corrective action at the site of the mobilehome or manufactured home in instances of substantial defects in materials or workmanship which become evident within one year from the date of delivery of the mobilehome or manufactured home to the buyer, provided the buyer or his or her transferee gives written notice of those defects to the contractor, manufacturer, or dealer at their business address not later than 1 year and 10 days after the date of delivery.
3. (c) That the manufacturer and the contractor or dealer shall be jointly and severally liable to the buyer for the fulfillment of the terms of warranty, and that the buyer may notify either one or both of the need for appropriate corrective action in instances of substantial defects in materials or workmanship.
4. (d) That the address and phone number of where to mail or deliver written notices of defects shall be set forth in the document.
5. (e) That the one-year warranty period applies to the plumbing, heating, electrical, cooling, fire safety, and structural systems and all appliances of the mobilehome or manufactured home.
6. (f) That while the manufactures of any or all appliances may also issue their own warranties, the primary responsibility for appropriate corrective action under the warranty rests with the contractor or dealer and manufacturer, and the buyer should report all complaints to the contractor or dealer and manufacturer initially.
7. (g) That if corrective action taken by the manufacturer or the contractor or dealer fails to eliminate a substantial defect, then the material, system, appliance, or component shall be replaced in kind. As used in this subdivision, "replaced in kind" means
 - (1) replacement with the identical material, system, appliance, or component, and, if not available
 - (2) replacement with a comparable or better material, system, appliance, or component.

1797.4 Additional rights and privileges; Prohibited waiver.

The warranty under this chapter shall be in addition to and not in derogation of all other rights and privileges which the buyer may have under any other law or instrument. The contractor, manufacturer, or dealer shall not require the buyer to waive his or her rights under this chapter, and any such waiver of these rights shall be deemed contrary to public policy and shall be unenforceable and void.

1797.5 Display of copy of warranty.

Every contractor or dealer shall display a copy of all of the warranty provisions required by this chapter. The copy of the warranty provisions required by this chapter shall be posted in each area where purchase orders and conditional sales contracts are written.

1797.6 Records required to be kept.

Manufacturers, contractors, and dealers shall keep records of all actions taken pursuant to this chapter including all correspondence to or from the buyer for a period of three years from the date of delivery.

1797.7 Deadline for correcting defects.

The contractor, dealer or manufacturer shall complete warranty service to correct all substantial defects within 90 days of receiving the buyer's written notice specified in subdivision (b) of Section 1797.3, unless there are circumstances which are beyond the control of the contractor, dealer, or manufacturer.



Clayton homes

FAIRPOINT 2452

2 BEDS | 2 BATH | 1,172 SQ.FT.

STARTING AT...

\$155,411*

Base price 20x52

FEATURED OPTIONS DOES NOT INCLUDE DELIVERY AND INSTALLATION. INSTALLED PRICES WILL BE HIGHER

- WIDTH STRETCH TO 23'8"
- OPT. 2 BEDROOM LAYOUT
- W.U.I PKG
- HERITAGE EXTERIOR PKG
- DECKING W/ PORCH
- WHITE MISSION CABINETS
- WHITE TILE BACKSPASH
- STAINLESS STEEL APPL PKG
- SOLID SURFACE SHOWER W/
- SOLID SURFACE TUB/SHWR
- SUN TUBES
- RECESSED CEILING
- CRAFTSMAN DOOR
- 24"X24" TRANSOM WINDOW \$ 53,74⁺

ADDITIONAL FEATURES!

THUMB LATCH DOOR HANDLE
6-DOOR LINEN CABINETS IN UTILITY ROOM
MATTE BLACK PULL DOWN KITCHEN FAUCET
GAS AND ELECTRIC DRYER PREP ONLY
HOSE BIB
WIRED AND BRACED FOR CEILING FAN (LR AND BEDS)
WIRE FOR A/C
S/N: 39826

TOTAL PRICE

~~\$199,995~~
\$209,160

WITH OPTIONS SHOWN

* Sales price consists of home only and does not include delivery, installation & destination charges or other costs such as taxes, title fees, insurance premiums, filing or recording fees, land or improvements to the land, optional home features, optional delivery or installation services, wheels and axles, community or homeowner association fees, or any other items not shown on your Sales Agreement, Retailer Closing Agreement, and related documents (your SA/RCA). If you purchase a home, your SA/RCA will show the details of your purchase. Homes available at the listed sales price will vary by retailer and state. Available only at participating Clayton Family of Brands retailers.

Lot Model # KS9826

CMH MANUFACTURING WEST, INC. - Sacramento

Page 1 of 2

Sold To: 010160
CMH HOMES, INC.
DBA: CLAYTON HOMES-SANTA ROSA
3515 SANTA ROSA AVE
SANTA ROSA, CA 95407

Retail Cust: STOCK
Approval No:
Financed By:
** COD **
PAID IN FULL PRIOR TO SHIP

Invoice No.: 39826AC

Run Number.: 575

Invoice Date: 11/21/2024

Year Built.: 2024

Approx.Sq.Ft: 1,178

P/O Number.: 531353

Serial No.: SAC039826CAABAC

Model #: 91FPT20523BH24

Model Series: FAIRPOINT

Model Name: FAIRPOINT 20523B

Ship To: 010160 CLAYTON HOMES-SANTA ROSA

HUD: NTA2278523 NTA2278524

Remit To: CMH MFG, INC.

P.O. BOX 791071

BALTIMORE, MD 21279-1071

Brand: CLAYTON

Drawing #: 9120523B

Opt. #	Description	Qty	Price	Opt. #	Description	Qty	Price
180209	HOME MODIFICATIONS			110110	6-DOOR LINEN/PANTRY CAB HARDWOOD	1	
180072	WIDTH STRETCH HOME 23'-8" FPT24523B	1			UTILITY		
	MODEL# FAIRPOINT 24523B			121631	SQUARE CABINET PULLS - BLACK	1	-
	***NOTE: PLAN 20523B BOTH STD				KITCHEN		
070006	OPT BEDROOM LAYOUT (PRE-APPROVED)	1		076502	KIT TOP HIMACS MIRAGE	1	-
	PRIMARY BEDROOM WARDROBES ARE				2-1/4" SELF EDGE		
	REPLACED BY 1-LARGE WALK IN CLOSET			076570	TILE SPLASH-WHITE/DOVE GRAY GROUT	1	
	ALT CONST.- HEAT PUMP WATER HEATER				INSTALLED TO BOTTOM OF RANGEHOOD		
	AC LETTER REQUIRED ON HOME THAT			077800	VINYL FLOOR DF 9656 (EURO OAK)	1	STD
	DEVIATE FROM HUD CODE REQUIREMENTS.			076651	MATTE BLACK PULL DOWN KIT FAUCET	1	
	ELECTRIC HEAT PUMP WATER HEATER			260017	APPL PKG STAINLESS GAS FS LEVEL 1	1	
	REQUIRED TO MEET NET ZERO ENERGY				STAINLESS: REFRIGERATOR-SIDE BY SIDE		
	HOME. AC LETTER # 22-01-AC				COUNTER DEPTH DISPENSER IN DOOR		
	PACKAGES				22CF RS22TS201SR/AA. RANGE-GAS SELF		
130244	EXTERIORS	1			CLEAN SEALED 5 BURNERS CONTINUOUS		
	W.U.I. 52' & UNDER FAIRPOINT				GRATE AIR FRY NX60A6511SS/AA		
	FIRE RESISTIVE EXTERIOR PKG.				MICROWAVE/RANGEHOOD- 1000W 1.9CF		
075400	**** 7/16 LP SMART SIDE ****				ME1DG6300SRAA. DISHWASHER-		
075600	EXTERIOR BODY- WHITE STONE	1	STD		3RD RACK 51DBA AUTO RELEASE		
075500	EXTERIOR TRIM-CRACKED PEPPER(BLACK)	1	STD		DW80CG4051SRAA. *SAMSUNG*		
075700	EXTERIOR FASCIA-CRACKED PEPPER(BLK)	1	STD		UTILITY ROOM		
	EXTERIOR ACCENT-CRACKED PEPPER(BLK)	1	STD	420021	CARRIER FURNACE GAS 40K STD.	1	STD
	***SHUTTERS AND PAINTED				UP TO 1620 SQ.FT.		
280056	WAINSCOT***				MODEL# N95ESM0401712A		
184663	SHINGLES GAF TIMBERLINE HDZ CHARCOAL	1	STD	077800	VINYL FLOOR DF 9656 (EURO OAK)	1	STD
130012	HERITAGE EXTERIOR PACKAGE	1		030015	PLUMB FOR GAS DRYER AND WIRE	1	
	BOARD & BATTEN 16"O.C. FDS & FEW	1			FOR ELECTRIC DRYER (BOTH)		
130077	FROM TOP OF WAINSCOT			030020	HOSE BIB - WET HALF	2	
130036	PAINTED WAINSCOT EXTERIOR FDS & FEW	1		270250	30AMP RHEEM HEAT PUMP WATER HEATER	1	-
130179	CORBEL 4" X 6" (EACH)	1			ELECTRICAL		
	HORIZONTAL GROOVE SHUTTERS FDS & FEW	1	STD	080054	ELECTRICAL CALCULATION FEE	1	
180025	WITH LEDGE BELOW.			080021	CEILING LIGHT MATTE BLACK ILO BN EA	2	
	BEACH HOUSE GRAY FIBERON (SQFT)	180			OVER WIRE AND BRACES IN BEDROOMS		
	DECKING WITH COVERED PORCH (SQ FT)			128888	DIMMER SLIDE/ROCKER SWITCH	1	
100016	ENTRY DOORS				GENERAL LIGHTING IN KITCHEN		
	THUMB LATCH DOOR HANDLE MATTE BLACK	1		080055	FREEZER RECEPT	1	
	INCLUDES DEADBOLT AND MATTE BLACK				UTILITY		
100025	REAR DOOR KNOB	1		080016	TV/PHONE COMBO BOX	2	
	CRAFTSMAN DOOR 36X6'8" ILO 6-PANEL			080045	WIRE FOR A/C (DROP UNDER PANEL BOX)	1	
	***** 2.5 TON MAX				PRIMARY BATH		
141048	WINDOWS			076605	P/BATH TOP HIMACS MIRAGE	1	STD
	24"X24" W-220 TRANSOM - EXTRA	3		076676	2-1/4" SELF EDGE		
	*****				BLACK FAUCETS, TP, TOWEL BAR-1 SINK	1	
	A-1/2 REW CENTERED ON RECESS				INCLUDES: LAVY FAUCET, TUB/SHOWER		
	CEILING				OR SHOWER DIVERTER, TP, TOWEL BAR,		

	INSTALL AT 94" HEADER						
140040	SUN TUBE	2					

	(1) HALLWAY						
	(1) PRIMARY WARDROBE						
140035	RELOCATE WINDOW	1					

	A-1/2 PRIMARY REW TO A-1/2						
	SIDEWALL PRIMARY BEDROOM						

280086	CABLES & DORMERS	2					
	RECESSED CEILING W/SQUARE CORNERS						
	AND CROWN MOLDING IN RECESSED AREA-						
	UP TO 20'.						

	LIVING ROOM & PRIMARY BEDROOM						
028095	FLUSH DORMER 16 FT. DW	1					

076030	CABINETRY	1					
	WHITE MISSION CAB DOORS ILO STAINED						
	THIS IS AN UPGRADE TO A PKG						

(Continued on Page 2)

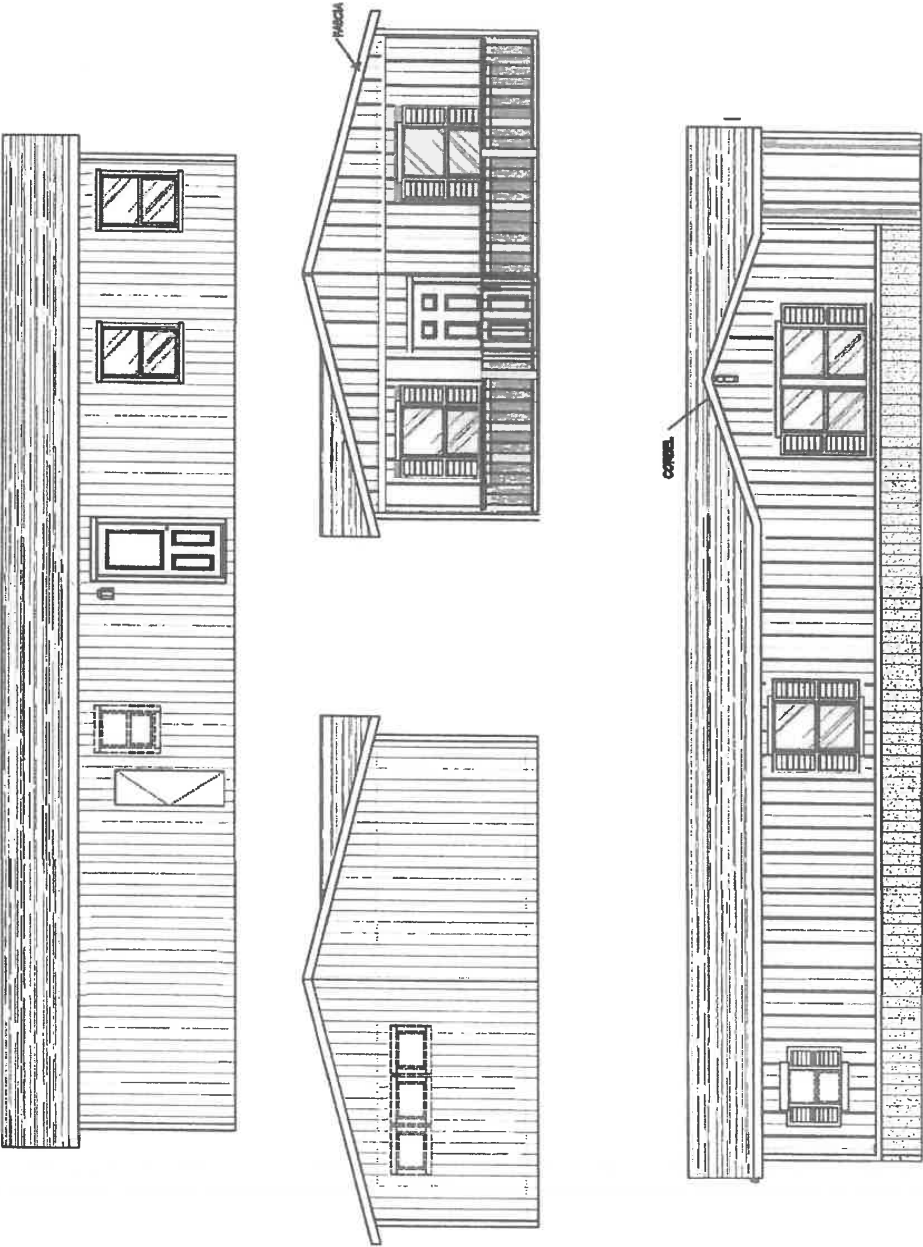
CMH MANUFACTURING WEST, INC. - Sacramento

Page 2 of 2

Sold To: 010160 CMH HOMES, INC. DBA: CLAYTON HOMES-SANTA ROSA 3515 SANTA ROSA AVE SANTA ROSA, CA 95407		Invoice No.: 39826AC Run Number: 575 Invoice Date: 11/21/2024 Year Built: 2024 Approx. Sq. Ft.: 1,178 P/O Number: 531353 Serial No.: SAC039826CAABAC Model #: 91FPT20523BH24 Model Series: FAIRPOINT Model Name: FAIRPOINT 20523B Ship To: 010160 CLAYTON HOMES-SANTA ROSA HUD: NTA2278523 NTA2278524 HUD:		Remit To: CMH MFG, INC. P.O. BOX 791071 BALTIMORE, MD 21279-1071 Sls Rep: Doug W Rogers Brand: CLAYTON Drawing #: 9120523B	
Retail Cust: STOCK Approval No: Financed By: ** COD ** PAID IN FULL PRIOR TO SHIP					

Opt. #	Description	Qty	Price	Opt. #	Description	Qty	Price
077800 270128	AND TUB FAUCET (IF APPLICABLE) VINYL FLOOR DF 9656 (EURO OAK) GRAB BAR - STAINLESS STEEL 36" ***** HORIZONTAL REAR WALL *****	1 1	STD		BOARD (MDF) MATERIALS ARE IN COMPLIANCE WITH THE CARB PHASE 2 FORMALDEHYDE EMISSIONS STANDARDS IN CCR 93120.2		
271145	SOLID SURFACE SHOWER MIRAGE INCLUDES FIBERGLASS PAN, MOISTURE RESISTANT SHETROCK BEHIND SHOWER & INCLUDES CLEAR SHOWER ENCLOSURE MATTE BLACK BARN SHOWER DOOR	1			COLORS		
270049	GUEST BATH G/BATH TOP HIMACS MIRAGE 2-1/4" SELF EDGE BLACK FAUCETS, TP, TOWEL BAR-1 SINK INCLUDES: LAVY FAUCET, TUB/SHOWER OR SHOWER DIVERTER, TP, TOWEL BAR, AND TUB FAUCET (IF APPLICABLE) VINYL FLOOR DF 9656 (EURO OAK) SOLID SURFACE TUB/SHOWER MIRAGE INCLUDES PORCELAIN STEEL TUB AND MOISTURE RESISTANT SHETROCK BEHIND TUB/SHOWER. ENCLOSURE IS EXTRA. ROBE/TOWEL HOOK IPO TOWEL BAR	1 1 1 1 1	- STD	070900	OTHER OPTIONS EBUILT GAS ***DOE CERTIFIED ZERO ENERGY READY HOME*** SOLAR AND WIND READY. HIGH EFFECIENCY SMART COMFORT GAS FURNACE. ARGON GAS LOW-E WINDOWS. ECOBEE SMART THERMOSTAT. ENERGY STAR DISHWASHER AND REFRIGERATOR. (IF ORDERED) PFISTER WATER SAVING BATHROOM FIXTURES. LED LIGHTING. INSULATED EXTERIOR DOORS. ZERO READY INSULATION PACKAGE. SEALE DUCT SYSTEM. WHOLE HOUSE VENTILATION SYSTEM. ENERGY STAR VENTILATION FANS.	1	-
370001	ADDITIONAL BATH				SPECIAL INSTRUCTIONS LOT MODEL 3515 SANTA ROSA AVE SANTA ROSA, CA. 95407		
020123 020111 022334 020093	FLOOR COVERINGS CARPET TRUE SPIRIT TRUFFLE 701 5-1/4" COLONIAL BASEBORDS ILO 3-1/2 7/16" 8 LB REBOND CARPET PAD-PER LF ENTRY VINYL DF 9656 (NATURAL OAK) **** SHIP LOOSE FOR ON SITE INSTALLATION AT MARRIAGE LINE.	71 1 142 1	STD				
	FIREPLACES						
100148	INTERIOR DOORS LEVER DOOR KNOBS-MATTE BLACK (EA) INCLUDES MATTE BLACK HINGES, DOOR STOPS AND WARDROBE CLOSET PULLS	10					
075900 150003	MISCELLANEOUS STD INTERIOR WALLS - SWISS COFFEE DOUBLE CLOSET SHELF PER WALL ***** PRIMARY WARDROBE LONG WALL *****	1 1	STD				
150417 200015 200005 290001 340126 185000	SHIP LOOSE SHIP LOOSE 1/4 RND CABINET TRIM 10' EXTRA EXTERIOR BODY PAINT 5 GALLONS EXTRA INTERIOR PAINT 5 GALLONS SHIP LOOSE ENTRY LINO SHIP LOOSE 5'X5' ENTRY LINO SHIP LOOSE CONTEMPORARY EXT LIGHT SHIPLOOSE 2"X4"X14' ROUGH SAWN TRIM HERITAGE EXTERIOR CLOSE UP MATERIAL	5 1 1 1 1 1	- - - -				
290006	OTHER TILE & GROUT NON-WARRANTABLE ITEMS ** MFG'S WARRANTY DOES NOT COVER GROUT SEPERATION OR CRACKING. *RE-GROUTING WALLS, FLOORS AND BATH FIXTURES AS NEEDED IS PART OF THE INSTALLATION OF THE HOME & EXTRA GROUT WAS SHIPPED FOR THIS PURPOSE. *HIGH QUALITY GROUT SEALER NEEDS TO BE APPLIED ON SITE AND REMAIN PART OF ROUTINE MAINTENANCE. BLEACH BASE CLEANERS ARE NOT RECOMMENDED. WHERE USED IN THE FABRICATION OF THIS HOME, MEDIUM DENSITY FIBER-	1	-	(VEP)	Lot model sold as is. \$199,995 Includes CA. USE Tax, Requires 10K NON-REFUNDABLE DEPOSIT. Sold as is. Standard 1 year warranty excludes cosmetic.		
290010		1	STD				

Purchasers represent, to the best of their knowledge, that the Manufactured Home shall be used for the purpose intended.



rev/5011 00-28-47



STATE OF CALIFORNIA
BUSINESS, CONSUMER SERVICES AND HOUSING AGENCY
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
DIVISION OF CODES AND STANDARDS
MANUFACTURED HOUSING PROGRAM

NUMBER:

8867894

MANUFACTURER CERTIFICATE OF ORIGIN

☐ CHECK IF THIS IS A DUPLICATE MCO-ENTER ORIGINAL MCO NO.

MANUFACTURED HOME OR MULTIFAMILY MANUFACTURED HOME ☒ SFD (SINGLE FAMILY DWELLING) ☐ MFMH (MULTIFAMILY MANUFACTURED HOME)		NUMBER OF TRANSPORTABLE SECTIONS <u>2</u>			
COMMERCIAL MODULAR: OCCUPANCY GROUP					
MANUFACTURER NAME: CMH MANUFACTURING WEST, INC.		MANUFACTURER LICENSE NUMBER: MF1126458			
MANUFACTURER ADDRESS: 9998 OLD PLACERVILLE RD, SACRAMENTO, CA 95827 (Street) (City) (State) (Zip)		SUGGESTED RETAIL PRICE:			
MANUFACTURER TRADE NAME: CLAYTON	MODEL NAME AND/OR NUMBER: FAIRPOINT 91FPT20523BH24		DATE OF MANUFACTURE: 11/19/24		
NAME OF DEALER OR TRANSFEREE (OWNERSHIP TRANSFERRED TO): CLAYTON HOMES-SANTA ROSA		CALIFORNIA DEALER NUMBER OR TRANSFEREE DESIGNATION: DL1127000	DATE OF TRANSFER: 11/21/24		
DEALER OR TRANSFEREE ADDRESS: 3515 SANTA ROSA AVE, SANTA ROSA, CA 95407 (Street) (City) (State) (Zip)					
INVENTORY CREDITOR NAME:					
INVENTORY CREDITOR ADDRESS: (Street) (City) (State) (Zip)					
SECTION (1-5)	MANUFACTURER SERIAL NUMBER	HCD INSIGNIA OR HUD LABEL NUMBER	LENGTH (INCHES)	WIDTH (INCHES)	WEIGHT (POUNDS)
1	SAC039826CA AAC	NTA2278523	684	142	21,3
2	SAC039826CA BAC	NTA2278524	684	118	21,3
TRANSPORTER NAME: BENNETT TRUCK TRANSPORT					
TRANSPORTER ADDRESS: P.O. BOX 569, MCDONOUGH GA 30253 (Street) (City) (State) (Zip)					
DESTINATION FOR UNIT DESCRIBED ABOVE: CLAYTON HOMES-SANTA ROSA, 3515 SANTA ROSA AVE, SANTA ROSA, CA 95407 (NAME) (Street) (City) (State) (Zip)					
I certify under penalty of perjury under the laws of the State of California that the above facts are true and correct.					
Executed on <u>11/21/24</u> at <u>SACRAMENTO, SACRAMENTO, CA</u> (Date) (City) (County) (State)					
SIGNATURE OF AUTHORIZED AGENT:					

DISTRIBUTION:

ORIGINAL (PINK)
COPY 1 (WHITE)
COPY 2 (YELLOW)
COPY 3 (GOLDENROD)

FORWARD TO THE INVENTORY CREDITOR, UNLESS THERE IS NONE, THEN FORWARD TO THE PURCHASER (DEALER OR TRANSFEREE).
FORWARD TO THE DEPARTMENT AT P.O. BOX 278540, SACRAMENTO, CA 95827-6540, WITHIN FIVE (5) DAYS OF RELEASE.
DELIVER TO THE TRANSPORTER TO ACCOMPANY THE UNIT TO ITS DESTINATION.
TO BE RETAINED BY THE MANUFACTURER.

DIVISION OF CLAYTON MANUFACTURED HOUSING
9998 Old Placerville Rd Sacramento, CA 95827

INSULATION SPECIFICATIONS

THIS CLAYTON MANUFACTURED HOME, SERIAL NUMBER SAC039826CAABAC CONTAINS THE FOLLOWING INSULATION SPECIFICATIONS:

LOCATION	TYPE OF INSULATION	*THICKNESS	R VALUE
FLOOR	FIBERGLASS WOOL	7-1/2"	R-22
**EXTERIOR WALLS	FIBERGLASS WOOL	6-1/2"	R-19
***CEILING	BLOWN: LOOSE-FILL KNAUF	INSTALLED 11.32 " SETTLED 10.53"	R-38

*Insulation thickness and R-values listed are as certified by original manufacturer of the insulation prior to installation in the home. Once installed in the home, the insulation thickness and R values are reduced in areas of the floor, wall, and ceiling cavities due to compression and structural limitations. Electrical equipment and fixtures, plumbing, ductwork, and the home's structural limitations contribute to the compression of insulation.

**R19 wall insulation is 6.5" thick as provided by the insulation manufacturer, and is compressed to 5.5" to fit in homes that have a 2x6 wall cavity. The net R-value is reduced to R-17.8.

***The shape of truss rafters structurally limits the amount of insulation that can be applied in certain parts of the ceiling area. At the narrowest part of the truss rafter (near the exterior walls) insulation will be restricted. The depth and R-Value of the insulation will increase as the truss increases in volume up the slope of the roof. The total number of bags of insulation added to the ceiling area is not reduced. The bags of insulation that can not be added where there is a structural limitation are added into the ceiling cavity where the bags can be accommodated. In the upper part of the roof, where the depth of insulation is not restricted by the truss, the R-Value measurements are at or above the value listed in the above table.

Calculations conducted on the home to ensure conformance to energy efficiency standards take into consideration the limitations and compression of the insulation as mentioned above, and the overall insulative capacity of the home complies with the applicable building codes in effect when the home was built.

DATE _____ RETAILER SIGNATURE _____

I HEREBY UNDERSTAND THAT A COPY OF THIS FORM WILL BE INCLUDED WITH MY SALES CONTRACT:

DATE _____ CUSTOMER SIGNATURE _____

DISPLAY MODEL ACKNOWLEDGMENT AND AGREEMENT

If Buyer is purchasing a Display Model, the following terms and conditions are made a part of the Sale and/or Purchase Agreement between Buyer and Dealer:

Buyer acknowledges and understands that the home has been previously set up on the premises of Dealer, a manufactured housing show or at some other location, and has been used as a Display Model. As such, the home has been subject to weather conditions, cosmetic wear and tear, including, without limitation, carpet wear, scratches, dents, nicks, paint chips, fading, etc., as fully described below. In addition, Buyer acknowledges and understands that the home must be disassembled and transported to Buyer's home site and, further, such disassembly and transport will likely result in certain cosmetic and other damage to the home units. Excluding any previously mentioned cosmetic wear and tear to the home due to use as a Display Model, Dealer will be responsible for repairing any damage caused by disassembly and transport.

All applicable manufacturer's warranties will still apply as set forth in the manufacturer's warranty materials received by Buyer. Buyer specifically acknowledges that there have been no representations or warranties of any kind made by Dealer or any of its representatives regarding the applicable warranty, the condition of the home, its systems or any of the appliances that may be contained therein, other than as set forth in writing in the Sales and/or Purchase Agreement between Buyer and Dealer and this acknowledgment and release.

Buyer acknowledges that Dealer may have furnishings, wall decorations and similar display items in the Display Model that are not included in the purchase of the home unless listed separately on the Sales and/or Purchase Agreement between Buyer and Dealer.

To the fullest extent permitted by applicable law, Buyer is accepting the home in "AS IS" condition and without warranty, express or implied, with regard to each of the following items only:

- Exterior Paint AS IS
- Wear and Tear on Linoleum AS IS
- Scratches on Cabinets AS IS
- Wear and Tear on Carpet AS IS
- Scratches and Dents on Appliances AS IS
- Ordinary Wear and Tear on Roof AS IS
- Cosmetic Defects (Cuts, Chips and Cracks) AS IS
- Dents, Scratches and Discoloration of Interior and Doors AS IS

This acknowledgement and release does not alter or limit any structural warranty provided by the manufacturer, or any implied warranty that is not waivable under applicable law.

Buyer _____ Date _____

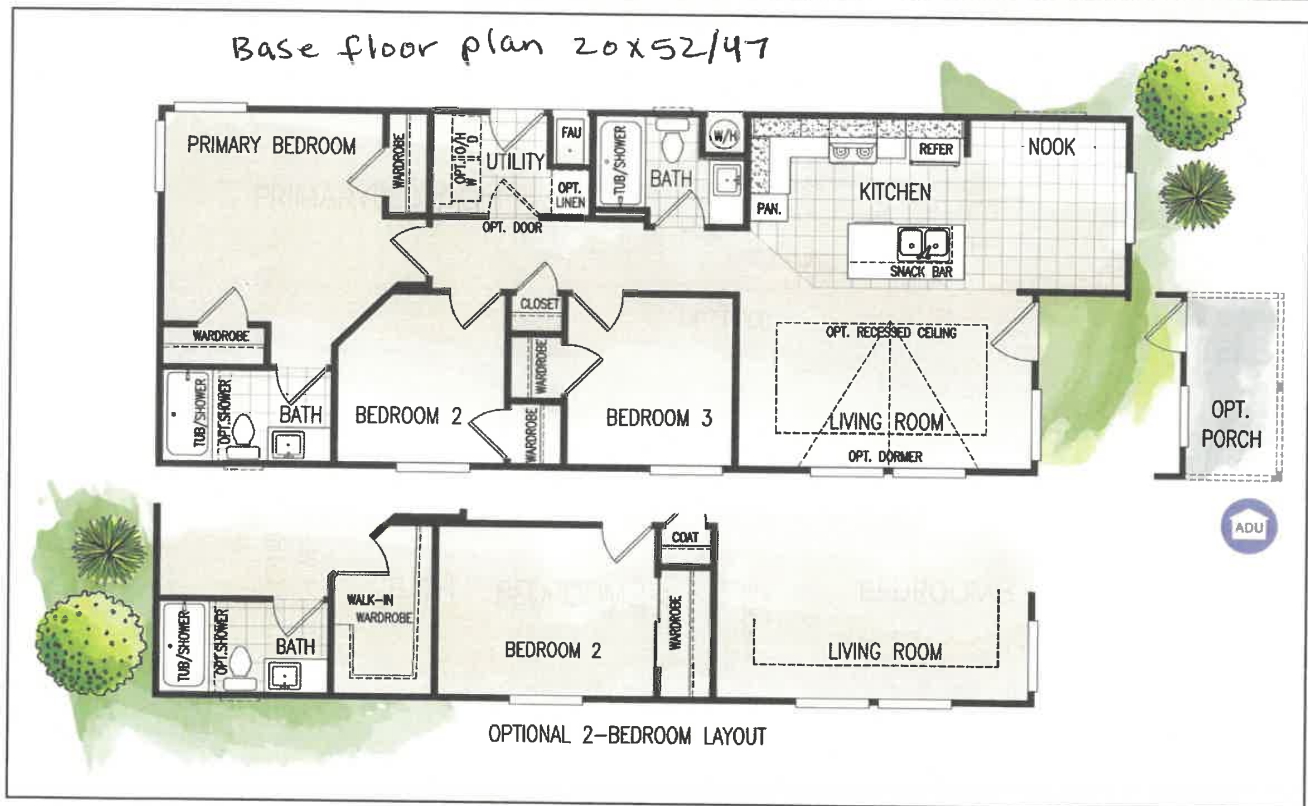
Buyer _____ Date _____

Modular, Manufactured, Mobile Homes For Sale Near Me

2/11/26, 9:40 AM



FAIRPOINT 2452
SAC039826CAABAC
2 beds • 2 baths
20x52 973 sq. ft.



(707) 588-2725

Monday - Friday: 9am to 5pm

Saturday: 9am to 5pm Sunday: Closed

CLAYTON HOMES-SANTA ROSA

3515 SANTA ROSA AVE
SANTA ROSA, CA 95407

<https://www.claytonhomesofnorthernca.com/homes/SAC039826CAABAC/brochure>

Page 1 of 2

FAIRPOINT

Home Collection

STANDARD SPECIFICATIONS

EXTERIOR

- 9' Sidewall with Flat Ceiling
- **CA Wildland Urban Interface Compliant (WUI)**
- LP Vertical Smart Side
- Z-Metal at bottom of vertical siding
- Exterior House Wrap
- 2" x 6" Exterior Walls 16" O.C.
- 2-Panel Horizontal Groove Shutters FEW & FDS (most locations)
- 2"x4" Rough Sawn Trim – REW & A1/2 Sidewall
- 2"x8" Rough Sawn Fascia
- 4/12 Roof Pitch - 20 Wide & Single Wides
- 3/12 Roof Pitch - 24, 27, 30 Wides
- 20# - 24" O.C. Trusses
- 1-1/2" LVL Engineered Ceiling Ridge Beam
- Dimensional Shingles
- Synthetic Roofing Underlayment
- 7/16" OSB Roof Sheathing
- 6" Nominal Sidewall Eaves - 12, 14, & 15 Wides
- 6" Front & Rear Overhangs - Single Wides
- 12" Nominal Sidewall Eaves - 20, 24, 27 Wides
- 10" Nominal Sidewall Eaves - 30 Wides
- 12" Front and Rear Overhang
- Ice Dam on Edge of Roof
- Floors 2"x6" 16" O. C.
- Floors 2"x8" 16" O.C. -14'-10" Floor Widths
- 5/8" OSB Floor Decking
- All Brake Axels if Over 14' Wide w/Eaves
- Insulation: R-22 Floor, R-19 Wall, R-38 Ceiling
- **eBuilt (Energy Star Certified)**

EXTERIOR DOORS

- 36"x80" 6-Panel Inswing Fiberglass Front Door
- 32" Inswing Fiberglass with 1/2-Light Window (per plan) Rear Door
- Round Doorknob With Deadbolt
- Sliding Glass Doors 6'x6'-8" (per plan)

WINDOWS

- Single Hung Windows
- White Vinyl Frame - Dual Pane w/Low -E
- Picture Framed Window Returns with 2-1/4" Colonial Trim
- Bathroom Windows Per Plan
- 2" Fauxwood Mini Blinds

CABINETRY

- Hardwood Mission Style Cabinet Doors (Gray or Mocha)
- Tall Overhead Cabinets in Kitchen

CABINETRY

- 2 Door Cabinet Above Refrigerator
- Rock Maple Interior Cabinet Finish with Back Paneling
- 3" Crown Molding on Overhead Cabinets
- Drawers Over Doors
- Hidden Hinges - Soft Close
- Ball Bearing Drawer Guides
- Choice of Pulls on Cabinet Doors & Drawers
- Bank of Drawers in the Kitchen

KITCHEN

- LG Solid Surface Hi-Macs Countertop & Backsplash with 2-1/4" Self Edge
- Solid Surface Sink - 50/50
- Brushed Nickel Package
- 30" Gas Range Stainless Steel - Manual Clean
- 30" Range Hood - Stainless Steel
- Energy Star Dishwasher - Stainless Steel
- Energy Star Refrigerator - Stainless Steel
- Plumb for Ice Maker w/recessed supply line box
- Garbage Disposal 1/2 HP
- Water Shut-off Valves at Sink

UTILITY ROOM

- High Efficiency Carrier Natural Gas/Propane Furnace
- 40 Gallon Gas Water Heater
- Plumb/Wire Washer (per plan)
- Wire for Electric Dryer (per plan)
- Metal Shut Off Valves at Washer
- Dryer Vent in Wall
- 2-Door Washer/Dryer Overhead Cabinet
- Furnace Air Return Opening in Wall (per plan)
- **Hose Bib at Rear**

ELECTRICAL

- 100 Amp Panel Box
- Ecobee Smart Thermostat
- Smoke Detectors Hard Wired w/Battery Backup
- Carbon Monoxide Detector Hard Wired w/Battery Backup
- Doorbell
- Exterior GFI Plug at Rear Door and Porch (per plan)
- Rocker Light Switches
- Contemporary Porch Light(s) or Ceiling LED on Recessed/Porch Doors
- LED Lights Through Out
- **Wire and Brace Ceiling for Ceiling Fan in Living Room & Primary Bedroom**
- Recessed Can Lights Living Room and P/Bed (4ea), G/Beds or Den (2ea)

BATHROOM(S)

- 36" High Sink Cabinet
- LG Solid Surface Hi-Macs Countertop & Backsplash with 2-1/4" Self Edge
- Rectangle Solid Surface Sinks(s)
- Brushed Nickel Package
- Drawer Bank in Primary Bathroom
- Drawer Bank or Drawer in Guest Bathroom
- Fiberglass Tub/Shower 60" (Per Plan)
- Ceiling Exhaust Fan
- 42" Tall Mirror w/ J-Rail & Clips
- Medicine Cabinet(s)
- Elongated Toilet
- Water Shut-off Valves at Sink(s) & Toilet(s)

FLOOR COVERINGS

- Plush Stain Resistant Carpet
- 3/8" 5lb. Carpet Pad
- Vinyl Flooring - Location Per Plan
- Baseboards – 3-1/4" Colonial Throughout
- Toe Kick Heat Registers in Kitchen and Bathroom(s)
- Entry Lino

INTERIOR DOORS

- 2-Panel Interior Passage & Wardrobe Doors
- Passage Door To Utility Room w/Air Return Above (per plan)
- Louvered Doors on Interior Furnace and Water Heater Access
- MDF Door Jambs
- Colonial Door Casing 2-1/4"
- Round Doorknobs - Brushed Nickel
- Wood Closet Shelf with Pole

INTERIOR

- 2"x4" Interior walls
- Tape and Textured Ceiling & Walls (1/2")
- Swiss Coffee Interior Wall & Ceiling Paint
- Mini Bullnose Corner (Most Areas)
- Silent Air Returns

Current standards Base price \$155,411 20x52/47

Specifications subject to change without notice or obligation



FY 26 thru FY 30

Capital Improvement Plan

St Helena, CA

Project # W26-03
Project Name Water Treatment Plant Modular Homes

Total Project Cost	\$390,671	Department	Public Works
Category	Water	Priority	High
Phase	Active	Status	Preliminary Design
Project Location	Water Treatment Plant	Expenditure Account	763-5030-

Description

This project replaces the deteriorated modular residence located at the City's Water Treatment Plant at 410 Crystal Springs Road. The structure, originally installed in 1980, historically provided onsite housing for plant operations staff, enabling repaid response to system alarms, after-hours operational issues, and emergency events. The residence was vacated in 2020 and is no longer habitable due to significant structural and mechanical deficiencies.

The project includes demolition and removal of the existing unit, design and installation of a replacement modular housing structure, and associated site improvements such as septic system design, utility connections, and required permitting. Public Works staff will perform portions of the design, permitting, and demolition work in-house to reduce costs.

Reestablishing onsite housing at the Water Treatment Plant supports operational resiliency, improves emergency response capabilities, and enhances recruitment and retention for certified operators. The replacement housing is anticipated to be procured and installed by March 2026.

Notes

- FY25** - Staff Presentation and discussion was completed at the City Council meeting on June 24, 2025.
- FY26** - Creation of CIP Project presented to City Council on December 9, 2025.
- FY26Q3 CC authorization to purchase modular unit on 3/24/26
- FY27** - anticipate project completion in FY27Q1

Expenditures	Prior	FY 26	FY 27	FY 28	FY 29	FY 30	Future	Total
3160 - Construction Contract	0	336,974	0	0	0	0	0	336,974
3170 - Contingency	0	33,697	0	0	0	0	0	33,697
3110 - Design	0	20,000	0	0	0	0	0	20,000
Total	0	390,671	0	0	0	0	0	390,671

Funding Sources	Prior	FY 26	FY 27	FY 28	FY 29	FY 30	Future	Total
561-Water Rate Revenues	0	390,671	0	0	0	0	0	390,671
Total	0	390,671	0	0	0	0	0	390,671



Request to Remove Consent Item 10.5 and Address Significant Cost Escalation

From Elaine de Man <elainede@sbcglobal.net>

Date Mon 3/23/2026 11:19 AM

To Public Comment <publiccomment@cityofsthelena.gov>

Subject: Request to Remove Consent Item 10.5 and Address Significant Cost Escalation

Dear Mayor and Members of the City Council,

I respectfully request that **Consent Item 10.5** be removed from the consent calendar and considered as a regular agenda item.

My primary concern is the **substantial increase in the project's cost—from approximately \$150,000 to over \$300,000**. A change of this magnitude is not routine and warrants public discussion, detailed explanation, and Council oversight.

Before any approval, I ask that staff clearly and specifically address the following:

1. Scope Changes

- What specific scope changes account for the increase?
- When were these changes identified?
- Who authorized the expansion of scope, and under what authority?
- Were these changes ever presented to the Council prior to this agenda?

2. Cost Transparency

- Please provide a line-item comparison between the original estimate and the current cost.
- Which categories (design, labor, materials, contingency, etc.) increased the most?
- How much of the increase is attributable to change orders versus revised assumptions?
- What percentage of the total is contingency, and what risks justify that amount?

3. Validity of the Original Estimate

- What level of design, engineering, or analysis supported the original \$150,000 estimate?
- Was that estimate based on bids, or was it conceptual?
- Who prepared the original estimate, and what assumptions were made?
- In hindsight, does staff consider that estimate to have been materially understated?

4. Procurement Process

- Was a competitive bidding or RFP process conducted at any stage?
- If not, why not—particularly given the scale of the cost increase?
- Have any contracts been amended or expanded beyond their original intent?
- Were any vendors selected through a non-competitive process?

5. Oversight and Controls

- At what point should a cost increase of this magnitude trigger removal from consent and require Council review?
- What internal controls exist to flag and manage significant cost overruns?
- Was this increase reviewed and approved by senior leadership prior to being placed on consent?

6. Broader Pattern and Accountability

Additionally, this item does not appear to be an isolated case and it raises broader concerns about:

- the accuracy of initial cost estimates,
- the management of project scope,
- and the transparency of procurement practices.

To better understand whether this reflects a systemic issue, I ask:

- How many projects in the past several years have experienced similar cost escalations?
- What steps has the City taken to improve cost estimation accuracy and project scoping?
- Is there a formal policy defining when projects must return to Council due to budget increases?

A project doubling in cost should not be treated as routine business under a consent calendar. Even if there are valid explanations, those explanations must be clearly presented and subject to public review.

Removing Item 10.5 from consent is not an accusation—it is a necessary step toward transparency, accountability, and maintaining public trust.

I respectfully urge the Council to:

1. Remove Item 10.5 from the consent calendar
2. Require a full staff report and presentation
3. Allow for public comment and Council deliberation prior to any decision

Thank you for your attention to this matter and your commitment to responsible governance.

Respectfully,

Elaine de Man



Fw: Failure Notice

From Colleen Gillaspy <cgillaspy59@yahoo.com>

Date Mon 3/23/2026 9:42 PM

To Public Comment <publiccomment@cityofsthelena.gov>

To the Mayor and City Council,

I understand there will be an evaluation of the (notice I did not use "our") City Manager, Anil Comelo, at this closed door session. It is my wish that he be removed from this position immediately. Enough is Enough.

I recently started to pay more attention to what is going on with our City. Mainly because I am frustrated that I cannot drink water coming out of my faucets. Next Door comments got me curious to what was really going on with the Art Installation. I wanted to hear 1st hand about this Art Project that was being voted on. I attended the Parks and Rec meeting last week and was appalled by what I heard from the city representatives. The Process was NOT followed! Cement pads (6-7 of the 13 proposed) were poured **before** the city council had even met about this. It appears Mr. Comelo made the agreement with the Artist. A contract, with ever changing amounts that the city would be responsible for and unclear information on several issues.

This alone is a just cause for removal. A it would be a Just removal.

Unfortunately there are several more. And this is just in the last few weeks! I met with Mr. Comelo last year, at my request, and he explained to me that the city was not broke (as people were stating on social media). I asked about his bonus that was in the works. He told me directly that he was not going to accept it. I advised that I thought that wise under the circumstances and showed good faith. I also suggested he get that word out to the community as I felt it was important. Low & behold he accepted the bonus. I was shocked. That was last year and I felt I gave him a fair chance to explain things. I was trying to base my opinion on my own interactions. HE LIED TO ME.

Now here we are, a year later and things have really gone out of control. I am not opposed to Art in our Town. That is not the issue. The backroom deal is! When someone tells you to take all 13 pieces or Nothing, well that would have been my 1st Red Flag. Still Mr. Comelo pressed on and started work. Then there is the Sidewalk/Gas line/trees cut down in front of Old City Hall. We all know the Saying "call before you dig". Come on! How ridiculous. You just can't make up this type of mistake. The Public Works employee needs to go also. Now that area is more of a mess and just in time for our 150th celebration. Then move on to Water, I want to be able to drink it. Plain and simple. This, in my opinion, should be number 1 priority. I have no trust in our City Manager. There should be town hall meetings. I feel he needs to hear from all of us. If he wants respect, he must give it too.

Next I'll move on to Item 10.2. The hiring of Leza Mikhail. I think someone other than Mr. Comelo should be vetting new hires. My concern in the contract is the comment that Telecommuting will be allowed. I say NO to that. It's part of the reason we are in this mess with Mr. Comelo. He does not live here and has no vested interest in the town other than a huge paycheck. I do not trust his word alone and the Telecommuting should be a hard NO from the City Council.

Next, 10.5 on the Agenda. The project manager asking for \$240,671 **additional funds** towards the purchase of a manufactured home. This needs to be removed from the Consent items and needs to be talked about in more details before that decision should be made. It states the City Manager negotiates a purchase agreement. NO NO NO
Someone is failing at their job if budgets and Bids are constantly being altered by this much money.

Our City deserves someone they can trust. I, for one, have lost trust in Mr. Comelo. I'm hoping our Mayor and city council will please listen. My wording in this email is not elegant. I'm upset as I write this. I'm new to being this involved but I cannot sit and do nothing. I've lived here 2 years (but have been visiting for over 30 years) I need to speak out. Tomorrow will be my 1st City Council meeting. I'm wanting to form my own opinion and see if the lack of respect is as apparent as I hear around town.

It's time to cut our losses with Mr. Comelo. It will save us money in the long run I'm sure and it will help to restore trust in our community.

Colleen Gillaspy
10 Del Rio Court
Saint Helena, CA



Item 10.5, Clayton Home for water treatment plant/budget increase resolution

From Celeste Neeley <neeleycc@gmail.com>

Date Tue 3/24/2026 11:07 AM

To City Clerk <cityclerk@cityofsthelena.gov>

To the Mayor and Members of the City Council:

I am writing to formally request that the consent calendar item authorizing the purchase and installation of a Clayton manufactured home at the Water Treatment Plant be PULLED for full public discussion. This item should not pass on consent. The dollar amounts involved, the budget overrun it represents, the unresolved policy questions it raises, and the department sponsoring it all demand that the Council give it the scrutiny it has not yet received.

The original allocated budget for this project was \$150,000. The resolution before the Council tonight asks for an additional \$240,671 — a 147% increase — bringing the total project cost to \$370,671. This is not a minor adjustment. This is a project that has nearly tripled in cost before a single foundation has been poured.

The Council and the public deserve a direct answer to a direct question: how did we get here? What was the basis for the original \$150,000 estimate? Clayton Homes is a well-established manufactured housing company with published product lines and regional representatives who provide detailed cost estimates. Bidding and estimating this type of project is not novel or complicated. If the original figure was developed without contacting a Clayton representative, without a site assessment, or without accounting for installation, utility connections, permits, and site preparation, then the \$150,000 was never a real budget — it was a placeholder, and the Council approved a placeholder without knowing it.

That is a planning failure, and it is consistent with the preliminary report from the modernization consultant, who documented a severe lack of management systems and situational awareness in this department — findings that, as of October 2025, had not been addressed.

The resolution authorizes the City Manager to execute the agreement and further delegates to the Director of Public Works the authority to approve construction change orders of up to 10% — on a project that has already demonstrated it cannot be estimated accurately. Ten percent of \$370,671 is another \$37,000 in potential expenditure with no further Council review. The Council would be granting expansive financial authority to the same department that produced this overrun in the first place, on the same project. That is not prudent oversight.

This project is proposed to be funded entirely from the Water/Wastewater Enterprise Fund. That fund exists to support the infrastructure and operations of water and wastewater systems — it is built from ratepayer revenues, not general tax receipts. The Council should require a formal legal and policy justification for why workforce housing for a staff member is an appropriate charge against enterprise

ratepayer funds rather than the General Fund. If the City is providing housing as an employment benefit or operational necessity, that is a personnel and general operations expense. Quietly absorbing it into the enterprise fund without explanation is not transparent accounting, and ratepayers are entitled to know why their utility fees are funding a home.

Beyond the budget and funding mechanics, this item raises fundamental policy questions that have not been put before the Council or the public:

Will the occupant pay rent? The City provides no other employee with free housing. If this dwelling is made available at no cost and with utilities covered, that is a significant compensation benefit that should be evaluated, priced, and disclosed as part of the total compensation package for this position. A nominal rent structure — even a below-market one — would establish the City is not simply giving away a \$370,000 asset as a job perk. What is the policy?

Why does this position require on-site housing? Wastewater treatment operations across California and the country are routinely managed with staff operating under on-call response protocols. Hospitals staff positions with response time standards of 30-45 minutes. Emergency response agencies operate on similar frameworks. What is the specific operational justification — in writing, with supporting data — that this particular facility requires a live-in operator rather than a reasonable on-call protocol?

Why has the City not been able to recruit locally or regionally? This raises its own questions about whether the City has made a genuine, sustained effort to recruit, train, and retain qualified wastewater operators from within a reasonable commute. Wastewater operator certification is an achievable credential with established training pathways. What recruitment effort has been made? What training investment has been made?

I am asking the Council to pull this item from the consent calendar and direct staff to return with the following before any approval is granted:

A full accounting of how the original \$150,000 estimate was developed, who developed it, and why it was presented to the Council without proper vendor or contractor input.

A formal legal and policy memo justifying the use of Water/Wastewater Enterprise funds for workforce housing rather than the General Fund.

A written rent and utilities policy for the proposed occupant, including the proposed monthly rate and how it was determined.

A documented operational justification for on-site housing versus an on-call response protocol, benchmarked against comparable facilities.

A workforce development plan addressing local and regional recruitment, certification training pathways, and a long-term staffing strategy for this position.

Consent calendar items are intended for routine, non-controversial matters requiring no deliberation. A \$370,671 expenditure with a 147% cost overrun, unresolved funding questions, no stated occupancy policy, and no long-term workforce plan is not routine. It is exactly the kind of item that erodes public trust when it passes without discussion in the middle of a consent calendar while residents are none the wiser.

The preliminary consultant report showed there is a severe lack of management systems and situational awareness in this department. Approving this item as presented — without answers to the questions above — would be the Council ratifying that assessment rather than challenging it.

Please pull this item. The community deserves better than a \$370,000 surprise buried in consent.

Respectfully submitted,

Celeste Neeley

St. Helena resident

March 24, 2026



Agenda Report to the City Council

Agenda Section: NEW BUSINESS

Department: Public Works

DATE:	March 24, 2026
FROM:	Joseph Leach, Assistant City Manager/Director of Public Works/City Engineer
SUBJECT:	Adopt a resolution accepting the St. Helena Streets Master Plan (March 2026) and directing staff to utilize the Plan to guide future capital improvement planning, grant applications, and transportation project implementation.
RECOMMENDED ACTION:	Adoption of the attached resolution.
PREVIOUS COUNCIL ACTION:	2019 – Adoption of the St. Helena General Plan Update 2040 2021 – Adoption of the Active Transportation and Safe Routes to School Plan December 2024 – City Council study session providing direction on network-wide recommendations and prioritization framework. March 12, 2024 adopted Reso 2024-028 authorizing execution of Professional Services Agreement with Toole Design. February 25, 2025 adopted Reso 2025-015 authorizing execution of Amendment 1 to the agreement with Toole for a total not-to-exceed contract of \$325,374.
STATEMENT OF THE PURPOSE:	The purpose of this item is to present the St. Helena Streets Master Plan and request City Council acceptance of the Plan as a comprehensive, citywide framework to guide future transportation investments, improve safety and mobility, and support long-term implementation of multimodal infrastructure improvements.
FINANCIAL IMPACT:	The Streets Master Plan was funded through previously approved City budget allocations and applicable resources. Implementation costs for projects identified in the Plan vary widely, ranging from minor striping improvements of approximately \$4,000 to major capital projects exceeding \$50 million.

BACKGROUND:

The St. Helena Streets Master Plan was developed to establish a coordinated vision for improving how people move throughout the city, whether walking, biking, driving, or taking transit. The Plan builds upon the City's General Plan and previously adopted

transportation and safety plans, consolidating multiple efforts into a single, unified framework.

The Plan responds to long-standing transportation challenges, including heavy reliance on Main Street (State Route 29), limited east–west connectivity, gaps in bicycle and pedestrian infrastructure, and constrained bridge crossings. It also reflects the City Council-approved Vine Trail alignment and incorporates community input and technical analysis to guide future improvements.

DISCUSSION:

The Streets Master Plan (***Attachment 01 - Report, Attachment 02 - Appendices A - H; Attachment 03 - Council Presentation***) provides a comprehensive, multimodal framework intended to enhance safety, connectivity, and accessibility across the city. The Plan identifies a broad range of improvements, including:

- 46 bicycle facility projects
- 39 pedestrian and bicycle crossing improvements
- 9 roadway extension and bridge projects

These improvements are designed to address network gaps, improve access to key destinations such as schools and downtown, and reduce reliance on Main Street by providing alternative routes.

Projects were prioritized based on safety, connectivity, community input, and feasibility. The prioritization framework is intended to guide decision-making while maintaining flexibility, recognizing that implementation will depend on funding availability and evolving City priorities.

The Plan also includes transportation operations analysis of key network improvements, demonstrating that major projects such as the Adams Street Extension and Oak Avenue Extension would improve traffic flow and reduce congestion along Main Street by providing additional connections (***Attachment 02 - Appendix F***, pdf p.104 of 912).

Public Outreach and Comments:

The public review period was conducted from January 22 through February 16, 2026, and was advertised through the City's website, newsletter, and social media channels. A total of 68 comments were received, with approximately 68 percent submitted by a single individual and the remainder distributed among community members (***Attachment 04***).

All comments were compiled into a formal comment matrix, reviewed by staff and the consultant team, and responded to individually. The majority of comments were addressed through clarification, confirmation of existing recommendations, or determined to be outside the scope of the Plan.

Several targeted updates were incorporated, including refinement of bicycle facility classifications in select locations, inclusion of daylighting recommendations consistent with AB 413, additional intersection improvements, and clarification of cost assumptions and ADA-related considerations. Certain comments were identified as implementation-level items and will be addressed during future project design and Capital Improvement Program development.

It should be noted that the Active Transportation and Sustainability Committee unanimously approved two recommendations at their March 4, 2026 meeting:

- Recommend the Adams Street Extension project rank highest as a priority.
- Recommend the Oak Avenue Extension project rank lowest as a priority.

Funding and Implementation:

The Plan outlines a phased implementation approach, with near-term efforts focused on lower-cost, high-impact safety improvements such as crossing enhancements, and longer-term efforts focused on more complex capital projects such as roadway extensions and bridge improvements.

Future implementation is anticipated to rely on a combination of General Fund resources, Measure U revenues, development impact fees, regional, state, and federal grants, and developer contributions. Acceptance of the Plan does not commit the City to specific expenditures but provides a framework for prioritizing projects and pursuing funding opportunities.

Next Steps:

- Develop a 20-year implementation strategy for Finance Committee and Council consideration.
- Update the City's impact fee program based on Plan cost estimates.
- Identify and pursue funding opportunities for priority projects.
- Integrate Plan recommendations into the Capital Improvement Program.

ENVIRONMENTAL REVIEW:

Acceptance of the St. Helena Streets Master Plan is not a project under the California Environmental Quality Act (CEQA) pursuant to Section 15378, as it represents a planning-level policy document and does not authorize construction. Individual projects identified in the Plan will undergo project-specific environmental review as required.

GOAL:

Goal 1: Strengthen Financial Sustainability

Goal 2: Improve Infrastructure & Further Environmental Sustainability
Goal 5: Enhance Quality of Life

DOCUMENTS ATTACHMENTS:

[00 - SMP Resolution](#)

[01 - St Helena Streets Master Plan March 2026](#)

[02 - St Helena Streets Master Plan Appendices March 2026-Collated](#)

[03 - StHelena SMP Council Adoption Presentation 03 2026-Final 031926](#)

[04 - St Helena SMP-Jan 2026 Public Draft Comment Matrix](#)

CITY OF ST. HELENA
RESOLUTION NO. 2026-__

RESOLUTION ACCEPTING THE ST. HELENA STREETS MASTER PLAN (MARCH 2026) AND DIRECTING CITY STAFF TO UTILIZE THE PLAN TO GUIDE FUTURE TRANSPORTATION PLANNING, CAPITAL IMPROVEMENT PROGRAMMING, AND IMPLEMENTATION EFFORTS.

RECITALS

- A. The City of St. Helena has developed the St. Helena Streets Master Plan (March 2026) to provide a comprehensive, coordinated framework for improving transportation, circulation, and mobility throughout the city; and
- B. The Plan consolidates prior planning efforts, technical analysis, and community input into a single document intended to guide future decision-making, capital improvement planning, and funding strategies; and
- C. The Plan identifies a network of bicycle, pedestrian, roadway, and bridge improvements intended to enhance safety, connectivity, accessibility, and emergency access throughout the city; and
- D. The City conducted public outreach, received comments, and prepared a comment matrix documenting responses and incorporated revisions; and
- E. Acceptance of the Plan does not constitute approval of specific projects or commit the City to construction, but establishes a long-term planning framework; and
- F. Individual projects identified in the Plan will undergo future City Council review and environmental analysis pursuant to the California Environmental Quality Act (CEQA).

RESOLUTION

NOW, THEREFORE, the City Council of the City of St. Helena resolves as follows:

- 1. The City Council hereby accepts the St. Helena Streets Master Plan (March 2026).
- 2. The City Council directs staff to utilize the Plan to guide development of the Capital Improvement Program (CIP), funding strategies, and implementation planning.

3. The City Council affirms that acceptance of the Plan does not constitute approval of specific projects or funding commitments.

4. The City Council finds that this action is not a project under CEQA pursuant to Section 15378.

Approved at a Regular Meeting of the St. Helena City Council on March 24, 2026, by the following vote:

Mayor Dohring:

Vice Mayor Deasy:

Council Member Barak:

Council Member Spadarotto:

Council Member Summers:

APPROVED:

Paul Jamison Dohring, Mayor

ATTEST:

Andrew Bradley, City Clerk



St. Helena Streets Master Plan

March 2026



Executive Summary

Overview

The St. Helena Streets Master Plan provides a coordinated framework for improving how people move around St. Helena, whether walking, biking, or driving. The Plan responds to long-standing challenges such as limited east–west connectivity, constrained bridges, gaps in the bicycle and pedestrian network, and heavy reliance on Main Street/Highway 29 for both local and regional travel.

Building on the City's General Plan and previously adopted plans and studies, the Streets Master Plan consolidates prior recommendations, new technical analysis, and community input into a single, comprehensive document. It is intended to guide decision-making, funding, and interdepartmental coordination over time.

The Plan documents existing conditions and identifies a comprehensive set of bicycle, pedestrian, roadway extension, and bridge projects to improve connectivity, accessibility, and safety. Projects are evaluated using multiple performance metrics, alongside community input, through a prioritization process, with select projects advanced to conceptual design. The Plan also includes planning-level cost opinions, funding and implementation guidance, and toolkits to support placemaking and green infrastructure.

Together, these components provide a roadmap for City staff, elected officials, and partners to support capital programming, pursue grants, coordinate with development and infrastructure projects, and adapt to evolving conditions, funding, and priorities.

Key Plan Elements

Network Vision and Proposed Projects

At the core of the Plan is a comprehensive set of proposed bicycle, pedestrian, roadway extension, and bridge projects that define the City's active transportation and street network. Developed from prior plans, technical analysis, and community input, these projects represent a citywide vision for improving connectivity, safety, and access and include:

- + **Bicycle facilities: 46 proposed projects**, including Class I shared-use paths, Class II bike lanes, and Class III bike boulevards (Class III rural bike routes are noted but not included in the mapped or prioritized facility list)
- + **Crossing Improvements: 39 intersections** recommended for safety and accessibility upgrades
- + **Roadway extensions and bridge projects: 9 projects**, including 7 extensions and 2 bridge projects intended to improve connectivity and emergency access

Together, these projects address long-standing challenges such as reliance on Main Street, limited east–west connections, constrained bridges, and gaps in the street network.

Project Prioritization

Recognizing that not all projects can be implemented at once, the Plan includes a prioritization process that uses multiple metrics, including community input, to identify projects likely to provide the greatest benefit within each project type. Projects are prioritized within their respective categories, such as bicycle facilities, intersection improvements, and roadway extensions or bridges, and are not ranked against one another across categories.

Project cost was not included as a prioritization metric, allowing projects to be evaluated based on need, benefit, and alignment with community and network objectives rather than implementation complexity.

Prioritization results are intended to support decision-making, not dictate construction sequencing, and to identify projects that may warrant early coordination, further study, or strategic investment.

Transportation Operations Synchro Analysis

To build on the prioritization process, the Plan includes a Synchro-based transportation operations analysis of three major network concepts: the Adams Street Extension, Oak Avenue Extension, and Pope Street Bridge. This analysis provides additional context on how new connections could improve congestion, traffic flow, and intersection performance, particularly along Main Street. Key findings indicate that all three concepts would provide congestion relief by creating alternative routes. Among them, the Oak Avenue Extension offers the greatest overall operational improvement. While this analysis did not determine project rankings, it helps illustrate the relative impact of these major investments.

Cost Opinions and Implementation Considerations

Planning-level cost opinions are included for all proposed bicycle and pedestrian crossing improvement projects to help the City understand relative costs across facility types and the tradeoffs between incremental improvements and more capital-intensive investments. More detailed cost opinions were prepared for the Adams Street Extension and Spring Street Class III bike boulevard, which were advanced to conceptual design.

In addition, planning-level cost estimates for the Oak Avenue Extension were developed by updating the 2001

Highway 29 Specific Plan estimates to reflect current phasing considerations and costs in today's dollars.

Beyond project identification and prioritization, the Plan provides tools to support implementation over time, including funding strategy guidance, CEQA pathway considerations, and placemaking and green infrastructure toolkits. Together, these elements enable the City to advance projects incrementally and strategically while maintaining alignment with the Plan's long-term vision.

Conceptual Design

The Adams Street Extension and Spring Street Class III bike boulevard projects were advanced to conceptual design to demonstrate how Plan recommendations can transition toward implementation. These projects were selected because they ranked highly within their respective prioritization categories, play critical roles in the citywide network, and reflect strong community interest or long-standing planning objectives. Conceptual designs include example cross sections, intersection treatments, and planning-level cost opinions to support future funding applications and coordination with partner agencies.

Prioritization Results Summary

This summary presents the **top-ranking projects by category and project type based on the Streets Master Plan prioritization analysis**. These results highlight projects that performed most strongly across the evaluation criteria.

Bicycle Facilities

Proposed bicycle projects were prioritized based on access to key destinations (particularly schools and parks), safety, network connectivity and comfort, existing activity, and community support. Class I shared-use paths consistently ranked highest due to their ability to provide low-stress, all-ages-and-abilities connections and close major gaps in the citywide active transportation network; priority corridors such as Sulphur Creek and the Napa River offer the potential for city-shaping, continuous off-street routes. Class III bike boulevards and Class II bike lanes are generally lower cost and less complex to implement and play an important role in improving neighborhood connectivity and access to schools and downtown destinations. Of the eight top-ranked bicycle projects, three are on-street facilities, two Class III bike boulevards and one Class II bike lane. Several additional medium-high-ranking projects (score of 4), including Spring Street, also feature Class III and Class II improvements, but are not included in the list below.

Score	Street/Trail Name	Begins	Ends	Proposed Facility	Low Cost*	High Cost*
7	Sulphur Creek Trail	Sulphur Springs Ave	Napa River	Class I Shared-Use Path	\$15.8M	
6	S Crane Ave	Grayson Ave	Sulphur Springs Ave	Class II Bike Lanes	\$261K	\$1.4M
6	Adams St	Railroad Ave	Allyn Ave	Class III Bike Boulevard	\$366K	\$846K
6	Napa River Trail	St Helena city limit near wastewater treatment plant	St Helena city limit (Deer Park Rd / Lower Reservoir Trail)	Class I Shared-Use Path	\$21.9M	
6	Adams St (pending future extension)	Railroad Ave	Silverado Trail	Class I Shared-Use Path	\$59.1M^	
5	Crane Park Path (to La Quinta Way)	Grayson Ave	Sulphur Springs Ave	Class I Shared-Use Path	\$3.6M	
5	Library Lane Path	Adams St	Vine Trail (along RR corridor)	Class I Shared-Use Path	\$939K	
5	College Ave	Pope St	Proposed class I facility at SE end of College Ave	Class III Bike Boulevard	\$140K	\$324K

*The low and high cost range for Class II bike lanes and Class III bike boulevards reflects uncertainty in the extent of roadway modifications required. For bike lanes, improvements may range from striping and signage to more substantial changes such as curb relocation or drainage adjustments; for bike boulevards, costs may vary from minor traffic calming measures, such as speed humps, to more substantial treatments like curb extensions.

^Reflects full cost of roadway extension.

Crossing Improvements

Pedestrian crossing projects were prioritized based on safety history, pedestrian activity, access to schools and parks, network connectivity, and consistency with prior planning efforts. Top-ranked crossings are concentrated along Main Street, reflecting its role as the city's primary commercial and civic corridor and its high pedestrian activity and injury history; several intersections, including Main Street at Grayson Avenue, Madrona Avenue, Spring Street, and Elmhurst Avenue, have been repeatedly identified in prior plans. Other prioritized crossings are located near schools and neighborhood connectors, where targeted improvements can significantly enhance safety and accessibility for students and everyday users. Proposed improvements at Spring Street at Hudson also received a score of 4 but are not listed above, as they are part of the broader Spring Street bike boulevard concept detailed elsewhere in the Plan.

Score	Intersection	Improvement	Cost
6	Main St at Grayson Ave	Update crosswalk to high visibility	\$4K
5	Pope St at Allison Ave	Install speed reduction treatments on both approaches of Pope St at Allison Ave. Consider vegetation management to improve visibility.	\$19K

Score	Intersection	Improvement	Cost
5	Hillview Pl and Spring Mountain Rd	Install stop-control on all approaches and curb extensions on all corners, upgrade all crosswalks to high visibility, and upgrade all curb ramps to be ADA-compliant.	\$67K
4	Main St at Crinella Ct	Install RRFB with advanced warning signs on either north or south approach	\$23K
4	Main St at Madrona Ave	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant; install curb extensions	
4	Main St at Adams St	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant; install curb extensions on both sides of Main St crossings	\$63K
4	Main St at Spring St	Install curb extensions and RRFB on southeast approach; upgrade all curb ramps to be ADA compliant	\$104K
4	Pope St at Starr Ave	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant	\$17K
4	Hillview Pl at Middle School	Upgrade to high-visibility crosswalk and upgrade ramp to be ADA-compliant; install curb extensions and RRFB	\$32K

Roadway Extension and Bridge Projects

Roadway extension and bridge projects were prioritized based on feasibility, community support, and their functional role in the overall street network. The Adams Street Extension emerged as the top-ranking project due to its ability to improve east–west connectivity, support planned development, enhance emergency access, and relieve pressure on Main Street, with the Oak Avenue Extension also ranking highly. A separate Synchro-based transportation operations analysis demonstrated that the Adams Street Extension, Oak Avenue Extension, and Pope Street Bridge concepts would all help reduce congestion on Main Street by providing alternative routes. While this analysis did not determine project rankings, it provides important context supporting the long-term transportation value of these investments. Given the complexity of estimating costs for major roadway and bridge projects, planning-level cost opinions were developed only for the Adams Street and Oak Avenue extensions as part of this effort.

Score	Roadway Extension or Bridge Project	Cost
5	Adams St Extension to Silverado Trail	\$59.1M
4	Oak Ave Extension to Grayson Ave*	Mitchell Dr to Charter Oak Ave: \$37.2M Charter Oak Ave to Grayson Ave: \$15.4M
4	Pope Street Bridge Realignment	n/a
3	Starr Ave extension north to Adams St	n/a
3	Mills Ln extension to Silverado Trail	n/a
3	Pratt Ave Bridge Realignment	n/a

* Inclusive of both phases of the Oak Avenue extension (Mitchell Drive to Charter Oak Avenue and Charter Oak Avenue to Grayson Avenue)

Implementation and Funding Strategies

The Streets Master Plan outlines a mix of funding tools to support implementation, recognizing that no single source will fund all projects. Implementation will rely on local revenues (such as General Fund allocations, transportation and parks impact fees, and developer-required improvements), regional sources including Measure U sales tax revenues administered by the Napa Valley Transportation Authority, and state and federal grants. Projects will advance in phases based on funding availability, grant cycles, development activity, and inclusion in the City's 5-Year Capital Improvement Plan. Recommended strategies include layering funding sources, aligning project readiness with funding opportunities, and bundling projects, such as corridor, school access, or safety packages, to improve grant competitiveness and delivery efficiency. Near- and mid-term efforts will prioritize bicycle and pedestrian intersection projects, while larger roadway and bridge projects will advance more gradually, beginning with feasibility, environmental review, and right-of-way coordination before construction as longer-term funding becomes available.

Contents

Project Overview	4
-------------------------------	----------

Engagement Summary	9
---------------------------------	----------

Phase 1	12
---------------	----

Phase 2	13
---------------	----

Phase 3	14
---------------	----

Existing Conditions.....	15
---------------------------------	-----------

Needs Assessment	34
------------------------	----

Network-wide

Recommendations	37
------------------------------	-----------

Proposed Bicycle Facilities.....	39
----------------------------------	----

Crossing Assessment and Proposed Improvements	42
--	----

Proposed Roadway Extensions and Bridge Projects	46
--	----

Implementation

Considerations	48
-----------------------------	-----------

Project Prioritization	50
------------------------------	----

Funding Strategies	55
--------------------------	----

CEQA Pathways	56
---------------------	----

Stormwater and Utilities Coordination	57
--	----

Key Projects	60
---------------------------	-----------

Spring Street	62
---------------------	----

Adams Street Extension	67
------------------------------	----

Oak Avenue Extension	73
----------------------------	----

Appendices

A: Streetscape Placemaking and Green Infrastructure Toolkits

B: Community Engagement Summary Memo

C: Project Prioritization Methodology and Detailed Results

D: Network-wide Cost Opinions

E: Project Cost Opinions

F: Synchro Analysis for Key Extension and Bridge Projects

G: Stormwater and Utilities Technical Memo

H: Funding Strategies Memo

Information contained in this document is for planning purposes and should not be used for final design of any project.

List of Figures

Figure 1: St. Helena Planning Area	7
Figure 2: Functional Road Classification	17
Figure 3: City Road Classification	18
Figure 4: Roadway Extension Projects. Source: St. Helena General Plan Update 2040.	18
Figure 5: St Helena Street Types. Source: St. Helena General Plan Update 2040.....	19
Figure 6: 2019 NVT Countywide Bicycle Plan - Existing and Proposed Bicycle Network.....	21
Figure 7: Bikeway Classification Typical Cross sections...	22
Figure 8: Sidewalk Network. Source: St. Helena General Plan Update 2040.....	24
Figure 9: Key Destinations	26
Figure 10: Bicycle Counts	28
Figure 11: Pedestrian Counts	29
Figure 12: Active Modes Injury Crashes	31
Figure 13: Assumed Level of Traffic Stress.....	32
Figure 14: Proposed Bicycle Facilities.....	41
Figure 15: Proposed Intersection Improvements	45
Figure 16: Proposed Roadway Extension and Bridge Projects	47
Figure 17: St. Helena Flood Zones. Source: St. Helena General Plan Update 2040.....	59
Figure 18: Proposed Spring Street Key Plan	64
Figure 19: Proposed Spring Street Typical Cross Sections	65
Figure 20: Proposed Spring Street Typical Cross Sections and Intersection Improvements	66
Figure 21: Proposed Adam Street Extension Alignment and Key Plan.....	69
Figure 22: Proposed Adam Street Extension Alignment Typical Cross Section	70
Figure 23: Adam Street Extension Proposed Designs for Key Intersections.....	71
Figure 24: Proposed Oak Street Extension Typical Cross Section, Highway 29 Specific Plan, 2001.....	76
Figure 25: Proposed Oak Street Extension Typical Cross Section, Highway 29 Specific Plan, 2005.....	76

List of Tables

Table 1: Active Modes Count Data.....	29
Table 2: Proposed Bicycle Facilities.....	39
Table 3: Proposed Crossing Improvements.....	42
Table 4: Proposed Roadway Extension and Bridge Projects.....	46
Table 5: Proposed Project Prioritization Criteria	50
Table 6: Prioritized Bicycle Facilities	51
Table 7: Prioritized Crossing Improvements	53
Table 8: Prioritized Roadway Extension and Bridge Projects.....	54
Table 9: Probable cost ranges for proposed bikeways by facility type	55
Table 10: Potential CEQA Pathways by project type	56

1

Project Overview

Project Overview

The St. Helena Streets Master Plan was led by the City of St. Helena to establish a clear path forward for creating a street network that supports safe, connected, and vibrant mobility for all users, whether walking, biking, driving, or taking transit.

The plan builds on previous planning efforts and unifies multiple studies, reports, and initiatives into a cohesive vision for the future of St. Helena's streets and circulation system. Importantly, it also integrates the City Council-approved alignment of the Vine Trail through St. Helena. Selection of the Vine Trail route marked a major milestone for the community and informed the the reprioritization of projects identified in past transportation plans.

This report presents the key outcomes of the Streets Master Plan, including:

- + Network-wide recommendations grounded in previous planning reports and refined through new technical analysis and community feedback.
- + Network-wide implementation and financing strategy.
- + Targeted recommendations for key priority projects, including conceptual designs and planning-level cost opinions.

Plan Goals

- + Enhance multimodal options for all users, prioritizing connectivity, accessibility and safety as key guiding principles.
- + Plan for future growth, accounting for citywide projections in the General Plan and planned subdivision projects.
- + Develop preliminary implementation strategies to guide investment and delivery of improvements over time.
- + Strengthen local and regional partnerships to support collaboration and leverage funding opportunities.

Guiding Principles

- + **Connectivity:** Ensure that all modes of transportation, motor vehicles, public transit, bicycles, and walking/rolling, are well-integrated and facilitate connected and convenient travel throughout the city.
- + **Accessibility:** Help ensure that essential locations, such as schools, parks, and downtown, are easily and comfortably accessible to everyone, regardless of ability or mode of transportation.
- + **Safety:** Ground active transportation recommendations in current safety data and prioritize low-stress, comfortable facilities for people biking and walking/rolling, especially vulnerable users like school-aged children.

Foundational Plans and Studies

The following page provides a high-level summary of the key plans, studies, and reports that informed the development of the St. Helena Streets Master Plan.



Napa Countywide Pedestrian Plan - NVTA (2016)

This Plan was created to address pedestrian needs and opportunities and to establish a policy framework and implementation plan to enhance pedestrian mobility and safety throughout all Napa County communities, including a dedicated chapter for St. Helena (Chapter 7).

St. Helena General Plan Update 2040 (2019)

Section 5 of the General Plan, the Circulation Element, sets the framework for focusing on decreasing automobile use and vehicle miles traveled while strengthening pedestrian and bicycle connections. Proposed bicycle network recommendations were developed in coordination with the Napa Countywide Bike Plan (2019).

Napa Countywide Bike Plan - NVTA (2019)

The Countywide Bike Plan evaluates Napa County's bicycling conditions, covering both incorporated and unincorporated areas. It summarizes current facilities, policies, and standards, identifies deficiencies, and suggests improvements. Chapter 7 focuses on St. Helena. An update to this plan (the 2026 Napa County Active Transportation Plan) is currently underway.

Active Transportation and SRTS Plan (2021)

This plan reviews citywide conditions and provides short-term recommendations for Spring Street and Madrona Avenue in St. Helena to enhance safety for the 2021-2022 school year.

Napa County Walk Audit Reports (2022)

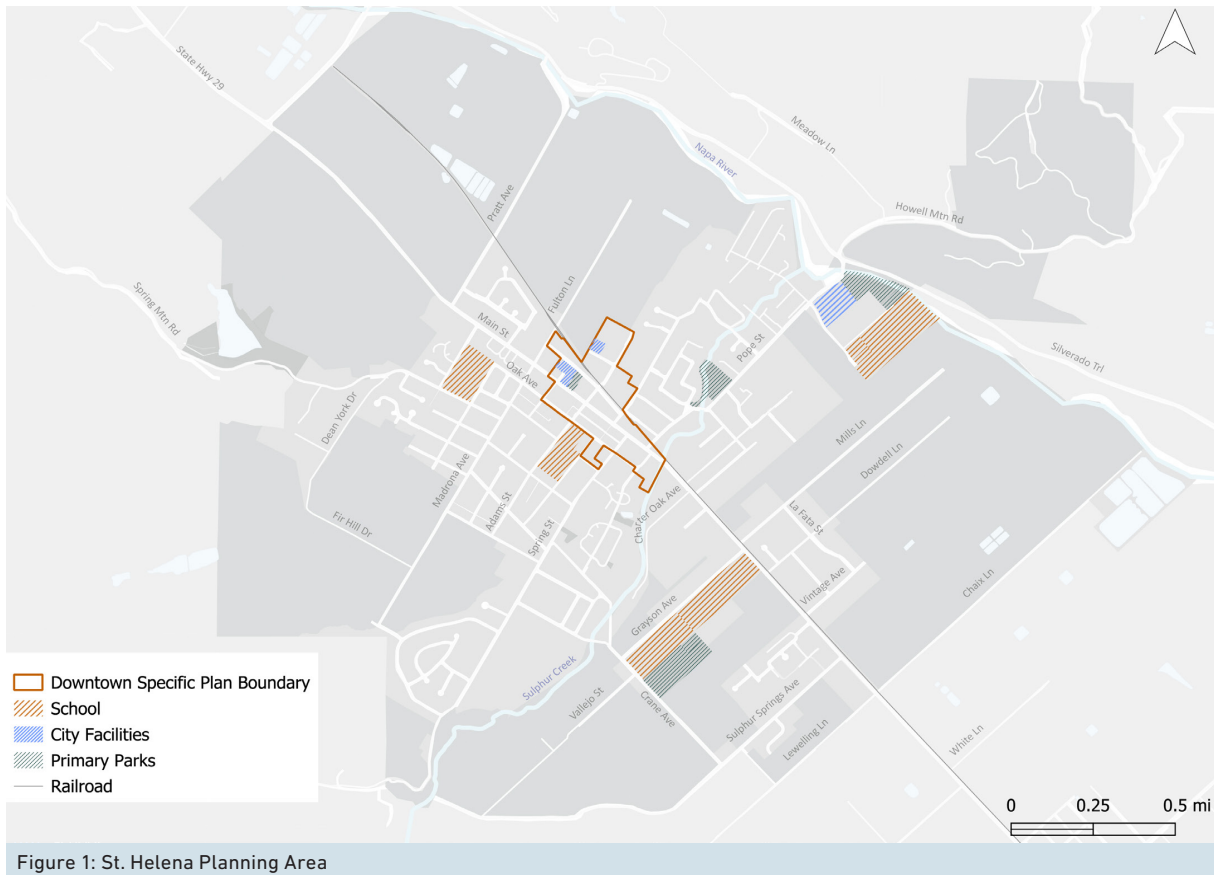
The goal of the Walk Audit Report is to identify, evaluate, prioritize, and offer solutions to infrastructure and non-infrastructure barriers to students safely walking and biking to school in Napa County and St. Helena.

Vine Trail Alignment Study: Yountville to St. Helena (2022)

The alignment study updates and expands two previous studies on a Class I trail from Yountville to St. Helena, incorporating the current Vine Trail alignment study by BKF Engineers, approved by the St. Helena City Council. A council action on May 14, 2024 slightly revised the alignment presented in this plan.

NVTA Vision Zero Plan (2023)

The Vision Zero Plan establishes a Safe System, data-driven framework to eliminate traffic deaths and serious injuries by 2030, with emphasis on equity and prioritizing improvements on the countywide High-Injury Network for projects like safer crossings, bikeways, and speed management.



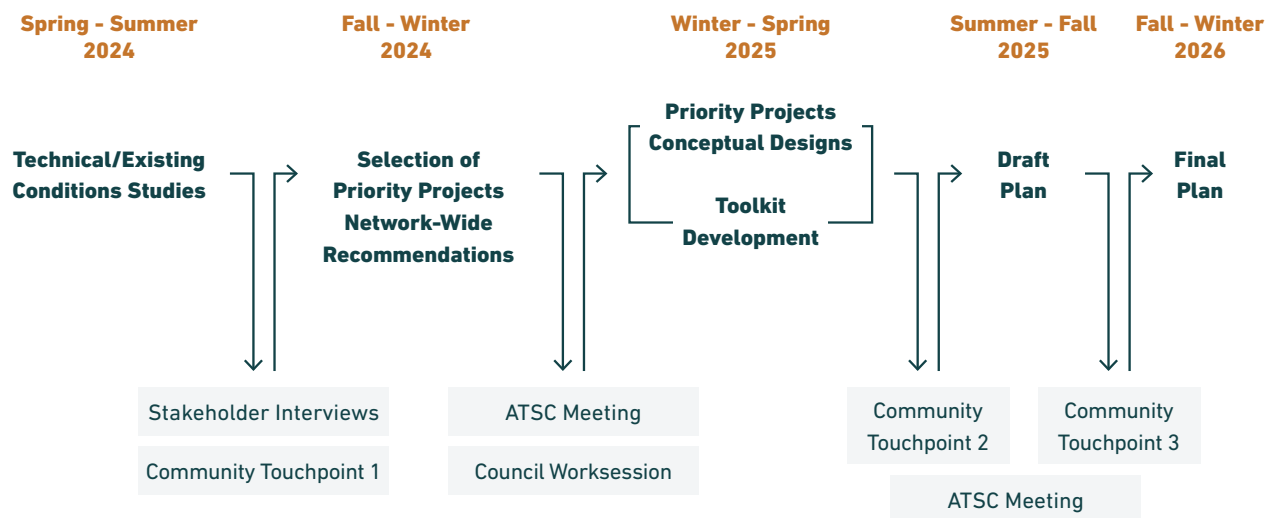
Project Area

The St. Helena Streets Master Plan covers the entire city, excluding the Downtown Specific Plan area (outlined in red on the project map). The Downtown planning effort was put on pause during this process. Future downtown planning efforts and recommendations for this area should be coordinated with Streets Master Plan to ensure consistency and alignment across the city's street and transportation network.

Process

The St. Helena Streets Master Plan was developed over the course of approximately eighteen months. The process began with comprehensive data collection and analysis, incorporating both newly gathered information and a review of existing plans. This analysis informed the development of network-wide recommendations and the creation of a prioritization methodology to evaluate the relative impact and importance of proposed projects. From this framework, a selection of priority projects was advanced to conceptual design.

Implementation strategies were then developed, including cost opinions, funding approaches, and a green infrastructure and placemaking toolkit. In parallel, a project website was launched early in the process to support ongoing communication, and a community engagement plan guided outreach throughout the planning effort. A draft plan was prepared to gather feedback from stakeholders and the public, followed by a final plan that incorporated this input and established a roadmap for implementation.



2

Engagement Summary

ST. HELENA STREETS MASTERPLAN | 9

This chapter provides a high-level overview of the community engagement conducted for the Streets Master Plan. Engagement aimed to reach a broad cross-section of St. Helena residents, stakeholders, and agency partners through multiple formats. Detailed findings are not included in this chapter but are incorporated throughout the document, where relevant.

Activities included public workshops, online surveys, interactive mapping tools, stakeholder interviews, small-group discussions, and pop-up events across the city. These efforts gave participants opportunities to share travel experiences, identify areas of concern, respond to early concepts, and offer input on potential improvements.

Community input played a critical role in shaping the plan, informing the identification of needs, refinement of project concepts, and prioritization of improvements. Engagement also helped validate findings from the Existing Conditions analysis and prior planning efforts. For a more detailed outline of project engagement see Appendix B.

Engagement Overview

Introduction

This section describes the outreach and engagement efforts for the St. Helena Streets Master Plan, which are two distinct, but related activities:

Outreach is the act of distributing information and materials about the project to the public. Outreach is uni-directional: during outreach, information will flow from the City of St. Helena to the community. The purpose of outreach is to let target populations know when, where, and how to participate in engagement opportunities.

Engagement is interactive. During engagement, information flows between City staff, partner organizations and agencies, and community members. During engagement, stakeholders and community members are active participants.

Goals

The goals of the outreach and engagement process were to:

- + Gather public feedback to inform plan recommendations.
- + Energize and engage stakeholders and residents familiar with St. Helena's planning efforts, so they can become active partners and advocates throughout and beyond the project.

Phasing

Outreach and engagement for the St. Helena Streets Master Plan took place over the course of eighteen months. The process was divided into three phases, each with distinct goals, strategies, and materials.



Phase 1

August-November 2024

Goals

- + Get input on challenges related to the existing road network, including bike and pedestrian infrastructure.
- + Determine which of the proposed network-wide projects are the most critical and should be prioritized for further analysis and design.
- + Share findings from the technical studies, particularly the proposed transportation infrastructure projects (sourced from previous planning efforts and recommended by the project team).



A booth was set up at the 2024 Harvest Festival to solicit feedback on proposed projects

Overview

Outreach

- + Emails distributed to promote the project and encourage participation in Stakeholder Interviews.
- + Project landing page launched on City website.

Engagement Touchpoints

- + 2 x Pop-up events (at the St. Helena Farmer's Market and the Harvest Festival), during which the project team spoke to approximately 80 people who live, work, and/or have a child who goes to school in St. Helena.
- + 3 x Focus groups with stakeholders and agency partners (12 participants in total).
- + One-on-one interviews with planning commissioners and councilpersons.



Community members vote on their priority projects at the 2024 Harvest Festival

Key Questions

- + What transportation and streetscape projects or improvements do you think should be prioritized for the city?
- + Are there any challenges you face while navigating the city, and what changes would you like to see to address them?
- + Which aspects of the city's current transportation and mobility infrastructure do you value and believe should be maintained?

Phase 2

November 2024-April 2025

Overview

Outreach

- + Flyer distributed to advertise the in-person Public Workshop.
- + Emails distributed to promote the project and encourage attendance at the Public Workshop.

Engagement Touchpoints

- + 1 x Active Transportation Steering Committee Meeting.
- + 1 x City Council Meeting.
- + 1 x In-person Public Workshop.

Goals

- + Provide a high-level refresher of the project purpose, scope, and timeline.
- + Present the full list of network-wide prioritized projects.
- + Present and collect feedback on initial conceptual designs for Adams Street Extension and Spring Street.

Key Questions

- + Do you agree with the list of priority projects by type, including bikeways, crossings, and roadway extension/bridge projects?
- + What feedback on draft design concepts do you have? What's working and what could be improved?



2025 Public Workshop

St. Helena Streets Master Plan

Public Meeting

Wednesday, April 30th 2025
5.30 to 7pm
Carnegie Building
1360 Oak Ave, St Helena, CA 94574



The City wants your input! Join us to explore citywide streetscape recommendations and draft concept designs for key streets. **Your feedback is crucial in creating safer, more connected, and accessible streets for all.**

Recommendations and designs (to be shared for feedback at the public meeting) were shaped by invaluable community input gathered in October 2024 by the project team.

During this meeting, the City and community members will review and discuss:



Prioritized, City-wide Projects to Improve Biking and Walking



Conceptual Design Ideas for Key Streets

Questions? Contact Rebecca White at rwhite@cityofsthenana.gov

Flyer Advertising the Public Workshop

Phase 3

April 2025-March 2026

Overview

Outreach

- + The Draft Plan for Public Comment was advertised through the following channels:
 - + City newsletter
 - + City homepage
 - + Public Works homepage
 - + Streets Master Plan page
 - + City social media channels

Engagement Touchpoints

- + Interactive Draft Plan (Online PDF) for Public Comment (Open: 1/22/26-2/16/26)
- + 2 x Active Transportation Steering Committee Meetings.

Goals

- + Share the Final Conceptual Designs and Draft Plan with the community.
- + Gather feedback on the Final Conceptual Designs and Draft Plan to inform revisions before preparing the Final Plan.

Key Questions

- + Are there any suggested refinements or corrections to the Draft Plan content, including the network recommendations, prioritization, or conceptual designs?
- + Is any information in the Draft Plan unclear or missing that should be clarified before the plan is finalized?

[Home](#) · [City Hall](#) · [Public Works](#) · [Construction & Projects](#) · [Streets Master Plan](#)

Streets Master Plan

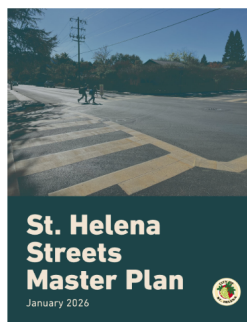
The Streets Master Plan aims to revolutionize our City's transportation network, boosting connectivity and synergy to enhance circulation, public safety, and mobility for everyone. It's a game-changing approach to creating vibrant, sustainable streets that will shape the future of our community.

UPDATE: Streets Master Plan Ready for Public Review – January 22, 2026

The City of St. Helena is pleased to announce the release of the [Draft Streets Master Plan \(PDF\)](#), for public review and comment. Building on previously adopted plans, studies, and community input, the Draft Plan provides vetted, implementable recommendations to improve St. Helena's streets for safety, mobility, and accessibility for all users, including people walking, biking, driving, and using mobility devices.

The Draft Streets Master Plan synthesizes past planning efforts with updated technical analysis to create a coordinated framework for future street improvements that enhance connectivity, support local travel needs, and reflect the city's unique character.

Community members are invited to review the Draft Plan and share feedback through an interactive PDF document, which allows readers to explore the plan and submit comments directly online.



Presentation and Materials from April 30th Meeting

Presentation

- [April 30, 2025 Community Meeting Presentation \(PDF\)](#)
- [Priority Projects \(PDF\)](#)
- [Adams Street Draft Design Concept \(PDF\)](#)
- [Spring Street Draft Design Concept \(PDF\)](#)

The Public Draft Plan was advertised on the City's Public Works homepage

3

Existing Conditions

ST. HELENA STREETS MASTERPLAN | 15

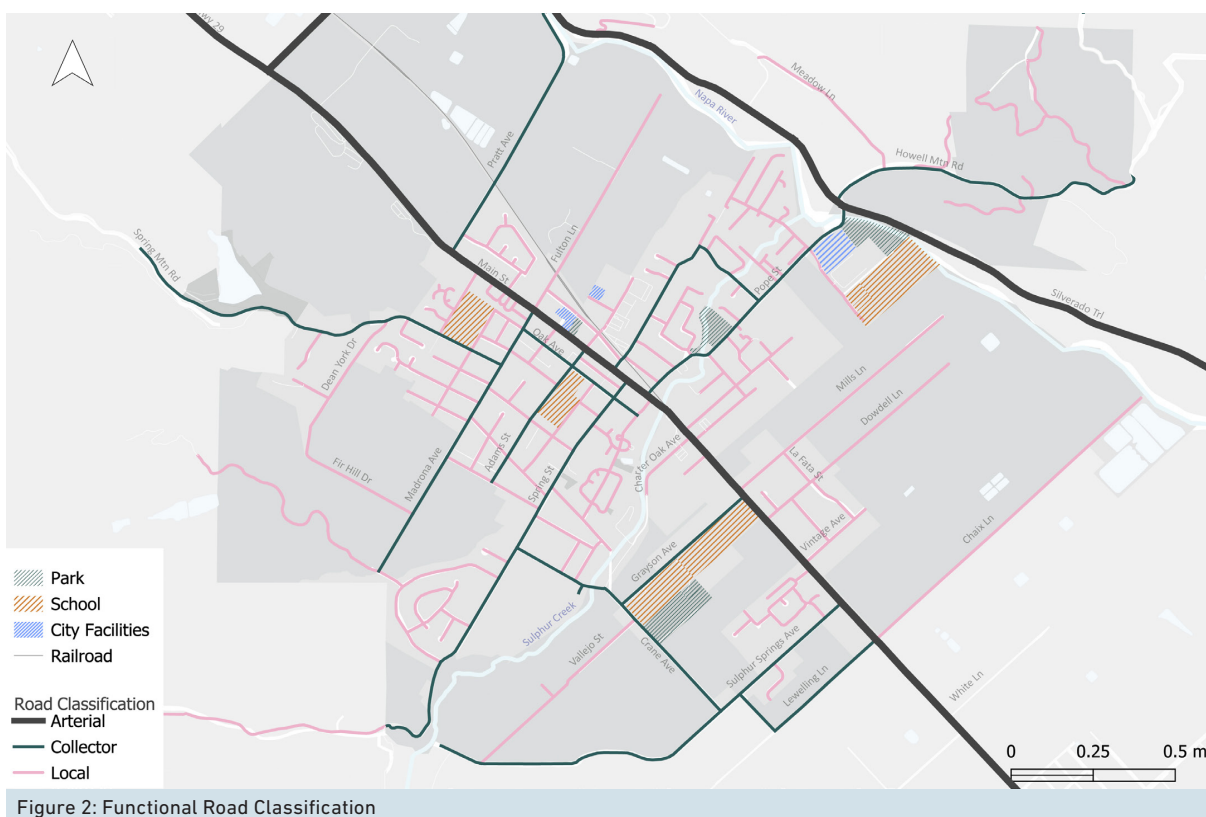
This chapter assesses St. Helena's street network with a focus on connectivity, accessibility, and safety for all users. These existing conditions inform the recommendations presented later in the plan.

St. Helena's transportation system is shaped by physical, operational, and multimodal constraints that affect connectivity, accessibility, and safety. Natural features such as the Napa River, Sulphur Creek, and surrounding hills create dead ends, network gaps, and limited alternatives to Main Street, concentrating traffic on the primary corridor and reducing redundancy for daily travel and emergency response.

Structural limitations, including narrow bridges at Pope Street and Pratt Avenue, constrained right-of-way, and gaps in the walking and bicycling network, further limit safe and accessible mobility. Many bridges lack space for dedicated active transportation facilities, and local streets often lack continuous sidewalks or low-stress bicycle routes, creating challenges for residents, visitors, and emergency responders.

At the same time, St. Helena's outdoor opportunities, compact size, and walkable downtown support a strong culture of walking and biking. The city also sits within a growing recreational trail network, including the Napa Valley Vine Trail, offering residents and visitors increasing opportunities to travel by bike and enjoy the region's scenic setting.

Understanding these conditions is essential to the development of the Streets Master Plan. The concepts in later chapters respond directly to these challenges by expanding east-west connections, improving safe walking and bicycling options, addressing traffic congestion, and strengthening emergency access. This includes several ambitious roadway extension and bridge projects that aim to overcome long-standing physical barriers and create a more resilient, connected network for all users.



Street Network

Located in the heart of Napa Valley, St. Helena is known for its scenic vineyards, charming downtown area, and vibrant wine culture. St. Helena is composed of a small network of streets that surround its compact downtown (Figure 2). Railroad tracks that serve the privately owned Napa Valley Wine Train bisect the city. Figure 2 shows the functional road classification in St. Helena. Highway 29/Main Street is the primary access route through the city and serves as a regional connector, along with the Silverado Trail. These two arterials connect St. Helena to the rest of Napa Valley and the San Francisco Bay Area. A dense network of collectors and local streets provide connectivity between residential and commercial areas.

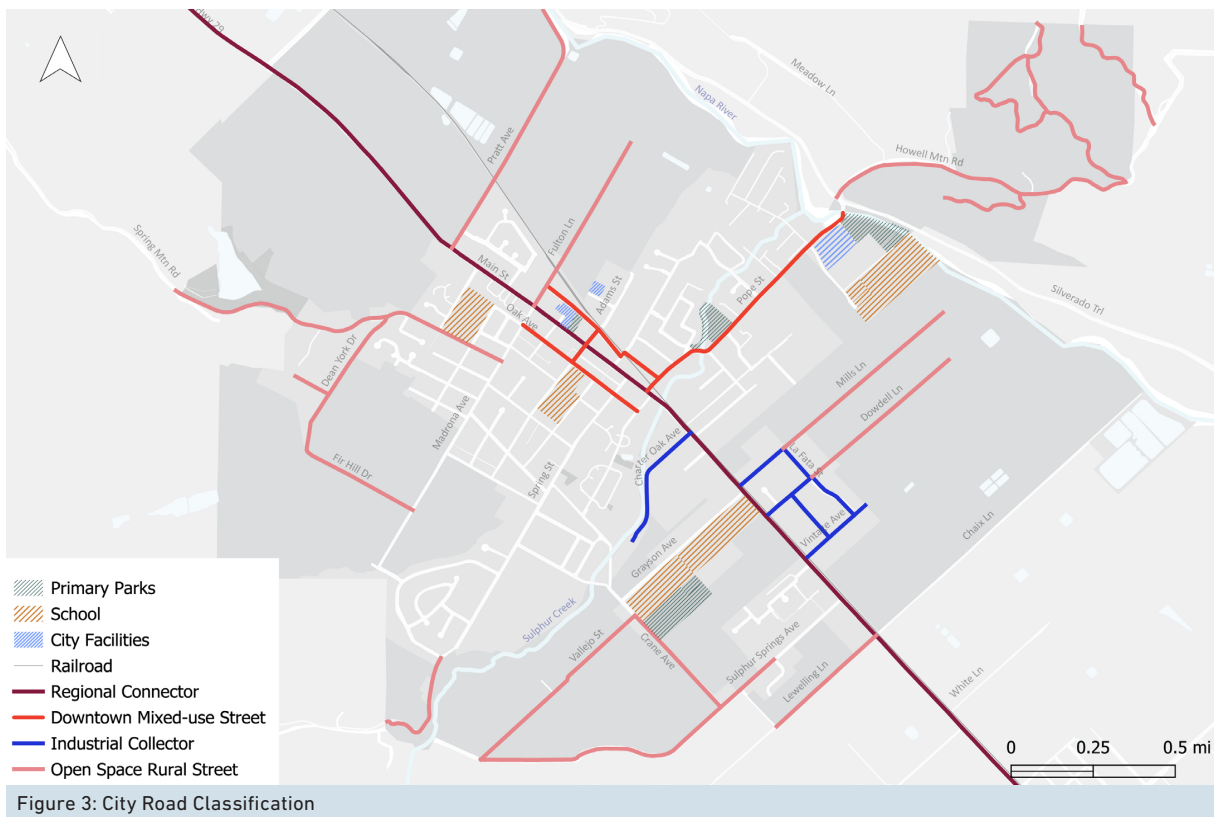
Figure 3 shows the City's road classification, per the City's General Plan.¹ The Plan identifies typical cross sections

¹ Chaix Lane is shown in the General Plan as an Open Space Rural Street. However, 2023 research into access rights serving the City's Wastewater Treatment & Reclamation Facility (WWTRF) determined that it is a private roadway for which the WWTRF holds access rights. Accordingly, Chaix Lane has been removed from Figure 3.

for each street typology (Figure 5). These typologies were adopted as part of the Plan Update to underscore the importance of accommodating a diverse range of travel modes and integrating Complete Streets principles into the City's overall network development strategy.

An assessment of the road network identified several barriers that impede efficient circulation and mobility within the city:

- + Dead-end streets, while beneficial for limiting through traffic and enhancing neighborhood privacy, reduce overall connectivity and circulation, increasing travel distances and potentially delaying emergency response. This is especially true for "open space rural streets" like Fulton Lane, Mills Lane, and Dowdell Lane, which could otherwise link Highway 29 and Silverado Trail.



- + Bridges on Pope Street and Pratt Avenue are narrow two-lane crossings that create bottlenecks during peak periods and cannot safely accommodate bicycle or pedestrian facilities within the existing right-of-way. Highway 29/Main Street's dual role as both a regional connector and a downtown Main Street can lead to conflicting traffic flows, congestion, and inefficiencies in managing local and through traffic.

Roadway Extensions and Bridge Projects

Several long-standing street extension and bridge concepts, such as the Adams Street extension over the Napa River and the Oak Street extension over Sulphur Creek, have been identified in previous planning efforts as potential additions to the network. While unbuilt, their intended purpose helps frame existing conditions. Some would cross major waterways that limit circulation and concentrate traffic on a few streets, while others would extend streets without new water crossings; together, they could reduce pinch points, improve network redundancy, and expand options for access and emergency response.

- 1 Starr Avenue extension north to Adams Street
- 2A College Avenue, Starr Avenue or Allison Avenue extension to Mills Lane
- 2B
- 2C
- 3 Adams Street from its current eastern terminus to Starr Avenue
- 4A Extension to Silverado Trail, by extending Adams Street or Mills Lane.
- 4B

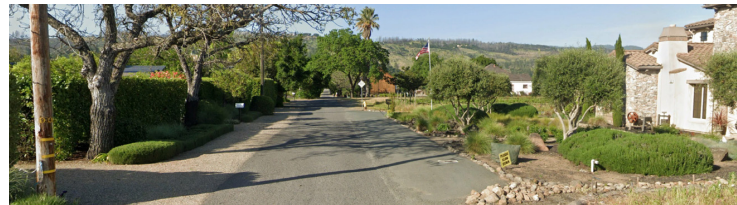
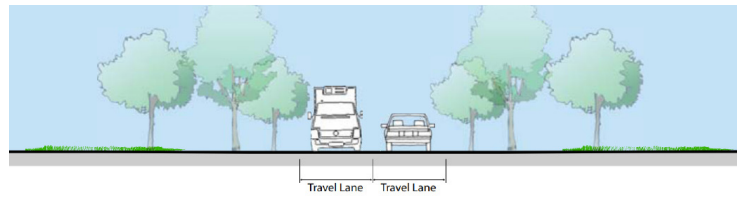


Figure 4: Roadway Extension Projects.
Source: St. Helena General Plan Update 2040.

Figure 5: St Helena Street Types. Source: St. Helena General Plan Update 2040.

Open Space/ Rural

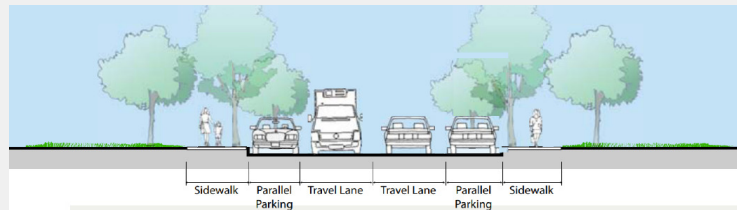
Provides access to open space, vineyards, agricultural areas, and rural residences. Typically lacks sidewalks and curbs, though some may include bicycle boulevards and low-speed limits.



Fulton Lane

Industrial Collector

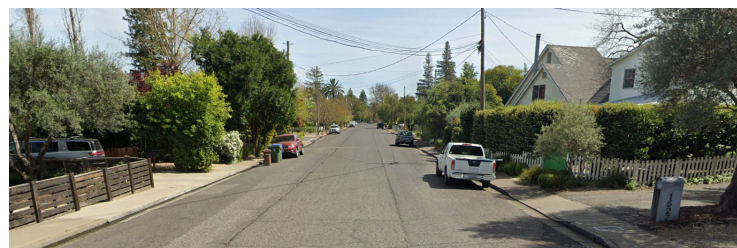
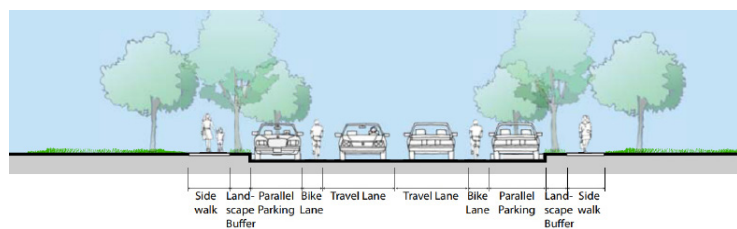
Designed for truck access to industrial and manufacturing areas. Sidewalks are present, but bicycle and transit facilities are typically not included.



Charter Oak Avenue

Residential

Serves neighborhoods, emphasizing pedestrian and bicycle amenities with slow driving speeds to support local trips.

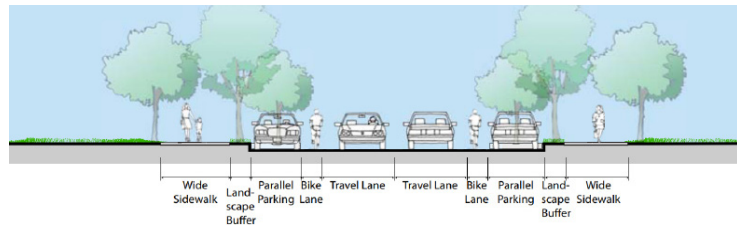


Allyn Avenue

Figure 5 (cont): St Helena Street Types. Source: St. Helena General Plan Update 2040.

Downtown/ Mixed Use

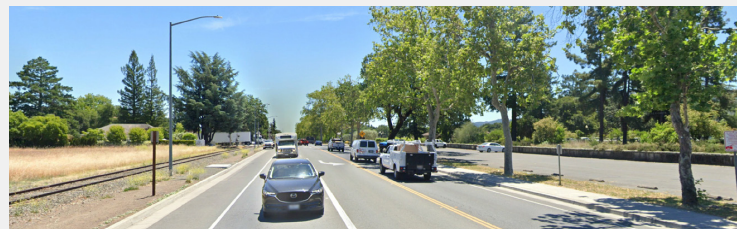
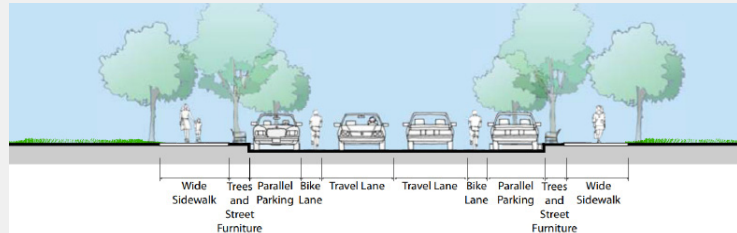
Accommodates all travel modes with features promoting livability, including wide sidewalks, traffic calming, and bicycle lanes.



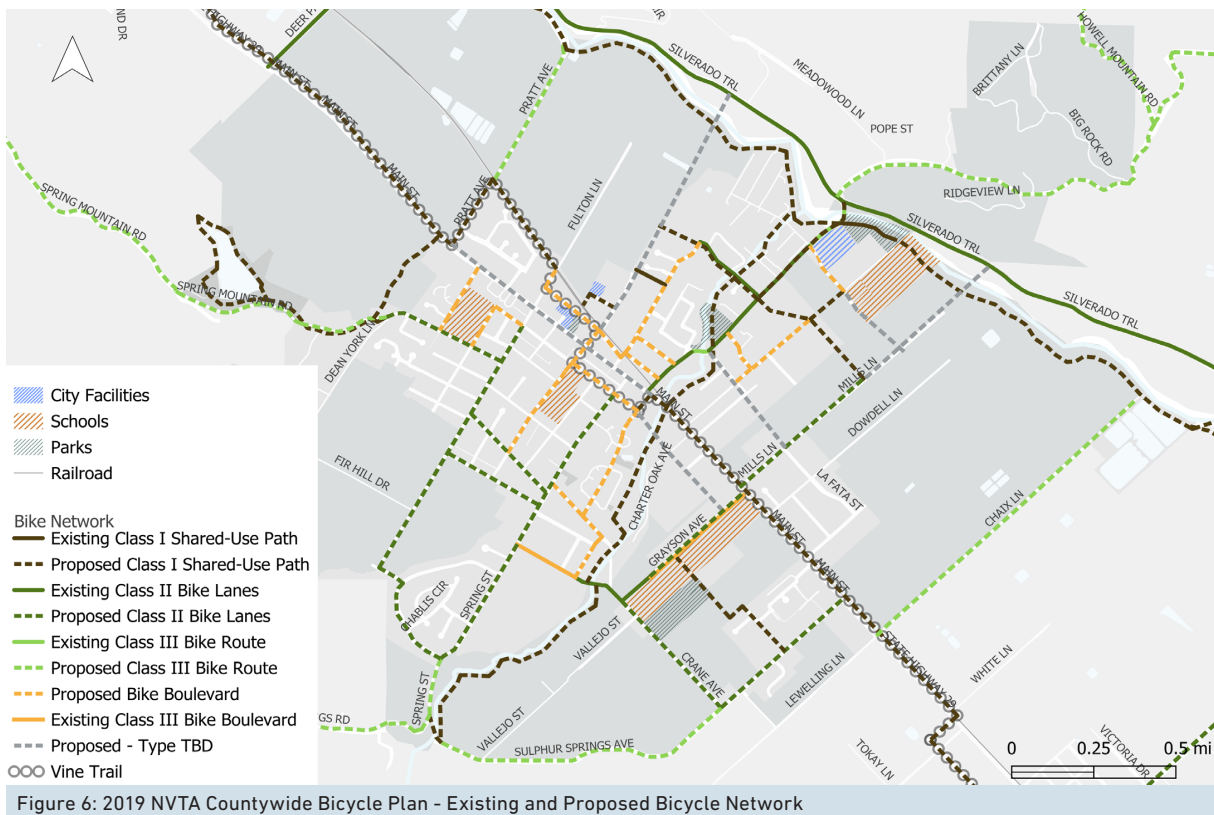
Oak Street

Regional Collector

This street type supports all modes, but is primarily designed to provide citywide and regional access for cars, transit and trucks trips. As Main Street/State Route 29 is the key commercial center for St. Helena, specific design features that foster livable streets and multimodal access may be applied, including wide sidewalks with regular street crossings, high-quality pedestrian amenities, and enhanced bus transit facilities.



Main Street



Bicycle Network

As shown in Figure 6, St. Helena's existing bicycle network consists of Class II bike lanes, small segments of Class I shared-use path segments, and Class III bike boulevards. The map also highlights the Vine Trail (ie: the final leg between Yountville and St. Helena currently under design and environmental permitting), which will form a 47-mile dual use corridor from the Vallejo Ferry Terminal to Calistoga. The segment north of Pratt Avenue opened in August 2024. Once complete, the Vine Trail will serve as both a regional connector and a major walking and bicycling spine within St. Helena. Community feedback included broad enthusiasm for the Vine Trail, and a strong desire to build a complete citywide bike network that connects to this regional facility.

The proposed bicycle network in Figure 6 reflects recommendations in the 2019 NVTA Countywide Bicycle Plan, with a few key exceptions. The Sulphur Creek Trail

reflects the longer alignment from the St. Helena General Plan and proposed facilities along Main Street and along potential roadway extensions are shown as "Type TBD" pending further coordination.

Several existing routes are recommended for upgrades to lower-stress facilities, such as converting the Pope Street Class II and III facilities into a Class I shared-use path. New Class I paths along Sulphur Creek and the Napa River would further expand off-street connectivity, supported by a grid of Class II bike lanes and Class III routes on local and collector streets. The proposed network (Chapter 4) builds on the 2019 NVTA Plan and has been refined through community feedback and technical analysis to reflect current conditions and priorities.

Bike Facility Classifications

St. Helena uses the Caltrans classification system for bikeways, summarized below:

Class I: A shared-use path (see image, right) is completely separated from motor vehicle facilities by space or a physical barrier, and typically is grade-separated (at sidewalk level). It is identified with guide signing and may have pavement markings. An example of a shared-use path is the existing Vine Trail north of Pratt Avenue.

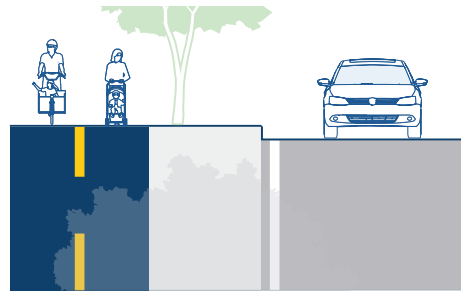
Class II: A bike lane (see image, right) is a striped lane for one-way bike travel within the paved area of the street. A bike lane is identified by a painted (usually white) lane line, and sometimes other pavement markings, such as a bicycle or bicyclist icon. There are a few bike lanes in St. Helena, including on Pope Street and Silverado Trail.

Class II - Buffered Bike Lane: A variation of a bike lane is a buffered bike lane, which has an additional painted buffer space to provide increased separation between bicyclists and motorists. There are currently no buffered bike lanes in St. Helena.

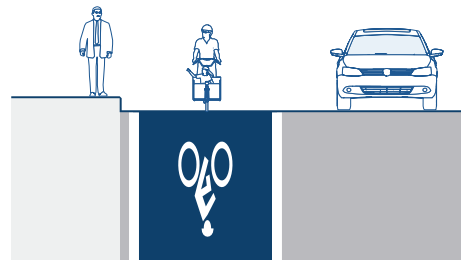
Class III: A bike route is a route recommended for bicycle travel along an existing right-of-way which is typically signed but not striped.

Class III - Bike Boulevard: A variation of the bike route is the bike boulevard. This alternative facility is typically striped and includes additional traffic calming measures, such as traffic circles, speed cushions, and/or raised crosswalks, and is typically recommended for streets with lower speeds and lower vehicle volumes. Valley View Street is an example of a bike boulevard.

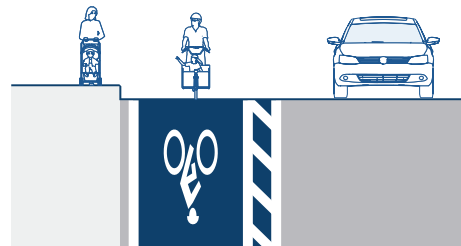
Class IV- Separated Bikeway: One- or two-way bikeways with a physical barrier between the bicyclist and traffic lanes (e.g., bollards, curb, planters, etc.) There are currently no existing or proposed separated bikeways in St. Helena.



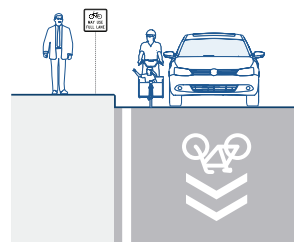
Class I: Shared Use Path



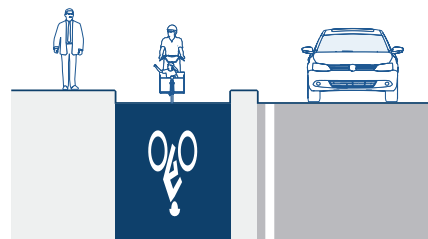
Class II: Bike Lane



Class II: Buffered Bike Lane



Class III: Bike Boulevard



Class IV: Separated Bikeway

Figure 7: Bikeway Classification Typical Cross sections



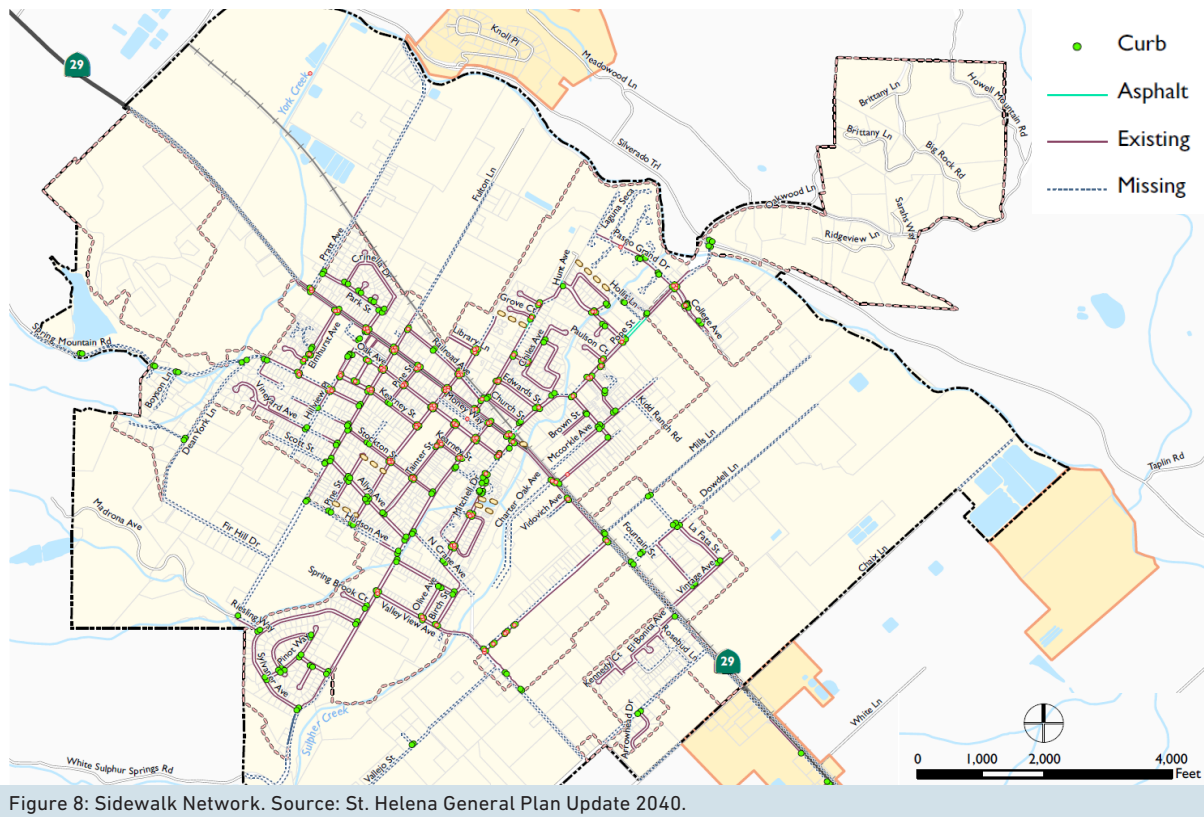
Planned Class I trail facilities, like the Vine Trail, could anchor an expanded bicycle and pedestrian network (2024)



Bicycle Lanes (Class II) on Pope Street (2024)



Bicycle Boulevard (Class III) on Valley View Street (2024)



Sidewalk Network

St. Helena's sidewalk network was mapped as part of the General Plan Update 2040 (Figure 8). The network is generally well-connected within the downtown area and its immediate surroundings, where a robust system of sidewalks supports pedestrian movement and access to local amenities and services. However, in some areas near schools, sidewalks exist on only one side of the street, and the network diminishes significantly in the more rural and peripheral parts of the city. In these areas, sidewalks are sparse or absent, which can hinder pedestrian access, safety, and connectivity. Furthermore, many sidewalks have poor pavement quality and are in need of maintenance.

St. Helena has a strong tradition of recreational walking, with many residents using informal trails and paths through agricultural land and greenfield areas. While these routes are valued by the community, they are not always accessible, legible, or comfortable for all users.

Over time, there may be opportunities to formalize select informal paths, where appropriate and feasible, to improve access, enhance comfort, and better connect neighborhoods and destinations.

This combination of gaps near schools, limited facilities in rural areas, and reliance on informal paths underscores the need for targeted sidewalk and trail investments that expand safe, walkable access throughout the city and encourage walking as a viable option for more residents.

Public Transit Service

Public transit options in St. Helena are limited and primarily focused on regional rather than local travel. The city is served by The Vine's Route 10, operated by the Napa Valley Transportation Authority (NVTa), which runs along Highway 29 between Napa Valley College and Calistoga with multiple daily trips. Route 10 provides connections to destinations throughout Napa Valley, including transfers at the Soscol Gateway Transit Center and the Redwood

Park and Ride, where riders can access Amtrak and BART services.

Within the city, the St. Helena Shuttle offers door-to-door, on-demand service operated by Vine Transit/NVTA, running daily except Sunday.

Given these limited local options, community members emphasized the importance of expanding transit service throughout the valley to reduce reliance on personal vehicles, particularly for students, parents, and the workforce. Enhanced transit would complement the City's bicycle and pedestrian initiatives by offering additional non-drive alternatives for everyday trips. The Vine Shuttle was frequently cited as a successful model, especially for helping students travel to St. Helena from surrounding areas, demonstrating how improved and expanded transit could further support mobility and reduce vehicle dependence citywide.



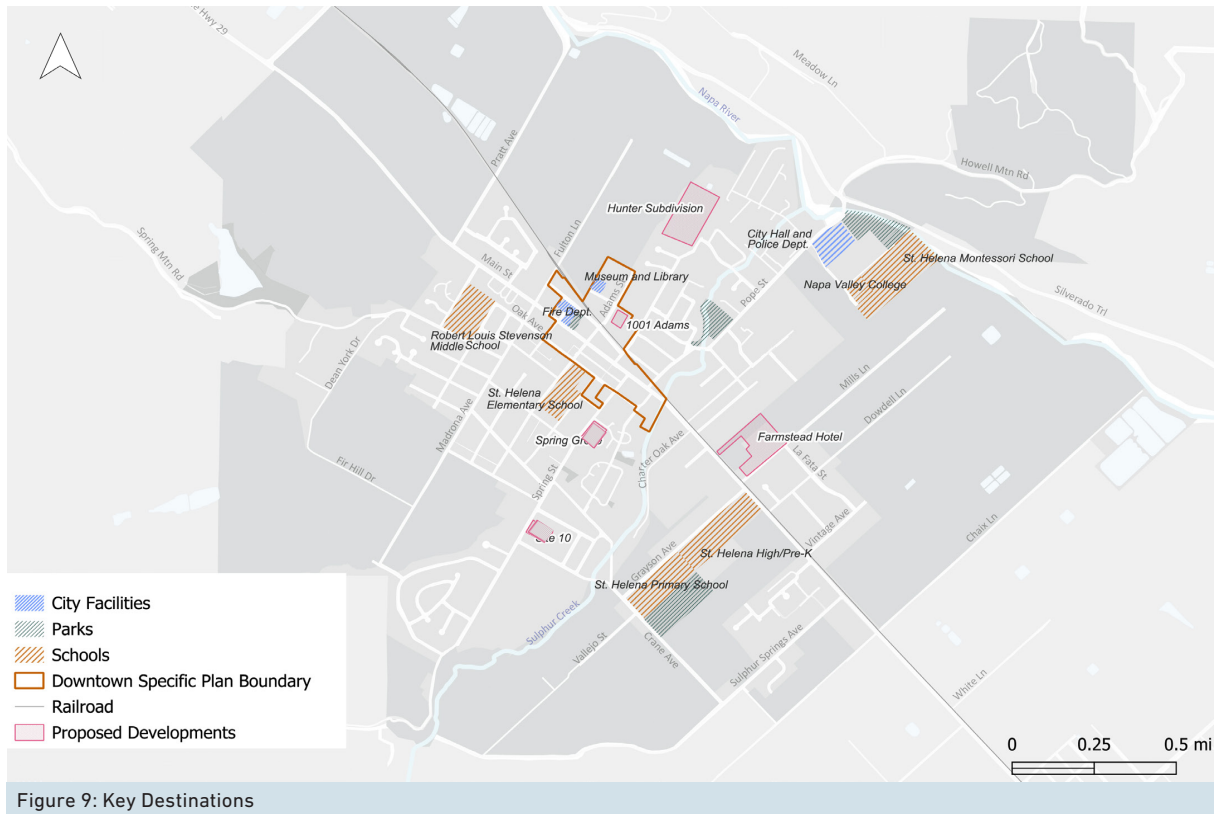
Continuous sidewalks on both sides of Adams Street near the downtown area



Sidewalk on only one side of street on Elmhurst Ave outside of Robert Louis Stevenson Middle School



Informal trails and walking paths between the terminus of Adams St and Napa River (left) and along Madrona Ave west of Main St (right)



Key Destinations

Ensuring that people of all ages and abilities can travel to key destinations by walking and biking is essential for building a high-quality, accessible transportation network. Identifying where these destinations are helps determine where safe, comfortable routes are most needed and where improvements will have the greatest impact. Key destinations were identified through desktop review, analysis of prior plans and upcoming development projects, and pedestrian and bicycle count data. Figure 9 shows their locations, including:

- + Downtown St. Helena (Main Street/Highway 29, from Madrona Avenue to Mitchell Drive) commercial area with shops, restaurants, and grocery stores
- + Schools
 - + St. Helena Preschool for All and St. Helena High School (shared campus on Grayson Avenue)
 - + St. Helena Primary School (Grayson Avenue)
- + St. Helena Elementary School (Adams Street)
- + Robert Louis Stevenson Middle School (Hillview Place)
- + St. Helena Montessori School (College Avenue)
- + Napa Valley College (College Avenue)
- + Parks (Only primary parks, listed in bold below, are shown on the map)
 - + **Crane Park**
 - + **Jacob Meily Park**
 - + **Lyman Park**
 - + Mary Fryer Park
 - + Mennen Park
 - + Starr Baldwin Park
 - + Stone Bridge Park
 - + **Wappo Park and Dog Park**
- + Robert Louis Stevenson Museum and the St. Helena Library (Library Lane)

Future and planned destinations are also critical to establishing accessibility network-wide:

- + Potential new park sites (as identified in the 2040 General Plan Figure 12.1):
 - + Sulphur Creek Park
 - + Adams Street Park
 - + Flood Control Project Open Space
 - + Pratt Avenue Park
 - + Lower Reservoir Park
- + Proposed building sites (expected to be significant trip generators):
 - + Hunter Subdivision
 - + 1001 Adams Street
 - + Spring Grove
 - + Spring Street Site 10

The future Hunter Subdivision project, located at the east end of Adams Street near the Museum and Library, is poised to significantly impact local travel patterns. This new development will introduce 51 single-family units, 25 multi-family units, and 11 accessory dwelling units. The increased density in this area makes it a critical origin point for users of all travel modes. The hotel proposed at 1001 Adams Street, which includes 75 guest rooms and 13 for-sale residential units, will generate even more trips, especially vehicle and pedestrian trips, which start and end on Adams Street. In addition, recent development applications for Spring Grove and Spring Street Site 10 underscore the scale of anticipated growth and the importance of coordinated transportation planning in this area of St. Helena.



St. Helena Elementary School



Robert Louis Stevenson Middle School



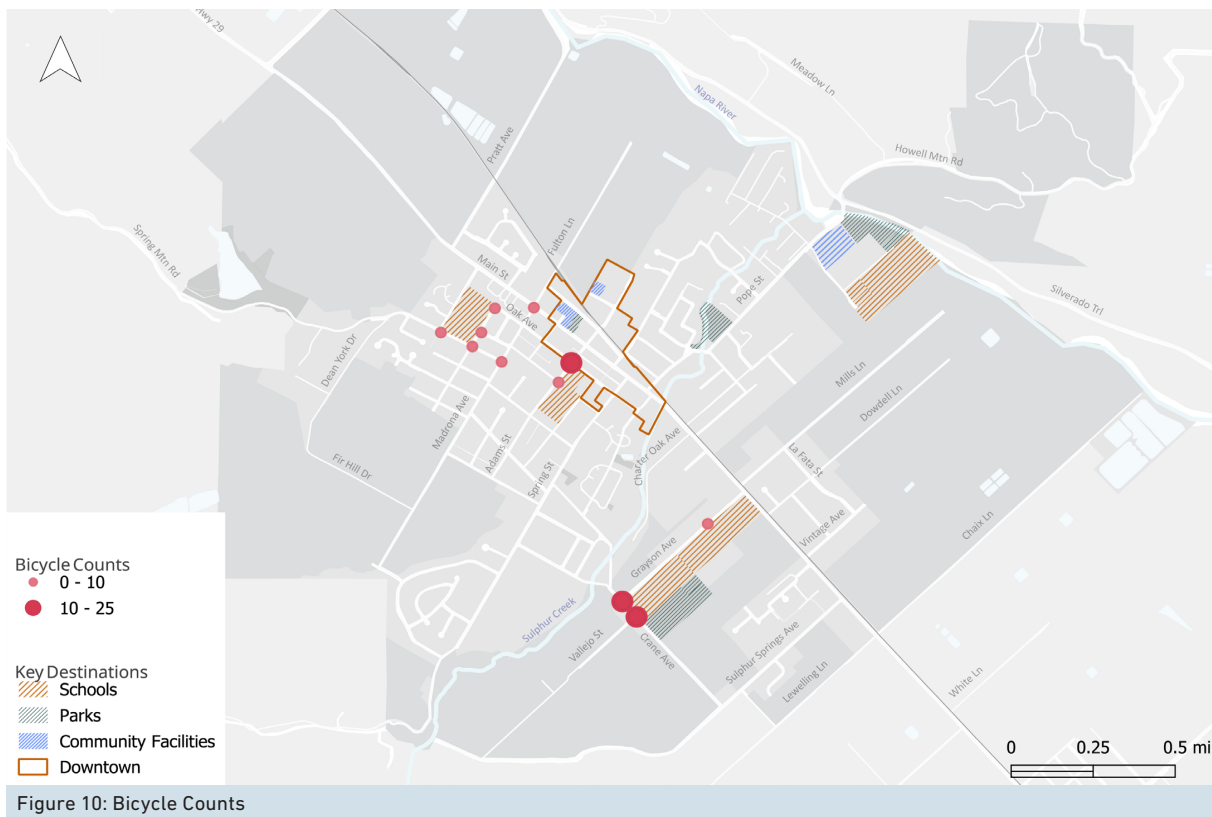
Crane Park



Wappo Dog Park



Downtown St. Helena



Bicycle and Pedestrian Counts

Bicycle and pedestrian counts help identify where biking and walking activity is concentrated—and where safety and connectivity improvements will have the greatest impact. These observations reveal how students and residents are currently traveling and highlight locations where supportive infrastructure is most needed. As part of this planning effort in 2024, counts were collected at selected locations across the City, primarily near schools, during the 7–9 a.m. and 2–4 p.m. weekday peak periods. Table 1 reflects totals across both time windows. “Other active mode” includes mobility devices, skateboards, and scooters.

Figures 10 and 11 show the total number of bicyclists and pedestrians were observed at each location (“other active modes” are grouped with pedestrians). Because counts were limited to specific locations, they allow for relative comparison but do not represent citywide activity.

Findings from these counts suggest:

- + High pedestrian activity near the centrally located middle and elementary schools may indicate strong demand for safe walking routes in this area, suggesting that improved crossings and sidewalk connections around Adams Street and Oak Avenue could be especially impactful.
- + Low bicycle volumes citywide may reflect limited all-ages-and-abilities infrastructure, pointing to the potential need for more protected and low-stress facilities. The relatively higher bicycle activity at Adams Street and Oak Avenue could suggest existing latent demand that improved infrastructure might better support.
- + The higher bicycle counts on Crane Avenue near the primary school, paired with lower pedestrian volumes, may indicate that students are more likely to bike than walk due to the school’s distance from most neighborhoods, suggesting an opportunity to enhance safe bike access along this corridor.

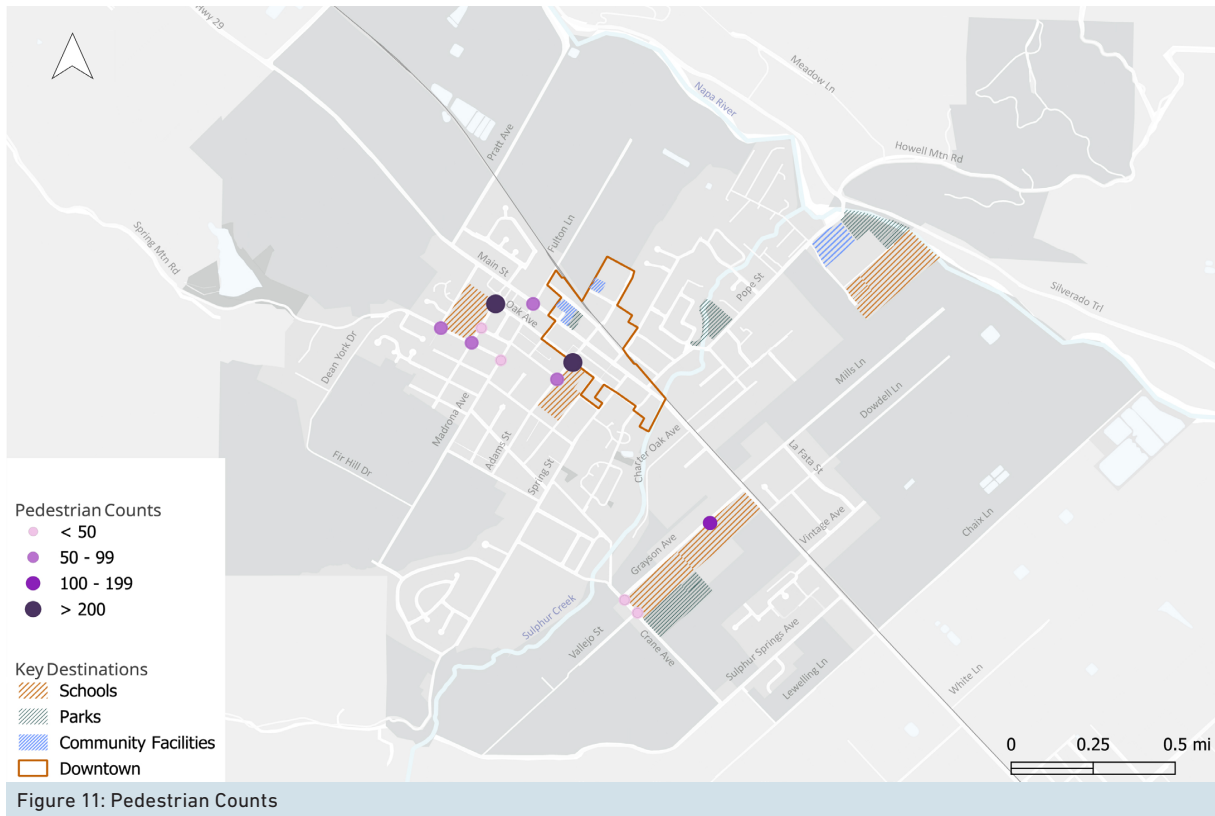


Table 1: Active Modes Count Data

Location	Bicyclists	Pedestrians	Other Active Mode
Adams St / Kearney St	5	64	0
Adams St / Oak Ave	21	272	2
Crane St / Grayson Ave	15	26	0
Grayson Ave Crosswalk	10	108	3
Kearney St / Hillview Pl	3	26	0
Madrona Ave / Main St	7	81	0
Oak Ave / Hillview Pl	9	217	1
Spring Mt Rd / Elmhurst Ave	9	51	2
Spring Mtn Rd / Hillview Pl	3	53	0
Spring Mtn Rd / Madrona Ave	10	31	0
Vallejo St / Crane Ave	13	39	0



This crossing outside of St. Helena High School includes a high-visibility crosswalk, ADA-compliant curb ramps, and an RRFB

Crossing Assessment

A key component of pedestrian access is the presence of safe and comfortable crossings and curb ramps that are compliant with the Americans with Disabilities Act (ADA). A desktop review of key crossings was conducted using Google Streetview images from April-May 2024; major corridors (arterials, collectors, and select other streets around schools) were reviewed for presence of traffic control, crosswalks, and ADA-compliant curb ramps. Proposed improvements based on this review and inventory can be found in the Chapter 4.

In summary, most intersections in St. Helena could benefit from some improvements. Key findings include:

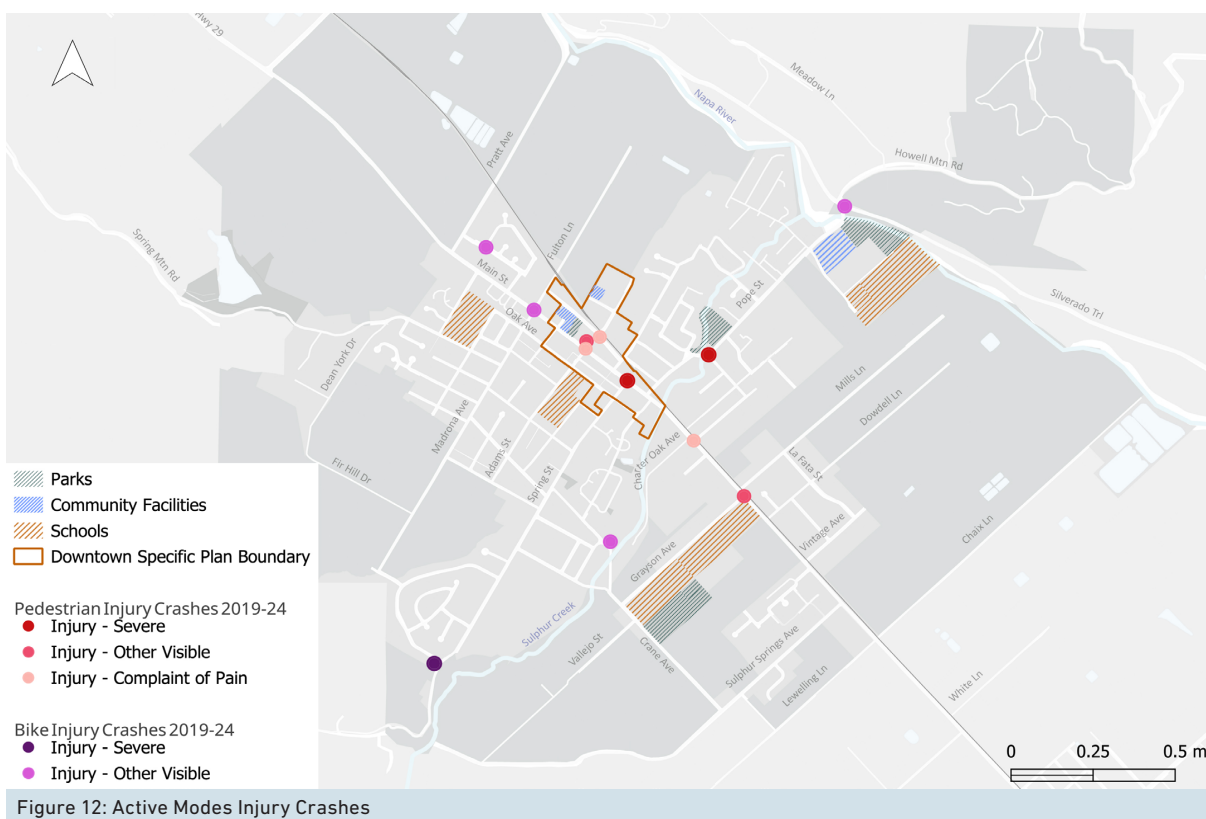
- + Most existing curb ramps are not current ADA-compliant, and some crossings are missing curb ramps altogether.
- + Many crosswalks should be upgraded from standard, parallel lines to high-visibility, ladder-style lines. (See example photo above.)
- + Some uncontrolled crossings (i.e., where no stop sign nor signal is present) could benefit from rectangular rapid flashing beacons (RRFBs) which feature flashing white or yellow lights activated by pedestrians using

a button. There are some locations in St. Helena that use RRFBs, including at the entrance to St. Helena High School on Grayson Avenue, pictured above.

- + Many intersections would benefit from red paint or curb extension daylighting to improve visibility of pedestrians crossing at intersections. Assembly Bill 413 prohibits parking within 20 feet of a marked or unmarked crosswalk.
- + The City has been implementing high-visibility crosswalks and ADA-compliant curb ramps with detectable warning surfaces in its recent improvement projects.



Most curb ramps are not currently ADA-compliant



Active Modes Injury Crashes

All active mode injury crashes were sourced from the UC Berkeley SafeTREC Transportation Injury Mapping System (which relies on data from the California Highway Patrol's Statewide Integrated Traffic Records System) for March 2019-March 2024, and are shown in Figure 12. Overall, there are very few crashes in St. Helena, which is consistent with the size of the city. There were, however, three severe or fatal injury crashes among those.

Pedestrian injury crashes

- + Most occurred on Highway 29/Main Street
- + Two severe crash occurred at Pope Street and Allison Avenue, and Main Street and Spring Street

Bicyclist injury crashes

- + Located at various intersections, primarily where bicycle facilities are lacking
- + One severe crash occurred at Spring Street and Sylvanna Avenue
- + No fatalities

The concentration of pedestrian injury crashes along Main Street may suggest traffic safety issues on that street but may also reflect a higher level of pedestrian activity there. Regardless, Main Street in downtown St. Helena is a prime location for mixing of active modes with vehicle traffic. The lack of pedestrian crashes outside of the central parts of the city, and especially in the more rural areas, might indicate that people feel unsafe walking in areas with limited sidewalks and lighting and therefore avoid walking in these areas.



Bicycle Level of Traffic Stress

Bicycle Level of Traffic Stress (LTS) is a tool for quantifying the comfort level experienced by most people bicycling along a street on a scale from 1 (least stress) to 4 (highest stress). The following inputs and street characteristics determine LTS scores for a street segment:

- + Bicycle facility presence, type, and width
- + Posted speed limit
- + Number of travel lanes per direction
- + Average daily traffic (ADT) volume
- + Presence and width of on-street parking lanes
- + Presence of a centerline

An LTS analysis was conducted for St. Helena as part of the Napa Countywide Bike Plan effort in 2019, revealing that many of St. Helena's streets are considered low stress (Figure 13), these are mostly local streets with lower traffic volume and speeds, which typically do not connect to destinations outside of an immediate neighborhood. One exception would be Pope Street, which is a connector street with bicycle facilities. In contrast, most of the city's major streets are high stress, which serve as barriers and potentially limit mobility for those traveling by bike.

Community Feedback on Safety

In addition to the safety analysis conducted for this plan, community members provided substantial feedback on safety concerns throughout the city. Their input highlighted several recurring themes and locations where conditions feel uncomfortable or unsafe for people walking and biking. Common concerns included the need for more consistent roadway maintenance, particularly pothole repair on corridors like Sulphur Springs Avenue, which many felt discouraged bicycling. Participants also pointed to challenging conditions on key streets, such as limited visibility on Valley View Street and just west of the Pope Street at Allison Avenue intersection, narrow and inconsistent bicycle facilities along Pope Street, and constrained widths on Adams Street, where some suggested removing on-street parking to improve comfort for bicyclists.

Several major crossings, including many along the Highway 29/Main Street corridor, for example the Hunt Avenue intersection, were described as difficult and potentially dangerous for pedestrians and bicyclists, with particular emphasis on the need for improved crossings south of Downtown. Safety around St. Helena High School was another prominent concern, where pick-up and drop-off activity creates conflicts and students frequently cross outside designated areas. Finally, participants stressed the importance of improving multimodal safety along key evacuation routes to ensure reliable access during emergencies.



Sulphur Springs Avenue Roadway Condition (2024)



Visibility at Pope Street at Alison Avenue (2024)

Needs Assessment

A needs assessment is a summary of the key gaps, challenges, and opportunities identified through the existing conditions analysis and previous planning studies. To provide a consistent framework for evaluating conditions and shaping project recommendations, the needs assessment is organized around the plan's three guiding principles: connectivity, accessibility, and safety. Drawing on findings from current network performance, community input, and past studies, the assessment highlights where improvements are most needed and where investments can have the greatest benefit.

Connectivity

Definition: The degree to which different parts of the transportation network are linked together, allowing for seamless travel.

Guiding Principle: Ensure that all modes of transportation, motor vehicles, public transit, bicycles, and walking/rolling, are well-integrated and facilitate connected and convenient travel throughout the city.

Key Challenges

- + Several streets terminate as dead ends or cul-de-sacs, hindering connectivity and emergency response time, and creating longer journeys for all modes.
- + Narrow bridges and congestion along the Highway 29/Main Street regional connector create vehicular bottlenecks.
- + Missing and narrow sidewalks are common, especially on the rural edges of the city. However, even sidewalks around schools are often insufficient, such as along Grayson and Oak Avenues, where they only exist on one side of the road and lack adequate width.

- + Outside of downtown, collectors including Pope Street and Madrona Avenue create barriers for bicyclists and pedestrians due to traffic volumes and limited crossing opportunities.
- + Several bridges with narrow roadways lack dedicated space for people walking and biking alongside people driving.
- + Roadway improvements in more rural areas will need to balance environmental sensitivity with mobility needs.
- + Regional transit is only available along Highway 29.

Key Opportunities and Preliminary Recommendations

- + St. Helena's compact size, with daily destinations located close together, support a strong culture of walking and biking, offering a foundation for expanding safe, comfortable routes for all ages and abilities.
- + Bridge realignment and road extension projects could help address some of the current barriers and bottlenecks in the network for all modes.
- + Planned cross-city Class I bike facilities, including the Vine Trail, can serve as the foundation for an expanded bike network.
- + An opportunity exists to strengthen bicycle access downtown by shifting from shared-road conditions to a system of dedicated lanes and paths that support safer, more inviting trips.
- + As the city expands, sidewalks can be installed with new, proposed development where none exist today. These new segments should either connect directly to existing sidewalks or be delivered through a broader phasing plan, with clear timing criteria and funded connection projects, so they close missing links and tie into the pedestrian network rather than creating "sidewalks to nowhere."

Accessibility

Definition: The potential for individuals of all ages and abilities to easily and comfortably travel between key origins and destinations regardless of transportation mode.

Guiding Principle: Help ensure that essential St. Helena destinations, such as schools, parks, and downtown, are easily and comfortably accessible to everyone, regardless of ability or mode of transportation.

Key Challenges

- + Most curb ramps in St. Helena are not current ADA-compliant and lack detectable warning surfaces. At some crossings, curb ramps are missing entirely. Current ADA-compliant curb ramps in the city are typically only found at recently installed ramps co-located with newer crosswalks.
- + Most parks are not located adjacent to schools, which might make it challenging for students to easily and comfortably access green spaces and after school activities on foot or by bike.
- + Outside of downtown, St. Helena lacks pedestrian-scale lighting, which makes traveling by active modes at night or during the winter uncomfortable (and potentially unsafe).
- + Bike racks in St. Helena are limited to a handful downtown, one at each park, and a few at each school. Limited end-of-trip facilities, such as bike racks, discourages people from biking to their destinations.

Key Opportunities and Preliminary Recommendations

- + The city has a compact, walkable downtown with a good density of destinations within it.
- + Providing low-stress routes to major destinations, including schools, parks, and community centers, could strengthen everyday accessibility and encourage more short trips by active modes.
- + Schools present a significant opportunity to transition routine local trips from vehicular to active transportation modes, particularly for short distances
- + Expanding and enhancing street tree coverage offers an opportunity to create more comfortable walking and biking connections to key destinations, using the shade provided along Main Street and in residential areas as a model for improving comfort along more rural roads where tree cover is often limited.
- + Implementing green infrastructure, landscape, and streetscape standards to enhance the comfort and legibility of the network can help to create inviting and cohesive experiences around key destinations.
- + Once the proposed bikeway network is substantially built out, there is potential to tap into the tourism economy to support local destinations and businesses by providing shared micromobility opportunities, such as bike/scooter share or local bike rental.

Safety

Definition: Safety involves creating a transportation environment that minimizes risks and enhances protection for all users.

Guiding Principle: Ground active transportation recommendations in current safety data and prioritize low-stress, comfortable facilities for people biking and walking/rolling, especially vulnerable users like school-aged children.

Key Challenges

- + Most bicyclist-involved crashes occurred where infrastructure is lacking, but narrow streets in St. Helena (such as Spring Street) will make accommodating low-stress facilities difficult. Reallocating space to pedestrians and bicyclists may require significant changes to the existing roadways, such as removing street parking.
- + Most of the city's major streets are high-stress, which divides the bicycle network and potentially limits mobility for those traveling by bike.
- + Drawing conclusions from crash data is limited because it only reflects where people are walking and biking today and doesn't capture locations that may be perceived as unsafe. Rural roads with limited lighting and no sidewalks and narrow bridges with poor visibility and no dedicated space for active modes all likely deter bicyclists and pedestrians.

Key Opportunities and Preliminary Recommendations

- + Improving intersection safety offers a key opportunity to address active modes injury crashes, which most often occur at intersections.
- + Daylighting strategies at intersections could improve sight lines, increase driver yielding, and free up space for streetscape enhancements.
- + Reducing vehicle speeds in areas with high pedestrian activity could create safer, more comfortable conditions for people walking and biking.
- + Installing higher-protection bicycle facilities (Class I shared-use paths) along high-stress corridors presents an opportunity to support "all ages and abilities" riders, meaning children, older adults, and anyone who may be less experienced or less comfortable biking in traffic.
- + Applying traffic-calming measures on collector roads could help manage speeds and enhance safety for all users.
- + Integrating green infrastructure into new streetscapes creates opportunities for natural traffic calming, improved safety, and more attractive, pedestrian-friendly environments.

4

Network-wide Recommendations

This chapter presents the network-wide recommendations that support a safer, more connected, and more accessible transportation system throughout St. Helena. These recommendations build on previous planning efforts, including the St. Helena General Plan, the NVTa Countywide Bicycle Plan, and other adopted local and regional transportation studies, and have been vetted through the Existing Conditions analysis and community engagement process.

Together, the network-wide recommendations establish a foundation for a cohesive multimodal system, enabling St. Helena to implement improvements in a coordinated, scalable, and cost-effective manner while advancing the community's long-term transportation vision.

At the time this Streets Master Plan was written, the Napa Countywide Active Transportation Plan (ATP) was also being developed and included citywide bicycle facility recommendations. For the proposed bike facilities listed on the following pages, a caret (^) indicates where alternative recommendations and/or discrepancies exist between this Streets Master Plan and the Napa Countywide ATP. For projects with differing recommendations, both plans should be referenced at the time of implementation to support an informed approach

All recommendations are planning level only and will require further design and engineering review.

Proposed Bicycle Facilities

The proposed bicycle network projects presented here draw primarily from the 2019 NVT Countywide Bicycle Plan. Exceptions include the extents of the Sulphur Creek Class I Trail, which is presented in the General Plan Update 2040 Bike Network exhibit. Facilities previously proposed for Main Street/Highway 29 prior to the implementation of the Vine Trail (including Class II and Class III facilities) have been excluded from the list of proposed bicycle facility projects. Spring Street has also been changed from Class II bike lanes to a Class III bike boulevard with a side path as detailed on page 62-65. The proposed bicycle network will better connect existing facilities to each other and to key destinations (such as parks and schools) that currently are disconnected from the network.

The proposed bicycle network includes a range of facility types that vary in infrastructure and user comfort, from

Class III rural bike routes and bike boulevards that rely on signage, traffic calming, and shared-street treatments, to Class II bike lanes that provide dedicated on-street space, and Class I shared-use paths, which are dedicated off-street paths separated from vehicle traffic. Some existing facilities will be upgraded to lower-stress treatments, such as converting the Class II bike lane and Class III rural bike route on Pope Street to a Class I shared-use path. In addition, proposed Class I shared-use paths along Sulphur Creek and the Napa River could create connected off-street greenways offering safe, scenic, and low-stress east-west and north-south connections, supported by a network of Class II bike lanes and Class III bike routes and boulevards on local and collector streets.

Prioritization of the proposed bicycle facilities is presented in Chapter 5, providing a basis for identifying high-impact projects for implementation and funding.

Table 2: Proposed Bicycle Facilities

Map #	Street/Trail Name	Begins	Ends	Length (Mi.)
Class II Bike Lane				
1	Allyn Ave	Spring St	Madrona Ave	0.34
2	S Crane Ave	Grayson Ave	Sulphur Springs Ave	0.45
3	Grayson Ave	Primary School driveway	Main St/SR 29	0.50
4	Hudson Ave	Madrona Ave	Spring St	0.32
5	Mills Ln	Main St/SR 29	Proposed class I facility annex from Starr Ave	0.50
6	Spring Mtn Rd^	Dean York Ln	Madrona Ave	0.39
7	Sulphur Springs Rd	S Crane Ave	Main St/SR 29	0.50
8	Sylvaner Ave	Riesling Way	Spring St	0.30
Class III Bike Boulevard				
9	Madrona Ave/Riesling Wy/Fulton Ln^*	Vine Trail	Sylvaner Ave	1.03
10	Adams St	Railroad Ave	Allyn Ave	0.47
11	Birch Ave	Crane Ave	Valley View St	0.15
12	Church St^	Hunt Ave	Pope St	0.13
13	College Ave	Pope St	Proposed class I facility at SE end of College Ave	0.18
14	Elmhurst Ave	Spring Mountain Rd	Main St	0.23
15	Edwards St	Hunt Ave	Pope St	0.15
16	Hillview Pl	Spring Mountain Rd	Oak St	0.14
17	Hunt Ave^	Railroad Ave	Church St	0.02
18	Hunt Ave	Church St	Starr Ave	0.42
19	Mariposa Ln^	Pope St	McCorkle Ave	0.14
20	McCorkle Ave	Alison Ave	Proposed class I facility 675' west of College Ave	0.29

Map #	Street/Trail Name	Begins	Ends	Length (Mi.)
21	Mitchell Dr	Main St	Crane Ave	0.44
22	N Crane Ave	Spring St	Birch St	0.23
23	Oak Ave	Hillview Pl	Madrona Ave	0.10
24	Railroad Ave	Adams St	Hunt Ave	0.11
25	Spring St	Sylvaner Ave	White Sulphur Spring Rd	0.18
26	Valley View St	Spring St	Birch St	0.20
27	Spring St	Valley View St	Oak Ave	0.56
28	Vine Trail	Fulton Ln/rail alignment	Mitchell Dr/Main St	0.72
Class I Shared-Use Path				
29	Vine Trail (Pratt Ave)	Railroad	Main St/SR 29	0.26
30	Vine Trail (Railroad)	Pratt Ave	Fulton Ln	0.33
31	Crane Park Path (to La Quinta Way)	Grayson Ave	Sulphur Springs Ave	0.50
32	Library Lane Path	Adams St	Vine Trail (along RR corridor)	0.13
33	Lower Reservoir Loop Trail	NW city limit	Loop around Lower Reservoir to connect to Spring Mountain Rd	1.25
34	McCorkle Ave Path	McCorkle Ave cul-de-sac	College Ave	0.14
35	Napa River Trail	St Helena city limit near wastewater treatment plant	St Helena city limit (Deer Park Rd / Lower Reservoir Trail)	3.04
36	Pope St	Starr Ave	Silverado Trail	0.41
37	Starr Ave Path	Adams Ave (pending future extension)	Mills Ln	0.84
38	Sulphur Creek Trail	Sulphur Springs Ave	Napa River	2.19
39	Vine Trail (Main St/SR 29)	St Helena City Limits (South)	St Helena City Limits (North)	2.44
40	York Creek Path	Spring Mountain Rd	Main St/SR 29 (Vine Trail)	0.33
41	Adams St (pending future extension)	Railroad Ave	Silverado Trail	0.84
Facility Type to Be Determined				
42	Allison Avenue (pending future extension)	Charter Oak Ave	Mills Ln	0.21
43	College Ave (pending future extension)	McCorkle Ave Path	Mills Ln	0.24
44	Main St	Pratt Ave	Mitchell Dr	0.76
45	Mills Ln (pending future extension)	Starr Ave	Silverado Trail	0.51
46	Oak Ave (pending future extension)	Mitchell Dr	Grayson Ave	0.42
Class III Rural Bike Route**				
	Chaix Ln	Main St/SR 29	Napa River Trail (proposed)	1.07
	Pratt Ave	Main St/SR 29	Napa River Trail (proposed)	0.71
	Spring Mountain Rd	St Helena city limit (West)	Dean York Ln	0.69
	Sulphur Springs Ave	St Helena city limit	Spring St	0.16
	Sulphur Springs Ave	Sulphur Creek	Crane Ave	0.93

*Posted speeds of 30 mph on Madrona will be reduced to 25 mph to comply with Senate Bill 1216, which prohibits Class III facilities on roadways with posted speeds over 30 mph.

** Class III rural bike routes are not shown in Figure 14 as they typically involve signage only and do not require roadway striping or construction. Class III rural bike routes differ from Class I bikeways, for example, which include dedicated off-street paths and require more extensive planning and coordination.

^Alternate recommendations were proposed in the Napa County Active Transportation Plan (ATP) during the writing of this Plan:

- #6: Change recommendation from Class II Bike Lanes to Class III Bike Boulevard
 - #9: Change recommendation from Class III Bike Boulevard to Class II Bike Lanes
 - #12: Shift recommendation from Church St to Edwards St
 - #17: Extend recommendation to Main St.
 - #19: Shift recommendation from Mariposa Ln to Allison Ave
- Additional facilities include a Class I facility over Sulphur Creek from Sulphur Springs Ave to White Sulphur Spring Rd and a TBD facility on Crinella Dr to connect to the Vine Trail if the Vine Trail alignment is west of the train tracks (otherwise this facility will be removed).



Crossing Assessment and Proposed Improvements

The recommendations below were developed as a part of the Streets Master Plan intersection review, and include locations flagged for improvement by City staff and the public. Recommendations from previous plans include:

- + 2021 St. Helena Safe Routes to School Plan (denoted with *)
- + 2019 Safe Routes Napa County Walk Audits (denoted with ^)
- + 2023 NVTA Vision Zero Plan (denoted with +)
- + All locations flagged for improvements below were identified in the 2017 ADA Transition Plan for curb ramp improvements.

Crosswalks have only been recommended where sidewalks exist on both sides and assume inclusion of ADA-compliant curb ramps. To enforce AB413 and improve pedestrian visibility, it is recommended that curbs are painted red within 20 feet of intersections, unless a curb extension is installed. This assessment is non-exhaustive and covers major streets only (except where

additional intersections were flagged). Recommendations in the Downtown Specific Plan are subject to change.

Prioritization of the proposed crossing improvements is presented in Chapter 5, providing a basis for identifying high-impact projects for implementation and funding.

The 2016 Napa County Pedestrian Master Plan included sidewalk recommendations for St. Helena which were reviewed by City staff in July 2024. The following outstanding projects carried forth in this plan are:

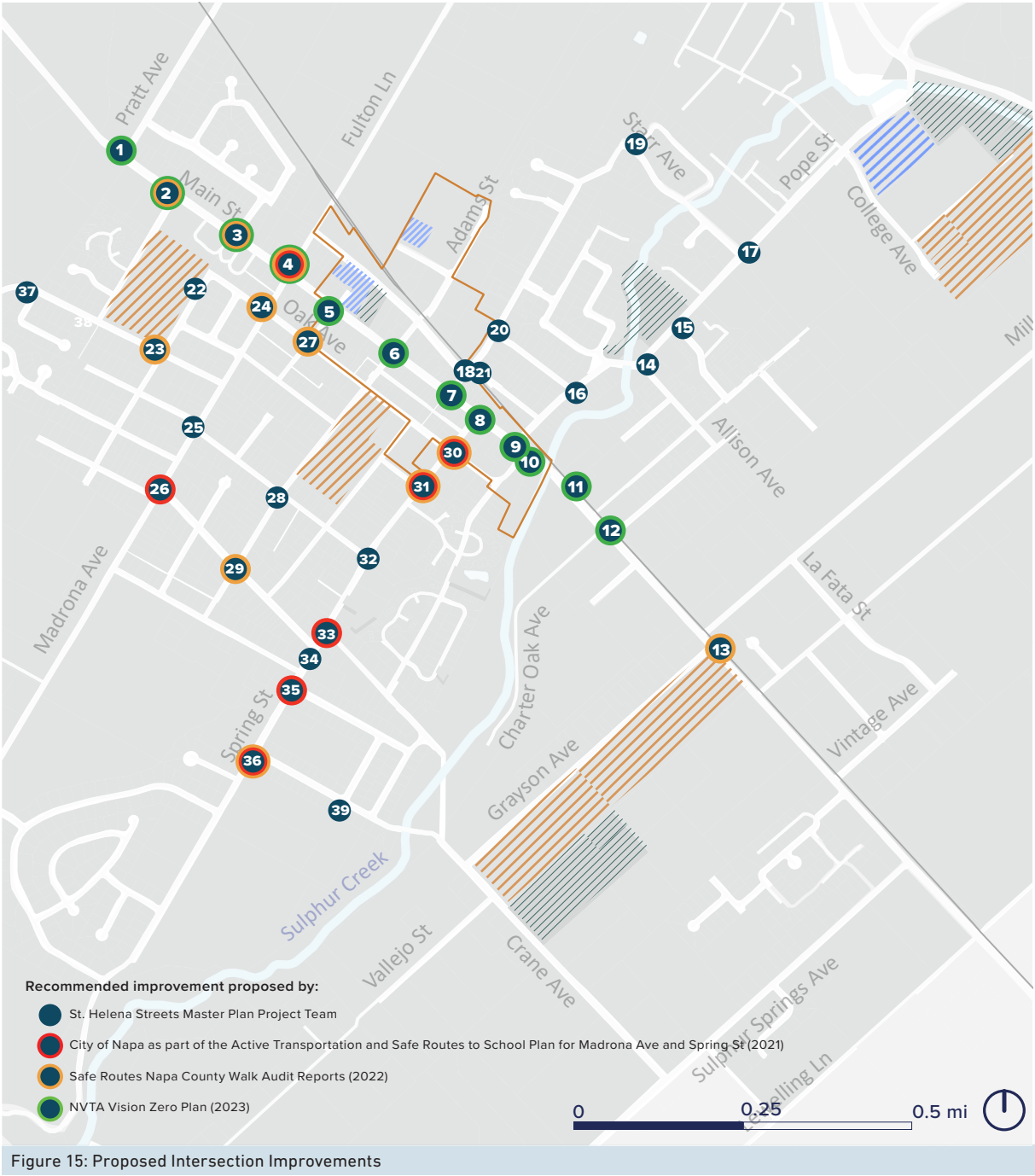
- + Sidewalk installation around Robert Louis Stevenson Middle School at Hillview Place, Spring Mountain Road, and Elmhurst Avenue.
- + ADA-compliant retrofit of business driveways along Main Street, from Spring Street to Pope Street (partially complete beginning at Pope Street end).
- + Conversion of decomposed gravel pathway along Main Street, from Dowdell Lane to El Bonita Avenue, to ADA-compliant sidewalk.
- + Sidewalk repair on Main Street at El Bonita Avenue.

Table 3: Proposed Crossing Improvements

Map #	Location	Existing Condition	Proposed Improvement
1	Main St at Pratt Ave+	High-visibility crosswalk on south approach; high-visibility crosswalk and stop sign on minor approach; curb ramps have detectable warning surfaces	Install high-visibility crosswalk on north approach
2	Main St at Elmhurst Ave^+	Standard crosswalk on south approach; standard crosswalk and stop-sign on minor approach; "slight" curb extensions; curb ramps have detectable warning surfaces; RRFB.	Ensure high-visibility crosswalks on all approaches and advanced warning sign for RRFB
3	Main St at Crinella Ct^+	High-visibility crosswalk on all approaches; stop sign on minor approach; curb ramps have detectable warning surfaces	Install RRFB with advanced warning signs on either north or south approach
4	Main St at Madrona Ave*^+	Signalized intersection; standard crosswalks; curb ramps not ADA-compliant	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant; install curb extensions
5	Main St at Pine St+	Standard crosswalks on all approaches except north; stop signs on minor approaches; curb ramps not ADA-compliant	Ensure high-visibility crosswalks on all approaches; upgrade curb ramps to be ADA-compliant; install RRFB on either north or south approach
6	Main St at Adams St+	Signalized intersection; standard crosswalks; curb ramps not ADA-compliant	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant; install curb extensions on both sides of Main St crossings
7	Main St at Hunt Ave^+	High-visibility crosswalk and stop sign on minor approach; high-visibility crosswalk on south approach; curb ramps not ADA-compliant	Install high-visibility crosswalk on north approach; upgrade curb ramps to be ADA-compliant; install curb extensions on all approaches

Map #	Location	Existing Condition	Proposed Improvement
8	Main St at Spring St ⁺	High-visibility crosswalk and stop sign on minor approach; high-visibility crosswalk on southeast approach; curb ramps not ADA-compliant	Install curb extensions and RRFB on southeast approach; upgrade all curb ramps to be ADA-compliant
9	Main St at Pope St ⁺	Signalized intersection; standard crosswalks on all approaches except south; curb ramps not ADA-compliant	Ensure high-visibility crosswalks on all approaches; upgrade curb ramps to be ADA-compliant; install curb extensions on both sides of Main St crossings
10	Main St at Mitchell Dr ⁺	Signalized intersection; standard crosswalk on minor approach only; curb ramps not ADA-compliant	Ensure high-visibility crosswalks on all approaches (note that north approach of this intersection is south approach of SR29/Pope St intersection); install curb extensions on both sides of Main St crossings; upgrade curb ramps to be ADA-compliant
11	Main St at 1000 Main ⁺	Currently no crossing here	Consider installing a crossing to improve pedestrian connectivity, reduce block lengths, and slow speeds.
12	Main St at Charter Oak Ave ⁺	High-visibility crossing with RRFB on north approach; stop control on minor approaches with standard crosswalk on west approach and no crosswalk on east approach; most curb ramps not ADA-compliant	Ensure high-visibility crosswalks on all approaches and upgrade curb ramps to be ADA-compliant. Modernize RRFB and/or install PHB (PHB already in City's CIP and dependent on private development funding)
13	Main St at Grayson Ave	Signalized intersection; standard crosswalk on minor approach (no sidewalk/train tracks only on east side of street); curb ramps have detectable warning surfaces	Upgrade crosswalk to high visibility
14	Pope St at Allison Ave	Stop-controlled crossing on minor approach (across Allison Ave) with high-visibility crosswalk with ADA-compliant ramps; no crossing across Pope St because there no sidewalk on north side and limited visibility at curve makes crossing dangerous.	Crossing cannot be installed here due to limited visibility and ROW constraints. Install speed reduction treatments on both approaches of Pope St at Allison Ave. Consider vegetation management to improve visibility.
15	Pope St at Mariposa Ln	Stop control and standard crosswalk on minor approach; high-visibility crosswalk on southwest approach	Install RRFB (Jacob Meily Park access)
16	Pope St at Edwards St	High-visibility crosswalk on north approach across Edwards; stop-controlled crossing on minor approach (no crosswalk); ramps not ADA-compliant	Install high-visibility crosswalk on minor approach and upgrade ramps to be ADA-compliant. If crossing is not installed at Allison Ave, consider installing RRFB at this location instead.
17	Pope St at Starr Ave	High-visibility crosswalks on major approaches; standard crosswalk on minor approach; RRFB on west approach; one curb ramp not ADA-compliant	Ensure all crosswalks are high-visibility and that all curb ramps are ADA-compliant
18	Hunt Ave and Railroad Crossing	Not ADA-compliant; poor visibility	Upgrade to be ADA-compliant. Add vertical delineation or other formalized separation on west side of railroad tracks between tracks and Railroad Avenue to shorten crosswalk across the parking spaces. Remove the two parking stalls immediately adjacent to the crosswalk to improve pedestrian visibility.
19	Hunt Ave and Starr Ave	Stop-controlled on all legs; no crosswalks; curb ramps missing and existing one is non compliant	Install high-visibility crosswalks at both stop signs and ensure ADA-compliant curb ramps are present at all crossings
20	Hunt Ave at Edwards St	High-visibility crosswalk on west and south approaches; stop sign on south (minor) approach; curb ramps have detectable warning surfaces	Install high-visibility crosswalk on east approach. Conduct study to address travel lane and parking reconfiguration.
21	Hunt Ave at Church St	High-visibility crosswalk and stop sign on Railroad Ave approach; stop sign with no crosswalk at Church St approach; curb ramps have detectable warning surfaces	Install high-visibility crosswalk at Church St, just east of the railroad tracks; upgrade Church crosswalk to high-visibility
22	Hillview Pl at Middle School	Standard crosswalk; one ramp not ADA-compliant	Upgrade to high-visibility crosswalk and upgrade ramp to be ADA-compliant; install curb extensions and RRFB
23	Hillview Pl and Spring Mountain Rd [^]	Stop control on minor approaches; standard crosswalks; curb ramps not ADA-compliant	Install stop-control on all approaches and curb extensions on all corners, upgrade all crosswalks to high visibility, and upgrade all curb ramps to be ADA-compliant
24	Madrona Ave and Oak Ave [*]	All-way stop control with standard crosswalks; non compliant curb ramps	Upgrade crosswalks to be high-visibility and upgrade curb ramps to ADA-compliant; extend red curb to daylight the intersection; install curb extensions on all corners
25	Madrona Ave at Stockton St	No crosswalks; stop control on minor approach; one curb ramp not ADA-compliant	Install high-visibility crosswalk on minor approach and across the NE approach on Madrona Ave; ensure all curb ramps are ADA-compliant

Map #	Location	Existing Condition	Proposed Improvement
26	Madrona Ave at Allyn Ave*	No crosswalks; stop control on minor approach; curb ramps have detectable warning surfaces	Install high-visibility crosswalk on minor approach and across the SW approach on Madrona Ave
27	Pine St and Oak Ave	All-way stop control with standard crosswalks; non-compliant curb ramps	Upgrade crosswalks to be high-visibility and upgrade curb ramps to ADA-compliant
28	Adams St at Stockton St	All-way stop control with standard crosswalks; curb ramps either non-compliant or missing	Upgrade crosswalks to be high-visibility and upgrade crosswalks to be ADA-compliant
29	Adams St at Allyn Ave	All-way stop control with no crosswalks; curb ramps have detectable warning surfaces	Upgrade crosswalks to be high visibility
30	Spring St at Oak Ave*	All-way stop control with standard crosswalks on three of four approaches; curb ramps not ADA-compliant	Ensure high-visibility crosswalks exist on all approaches; upgrade curb ramps to be ADA-compliant
31	Spring St at Kearney St*	Stop control and high-visibility crosswalk on minor approach; high-visibility crosswalk on NE approach; two ramps are not ADA-compliant and one does not exist	Install ADA-compliant ramps at all crossings. Conduct study to address travel lane and parking reconfiguration, and measure pedestrian volumes.
32	Spring St at Stockton St	Stop control and high-visibility crosswalk on minor approach; curb ramps have detectable warning surfaces	Install high-visibility crosswalk on NE approach
33	Spring St at Crane Ave*	Stop control and no crosswalk on minor approach; non-compliant ramp	Upgrade curb ramp to be ADA-compliant. Install high-visibility crosswalks across Spring St.
34	Spring St at Allyn Ave	Stop control and high-visibility crosswalk on minor approach; curb ramps have detectable warning surfaces	Install high-visibility crosswalk on NE approach
35	Spring St at Hudson Ave	Stop control on minor approach; missing curb ramps; no crosswalks	Install high-visibility crosswalks on minor approach and NE approach (feasibility challenge anticipated with utility pole; may need to angle crosswalk); ensure ADA-compliant curb ramps exist at all crossings
36	Spring St and Valley View Ave	Stop control and standard crosswalk on minor approach; high-visibility crosswalk on NE approach and non-compliant ramp on Spring St	Install RRFB on NE approach and upgrade curb ramp to be ADA-compliant; upgrade standard crosswalk to high-visibility. Conduct study to address travel lane and parking reconfiguration, and measure pedestrian volumes.
37	Spring Mountain Rd at Spring Mountain Ct	Three-legged intersection with stop control on two of the approaches; no crosswalks nor curb ramps present	Install high-visibility crosswalk and ADA-compliant curb ramps on east approach.
38	Spring Mountain Rd at Elmhurst Ave^	Stop control and standard crosswalk on minor approach and high-visibility crosswalk on southeast approach; all curb ramps either missing or non-compliant	Install high-visibility crosswalk on minor approach, ADA-compliant curb ramps, and curb extensions
40	Valley View Ave at Olive Ave	Stop control on minor approach; standard crosswalks on minor approach and across SE approach of Valley View Ave; curb ramps have detectable warning surfaces	Upgrade crosswalks to high visibility
Crossings that were reviewed and that do not need improvements			
	Grayson Ave at Crane Ave	All-way stop control; high-visibility crosswalk across Grayson Ave; curb ramps have detectable warning surfaces	None
	Pope St at Paseo Grand Drive	High-visibility crosswalks on all approaches except vineyard entrance (standard crosswalk); RRFB on north approach; stop control on minor approaches; curb ramps have detectable warning surfaces	None
	Adams St at Oak Ave	All-way stop control with high-visibility crosswalks and curb ramps with detectable warning surfaces	None
	Madrona Ave and Kearney St	Stop control on minor approaches, high visibility crosswalks, curb extensions; curb ramps have detectable warning surfaces	None
	Adams St at Kearney St	All-way stop control with high-visibility crosswalks; ADA-compliant curb ramps	None
	Hillview Pl at Kearney St	High-visibility crosswalks; stop control on minor approach; curb ramps have detectable warning surfaces	None; however curb extensions may be considered pending configuration study.
	Grayson Ave at High School Entrance	High-visibility crosswalk and RRFB; curb ramps have detectable warning surfaces	None



Proposed Roadway Extensions and Bridge Projects

Roadway Extensions

The roadway extension projects included in the Streets Master Plan aim to improve connectivity, stitch together gaps in the local street grid, and provide new east–west travel choices that reduce reliance on Main Street. These extensions would offer more direct neighborhood connections, enhance everyday mobility, and create additional routes for emergency access and egress.

Many of the concepts originate from the City’s General Plan, reflecting long-standing objectives to strengthen the roadway network and distribute traffic more evenly across the city. Key extension concepts include the Adams Street extension to Silverado Trail, the two phased Oak Avenue extension (from Mitchell Drive to Charter Oak Avenue and Charter Oak Avenue to Grayson Avenue), and additional connections along Starr Avenue, Mills Lane, Allison Avenue, and College Avenue.

While the Adams Street extension is the only project with a defined bicycle and pedestrian facility at this stage, all future extensions will require further multimodal design exploration. These corridors should be planned to accommodate high-quality bicycle and pedestrian infrastructure, maintain continuity with the facilities they connect to, and leverage the opportunity inherent in building new roadways to embed low-stress, comfortable facilities and streetscape amenities that enhance the walking and biking experience.

Bridge Projects

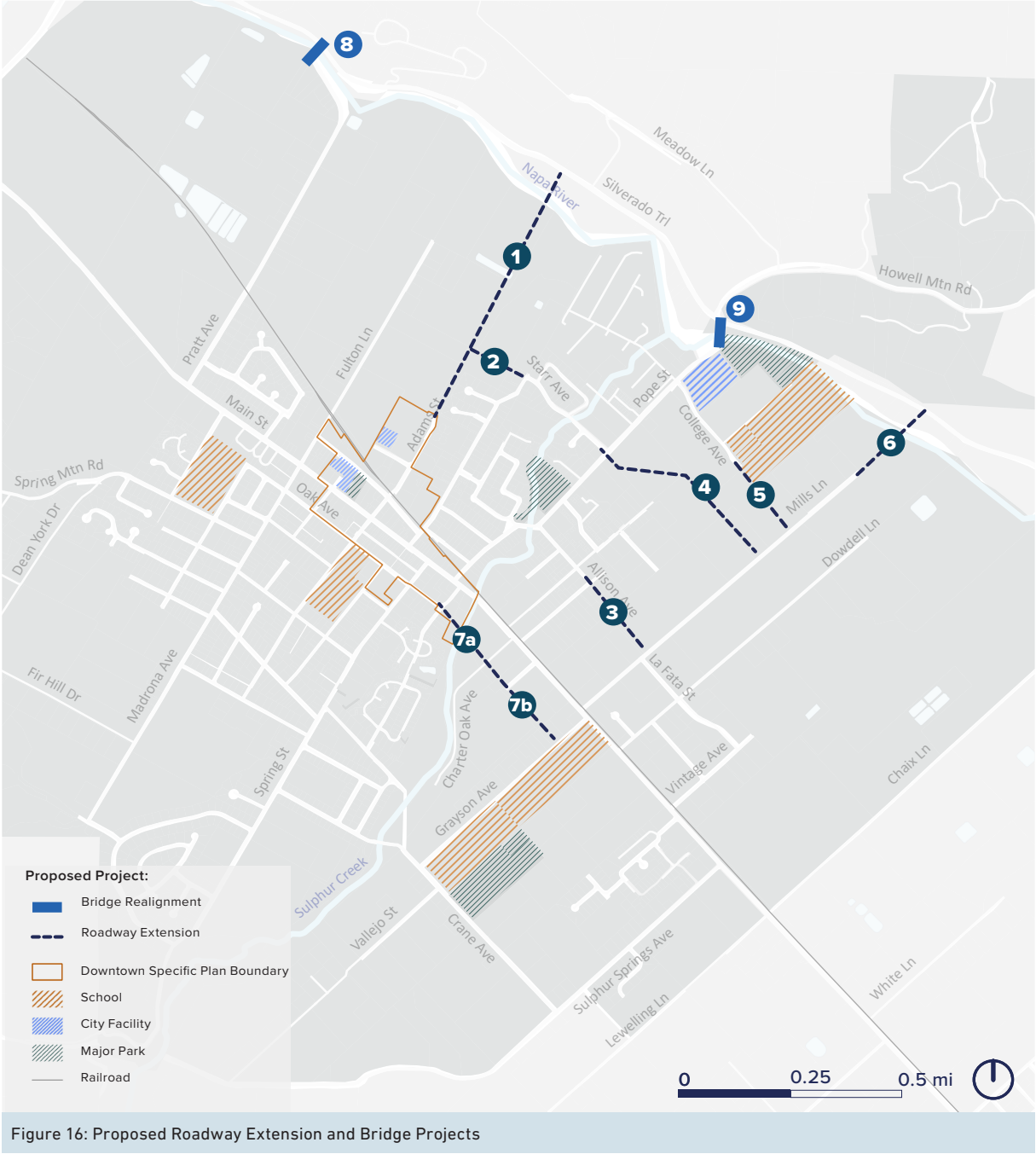
Two major bridge projects, the Pope Street Bridge over the Napa River and the Pratt Avenue Bridge, are intended to address long-standing safety, visibility, and accessibility concerns at existing constrained crossings. Both structures are characterized by narrow widths, limited shoulders, and geometries that restrict sight lines, creating challenges for everyday users and emergency responders. Their constrained cross-sections do not provide sufficient space

for dedicated pedestrian and bicycle facilities, resulting in gaps within the active transportation network as well as limited evacuation and emergency access capacity. To improve multimodal safety and route redundancy, a likely implementation scenario for both bridges would involve retaining the existing structures for bicycle and pedestrian use while constructing new, vehicular-only bridges adjacent to them. This approach would maintain the historic character and utility of the current bridges while significantly enhancing roadway capacity, emergency response reliability, and multimodal connectivity.

In addition to improvements to these existing bridges, the Adams Street extension across the Napa River and the Oak Avenue extension over Sulphur Creek would each require the construction of new bridge structures.

A Synchro-based transportation operations analysis was conducted for the Adams Street, Oak Avenue, and Pope Street Bridge alternatives to evaluate how new connections could relieve congestion on Main Street and improve citywide traffic flow. The results of this analysis, along with the prioritization of roadway extensions and proposed bridge projects, are presented in Chapter 5 (page 56). Additional technical details from the Synchro analysis are provided in Appendix F.

Table 4: Proposed Roadway Extension and Bridge Projects	
Map #	Roadway Extension or Bridge Project
1	Adams St extension to Silverado Trail
2	Starr Ave extension north to Adams St
3	Allison Ave extension to Mills Ln
4	Starr Ave extension to Mills Ln
5	College Ave extension to Mills Ln
6	Mills Ln extension to Silverado Trail
7a	Oak Ave extension from Mitchell Dr to Charter Oak Ave
7b	Oak Ave extension from Charter Oak Ave to Grayson Ave
8	Pratt Ave Bridge Project
9	Pope Street Bridge Project



5

Implementation Considerations

This chapter outlines key considerations for advancing future network-wide projects identified through this Plan. It provides a framework for evaluating and sequencing improvements based on a combination of community priorities, technical prioritization, funding strategies, and planning-level cost opinions.

This chapter provides guidance to support decision-making as opportunities, resources, and conditions change. These considerations help the City evaluate project readiness, identify phasing and bundling opportunities, and determine where partnerships or external funding may be most effective.

Full project prioritization results are presented in this chapter and detailed further in Appendix C. Network-wide cost opinions are provided in Appendix D, and a Synchro-based transportation operations analysis for key roadway extension and bridge projects is documented in Appendix F. This chapter summarizes key findings from these appendices; readers are encouraged to refer to the appendices for additional detail.

Project Prioritization

All recommendations in the Streets Master Plan will take time and resources to implement. Recognizing funding and staff capacity constraints, as well as potential feasibility challenges, infrastructure projects were evaluated using a data-driven prioritization process informed by public input. Bicycle facility, pedestrian crossing, bridge realignment, and road extension projects were scored based on the criteria summarized in the table below and explained on the following pages. Each project received points for each criterion, and total points determined its relative ranking. Bicycle and pedestrian projects relied on different criteria than road and bridge projects. Appendix C provides more information on the prioritization process and detailed scoring.

This prioritization was used to identify which projects this planning effort carried forward into conceptual design, focusing on those with the greatest potential to improve safety, access, and community outcomes. Just as importantly, the scoring provides a tool to inform future planning, helping the City understand which types of projects may offer the most meaningful impact.

As an example, many of the Class I trail projects, including the Napa River Trail and the Sulphur Creek Trail, ranked as high priority, especially when accounting for

strong community support and their potential to offer transformational, community-wide benefits. However, these trail corridors are also highly conceptual and visionary at this stage. They would require significant resources to advance and are expected to involve substantial environmental, design, and right-of-way complexities, especially when compared to lighter-touch facilities such as Class III rural bike routes or bike boulevards, which typically rely on signage, pavement markings, and targeted traffic calming rather than major new construction.

It is important to note that this prioritization is not a phasing plan and does not dictate the order in which projects will be constructed. It also does not account for fundability, detailed feasibility, right-of-way constraints, or future partnership opportunities, all of which will influence actual implementation. Instead, it serves as a high-level guide to help the City and its partners recognize where strategic investment, planning, and early coordination may yield the greatest long-term benefit.

Below is a table summarizing the prioritization criteria used, **For more information on the prioritization process, and detailed scoring see Appendix C. Network-wide cost opinions are provided in Appendix D.**

Table 5: Proposed Project Prioritization Criteria

Prioritization Criterion	Description
Bicycle and Intersection Improvement Projects	
Access	Prioritizing access to community-identified destinations with specific emphasis on schools and parks
Safety	Prioritizing safety needs based on where crashes have occurred in the past
Connectivity and Comfort	Prioritizing projects that fill gaps in the bicycle and pedestrian networks
Community Support*	Prioritizing locations with strong public/stakeholder support
Bonus: Activity	Prioritizing locations that currently have high levels of bicycle and pedestrian activity
Road Extension and Bridge Realignment Projects	
Feasibility	Prioritizing projects that do not have significant feasibility challenges
Community Support*	Prioritizing locations with strong public/stakeholder support
Functional Classification	Prioritizing projects that will function as essential arterial or collector routes in the overall network.

*Community support was quantified based on feedback received on the engagement boards presented to the St. Helena community during October 2024 engagement events.

Prioritized Bicycle Facilities

The prioritization results for proposed bicycle facilities show a clear trend: Class I shared-use paths consistently rose to the top because they performed well across all, if not most, criteria. Class I trail projects also ranked highly with the public, reflecting a community desire for recreational opportunities and comfortable, fully separated facilities. Corridors such as the Sulphur Creek Trail, the Napa River Trail segments, and the pending Class I extensions of Adams Street scored highest because they provide highly comfortable, all-ages-and-abilities connections across the city.

Although these trail projects scored well, and are strongly supported, they also carry some of the greatest feasibility challenges, including constrained right of way, environmental permitting considerations, and higher construction costs. Many of these corridors would require entirely new pathway construction, grading, and potential cut and fill work, making them more complex to advance despite their high public value.

While many mid tier projects consisted of neighborhood bike boulevards that improve local circulation and fill important gaps, several Class III projects also emerged as top priorities due to their strategic roles in the network. Adams Street in particular ranked highly because of its

potential to cross Main Street and create a key low stress connection into western neighborhoods, and College Avenue performed well given its proximity to major destinations including academic institutions and City Hall. Community members also expressed that a trail along the Napa River would be a desirable alternative to Silverado Trail, where narrow lanes and high vehicle speeds currently discourage bicycling.

Class III rural bike routes, while important to regional mobility, were not included in the community-facing prioritization exercise. These routes represent the lightest-touch bikeways and typically rely on signage, rather than substantial roadway changes. More robust facilities, such as Class III bike boulevards with traffic calming, Class II bike lanes with dedicated on-street space, and Class I shared-use paths that are fully separated from vehicle traffic, require progressively greater levels of investment and coordination and therefore benefit more from comparative project ranking.

Projects along Main Street and those within the Vine Trail corridor were removed from the prioritization list because they fall under separate planning processes and jurisdictions that extend beyond the scope of this master planning effort.

Detailed prioritization scores for proposed bike facilities are provided in Appendix C.

Table 6: Prioritized Bicycle Facilities

Score	Street/Trail Name	Begins	Ends	Proposed Facility
7	Sulphur Creek Trail	Sulphur Springs Ave	Napa River	Class I Shared-Use Path
6	S Crane Ave	Grayson Ave	Sulphur Springs Ave	Class II Bike Lanes
6	Adams St	Railroad Ave	Allyn Ave	Class III Bike Boulevard
6	Napa River Trail	St Helena city limit near wastewater treatment plant	St Helena city limit (Deer Park Rd / Lower Reservoir Trail)	Class I Shared-Use Path
6	Adams St (pending future extension)	Railroad Ave	Silverado Trail	Class I Shared-Use Path
5	Crane Park Path (to La Quinta Way)	Grayson Ave	Sulphur Springs Ave	Class I Shared-Use Path
5	Library Lane Path	Adams St	Vine Trail (along RR corridor)	Class I Shared-Use Path
5	College Ave	Pope St	Proposed class I facility at SE end of College Ave	Class III Bike Boulevard
4	Grayson Ave	Primary School driveway	Highway 29 (Main St)	Class II Bike Lanes
4	Madrona Ave/Riesling Wy/ Fulton Ln	Vine Trail	Sylvaner Ave	Class III Bike Boulevard
4	Elmhurst Ave	Spring Mountain Rd	Main St	Class III Bike Boulevard
4	Edwards St	Hunt Ave	Pope St	Class III Bike Boulevard
4	Hillview Pl	Spring Mountain Rd	Oak St	Class III Bike Boulevard
4	Spring St	Sylvaner Ave	White Sulphur Spring Rd	Class III Bike Boulevard

Score	Street/Trail Name	Begins	Ends	Proposed Facility
4	Spring Mtn Rd	Dean York Ln	Madrona Ave	Class II Bike Lanes
4	Hunt Ave	Church St	Starr Ave	Class III Bike Boulevard
4	Mitchell Dr	Main St	Crane Ave	Class III Bike Boulevard
4	McCorkle Ave Path	McCorkle Ave cul-de-sac	College Ave	Class I Shared-Use Path
4	Pope St	Starr Ave	Silverado Trail	Class I Shared-Use Path
4	Starr Ave Path (pending future extension)	Adams Ave (pending future extension)	Mills Ln	Class I Shared-Use Path
4	York Creek Path	Spring Mountain Rd	Main St/SR 29 (Vine Trail)	Class I Shared-Use Path
4	Valley View St	Spring St	Birch St	Class III Bike Boulevard
4	Spring St	Valley View St	Oak Ave	Class III Bike Boulevard
4	Oak Ave (pending future extension)	Mitchell Dr	Grayson Ave	TBD
3	Allyn Ave	Spring St	Madrona Ave	Class II Bike Lanes
3	Hudson Ave	Madrona Ave	Spring St	Class II Bike Lanes
3	Mills Ln	Main St/SR 29	Proposed class I facility annex from Starr Ave	Class II Bike Lanes
3	Birch Ave	Crane Ave	Valley View St	Class III Bike Boulevard
3	Church St	Hunt Ave	Pope St	Class III Bike Boulevard
3	Hunt Ave	Railroad Ave	Church St	Class III Bike Boulevard
3	Mariposa Ln	Pope St	McCorkle Ave	Class III Bike Boulevard
3	McCorkle Ave	Alison Ave	Proposed class I facility 675' west of College Ave	Class III Bike Boulevard
3	N Crane Ave	Spring St	Birch St	Class III Bike Boulevard
3	Oak Ave	Hillview Pl	Madrona Ave	Class III Bike Boulevard
3	Railroad Ave	Adams St	Hunt Ave	Class III Bike Boulevard
3	Railroad Ave	Fulton Ln	Hunt Ave	Class III Bike Boulevard
3	College Ave (pending future extension)	McCorkle Ave Path	Mills Ln	TBD
3	Mills Ln (pending future extension)	Starr Ave	Silverado Trail	TBD
3	Lower Reservoir Loop Trail	NW city limit	Loop around Lower Reservoir to connect to Spring Mountain Rd	Class I Shared-Use Path
2	Chaix Ln	Main St/SR 29	Napa River Trail (proposed)	Class III Rural Bike Route
2	Pratt Ave	Main St/SR 29	Napa River Trail (proposed)	Class III Rural Bike Route
2	Spring Mountain Rd	St Helena city limit (West)	Dean York Ln	Class III Rural Bike Route
2	Sulphur Springs Ave	St Helena city limit	Spring St	Class III Rural Bike Route
2	Sulphur Springs Ave	Sulphur Creek	Crane Ave	Class III Rural Bike Route
2	Sulphur Springs Rd	S Crane Ave	Main St/SR 29	Class II Bike Lanes
2	Sylvaner Ave	Riesling Way	Spring St	Class II Bike Lanes
2	Allison Avenue (pending future extension)	Charter Oak Ave	Mills Ln	TBD

Prioritized Crossing Improvements

The crossing prioritization analysis highlighted a strong concentration of high-scoring locations along Main Street, reflecting its central role in the community's mobility network and its consistently high levels of pedestrian activity. Intersections such as Main Street at Grayson Avenue, Madrona Avenue, Spring Street, Crinella Court, Elmhurst Avenue, and Hunt Avenue rose to the top in part because Main Street serves as the city's primary commercial and civic corridor where multimodal conflicts and safety concerns are most acute. Several of these intersections, including those at Crinella Court, Madrona Avenue, Spring Street, and Elmhurst Avenue, have also been identified for improvement in multiple previous planning efforts, underscoring a long-recognized need for enhanced crossings and traffic calming in these locations. Other high-ranking intersections, such as those along Pope Street, Spring Street, and Hillview Place near the middle school, reflect similar conditions where pedestrian demand, school access, transit activity, or network significance elevate the urgency of improvements.

Together, the prioritization results point to a focused set of locations where targeted intersection upgrades would provide substantial safety and connectivity benefits for people walking and biking.

Recommendations that were also made in previous plans and studies are noted as follows: 2021 St. Helena Safe Routes to School Plan (denoted with *), 2019 Safe Routes Napa County Walk Audits (denoted with ^), and 2023 NVTa Vision Zero Plan (denoted with +). All locations were identified in the 2017 ADA Transition Plan for curb ramp improvements.

Detailed prioritization scores for proposed crossing improvements are provided in Appendix C.

Table 7: Prioritized Crossing Improvements

Score	Intersection
6	Main St at Grayson Ave
5	Pope St at Allison Ave
5	Hillview Pl and Spring Mountain Rd^
4	Main St at Crinella Ct^+
4	Main St at Madrona Ave^++
4	Main St at Adams St+
4	Main St at Spring St^+
4	Pope St at Starr Ave
4	Hillview Pl at Middle School
4	Spring St at Hudson Ave
3	Main St at Elmhurst Ave^++
3	Main St at Pine St+
3	Main St at Charter Oak Ave+
3	Pope St at Mariposa Ln
3	Hunt Ave and Railroad Crossing
3	Hunt Ave at Edwards St
3	Madrona Ave and Oak Ave*
3	Madrona Ave at Stockton St
3	Madrona Ave at Allyn Ave*
3	Spring St at Oak Ave*
3	Spring St at Crane Ave*
3	Spring St and Valley View Ave
3	Spring Mountain Rd at Spring Mountain Ct
3	Spring Mountain Rd at Elmhurst Ave^
3	Valley View Ave at Olive Ave
2	Pope St at Edwards St
2	Hunt Ave at Church St
2	Main St at Pratt Ave+
2	Main St at Hunt Ave^++
2	Main St at Pope St+
2	Main St at Mitchell Dr+
2	Pine St and Oak Ave
2	Adams St at Stockton St
2	Adams St at Allyn Ave
2	Spring St at Kearney St*
2	Spring St at Stockton St
2	Main St at 1000 Main+
1	Hunt Ave and Starr Ave
1	Spring St at Allyn Ave

Prioritized Roadway Extension and Bridge Projects

As documented in Existing Conditions, dead-end streets and narrow bridges limit emergency access, circulation, and multimodal mobility. The following road extension and bridge realignment projects directly addresses these constraints through targeted new links and critical capacity upgrades. In alignment with the General Plan's VMT reduction goals, these projects would support necessary vehicular connectivity while being designed as multimodal corridors that integrate pedestrian, bicycle, and transit facilities to encourage alternatives to single-occupant vehicle travel and help manage overall VMT.

The prioritization process evaluated road extensions and bridge projects based on feasibility, community support, and their functional role within the broader street network. While several projects rose to the top, all face relatively low feasibility and high complexity, including right-of-way constraints, environmental permitting requirements, grading challenges, and substantial construction costs. Within the scoring, the Adams Street extension emerged as the top-ranked project, reflecting strong community support and its intended role as a future essential collector street, with the added benefit of accommodating a bicycle facility over time. The Pope Street Bridge realignment also ranked highly, supported by the community and reinforcing Pope Street's role as a key collector corridor in the city. The Oak Avenue extension scored strongly as well, with clear public backing and its role in strengthening Oak Avenue's existing collector function, improving grid connectivity, and providing a more direct route to schools. Mid-tier and lower-ranking projects—such as the Starr Avenue, Mills Lane, Allison Avenue, and College Avenue extensions—provide valuable connections but offer more localized benefits and face varying feasibility constraints.

To understand how these new connections could impact traffic, a Synchro-based transportation operations analysis was conducted (see Appendix F) for four key alternatives: the Adams Street extension, the Oak Avenue extension to Charter Oak Avenue, the Oak Avenue Extension to Grayson Avenue, and the Pope Street Bridge project (including construction of a new vehicular bridge and realignment of Pope Street at Silverado Trail and Howell Mountain

Road). Synchro is a traffic modeling tool that estimates intersection delay and Level of Service (LOS), a standard measure of traffic conditions ranging from LOS A (minimal delay) to LOS F (severe congestion). The analysis evaluated weekday morning, weekday evening, and weekend midday peak travel periods.

At a high level, the analysis found that all four alternatives would improve traffic operations by providing new routes and reducing dependence on Main Street. By rerouting traffic, each alternative reduced delays at several of the city's most congested intersections, including locations that currently operate over capacity during peak periods. Both the Oak Avenue and Adams Street extensions shifted enough traffic to measurably improve conditions at key intersections while maintaining acceptable operations on the new or expanded routes. The Oak Avenue extension to Grayson Avenue provided the greatest overall operational benefit because it creates a parallel route to the most congested segment of Main Street and attracts a significant share of north-south traffic. The Oak Avenue extension to Charter Oak Avenue also improves traffic operations, though its benefits are more modest because drivers remain on Main Street longer before accessing the new connection. The Adams Street extension also performed strongly, providing a high-quality east-west bypass that improves circulation, adds emergency access, and reduces pressure on Main Street. The Pope Street Bridge project produced moderate benefits, improving safety and reliability along the Silverado Trail-Pope Street corridor but with limited ability to divert traffic from the most congested sections of Main Street.

Detailed prioritization scores for road extension and bridge projects are in Appendix C. The transportation operations analysis is documented in Appendix F.

Table 8: Prioritized Roadway Extension and Bridge Projects

Score	Roadway Extension or Bridge Project
5	Adams St Extension to Silverado Trail
4	Pope Street Bridge Realignment
4	Oak Ave Extension to Grayson Ave*
3	Starr Ave extension north to Adams St
3	Mills Ln extension to Silverado Trail
3	Pratt Ave Bridge Realignment
2	Starr Ave extension to Mills Ln
1	Allison Ave extension to Mills Ln
1	College Ave extension to Mills Ln

* Inclusive of both phases of the Oak Avenue extension (Mitchell Drive to Charter Oak Avenue and Charter Oak Avenue to Grayson Avenue)

Funding Strategies

Project Costs

Project costs can be highly variable, as such the cost opinions developed for this Plan are provided as planning-level guidance rather than precise costs. Bicycle facility costs were developed using a cost-per-mile approach based on facility type, and the table below summarizes the associated low and high ranges.

Crossing improvement costs also vary widely, from approximately \$4,000 for high-visibility crosswalks to more than \$100,000 for treatments that include features such as Rectangular Rapid Flashing Beacons (RRFBs).

Network-wide cost estimates for bicycle and intersection improvements are included in Appendix D.

Roadway extension and bridge projects are more complex and do not fall within standard unit-cost ranges. Planning-level estimates are therefore provided separately for the Adams Street extension and the Oak Avenue extension (based on costs from the 2001 Specific Plan).

Funding

Implementation of the Streets Master Plan is expected to rely on a combination of funding sources, recognizing that no single source will fully fund the recommended program. Key funding tools include local revenues (such as

General Fund allocations, transportation and parks impact fees, and developer-required improvements), regional funding sources, including Measure U sales tax revenues administered by the Napa Valley Transportation Authority, and state and federal grant funding.

Projects are expected to advance in phases, with timing and sequencing guided by funding availability, grant cycles, development activity, and inclusion in the City's 5-Year Capital Improvement Plan (CIP). Recommendations include layering multiple funding sources, aligning project readiness with funding opportunities, and strategically bundling projects, such as corridor-based, school access, or safety-focused packages, to improve grant competitiveness and delivery efficiency. Near- and mid-term implementation is anticipated to focus on bicycle and pedestrian intersection projects, which are generally eligible for a broader range of funding sources. Larger roadway extension and bridge projects are expected to advance more gradually, with early phases focused on feasibility, environmental review, and right-of-way coordination, followed by construction as long-term funding becomes available.

Additional detail on funding tools and implementation strategies is provided in Appendix H.

Table 9: Probable cost ranges for proposed bikeways by facility type

Facility Type	Low Cost (per mile)	High Cost (per mile)	Lower Cost Description	Higher Cost Description
Class I Bike Paths	\$7,220,000	\$7,220,000*	Replace existing 5' sidewalk to 12' shared use path + 5' physical barrier along curb line	Trail-like facility next to river or creek (requires full new construction)
Class II Bike Lanes	\$580,000	\$3,160,000	Eradicate existing markings and stripe bike lanes	Resurface street and stripe bike lanes
Class III Bike Boulevard	\$780,000	\$1,800,000	Shared lane pavement markings and signage. Only speed humps, signing and striping	Shared lane pavement markings and signage. Speed humps, signing, striping, and traffic circles every third intersection
Class III Rural Bike Route	\$300,000		Shared lane pavement markings and signage	

*Right-of-way (ROW), property acquisition, and earthwork-related costs are not included because they are highly variable by location. It is assumed that these additional costs would substantially increase the total cost of Class I projects identified as "high cost."

CEQA Pathways

The California Environmental Quality Act (CEQA) is a state law requiring public agencies to evaluate and disclose potential environmental impacts before approving a project. It supports responsible planning, informed decision making, and public input.

Planning for CEQA early helps agencies choose the most efficient review pathway, avoid delays, and anticipate needed studies. It also allows teams to reduce risk and take advantage of exemptions where available. Senate Bill 71 (SB 71) reinforces this approach by making permanent a statutory CEQA exemption for certain low impact active transportation plan implementations, including restriping, bicycle parking and storage, signal timing, and related signage within the existing right of way.

Lower impact projects that improve safety and add bicycle or pedestrian facilities in the existing public right of way often qualify for simpler CEQA pathways or exemptions. Higher impact projects such as new roadway extensions,

vehicular bridge projects, or new Class I trails in corridors without existing paths are more likely to require an Initial Study-Mitigated Negative Declaration (IS-MND) or some form of an Environmental Impact Report (EIR). An IS-MND uses an Initial Study to identify impacts and mitigation; an EIR is required when significant impacts cannot be clearly mitigated.

The table below is intended for city staff, project managers, consultants, and anyone involved in planning, designing, or delivering street, bicycle, and pedestrian projects. It provides a high-level overview of potential CEQA pathways for various project types to support early coordination and informed decision-making.

Table 10: Potential CEQA Pathways by project type

Facility Type	Lower Cost Description	Higher Cost Description	Potential CEQA Pathway
Class I Bike Paths	Replace existing 5' sidewalk to 12' shared use path + 5' physical barrier along curb line	Trail-like facility next to river or creek (requires full new construction)	Depending on location, whether in public right-of-way, and existing conditions, these may be 1) exempt from CEQA pursuant to CEQA Statute Section 21080.25* or CEQA Guidelines Section 15301, or 2) an IS-MND or EIR would be required.
Class II Bike Lanes	Eradicate existing markings and stripe bike lanes	Resurface street and stripe bike lanes	If within the public right-of-way, these may be exempt from CEQA pursuant to CEQA Statute Section 21080.25* or CEQA Guidelines Section 15301. If not eligible for one of these exemptions, an IS-MND or EIR may be required.
Class III Bike Boulevard	Shared lane pavement markings and signage. Only speed humps, signing and striping	Shared lane pavement markings and signage. Speed humps, signing, striping, and traffic circles every third intersection	If within the public right-of-way, these may be exempt from CEQA pursuant to CEQA Statute Section 21080.25* or CEQA Guidelines Section 15301. If not eligible for one of these exemptions, an IS-MND or EIR may be required.
Class III Rural Bike Route	Shared lane pavement markings and signage		If within the public right-of-way, these may be exempt from CEQA pursuant to CEQA Statute Section 21080.25* or CEQA Guidelines Section 15301. If not eligible for one of these exemptions, an IS-MND or EIR may be required.
Intersection Improvements	—	—	If within the public right-of-way, these would likely be exempt from CEQA pursuant to CEQA Statute Section 21080.25* or CEQA Guidelines Section 15301. If not eligible for one of these exemptions, an IS-MND or EIR may be required.
Roadway Extension and Bridge Projects	—	—	Likely, an IS-MND or EIR would be required.

Stormwater and Utilities Coordination

Street, bicycle, pedestrian, roadway extension, and bridge projects are closely linked to the City's stormwater and utility systems. Any change within the right of way, whether building a new road, extending an existing street, adding or upgrading sidewalks and bikeways, reconfiguring intersections, or constructing new bridges and trails, can alter how stormwater is collected, conveyed, and treated. For both active transportation and roadway capital projects, this connection is especially important because grading, curb work, and drainage design directly influence infrastructure performance, user comfort, and long-term maintenance.

As a result, all street and multimodal projects, particularly new roadway extensions and bridge crossings, should evaluate existing storm drain capacity, flood zones, soil conditions, and utility conflicts early in design. Doing so helps ensure new facilities remain functional during storms, avoid ponding in travel lanes, bikeways, or crosswalks, and support long term system performance

Additional detail on the City's stormwater and utility systems is available in the Stormwater Technical Study Appendix G.

Storm Drain and Watershed Conditions

The Integrated Utility Master Plan (2021) evaluated St. Helena's water, storm drain, and sanitary sewer systems. This Streets Master Plan builds on those findings, and figures referenced in this chapter come from that study

St. Helena lies within three major watersheds, Sulphur Creek, Napa River, and York Creek, all of which ultimately drain to the Napa River and San Pablo Bay. The storm drain network conveys runoff to outfalls distributed across these waterways. These watershed corridors are also where some of the City's most important walking and biking routes exist or are planned, and where proposed roadway extensions and bridge concepts occur, making stormwater performance a key consideration for both multimodal access and new roadway connectivity.

The 2021 plan identified areas where storm drain pipes have capacity deficiencies and recommended capital improvement projects to address them (Figures 6.8 and 6.11). Many projects involve replacing older pipes with larger ones to better convey stormwater. Coordinating these upgrades with planned bikeway, sidewalk, and roadway projects can reduce costs and construction disruption while ensuring new facilities are built on streets with reliable drainage.

Portions of the city, especially areas near the Napa River and Sulphur Creek, lie within the FEMA 1 percent annual chance (Figure 18) flood zones (Zones X and AE). These areas often overlap with active transportation corridors and planned crossings, so projects in or near flood zones should prioritize resilient designs that maintain access for all modes during storms. In 2024, Caltrans completed storm drainage upgrades along State Route 29 between Adams Street and Madrona Avenue, adding new pipes, inlets, and manholes.

Bridges and Street Extensions

Proposed street extensions, such as the Adams Street extension over the Napa River and the Oak Street extension over Sulphur Creek, introduce added complexity due to their locations within river and creek corridors. These projects must account for flood conveyance, stormwater management, and environmental sensitivity. Bridges over waterways in FEMA flood zones require detailed engineering to ensure adequate flow during major storm events and to prevent increasing flood risks upstream or downstream. These crossings also involve more complex permitting and coordination with resource agencies. While they provide major opportunities to strengthen connectivity, their locations in sensitive corridors require careful, resilient design.

Green Infrastructure

Improving streets and stormwater systems together presents multiple opportunities for green infrastructure. Additional guidance on green infrastructure interventions and design strategies suitable for St. Helena is provided in the Green Infrastructure Toolkit; see Appendix A for more detail. At a high-level green infrastructure opportunities include:

- + Leveraging existing storm drains: Streets with storm drain mains offer cost effective opportunities to add bike lanes, sidewalk upgrades, or roadway enhancements alongside bioretention because conveyance systems already exist.
- + Addressing storm drain deficiencies: Streets with undersized storm drain pipes present opportunities to slow and treat runoff using green infrastructure, helping reduce stress on older parts of the system.
- + Coordinating with planned CIPs: Where storm drain upgrades are scheduled, the same construction window can incorporate roadway, bikeway, sidewalk, or streetscape improvements for coordinated delivery.

- + Using streetscape amenities: Landscaped areas, medians, and parking lanes can accommodate rain gardens, bioswales, and pervious pavement, helping reduce runoff and improve water quality.
- + Taking advantage of favorable soils: Much of St. Helena contains soil types suitable for infiltration, making bioretention and pervious pavement highly effective and a strong first consideration for capital projects.

Additional Considerations

- + Reliance on infiltration in rural areas: Streets without storm drain infrastructure, often outside central St. Helena and the downtown area, must use fully infiltration-based green infrastructure. These systems may require additional engineering where drainage cannot connect to a storm drain main.
- + Site and soil constraints: Infiltration measures must be located carefully to avoid impacts on building foundations, road base materials, or other improvements. Where soils are favorable, systems can still be installed without perforated pipes or storm drain connections.
- + Utility conflicts: Existing underground utilities may limit where green infrastructure can be placed. If conflicts prevent installation within the street, nearby City owned parcels may serve as alternative sites while still supporting roadway and active transportation projects by reducing surface runoff and improving corridor resilience.

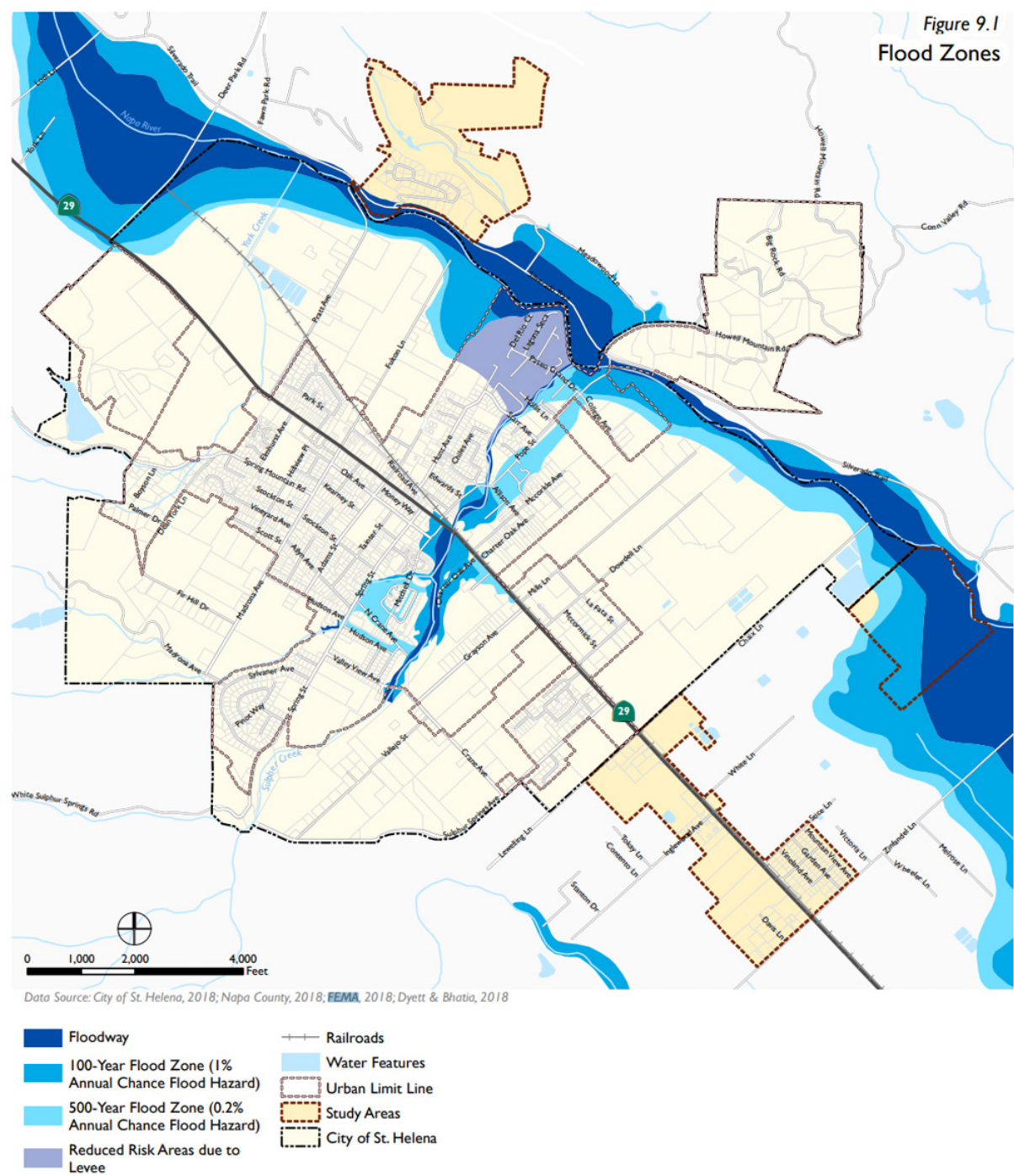


Figure 17: St. Helena Flood Zones. Source: St. Helena General Plan Update 2040.

6

Key Projects

This section presents three key street projects: the Adams Street Extension, the Oak Street Extension, and the Spring Street corridor. These projects were selected for further exploration because they scored highly in prioritization process, play important roles in the citywide network, and were identified through discussions with City staff as opportunities for meaningful multimodal and operational improvements.

Together, these projects represent key opportunities to improve connectivity, accessibility, and safety. The Adams Street Extension offers the potential to create a new east–west link across the Napa River, reducing reliance on Pope Street and Pratt Avenue while relieving congestion on Main Street and enhancing emergency access and egress. The Oak Street Extension, which would cross Sulphur Creek, could provide another important local connection, relieving pressure on nearby corridors and improving access to schools, neighborhoods, and community destinations. Spring Street, a key neighborhood corridor, presents opportunities to enhance walking and biking comfort, calm traffic, and strengthen access to nearby schools, parks, and residential areas.

This section includes preliminary design ideas and high-level cost opinions (Appendix E) for each project illustrating potential design approaches and offering an initial foundation for future refinement, funding efforts, and coordination with partner agencies.

Spring Street

Overview

Spring Street is a critical east–west corridor in St. Helena, linking established residential areas to Main Street, Oak Avenue, and key community destinations, including St. Helena Primary School and downtown. Because the corridor serves many school-age children, community members emphasized the importance of creating safe, comfortable bikeways that encourage students to bike to school and build lifelong active transportation habits. With the City preparing to restripe the corridor as part of its pavement rehabilitation program, there is a timely opportunity to build on that momentum and explore a more robust, long-term multimodal design. This Plan advances concept development for Spring Street between Valley View Street and Oak Avenue, the portion where conditions are most constrained and where improvements would offer the greatest community benefit.

Existing Conditions

Although Spring Street is classified as a residential street with a 25-mph speed limit, it functions as a primary neighborhood connector and a vital link in the community's school access network. Community feedback also noted that drivers often travel faster than the posted speed, creating uncomfortable and unsafe conditions for people walking and biking.

The character of the corridor shifts noticeably along its length: the western end transitions from a more rural, agricultural edge, moves through established residential blocks, and reaches the edge of downtown near Oak Avenue, where activity levels increase and street uses intensify. These transitions influence how people walk, bike, and drive along the corridor and highlight opportunities to tailor design strategies in different segments.

There are no dedicated bicycle facilities, and on-street parking is permitted on both sides of the street. Given Spring Street's direct connection to Oak Avenue, one of St. Helena's primary school-access corridors, the lack of continuous sidewalks and bike facilities creates notable

safety challenges, especially during school peak hours. Community input also highlighted Spring Street as a corridor where pedestrian visibility and crossing comfort could be improved south of downtown.

These functional issues, combined with the corridor's changing context and the scheduled pavement work, make Spring Street a strong candidate for reconfiguration to better support walking, biking, and safe neighborhood circulation.

Spring Street has an approximately 50-foot right-of-way with a varying curb-to-curb width of between 38'-40'. Sidewalks are inconsistent:

- + The north side has a 5-foot sidewalk, but its usability is significantly compromised by large utility poles and vegetation encroachments, often forcing people into the roadway.
- + The south side lacks continuous sidewalk, and residents, including school-age children, frequently walk within the parking lane, creating uncomfortable and unsafe conditions.

Design Concept

The design approach for Spring Street focuses on creating a continuous, all-ages bicycle and pedestrian facility that improves safety and comfort while responding to the corridor's mix of residential, park, and school-area uses. The primary design strategy is the introduction of a shared sidepath on the south side of the street, where sidewalk coverage is inconsistent today. The sidepath is intended to be wide enough for school-aged children and other less-confident riders to travel without entering the roadway, offering a safer alternative to mixed-traffic conditions. Sharrows in the roadway would serve more confident riders who prefer or need to travel in-lane.

Valley View Street to Hudson Avenue

Between Valley View and Hudson, the design proposes removing on-street parking on the south side to accommodate an 8-foot sidepath. The proposed sidepath would be constructed alongside the existing landscaping and sidewalk at the south edge of the street.

Hudson Avenue to Starr Baldwin Park

Between Hudson and Starr Baldwin Park, the design proposes removing on-street parking on the south side to continue the 8-foot sidepath. Areas of existing sidewalk on the south side would be retained, and the new sidepath would connect directly to it.

Starr Baldwin Park to Oak Avenue

Between Starr Baldwin Park and Oak, parking demand is higher due to proximity to downtown and Main Street. In this segment, parking would be maintained on both sides of the street. To improve pedestrian comfort, sidewalks on both sides should be widened from 5 feet to 6 feet, allowing for more space for pedestrians and children on bicycles traveling at very slow speeds.

Intersection Improvements

Improvements at Crane Avenue and Spring Street are included in the City's FY 2024–25 Pavement Restoration Project. Proposed upgrades include new curb and gutter, an upgraded ADA curb ramp, a high-visibility crosswalk, removal of a tree at the southwest corner to improve sight lines, and installation of a pedestrian-yield sign.

As part of this Plan, improvements are also proposed at Spring Street and Kearney Street. These include restriping the existing crosswalks and adding a high-visibility yellow school crossing on the west leg of the intersection. Curb extensions with ADA-compliant curb ramps and new landscaping are proposed on the south side of the intersection to receive and shorten the crossing. Driveway access would be maintained on both sides of the curb extension.

Placemaking and Traffic-Calming Elements

To reinforce safety, comfort, and corridor identity, the project incorporates greening and traffic-calming features throughout the alignment. These include landscaped curb extensions, speed humps, and other features that shorten crossing distances and help reduce vehicle speeds. Additional lighting and wayfinding signage are recommended to improve nighttime visibility and overall bicycle and pedestrian experience. During the April 2025 public workshop, community members expressed strong interest in traffic-slowing strategies, and the proposed speed humps were positively received as a response to concerns about vehicle speeds along Spring Street.



Spring Street functions as a primary neighborhood connector and is used by both pedestrians and bicyclists (2024)



Group walks in roadway on Spring Street where there are no sidewalks on south side (2024)

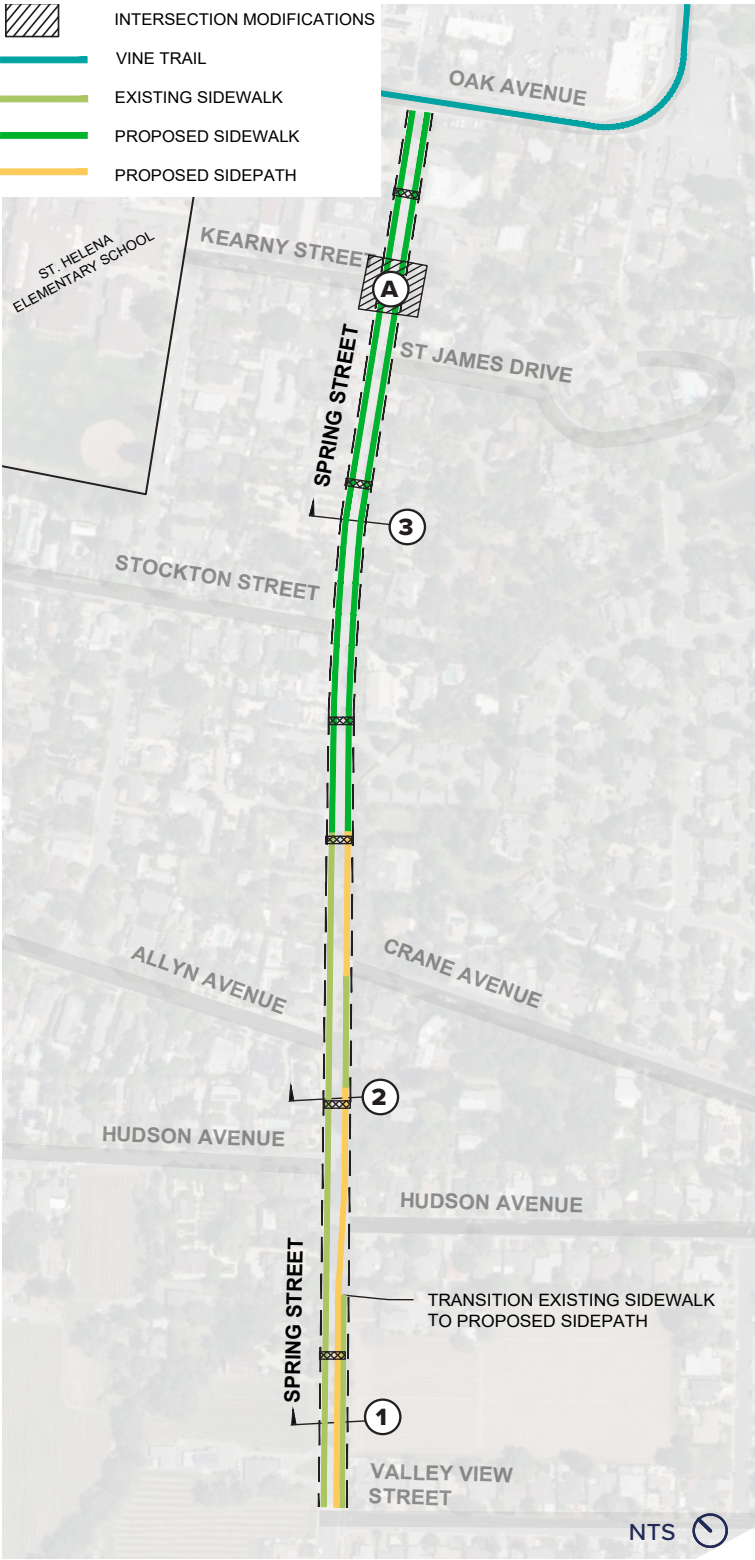


Figure 18: Proposed Spring Street Key Plan

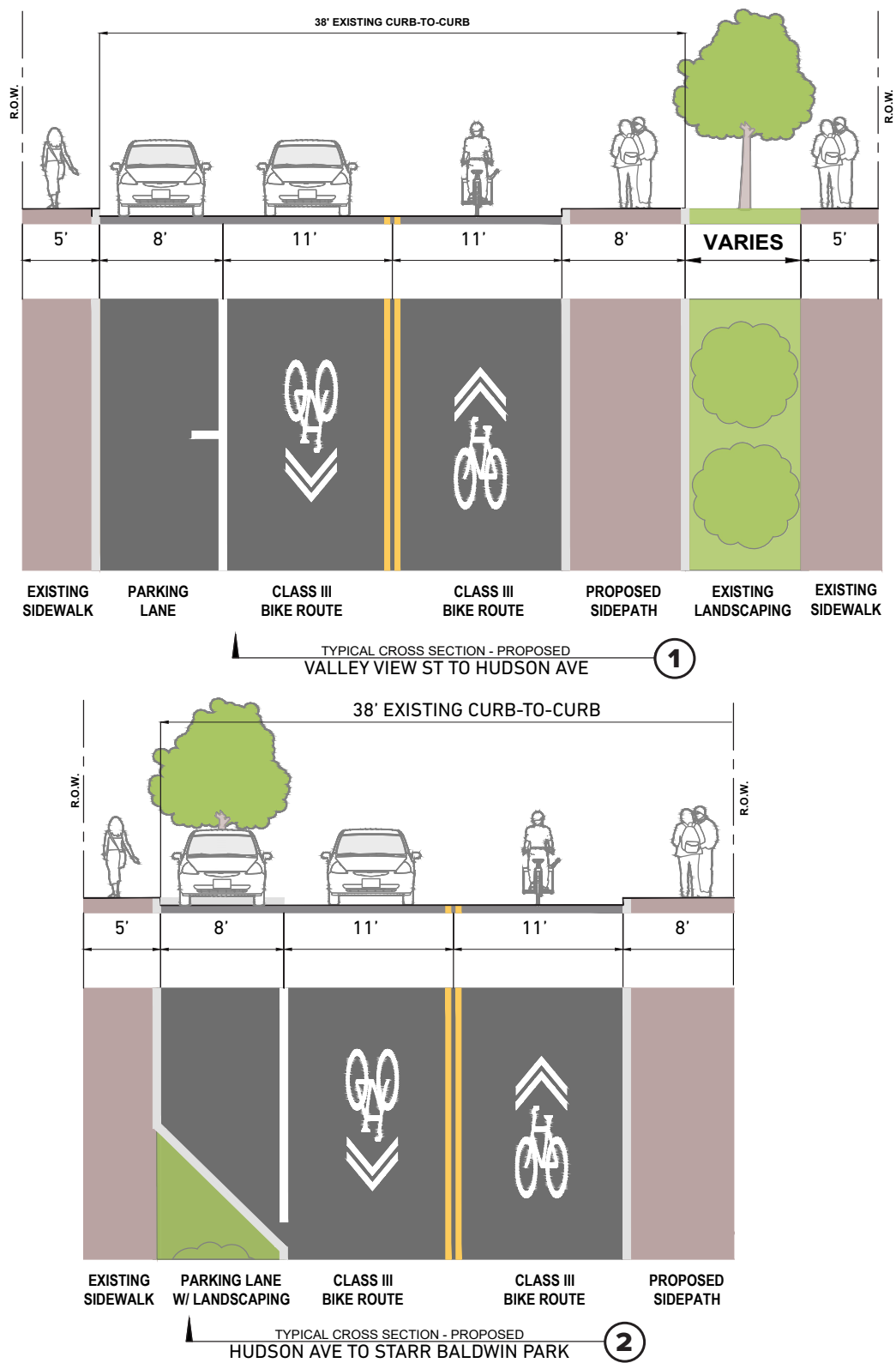


Figure 19: Proposed Spring Street Typical Cross Sections

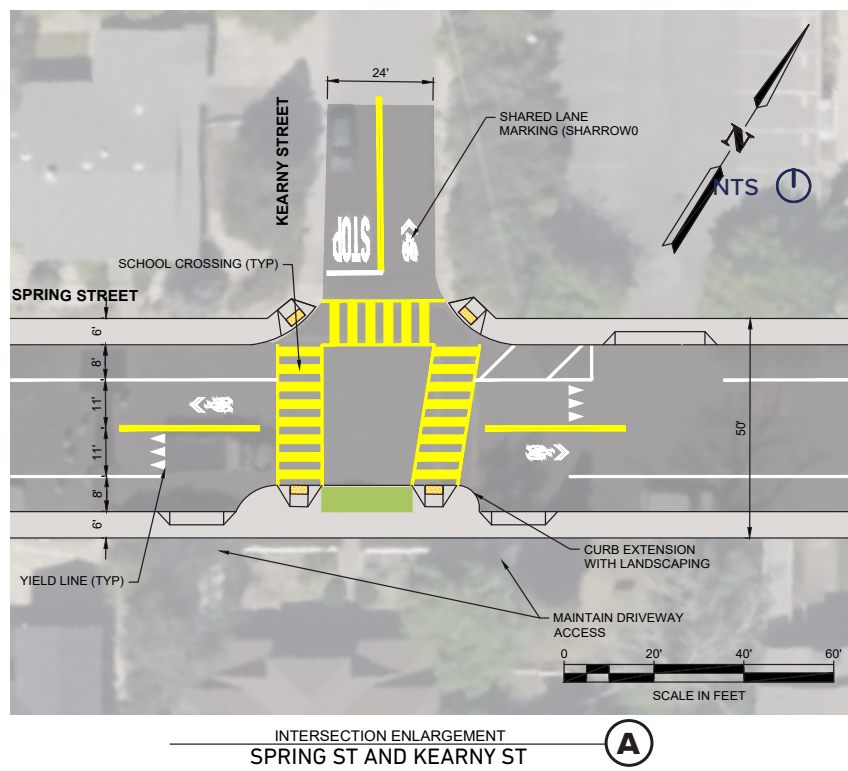
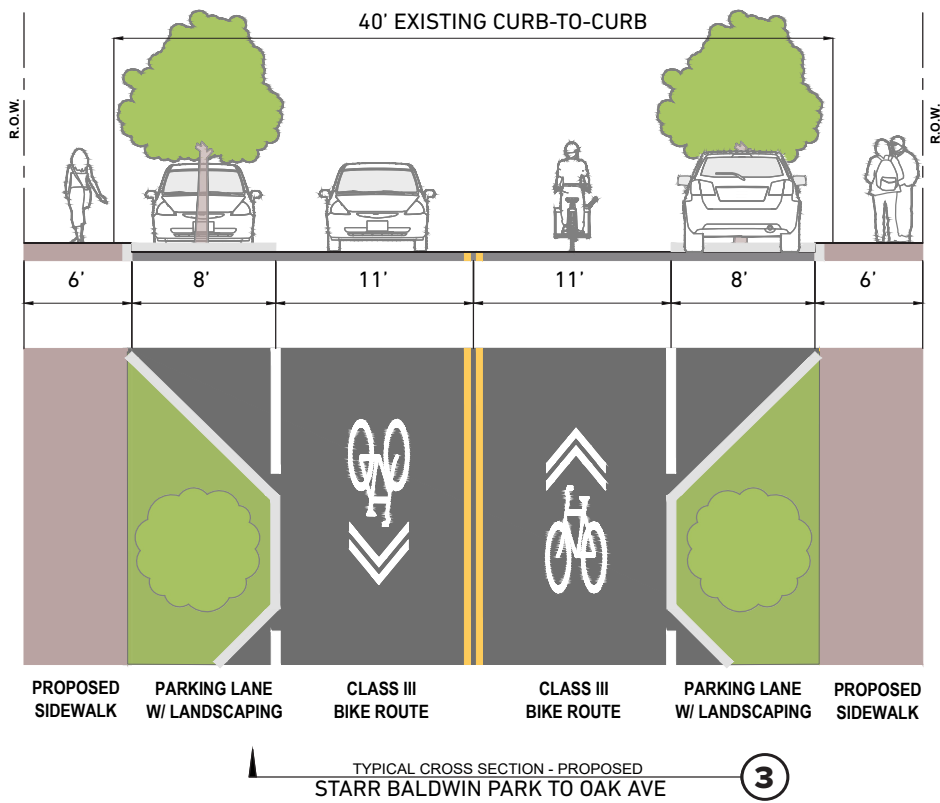


Figure 20: Proposed Spring Street Typical Cross Sections and Intersection Improvements

Adams Street Extension

Overview

Adams Street, which currently ends at a field and walking path, is planned for extension east to Silverado Trail. The need for this extension is established in the St. Helena General Plan 2040 Update, and Adams Street scored highly, both as a future bikeway and as a roadway extension, through this Plan's public engagement and prioritization process (outlined in previous chapters). Operations analysis conducted for this Plan using Synchro further underscores its importance, showing that the Adams Street extension would meaningfully reduce congestion on Main Street by creating a new east–west alternative (see Appendix F for Synchro findings). The extension improves performance at several of the city's most constrained intersections, including Main Street/Pope Street–Mitchell Drive, Main Street/Adams Street, and Main Street/Hunt Avenue. A new intersection at Silverado Trail is also supported and is expected to operate acceptably with appropriate traffic control.

The first phase of the extension is already advancing as part of planned development, including the Hunter Subdivision (87 units) and the 1001 Adams Street Hotel (75 guestrooms and 13 residences). As part of design development for the Hunter Subdivision, there are design plans developed for the extents between the existing terminus of Adams Street to Starr Avenue, establishing the initial segment of the future corridor.

This Streets Master Plan carries the vision forward by planning the next segment of the extension, from just north of Starr Avenue to Silverado Trail. Completing this link will create a continuous multimodal connection across the Napa River and into the city's eastern roadway network, essential for establishing a coherent street structure for planned development, expanding access to the Vine Trail, and strengthening the overall circulation system.

The extension also brings important engineering considerations. For roughly 1,000 feet, the corridor would run atop an existing levee, where the proposed 46-foot multimodal cross section (Figures 21 and 22) can be accommodated but requires careful design to maintain FEMA accreditation. Stormwater must be managed through sheet flow off the levee, and geotechnical review is needed to address potential settlement from added pavement weight and vehicular loading. North of the levee, the corridor crosses a FEMA-designated floodplain and floodway, where a viaduct structure is anticipated to avoid placing fill that could adversely affect flood storage or conveyance. The alignment also intersects a permanently protected habitat restoration area, requiring early coordination with environmental permitting specialists. Utility upgrades, including the replacement of an existing 4-inch water line with an 8-inch line, must also be integrated into the project.

Together, these considerations underscore both the value and the complexity of the Adams Street extension. The project would support planned growth, enhance multimodal travel, relieve pressure on Main Street, and improve emergency access and egress, while requiring thoughtful engineering and environmental coordination to ensure long-term performance and resilience.

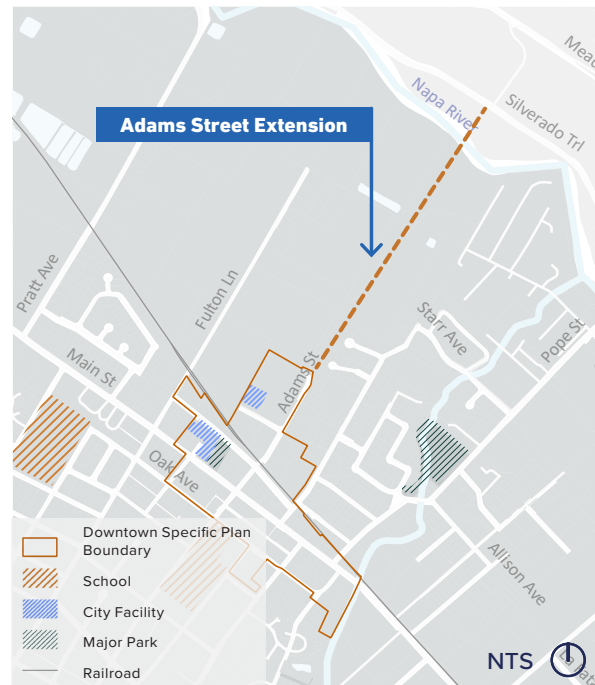
Planning and Policy Context

The Adams Street extension concept is supported by and builds on several prior and concurrent efforts, including:

- + St. Helena 2040 General Plan, Figure 5.3 – Future Roadway Extensions.
- + Hunter Subdivision Plan Set (January 23, 2023), which advances the corridor from Hudson Avenue to Starr Avenue.
- + Streets Master Plan Roadway Project Alternatives Analysis (Fehr & Peers, 2025), which evaluates the operational benefits of an Adams Street extension from 899 Adams Street to Silverado Trail (Appendix F).

Existing Conditions

Today, Adams Street extends from Hudson Avenue to approximately 200 feet southwest of Grove Court. It functions as a collector street with an approximate 60-foot right-of-way, two travel lanes, unmarked parallel parking on both sides, and 6-foot sidewalks (with sidewalk present only on the south side northeast of Library Lane). East of its current terminus, the corridor transitions to a levee and open space, with no existing vehicular crossing of the Napa River or connection to Silverado Trail.



Key map of Adams Street Extension (top right), aerial image of Adams Street Extension (bottom)

Design Concept

The Adams Street extension proposed in this Plan would extend the corridor from just north of Starr Avenue to Silverado Trail near the Meadwood Lane intersection.

The alignment would follow the crest of an existing levee for approximately 1,000 feet before transitioning to a viaduct over the FEMA regulatory floodway and a Habitat Restoration Area. The existing levee crown is

approximately 48 feet wide, sufficient to accommodate the planned 46-foot roadway cross section (accounting for buffer area on each side) (Figure 22). A bridge crossing the Napa River is also proposed. It should be noted that the portion of Adams Street Extension located outside of city limits (including the proposed bridge) would require inter-jurisdictional coordination and ROW acquisition.

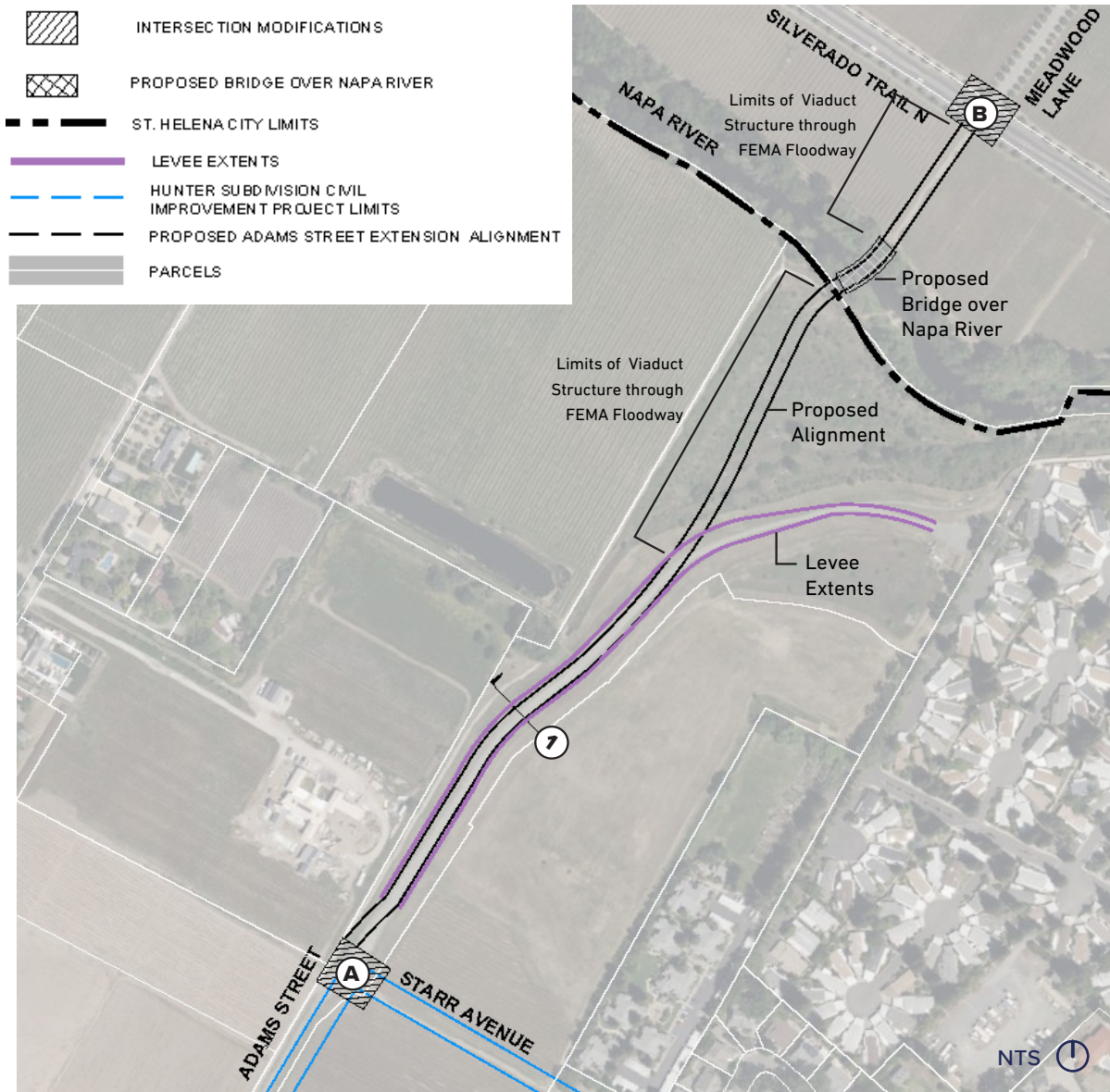


Figure 21: Proposed Adam Street Extension Alignment and Key Plan

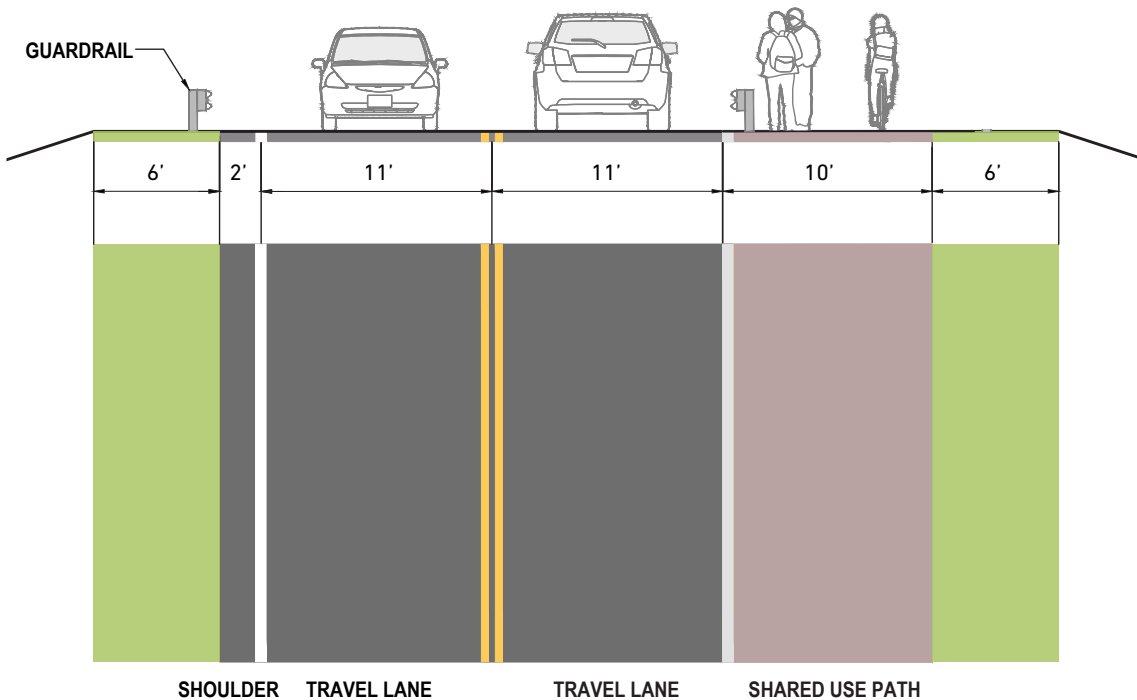
In addition to supporting future vehicular travel and helping relieve congestion along parallel corridors, the design would also include a shared-use path along the eastern edge of the levee. Bicyclists and runners currently use informal loops along the levee and within subdivisions east of Starr Avenue and south of Adams Street; participants expressed strong interest in formalizing these routes and improving connections to them. The Adams Street extension provides an opportunity to do so in a coordinated way, creating a safer, continuous facility that could serve as part of a larger active transportation network.

Proposed Cross Section

- + Two 11-foot travel lanes
- + Guardrails on either side of the travel lane
- + 10-foot shared-use path (on the south side)
- + 6-foot shoulders

Viaduct / Bridge Structure Cross Section

The proposed viaduct/bridge cross section is similar to the levee segment and consists of two 12-foot travel lanes, one 12-foot shared-use path on the south side, and two 3-foot shoulders with bridge sidewalls/guardrails, for a total structure width of 42 feet. The section provides a continuous physical separation between travel lanes and the shared-use path and accommodates a more substantial sidewalk/railing elements required (compared to typical roadside guardrail on the levee).



TYPICAL CROSS SECTION - PROPOSED
STARR AVE TO SILVERADO TRAIL 1

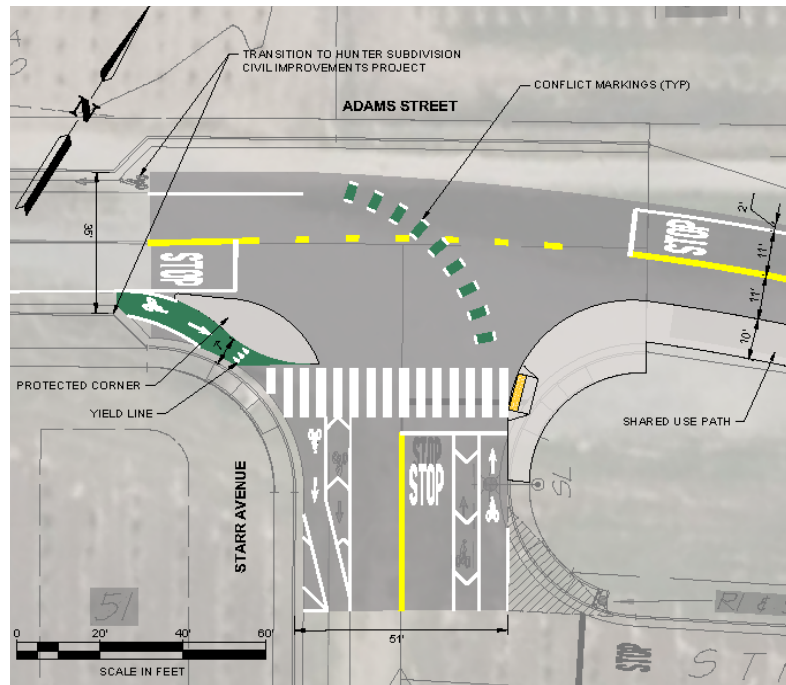
Figure 22: Proposed Adam Street Extension Alignment Typical Cross Section

Key Intersections

Adams Street and Starr Avenue

At the intersection of Starr Avenue and the Adams Street extension, the corridor will transition from the Hunter Subdivision's planned on-street bike lanes on both sides of Adams Street to a shared-use path located on the south side. This intersection serves as the formal transition point and will include appropriate bicycle conflict markings to guide riders through the shift in facility type. A protected corner will be provided for people biking east on Adams Street who wish to turn right, improving comfort and reducing turning conflicts.

A high-visibility crosswalk on the south side of the intersection will allow pedestrians to transition safely between the sidewalk on the south side of Starr Avenue and the shared-use path continuing north of Starr Avenue.

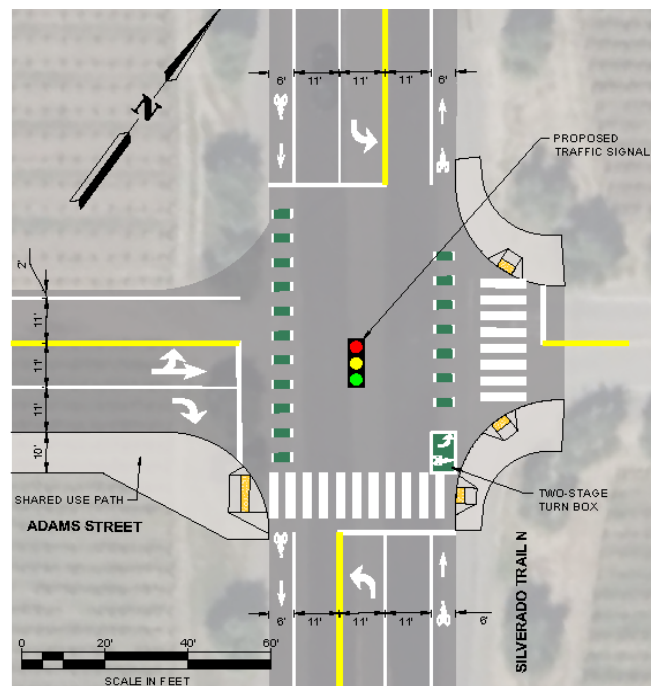


INTERSECTION ENLARGEMENT
ADAMS ST AND STARR AVE

A

Adams Street and Silverado Trail

A new intersection at Adams Street and Silverado Trail is proposed to include a traffic signal and high-visibility crosswalks on the south and east legs, each equipped with ADA-compliant curb ramps to ensure accessible crossings for all users. Bicycle conflict markings are planned across Silverado Trail to connect the existing bike lanes through the intersection, improving continuity and visibility for riders. A two-stage turn box is also proposed to support bicyclists turning left from Adams Street onto Silverado Trail.



INTERSECTION ENLARGEMENT
ADAMS ST AND SILVERADO TRAIL

B

Figure 23: Adam Street Extension Proposed Designs for Key Intersections

Additional Levee Design Considerations

To reduce erosion risk and comply with California's Municipal Regional Stormwater Permit (Provision C.3), the roadway and shared-use path atop the levee would be constructed at grade and without curb and gutter, allowing stormwater to sheet flow evenly off both sides into adjacent vegetated areas. This avoids concentrating runoff, which can accelerate erosion on steep levee slopes, and supports the required low-impact development (LID) approach.

The levee surroundings can function as self-retaining LID areas if grading maintains an acceptable ratio between impervious and pervious surfaces (generally up to 2:1). C.3 requires that 100 percent of required runoff treatment be met through LID measures such as infiltration, evapotranspiration, and biotreatment. Additional hydrologic analysis is needed to verify that the existing detention basin and pump station on the inboard side of the levee can accommodate runoff generated by new impervious pavement.

Geotechnical review will also be required to assess settlement potential from placing new pavement atop the levee, as asphalt concrete is heavier than existing soils. Maintaining current levee crest elevations is essential for preserving FEMA accreditation, and localized grade adjustments or pre-loading strategies may be needed to address short- and long-term settlement.

During public engagement, participants also raised questions about how the elevated portion of the corridor on the levee would relate to adjacent land uses. There was interest in exploring opportunities to improve connectivity between the levee-top alignment and nearby properties, trails, and open spaces, ensuring that this segment is integrated with the surrounding neighborhood fabric and supports accessibility where feasible.

Additional Viaduct / Bridge Design Considerations

As the corridor leaves the top of the levee to cross the Napa River and adjacent floodplain, the project would retain the same multimodal cross section using a viaduct structure. A viaduct is anticipated because it avoids placing fill within FEMA-designated flood zones and floodways, an action that could reduce flood storage capacity or adversely impact flood conveyance conditions in the surrounding area.

The eastern portion of the alignment also passes through a habitat restoration area permanently preserved under a conservation agreement with the Land Trust of Napa County. Early coordination with environmental permitting specialists will be required to determine feasible structure placement, construction methods, and mitigation measures within this protected area.



Habitat restoration area looking towards levee from Napa River



View from top of existing levee looking towards the Napa River

Oak Avenue Extension

Overview

Oak Avenue runs from Hillview Place to Mitchell Drive, ending just west of Sulphur Creek, and has long been recognized as an important corridor within St. Helena's transportation network. Its importance is reinforced by the planned alignment of the Vine Trail along Oak Avenue, which establishes the street as a key multimodal spine and elevates the value of extending it to strengthen citywide connectivity for people walking and bicycling.

The idea of extending the corridor has been part of St. Helena's planning framework for more than two decades. First introduced in the Highway 29 Specific Plan (2001/2005) and carried forward in the 2040 General Plan, Oak Avenue is identified as a potential future east-west connection capable of reducing pressure on Main Street/ Highway 29 and improving access to schools and downtown.

As part of this Streets Master Plan, the Oak Avenue extension concept was re-evaluated using current operational data, environmental constraints, and right-of-way conditions. Updated Synchro traffic operations analysis (see Appendix F) shows that extending Oak Avenue would provide the most significant congestion relief of the three roadway alternatives studied (Adams Street Extension, Oak Street Extension, Pope Street Bridge), reducing volumes on Main Street and improving operations near school access points. These findings reaffirm the corridor's longstanding value and demonstrate how the extension could enhance multimodal connectivity while improving citywide traffic performance.

Feasibility considerations dating back to the early 2000s acknowledged that the extension may need to advance in two phases. This Plan formalizes that understanding:

- + Phase 1: Mitchell Drive to Charter Oak Avenue, including a new bridge over Sulphur Creek, is the most feasible and highest-value segment.
- + Phase 2: Charter Oak Avenue to Grayson Avenue faces significant right-of-way and access challenges and it will be difficult to construct under current conditions.

This Plan does not advance a new conceptual design for Oak Avenue. Instead, it compiles key findings from previous planning documents and provides updated insights on environmental, access-related, and multimodal considerations that should be evaluated in future design phases. Updated planning-level cost estimates (Appendix E) based on the 2001 Highway 29 Specific Plan, the only document containing cost assumptions for the full extension, are also provided.

Planning and Policy Context

The Oak Avenue extension is grounded in several previous planning efforts:

- + Highway 29 Specific Plan (2001)
- + Highway 29 Specific Plan (2005)
- + 2040 General Plan Update, 5-Circulation: Figure 5.3 Future Roadway Extensions
- + 2040 General Plan Update, 5-Circulation: Figure 5.5 Bicycle Network

Existing Conditions

Oak Avenue currently runs from Hillview Place to Mitchell Drive, terminating just west of Sulphur Creek. Along this segment, Oak Avenue functions as a collector street with a 45–50-foot right-of-way and the following characteristics:

- + 6-foot sidewalks on both sides through most of the corridor with the exception of:
 - + Sidewalk only on the west side south of Spring Street
 - + Sidewalk only on the west side north of Madrona Avenue
- + Intermittent 2–3-foot landscape strip at the street edge
- + Two travel lanes
- + Unmarked parallel parking on both sides of the street



Key Opportunities

- + **Active Modes Connectivity:** Moves pedestrians and bicycles off Highway 29. Because the existing segment of Oak Avenue will already host the Vine Trail, the extension builds directly on this established multimodal spine, further strengthening Oak Avenue's role as a key corridor for people walking and biking.
- + **School Connectivity:** Improved connection between residential areas and downtown St. Helena including St. Helena High and Primary Schools.
- + **Reducing Traffic Congestion:** By promoting walking and biking among students, the need for vehicular drop-offs and pickups at schools can be reduced. This will help alleviate congestion around school entrances and improve traffic flow in the area. The extension also provides an alternative to Main Street, helping distribute demand across the network.
- + **Flood Mitigation:** Possibility to create overflow channels at Sulphur Creek crossing to help mitigate flooding issues.

Key Constraints

- + **Flood Risk:** Sulphur Creek is within both 100-year and 500-year flood plains. A street extension across the creek will need to account for both frequent flooding events and rare, severe flooding scenarios.
- + **Environmental Management:** Sulphur Creek supports valuable wetland and riparian habitats that must be preserved and protected, ensuring they are not compromised by any proposed extension or bridge.
- + **Congested Intersection:** Crossing design at intersections, especially at Grayson Ave, will need to be thoroughly studied to ensure safe connection to St. Helena High School.
- + **Access Management:** From the Highway 29 Specific Plan: "vehicular access [driveways] shall be directed to side streets so that drivers can take advantage of the new signalized intersection at Grayson/Mills/ Highway 29 and/or the signalized intersection at Highway 29/ Dowdell Lane." However, rerouting traffic

can introduce complexity in determining how drivers will adapt to these changes and how side streets will handle increased traffic volumes.

- + **ROW Acquisitions/Conflict:** An extension will require acquiring additional right-of-way, which is complicated and costly. Strategies to address these challenges will include engaging property owners early, using easements where possible, and seeking funding to offset acquisition costs.

Prior Design Concepts

Previous planning efforts have outlined different concepts for bicycle and roadway facilities along the Oak Avenue extension. The General Plan 2040 Proposed Bike Network envisions a Class I shared-use path from Mitchell Drive to Charter Oak Avenue and Class II bike lanes from Charter Oak to Grayson Avenue.

The 2001 Highway 29 Specific Plan proposed a cross section with 6-foot sidewalks, 4-foot landscape strips, and 8-foot shoulders/parking on both sides, along with a 12-foot travel lane (Figure 24), while the 2005 Specific Plan carried these elements forward and added 4-foot bike lanes (Figure 25). Both of these Specific Plan designs are outdated and will need to be revised based on current best practices for active transportation facilities.

Additional Considerations

Both Specific Plans identify the Oak Avenue extension as a 40 mph roadway with a 45 mph design speed, a higher speed scenario than today's Oak Avenue, where much of the corridor operates around 15 mph due to the school zone context. If a 40 mph posted and design speed is retained, the FHWA Bikeway Selection Guide recommends higher protection bicycle facility options. However, even with a Class I facility alongside the extension, people would still have to cross a high speed roadway at key points, raising comfort and safety concerns. As a result, retaining a 40 mph posted speed on the extension is unlikely and not recommended, since it would not align

with or adequately serve bicycle and pedestrian travel in this area.

Several potential safety and multimodal enhancements should also be considered as part of any future Oak Avenue extension. Installing a Pedestrian Hybrid Beacon or a full signal at Oak Avenue and Grayson Avenue would improve pedestrian visibility and crossing safety, while additional traffic-calming measures could further enhance comfort for people walking or rolling along the corridor.

These ideas align closely with what the community has voiced throughout the planning process. Community members emphasized that high-quality bicycle and pedestrian facilities should be a top priority for this connection, with some even expressing interest in a pedestrian- and bicycle-only extension.

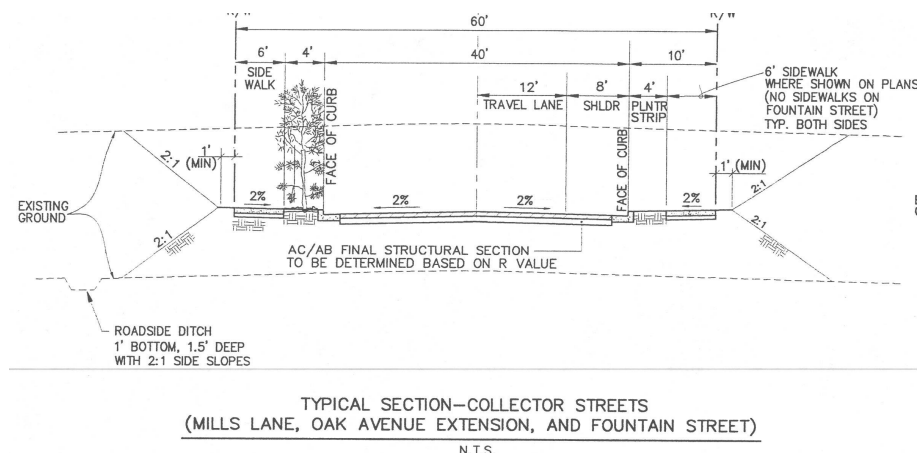
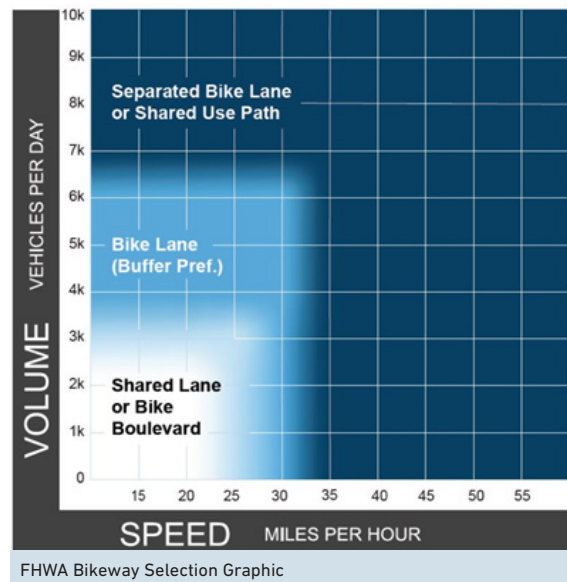


Figure 24: Proposed Oak Street Extension Typical Cross Section, Highway 29 Specific Plan, 2001

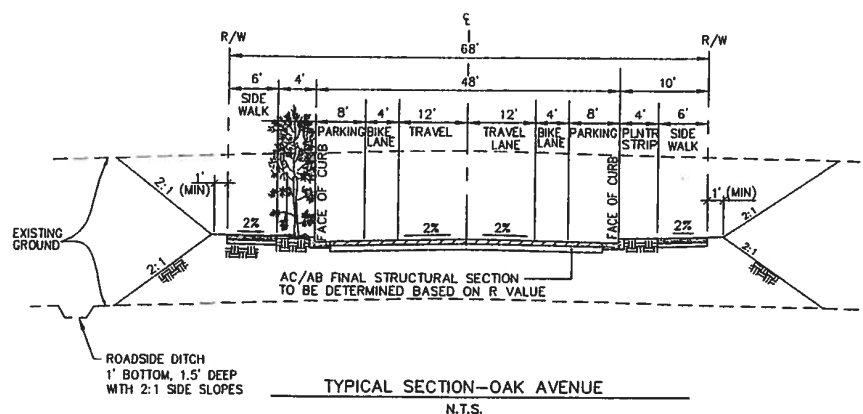


Figure 25: Proposed Oak Street Extension Typical Cross Section, Highway 29 Specific Plan, 2005

St Helena Streets Master Plan

St Helena Streets Master Plan

Appendices

A-H



St Helena Streets Master Plan

Appendix A

Streetscape Toolkits



Contents

Amenities and Placemaking Toolkit.....	4
St. Helena Character.....	4
Building on Related Efforts.....	4
Streetscape Amenities.....	6
Street Trees + Understory Planting	
Bike Facilities	
Seating	
Pedestrian Scale Lighting	
Transit Shelters	
Public Art	
Signage + Wayfinding	
Street Typology + Amenities Matrix.....	13
Green Infrastructure Toolkit.....	16
Regulatory Framework.....	16
Green Infrastructure Measures.....	17
Impervious Connection to Vegetated Areas	
Interceptor Tree Planting and Preservation	
Pervious Pavement Systems	
Bioretention Facilities	
Flow-Through Stormwater Control Measures	
Landscape-based Flow-Through	
Physically Structured	
Subsurface Infiltration Stormwater Control Measures	
Street Typology + Green Infrastructure Matrix.....	27
Additional Considerations.....	30

Information contained in this document is for planning purposes and should not be used for final design of any project. All results, recommendations, concept drawings, cost opinions, and commentary contained herein are based on limited data and information and on existing conditions that are subject to change.

Amenities and Placemaking Toolkit

The Streetscape Amenities and Placemaking Toolkit serves as a resource for City of St. Helena staff and the public, offering guidance on various streetscape elements and their application across different roadway types.

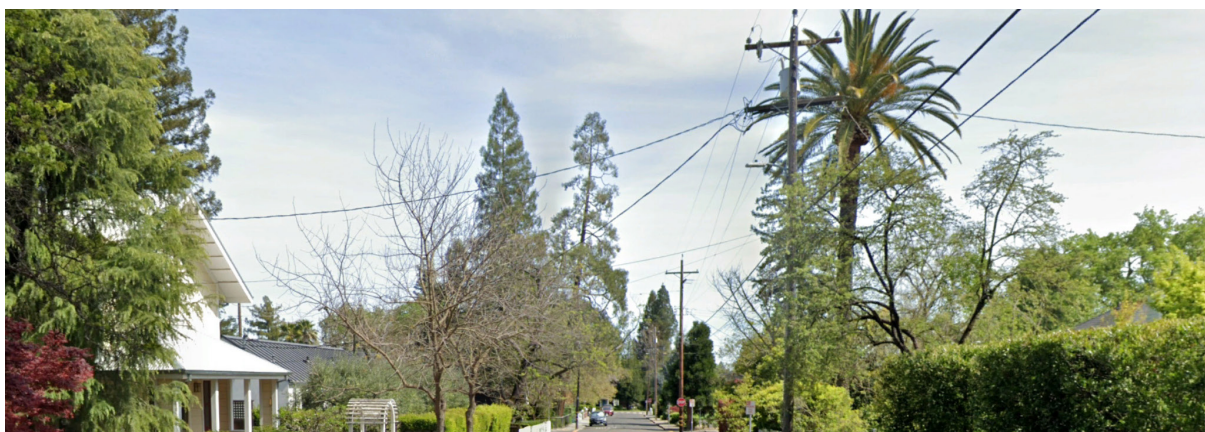
This toolkit aims to offer context-sensitive considerations that enhance the character and experience of St. Helena's streetscapes and public spaces. It should be used in partnership with the Green Infrastructure Toolkit to ensure that the selection, design, and placement of green infrastructure and streetscape amenities complement one another. By aligning these efforts, the city can create streetscapes that both manage stormwater effectively and enhance the public realm.

St. Helena Character

St. Helena's historic downtown, with its blend of Victorian, Craftsman, and Spanish Revival architecture, serves as a vibrant hub for residents and visitors alike. Anchored by an active Main Street lined with family-owned wineries, farm-to-table restaurants, artisan boutiques, and independent bookstores, this commercial core is more than just a shopping and dining destination—it is a gathering place that fosters St. Helena's close-knit community spirit. Public spaces, such as Lyman Park, further enhance downtown's role as a center for cultural and social connection.



St. Helena Historic Downtown



Stockton Street is an example of one of many tree-lined residential corridors in St. Helena

Beyond downtown, St. Helena's tree-lined neighborhoods are home to families, children, and longtime residents, reinforcing the need for safe, walkable, and bike-friendly streets that support both daily commutes and recreational activities. Well-connected sidewalks in residential neighborhoods allow students to walk to schools like St. Helena Elementary and Robert Louis Stevenson Middle School, encouraging pedestrian activity and making the area feel more connected.

In addition to its formal street network, many of St. Helena's agricultural roads double as walking paths and recreational spaces, providing residents and visitors with scenic routes through vineyards and open landscapes. These roads, often lined with oak trees and vineyard rows, serve as informal connectors between neighborhoods, wineries, and the surrounding countryside, offering opportunities for walking, jogging, and cycling in a setting that reflects the region's agricultural heritage.

As a regional destination in Napa County, St. Helena connects with nearby communities like Calistoga and Rutherford while maintaining its intimate small-town charm. Its proximity to the Vine Trail and scenic backroads makes it a key destination for cyclists. Its identity is also deeply tied to its natural surroundings, with Sulphur Creek meandering through town and the Napa River shaping its northern edge. These waterways provide essential ecological functions, from habitat preservation to stormwater filtration, underscoring the importance of integrating green infrastructure into streetscape design.

Building on Related Efforts

More specific guidelines and specifications for future streetscape amenities, including the selection and detailing of furnishings, landscape elements, paving materials, and related streetscape components, outside of downtown should align with the Downtown Specific Plan. The Downtown Specific Plan is intended to serve as the base framework for the rest of the city, establishing unified design themes and standards that can be applied citywide, with context-sensitive variation in placement, frequency, type, and scale by street.

However, at the time of writing the Downtown Specific Plan is currently on pause at the direction of City Council. Until it is restarted, the Cultivate St. Helena Plan should serve as the primary policy and design reference for near-term improvements and streetscape decisions.

Streetscape Amenities

The following provides an overview of the components of streetscape amenities and key considerations for these elements in St. Helena. Following this overview, a matrix summarizes the suitability and considerations for various amenities based on the city's street typology.

All amenities should strengthen and complement the city's existing character, using sustainable materials and practices. It's also important to ensure that amenities are accessible, with enough clear space around them, appropriate heights, and features that accommodate people with disabilities, such as easily reachable controls, non-slip surfaces, and seating that supports a variety of needs. To maximize convenience, accessibility, and efficiency, amenities should be co-located whenever possible to maximize space, and create well-integrated, multi-functional spaces.



Understory planting that is drought tolerant and low maintenance

Street Trees + Understory Planting

St. Helena is proud to be one of more than 3,400 Tree Cities USA, a designation that encourages the growth of trees within municipalities and promotes the well-being and importance of trees in urban communities. Tree City USA status is earned by meeting four core standards: maintaining a tree board or department, having a community tree ordinance, spending at least \$2 per capita on urban forestry, and celebrating Arbor Day. St. Helena also has 15 Heritage Trees, designated by the City Council based on community nominations. As such, the city has a strong tree program in place, and it is important to build upon this solid foundation. Expanding and enhancing the program will help foster a healthier, more sustainable urban tree canopy for the future.

Existing and new street trees and understory plantings serve many purposes, from slowing stormwater runoff and aiding water infiltration, to creating a sense of identity for St. Helena. It is essential to select species that work with the St. Helena climate, context and community identity, and that are maintainable. It is essential to select species that require low maintenance, infrequent trimming, and minimal water usage. In regions with a hot climate, like St. Helena, shade-bearing trees are particularly important for cooling the environment, reducing urban heat island effects, and enhancing pedestrian comfort.



Existing street trees on Main Street



Chinese Pistache, listed in the City Tree Species Selection Guide for Commercial Streets

In high-traffic areas such as Main Street and the downtown district, street trees should not only provide environmental benefits but also contribute to the aesthetic appeal of the streetscape, creating an inviting, green, and visually pleasing urban space. The choice of trees and understory plantings should reflect the local landscape, incorporating native species or drought-tolerant varieties that complement the surrounding vineyards and rural charm.

Beyond Main Street, street trees and landscaping should also be prioritized in residential neighborhoods and along key connecting corridors. In these areas, trees can provide much-needed shade, improve walkability, and enhance the overall sense of community. Thoughtful placement of trees in residential zones can help create a more comfortable microclimate, reduce heat buildup, and contribute to traffic calming by naturally narrowing sightlines and encouraging slower vehicle speeds. Additionally, integrating greenery along bike-friendly routes, including the Vine Trail and other popular cycling paths, can provide shade and visual interest while reinforcing St. Helena's identity as a scenic and bike-friendly community.

For street tree species selection, refer to the Master Tree List (Exhibit A), as recommended by the St. Helena Tree Committee. For stormwater management considerations, refer to the Green Infrastructure Toolkit to ensure that tree planting and other streetscape amenities achieve both aesthetic and environmental objectives, such as improving water infiltration and supporting biodiversity. By integrating sustainable practices, St. Helena can maintain its natural beauty while adapting to environmental changes and promoting a healthy, vibrant urban environment.



Holly Oak, listed in the City Tree Species Selection Guide for Residential Streets



Bike repair and hydration stations along long-distance routes



Bike racks strategically placed to provide convenient parking while maintaining pedestrian flow

Bike Facilities

As St. Helena continues to grow as a cycling community, it is critical to provide amenities that support cyclists, particularly those engaging in long-distance rides. When the Vine Trail is fully realized (i.e. the Calistoga-St Helena section was completed in 2024 and the St Helena-Yountville is currently in design), amenities will become even more essential for riders passing through the area.

The City should focus on providing shade and repair and hydration stations along long-distance routes and the Vine Trail, ensuring cyclists have the support they need during their journey. Additionally, bike racks should be integrated along Main Street and in key residential areas, such as multifamily or mixed-use areas, to accommodate community members making shorter, local trips.

U-racks and bike corrals can be placed within the right-of-way in wide sidewalks, curb bulb-outs, and landscape or furnishings zones to integrate with the streetscape while maintaining pedestrian flow. They should also be located near transit stops to support first/last-mile connections, and at trailheads where bike routes intersect with city streets.

Selections for bicycle facilities along Main Street should reference both the Cultivate St. Helena Plan and the Downtown Main Street Sidewalk Project Phase 1a to ensure consistency with established design direction and maintain a cohesive visual and functional identity.



Diverse seating options provide flexible uses and help activate the street



Benches are placed in residential areas to fit the more traditional site context

Seating

A range of seating options, including but not limited to, benches, seat walls, modular seating, and tree benches, should be considered to fit the context and site constraints of a particular street or area. The placement of these seating elements should align with the site's purpose, whether along the Vine Trail or in residential neighborhoods. In areas with limited space, compact or modular seating can provide comfort without blocking pedestrian flow. This diversity ensures St. Helena's streetscapes are flexible and meet the needs of all users.

Custom seating elements should be provided in areas with high pedestrian activity, such as downtown, to create a unique and inviting atmosphere that reflects the character of St. Helena. Business owners can contribute by partnering with the city to sponsor or maintain seating, helping to enhance the streetscape while fostering a sense of ownership. In other locations, off-the-shelf seating products can be used to ensure cost-effectiveness.

Given the hot climate and warm summer months, seating should be paired with shade from trees or shelter elements to provide comfort for users. This combination will encourage longer stays and improve the overall experience. To reduce the need for ongoing maintenance, seating materials and designs should be low-maintenance, durable, and resistant to the elements, ensuring longevity and minimizing upkeep costs. This approach creates comfortable, practical seating that complements the environment while being mindful of long-term sustainability.



Pedestrian-scale lighting should be placed where it is most needed, such as at intersections, crosswalks, and pathways



Adequate lighting at transit shelters enhances safety

Pedestrian Scale Lighting

Pedestrian-scale lighting should enhance visibility and safety while preserving St. Helena's rural character. This can be achieved by strategically placing lights where they are most needed—such as at intersections, crosswalks, and pedestrian pathways—and using low-impact, energy-efficient lighting solutions.

St. Helena has regulations in place to minimize light pollution, as outlined in the municipal code. Specifically, Section 17.24.070 requires that any new outdoor lighting installed on buildings or properties adhere to guidelines regarding shielding and lamp types. These measures aim to reduce light pollution, preserve the natural night environment, and promote energy efficiency. Compliance with these standards is mandatory for all new outdoor lighting installations within the city.

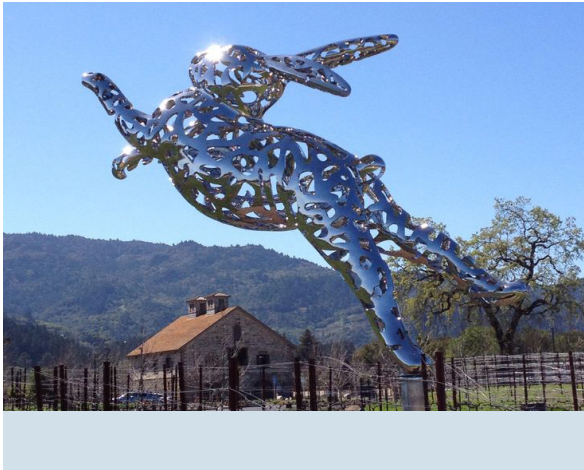
To maintain a human-scale experience, pedestrian-scale lighting should focus on residential neighborhoods, the downtown core, and along Main Street, while accent lighting can highlight key public spaces.

Transit Shelters

NVTA routes along SR29 could be improved by adding amenities like shade, seating, and Wi-Fi to enhance comfort and encourage greater transit use. Shelters should include bike facilities, such as racks and repair stations, to support both cyclists and transit riders, especially with the Vine Trail running parallel to SR29. Providing shade for cyclists at transit shelters could improve the overall transit connection by offering a more comfortable, welcoming space for riders transferring between cycling and public transportation, while also making the wait more pleasant by providing relief from the elements. Additionally, proper lighting should be included to ensure safety, making these spaces secure and welcoming at all hours.



Transit shelters can provide shade and relief from the elements, aiding cyclists in transitioning to buses or other forms of public transportation



Public Art

St. Helena’s public art, including notable pieces like the “Bunny Foo Foo” statue located at the south entrance to the city, plays a key role in enhancing the city’s identity, wayfinding, and sense of place. Public art should continue to reflect the town’s unique character while potentially serving additional purpose.

Large-scale sculptures or gateways can mark key entry points, while interactive and site-specific art, such as sculptures along the Vine Trail, can engage the community and highlight the area’s history. Building on the existing mural program in the downtown area, additional murals along streets with large blank facades—like Dowdell Lane—could further enhance vibrancy and activation, telling local stories and celebrating St. Helena’s history and culture.

Public art can also encourage exploration, guiding people to different parts of the city, and involving local artists can help create pieces that resonate with the community. As new installations are considered, coordination with the City’s Public Art and Installations process, including the mural permit application process and the public art donation and installation application process, will help ensure that artworks align with city policies, maintain aesthetic consistency, and reflect community values while supporting a cohesive approach to integrating art into public spaces.



Mural on the facade of the Wydown Hotel located on St. Helena’s Main Street



Peter Hassen’s “Cycles 3: Extinction” sculpture on Main Street in Napa, CA

Signage + Wayfinding

Signage and wayfinding throughout St. Helena should focus on creating clear, welcoming gateways and arrival points for both vehicular and bike/pedestrian traffic. Currently, there is a lack of clear arrival points and a cohesive branding or wayfinding identity that ties together the city's downtown area, surrounding neighborhoods, and key destinations.

To reduce sign clutter, particularly that of businesses in the downtown area, it's important to streamline the number and placement of signs, prioritizing clarity and functionality. Signs should be strategically positioned to enhance visibility without overwhelming the streetscape, considering factors like speed limits and traffic flow. The height and placement should accommodate all modes of transportation, ensuring that signage is easily visible to drivers, cyclists, and pedestrians. Additionally, most existing signage is oriented toward vehicles rather than pedestrians, making it necessary to supplement or redesign signs to improve visibility and usability at a pedestrian scale.

In addition to guiding people through the downtown area, signage should provide clear directions to key destinations like vineyards and other attractions outside the city center. These signs should blend with St. Helena's rural character, using materials and design elements that complement the natural environment. A cohesive design and color scheme will help create a unified system that supports wayfinding while enhancing both the user experience and the aesthetic integrity of the city, establishing a strong sense of place and clear direction for residents and visitors alike.

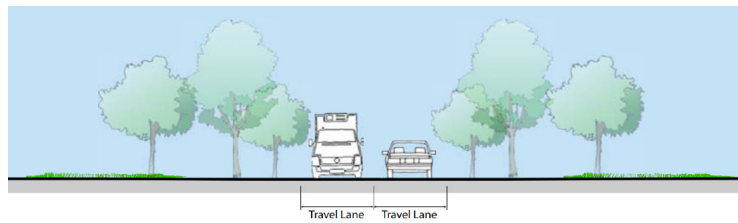
Street Typology + Amenities Matrix

This section examines the suitability of streetscape amenities for each street type defined in the St. Helena 2040 General Plan Update. The street typology provides a framework for selecting the most effective amenities based on factors like street function, surrounding land use, transportation priorities, and community needs.

By aligning these elements with the city's street types, this toolkit provides strategies to improve public spaces, enhance the pedestrian and cyclist experience, and strengthen St. Helena's character.

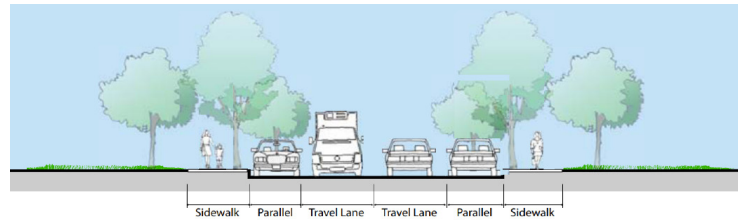
Open Space/ Rural

Provides access to open space, vineyards, agricultural areas, and rural residences. Typically lacks sidewalks and curbs, though some may include bicycle boulevards and low-speed limits.



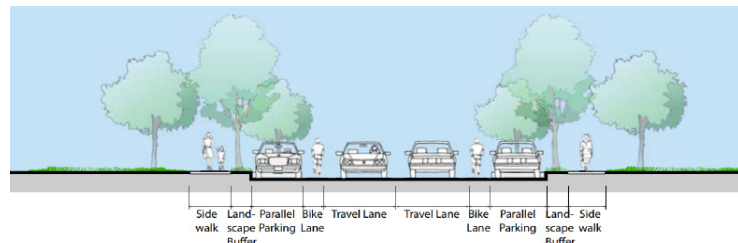
Industrial Collector

Designed for truck access to industrial and manufacturing areas. Sidewalks are present, but bicycle and transit facilities are typically not included.



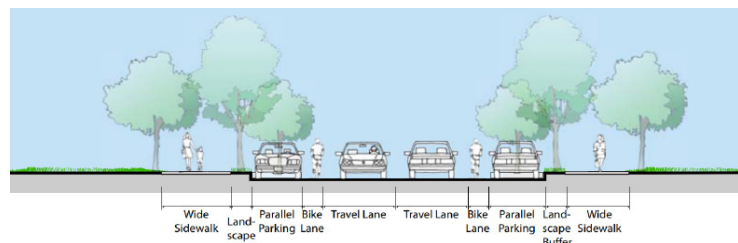
Residential

Serves neighborhoods, emphasizing pedestrian and bicycle amenities with slow driving speeds to support local trips.



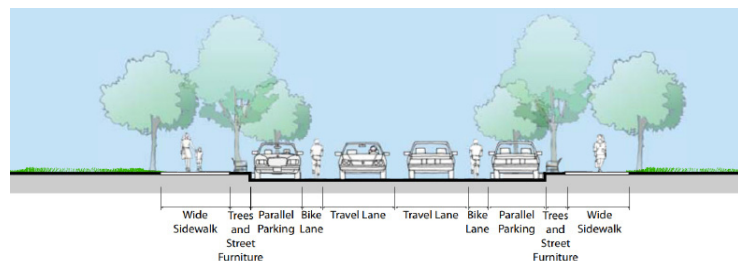
Downtown/ Mixed Use

Accommodates all travel modes with features promoting livability, including wide sidewalks, traffic calming, and bicycle boulevards.



Regional Collector

Primarily designed for citywide and regional access, this street supports cars, transit, and truck traffic.



Street Typology + Amenities Matrix

The matrix below outlines St. Helena’s street types and key streetscape amenities, assessing their suitability for each type. Additional considerations are provided for amenities best suited to specific street types.

Least Suitable

Suitability Depends On Site Context

Most Suitable

Street Types	Amenities Overview	Street Trees + Understory Planting*	Bike Facilities	Seating	Pedestrian-Scale Lighting	Shade Structure / Transit Shelters	Public Art	Signage / Wayfinding
Open Space/ Rural	Streetscape amenities should be minimal and thoughtfully placed to preserve scenic views and complement the area’s agricultural character. The focus should be on essential amenities at trailheads and key rest areas.		Prioritize bike repair and water refill stations at key locations including trailheads and rest areas.				Consider larger installations which act as landmarks, require less maintenance, and create identity and character without cluttering natural scenery.	
Industrial Collector	Streetscape amenities should be minimal and carefully placed, prioritizing safety, accessibility, and visual continuity. Due to limited foot traffic and need for street activation, amenities should be scaled appropriately and kept simple.							
Residential	Placement and frequency of streetscape amenities should prioritize pedestrian and bicyclists needs, incorporating features like street trees, seating, bike racks, and lighting in a way that improves safety and fosters community interaction while preserving a neighborhood scale.	Incorporate canopy and accent trees, clustering canopy/shade trees in gathering and seating areas.		Place space-efficient seating, such as backless benches and seating walls along landscaped spaces, in curb extensions, and wide sidewalks, allowing for shade, where possible.	Focus on lighting key areas such as intersections, crosswalks, and sidewalks while preserving privacy for homes.			
Downtown/ Mixed Use	Downtown/Mixed-Use streets feature the highest density of activity and the broadest range of streetscape amenities, strategically placed to support high pedestrian volumes and diverse uses. These amenities should be carefully integrated to enhance walkability, activate the street, and foster a vibrant, welcoming public realm.	Strategically place canopy trees at intersections and accent trees along the street to enhance permeability. Position trees to avoid blocking signage and building entrances.	Place space-efficient bike racks in curb extensions, at transit stops, and along wide sidewalks, ensuring at least 6 feet of clearance and shade where possible.	Provide diverse seating options, such as benches, seating walls, and movable chair. Strategically place seating in high-traffic zones (where space allows), curb extensions, and parklets.	Ensure adequate lighting at storefronts, transit stops, plazas, and high-traffic pedestrian areas to support activity at all hours.	Transit shelters should aim to offer additional amenities such as district branding, lighting, wayfinding maps, and Wi-Fi kiosks, where feasible.	Prioritize interactive, pedestrian-scale art such as sculptures, murals, and artistic seating that activate public spaces and enhance walkability.	Prioritize pedestrian-scale wayfinding with cohesive branding to direct visitors to key destinations, integrate historical and interpretive signage that enhances St. Helena’s identity.
Regional Collector	Regional Collectors in downtown areas and along Main Street, prioritize pedestrian amenities to support foot traffic and connectivity. In suburban or rural areas, amenities should be scaled to ensure safety, accessibility, and visual continuity while preserving the surrounding character.		Prioritize bike repair and water refill stations at key locations including trailheads, rest areas, and transit stops/shelters.			Transit shelters should aim to offer additional amenities such as city or district branding, lighting, wayfinding maps, and Wi-Fi kiosks, where feasible.	Use monument-style pieces at key gateways and corridors to signal arrival into St. Helena, ensuring visibility for pedestrians, cyclists, and drivers.	Install vehicular and bicycle-oriented wayfinding signs to guide travelers to key destinations—such as downtown, regional trails, and wineries—while using gateway signage to mark St. Helena’s entrances.

*While street trees and understory plantings enhance all street types, prioritizing new tree planting programs in residential and downtown/mixed-use streets can maximize both aesthetic and environmental benefits.

Green Infrastructure Toolkit

This toolkit serves as a resource for City of St. Helena staff and the public on green infrastructure measures, also known as stormwater treatment measures, that comply with state regulations. It outlines six approved green infrastructure measures, followed by guidance on their application throughout the city, based on St. Helena's General Plan street types and additional considerations. It should be noted that the City of St. Helena also utilizes Bay Area Stormwater Management Agencies Association (BASMAA) regulations and standards to guide private development compliance with stormwater management requirements.

The toolkit aims to support the proactive integration of green infrastructure into new transportation projects, reducing reliance on traditional storm drain systems and helping to prevent future flooding. It provides recommendations only and does not replace green infrastructure or design standards established by the City of St. Helena, the Napa Valley Transportation Authority, Caltrans or other applicable regulatory agencies.

Regulatory Framework

The City of St. Helena manages its storm drain system under the State Water Board's 2013 Phase II Small MS4 General Permit (Permit). This Permit regulates projects that create or replace 5,000 square feet or more of impervious surface, classifying them as Regulated Projects. For road and linear underground projects, like utility pipeline improvements, Section E.12.c. sets stormwater treatment requirements, including green infrastructure. However, some street and road projects

may qualify for exemptions when including sidewalks, bike lanes, and trails built with permeable surfaces or built to direct storm water runoff to vegetated areas.

A draft reissued Small MS4 Permit was released in 2024 for public review, and the City anticipates that many future street improvement projects will be required to comply with the updated standards when the final Permit is adopted. Attachment D6 of the draft Permit contains guidance on post-construction stormwater management. The draft Permit introduces several important updates, including stormwater control measure prioritization and interceptor tree credits, both of which aim to enhance stormwater management and environmental sustainability.

Interceptor tree credits allow newly planted or preserved trees to count toward meeting a project's stormwater treatment requirements by capturing and intercepting rainfall before it reaches the storm drain system. Each qualifying tree provides a defined "credit" for the volume of stormwater managed, reducing the need for other structural treatment facilities such as bioretention planters or infiltration basins.

To qualify, trees must meet certain criteria, such as species type, canopy size, and placement within a designated drainage area, and must be accompanied by a long-term maintenance and inspection plan. This approach incentivizes urban greening and shade canopy expansion while helping cities achieve water-quality compliance through natural systems.

Future street improvements are expected to follow the requirements of the 2024 draft Permit and 2025 updates, with stormwater treatment measures aligned to meet these standards. (Regulated projects must also meet retention and peak flow control standards with the support of stormwater treatment measures.)



Example of Green Infrastructure in St. Helena along St. James Court

Green Infrastructure Measures

To aid in the planning and design of improvements proposed by the Streets Master Plan, this toolkit provides a list of green infrastructure measures that can be incorporated into street design to meet regulatory requirements. Also included in this toolkit is a discussion of key considerations and maintenance needs associated with each of the relevant green infrastructure measures.

The City should use the following key green infrastructure measures to treat stormwater, prioritized in the listed below and the guidelines in the Permit. Each measure is described in further detail in this section. It should be noted that there is an imperative to minimize the need for green infrastructure measures by first reducing the use of impervious paving wherever possible.

Green Infrastructure Measures:

- + Impervious Connection to Vegetated Areas (Self-retaining Areas)
- + Interceptor Tree Planting and Preservation
- + Pervious Pavement Systems
- + Bioretention Facilities
- + Flow-Through Stormwater Control Measures
- + Biofiltration (lined bioretention with perforated pipe)
- + Landscape-based Flow-Through (tree-box media filter, etc.)
- + Physical Structured (media filters, hydrodynamic separators, etc.)
- + Subsurface Infiltration Stormwater Control Measures (infiltration trenches, dry wells, infiltration galleries, etc.)



Impervious Connection to Vegetated Areas, Napa County



Impervious Connection to Vegetated Areas, Seattle, WA

Impervious Connection to Vegetated Areas (Self-retaining Areas)

This green infrastructure measure manages and treats stormwater by sloping impervious areas to drain into adjacent vegetated (pervious) areas. These vegetated zones act as self-retaining areas, absorbing and infiltrating the runoff, thereby reducing the volume and improving water quality. This allows stormwater to be efficiently directed into adjacent green areas, minimizing the need for underground drainage in a low-impact, cost-effective way.

Key Considerations

- + Ensure a maximum 2:1 ratio of impervious to pervious area and maintain proper slopes to facilitate sheet flow into vegetated areas.
- + Adhere to minimum ponding depth and slope requirements to avoid erosion and ensure effective stormwater infiltration.
- + Position vegetated areas strategically in medians, roadside strips, or behind sidewalks to optimize stormwater management.
- + Use appropriate soil media to support vegetation and facilitate infiltration.
- + Ensure that runoff from impervious surfaces (streets, sidewalks, parking lots) is directed into vegetated areas via sheet flow rather than concentrated flow to prevent erosion.

- + Use plants that thrive in St. Helena's Mediterranean climate, such as oaks, manzanita, native grasses, and riparian species.
- + Utilize bioretention systems if the available right-of-way limits pervious area size (see bioretention section for more details).
- + Awareness of seasonal groundwater depth in proximity to the proposed facility.

Maintenance Needs

- + Regularly prune, remove weeds, and replace dead or damaged plants to maintain functionality.
- + Clear litter, sediment, and debris from vegetated areas and adjacent impervious surfaces to prevent clogging.
- + Address erosion or scouring promptly by regrading or reinforcing areas as needed.
- + Periodically inspect slopes, ponding areas, and vegetation health to ensure proper performance.
- + Replenish or amend soil media as required to maintain infiltration capacity.



Interceptor Trees, Mitchell Drive, St. Helena, CA



Interceptor Trees, Berkeley, CA

Interceptor Tree Planting and Preservation

This measure involves strategically planting new trees or preserving existing ones to intercept and manage stormwater. Trees intercept rainfall on their leaves and branches, allowing water to evaporate (through a process called evapotranspiration) before it reaches the ground. The root systems of these trees enhance stormwater uptake, promote infiltration, and reduce surface runoff. Utilizing interceptor trees can be an effective strategy for reducing the amount of impervious area within the street that requires treatment, thereby decreasing the size of other green infrastructure measures. In some instances, municipalities may decide to apply interceptor tree credits. For example, credits could be applied to different tree types, new deciduous, new evergreen, and existing, each of which is assigned a specific square footage reduction from the total impervious area in stormwater treatment calculations.

The City administers the interceptor tree credit program as part of its local stormwater management responsibilities under the State Water Board's Phase II Small MS4 Permit. The City establishes eligibility criteria (e.g., canopy size, species selection, location within the drainage area), develops design and documentation standards, and verifies compliance during project design review and post-construction inspection. Ongoing maintenance and inspection requirements are included to ensure long-term performance.

Similar crediting approaches have been adopted by other Bay Area municipalities, based on guidance from the Bay Area Stormwater Management Agencies Association (BASMAA). If St. Helena elects to apply an interceptor tree credit program under the forthcoming Phase II MS4 Permit reissuance, it would administer the program locally, consistent with state and regional standards, to ensure transparency, accountability, and measurable water-quality benefits.

Key Considerations

- + Consider the canopy of mature trees to reduce the impervious area requiring stormwater treatment.
- + Retain existing and strategically place proposed trees within the right-of-way to maximize benefits.
- + Choose tree species that are well-suited to local climate, soil conditions, and expected stormwater loads.
- + Prioritize native or drought-tolerant species to reduce water demand and enhance ecological benefits.
- + Ensure adequate spacing between trees to avoid root conflicts with infrastructure and allow for canopy growth.
- + In flood-prone areas near the Napa River and Sulphur Creek, trees can aid in stabilizing soils and managing stormwater.
- + Near vineyards and agricultural buffers maintain tree canopies to reduce soil erosion and filter runoff before it enters waterways.

- + Select fire-resistant trees in wildland-urban interface areas, maintaining defensible space around structures.
- + In flood-prone zones, ensure trees can withstand seasonal saturation and soil erosion.

Maintenance Needs

- + Regularly prune, water, and inspect trees for health and structural stability.
- + Clear debris from tree wells, grates, and infiltration zones to maintain proper stormwater flow.
- + Regularly clear dry leaf litter and deadwood to minimize fire risk during peak summer months.
- + Ensure soil around trees remains uncompacted and nutrient-rich to support growth.
- + Conduct periodic tree health assessments to check for stress, nutrient deficiencies, or signs of decline.
- + Watch for sudden oak death (SOD), powdery mildew, and root rot, which are prevalent in Napa County's oak woodlands.

Pervious Pavement Systems

Pervious pavements, such as gravel-set pavers (also known as permeable pavers), decomposed granite, pervious concrete, or porous asphalt, allow stormwater to infiltrate into the subgrade, reducing runoff and providing storage in the gravel base. Stormwater is stored in the gravel base and infiltrated into subgrade, if soil conditions allow. They are ideal when site constraints limit the amount of landscaping. These pavement types can either be self-treating or self-retaining and be designed to accept runoff from impervious surfaces via sheet flow.

Key Considerations

- + Ideal for parking strips, pedestrian zones, or areas with lower traffic volumes and loads.
- + Use gravel shoulders or vegetative buffers to minimize sediment transport onto the pavement.
- + In vineyard areas, ensure pervious pavement does not become compacted due to agricultural equipment.
- + Include geotechnical recommendations and proper edge treatments (e.g., deepened curbs) to maintain structural integrity.
- + Consider seasonal flooding risks near Napa River and its tributaries when selecting pavement location and sub-base design.
- + Select pavement type based on anticipated use and traffic volumes to ensure long-term performance.
- + Assess soil type and permeability—many areas in Napa County have compacted or clay-heavy soils that may require sub-base modifications to improve infiltration.
- + Porous asphalt or pervious concrete may be suitable for low-traffic roads or parking lots but require careful maintenance.
- + Consider using rainwater harvesting systems alongside pervious pavement to enhance water conservation.
- + Similar to other measures, awareness of seasonal groundwater depth in proximity to the proposed facility.

Maintenance Needs

- + Conduct periodic sweeping or raking for gravel-based pervious surfaces to maintain porosity.
- + Use a low-impact vacuum or compressed air system for deeper cleaning in interlocking pavers or porous concrete areas.
- + Regularly remove accumulated dust, soil, and organic debris from unpaved surroundings.
- + Periodically inspect for signs of compaction, cracking, or drainage issues.
- + After heavy rain events, inspect for sediment buildup and infiltration performance.
- + Adapt maintenance practices based on adjacent land uses and traffic volume.



Pervious parking lane, Oakland, CA



Pervious crosswalk, Seattle, WA



Bioretention Bulbout



Bioretention Strip, Bellevue, Washington

Bioretention Facilities

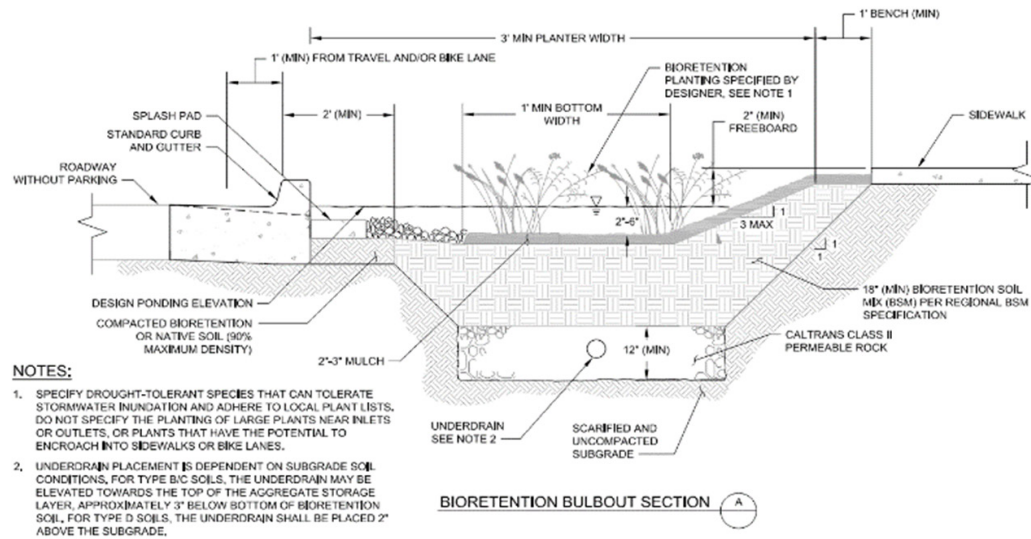
A bioretention facility is a landscaped area designed to capture and treat stormwater runoff by filtering it through soil and plants, removing pollutants before the water infiltrates into the ground or is discharged. These systems use deeper basins, soil mixes, and gravel layers to manage runoff effectively and are commonly placed in landscape strips, bulb-outs, or behind sidewalks. Structural curbs or retaining walls may be needed for adjacent improvements.

Key Considerations

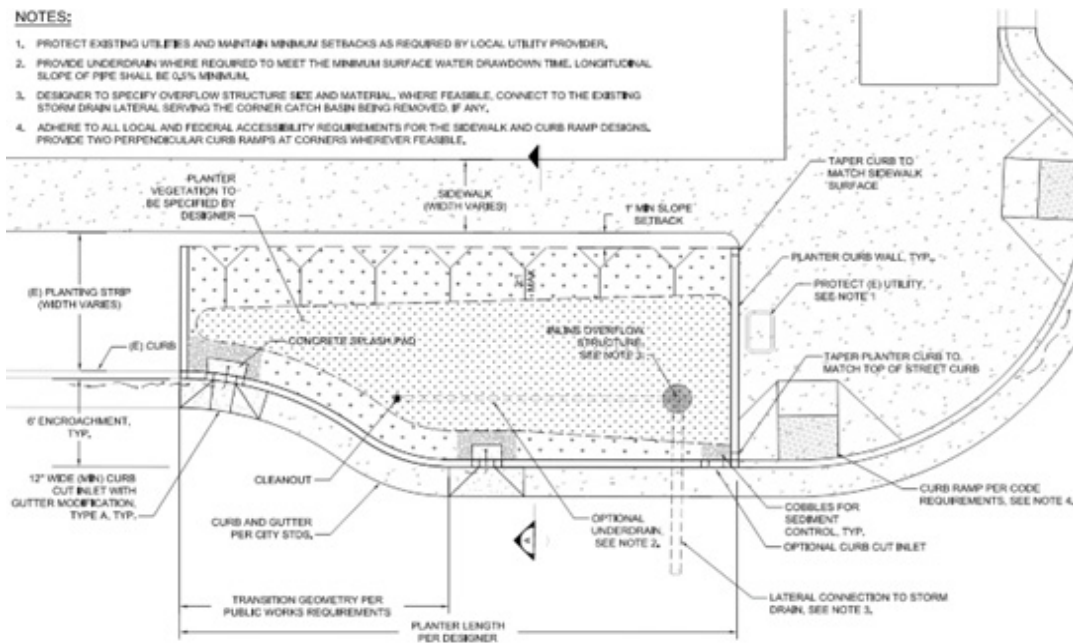
- + Use when there are space constraints within the right-of-way, which limit the feasibility of treating roadway surfaces using vegetated areas or pervious pavements.
- + Require significantly less space than vegetated areas, at 4% (versus 50%) of tributary impervious area.
- + Commonly located in landscape strips, bulb-outs, or behind sidewalks; runoff routed via gutters or swales.
- + Include 6"-12" ponding depth, 18" bioretention soil mix, and 12" gravel layer; structural curbs or walls may be required in tight spaces.
- + Avoid horizontal liners where soil allows for infiltration; use elevated perforated pipes to enhance retention.
- + Bioretention areas require a deep basin and soil section, as well as 3:1 side slopes or structural curbs.

Maintenance Needs

- + Regularly remove sediment and debris to prevent clogging.
- + Maintain healthy vegetation through pruning, weeding, and replanting as needed.
- + Inspect and repair retaining walls, curbs, and slopes for stability.
- + Ensure bioretention soil mix remains uncompacted and drainage layers function properly.



BASMAA Green Infrastructure Bioretention Section Detail



BASMAA Green Infrastructure Bioretention Bulbout Detail



Biofiltration System, Vancouver, BC

Flow-Through Stormwater Control Measures

Flow-through systems effectively manage stormwater without relying on infiltration, making them ideal for areas with poorly draining soils, high groundwater tables, or space constraints. These systems are designed to capture and treat runoff before safely discharging it into storm drains or nearby waterways. By using engineered media, vegetation, or filtration chambers, they help remove pollutants, improve water quality, and regulate flow rates. While they do not contribute to groundwater recharge (a process where water infiltrates from the surface into the groundwater), flow-through systems still provide essential stormwater management benefits, such as reducing peak flows, controlling runoff volume, and enhancing overall water quality.

Biofiltration (lined bioretention with perforated pipe)

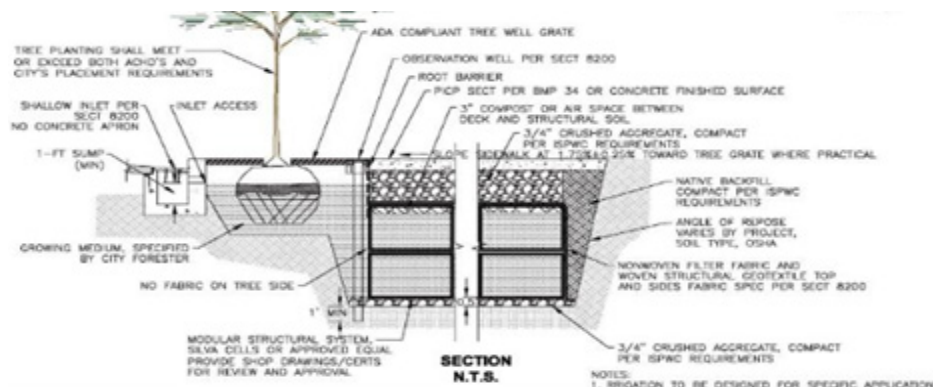
Biofiltration utilizes a bioretention system with an impermeable liner. The filter medium is composed of a porous material, such as sand, granulated active carbon or synthetic material, and activated by microorganisms that remove pollution from the water that passes through. It is suitable for sites where infiltration is infeasible due to soil or proximity to structures and may be installed downstream of impervious areas in the right-of-way.

Key Considerations

- + St. Helena's varied soil types and potential presence of high groundwater levels may require careful selection of engineered media to ensure proper filtration and drainage.
- + The impermeable liner prevents infiltration, making it essential to design an efficient underdrain system for controlled outflow.
- + Placement should prioritize areas with high impervious coverage, such as commercial corridors, to maximize pollutant removal and runoff control.

Maintenance Needs

- + Regular inspection and removal of accumulated sediment and debris, especially after major storm events, to prevent clogging of the media and underdrain system.
- + Checking for signs of blockage, standing water, or slow drainage, which could indicate maintenance needs.



Tree Box Media Filters, Typical Detail, San Mateo County

Landscape-based Flow-Through Stormwater Control Measures

This measure involves the use of natural elements, such as vegetation, as a filter for stormwater. Bioswales and rain gardens are examples. In space-limited areas, tree-box media filters may be used; these require deeper sections and careful elevation design for proper drainage. Tree-box media filters are only allowed to be used when very specific conditions are met, such as historic structures or landscapes limiting available space for other green infrastructure measures. Additional detail is in the MS4 Permit document.

Key Considerations

- + Ensure adequate space and proper grading for bioswales, rain gardens, and green roofs. In constrained areas, tree-box media filters may be used but only under specific conditions (e.g., historic structures or limited space).
- + Proper elevation design is critical to maintain effective drainage and prevent water from pooling or bypassing the system.
- + Use native or drought-tolerant vegetation that can thrive in local conditions while effectively filtering pollutants.

Maintenance Needs

- + Regular inspection and removal of accumulated sediment and debris, especially after major storm events, to prevent clogging of the media and underdrain system
- + Prune, remove invasive species, and replace dead or unhealthy plants to maintain effectiveness
- + Periodically replace and monitor the condition of the filter media to prevent system failure due to clogging or compaction



Tree Box Media Filters, San Rafael, CA

Physically Structured

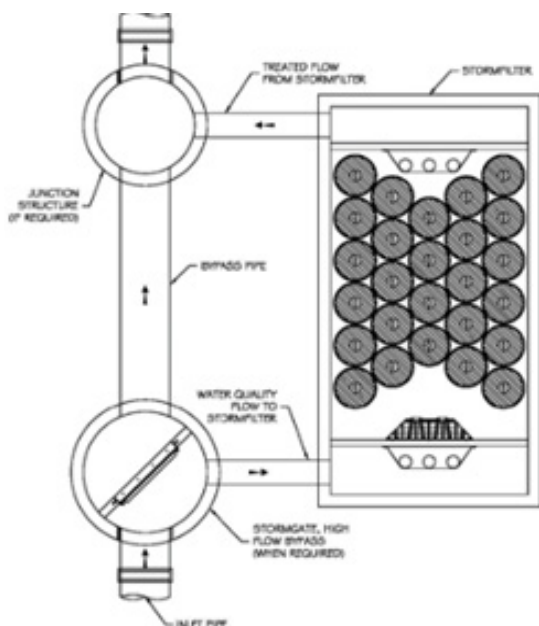
Physically structured measures are not landscape-based and can be placed below hardscape. Examples include media filter vaults and hydrodynamic separators. Like tree-box media filters, the MS4 Permit restricts use of media filter vaults and hydrodynamic separators to certain special cases. Reference should be made to the MS4 Permit document for specific requirements.

Key Considerations

- + Systems may have limitations in filtering out dissolved pollutants compared to landscape-based options.
- + Must be designed to handle expected stormwater flow rates without clogging or bypassing untreated water.

Maintenance Needs

- + Regular inspection and removal of accumulated sediment and debris, especially after major storm events, to prevent clogging of the media and underdrain system.
- + Must be emptied and cleaned at scheduled intervals to prevent resuspension of captured pollutants.



Media Filter Vault Typical Detail, San Mateo County

Subsurface Infiltration Stormwater Control Measures

Subsurface Infiltration Stormwater Control Measures are underground systems that store and slowly release water into the soil. As the water sinks, pollutants and sediments are filtered out. They are typically stone beds or basins located below hardscape and used when there is no available landscape for traditional treatment measures. Examples of subsurface infiltration systems include infiltration trenches or galleries.

Green Infrastructure Infiltration Gallery Typical Detail, San Francisco PUC

Key Considerations

- + Requires soils with adequate permeability to allow for infiltration. A geotechnical analysis should confirm infiltration rates and groundwater separation requirements.
- + System must be designed to handle expected stormwater volumes while preventing surface flooding or excessive subsurface saturation.
- + If any overlying surface includes permeable pavers or gravel, ensure vegetation does not impede infiltration.

Maintenance Needs

- + Conduct periodic inspections, particularly after major storm events, to assess sediment buildup, infiltration performance, and potential clogging.
- + Clear sediment and debris from inlets, pretreatment structures, and access points to maintain infiltration capacity.
- + Test percolation rates periodically to ensure water is infiltrating as designed; reduced infiltration may indicate clogging or compaction.

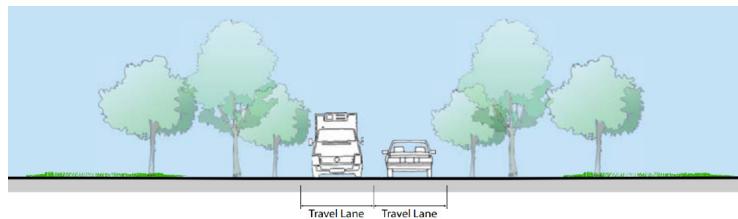
Street Typology + Green Infrastructure Matrix

This section examines the suitability of streetscape amenities for each street type defined in the St. Helena 2040 General Plan Update. The street typology provides a framework for selecting the most effective green infrastructure based on factors like street function, surrounding land use, transportation priorities, and

community needs. By aligning these elements with the city's street types, this toolkit provides strategies to improve public spaces, enhance the pedestrian and cyclist experience, and strengthen St. Helena's character.

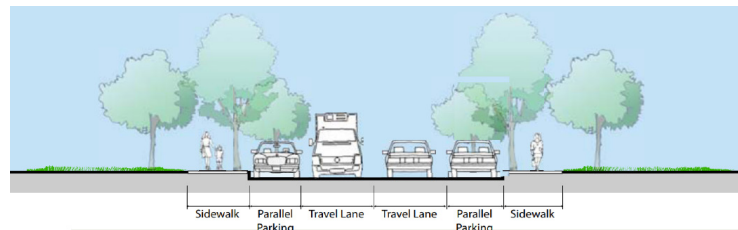
Open Space/ Rural

Provides access to open space, vineyards, agricultural areas, and rural residences. Typically lacks sidewalks and curbs, though some may include bicycle boulevards and low-speed limits.



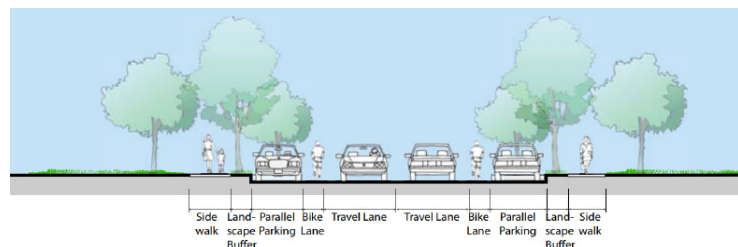
Industrial Collector

Designed for truck access to industrial and manufacturing areas. Sidewalks are present, but bicycle and transit facilities are typically not included.



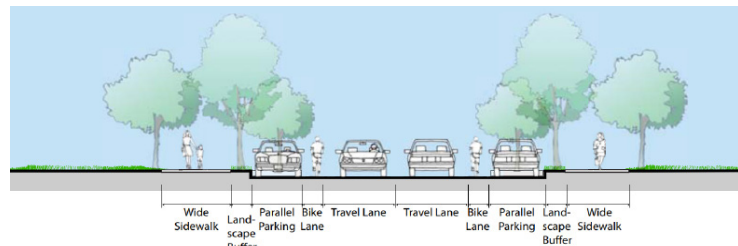
Residential

Serves neighborhoods, emphasizing pedestrian and bicycle amenities with slow driving speeds to support local trips.



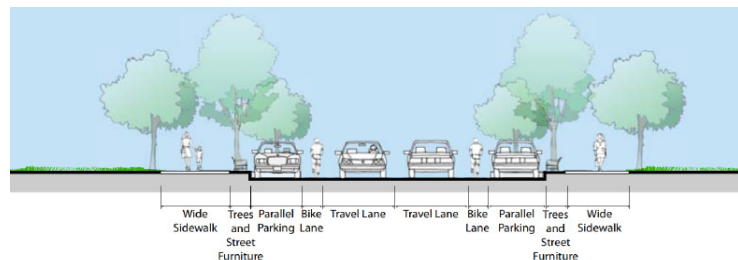
Downtown/ Mixed Use

Accommodates all travel modes with features promoting livability, including wide sidewalks, traffic calming, and bicycle boulevards.



Regional Collector

Primarily designed for citywide and regional access, this street supports cars, transit, and truck traffic.



Street Typology + Green Infrastructure Matrix

The matrix below outlines St. Helena’s street and key green infrastructure measures, evaluating their suitability and potential applications for each type.

Least Suitable

Suitability Depends on Site Context

Most Suitable

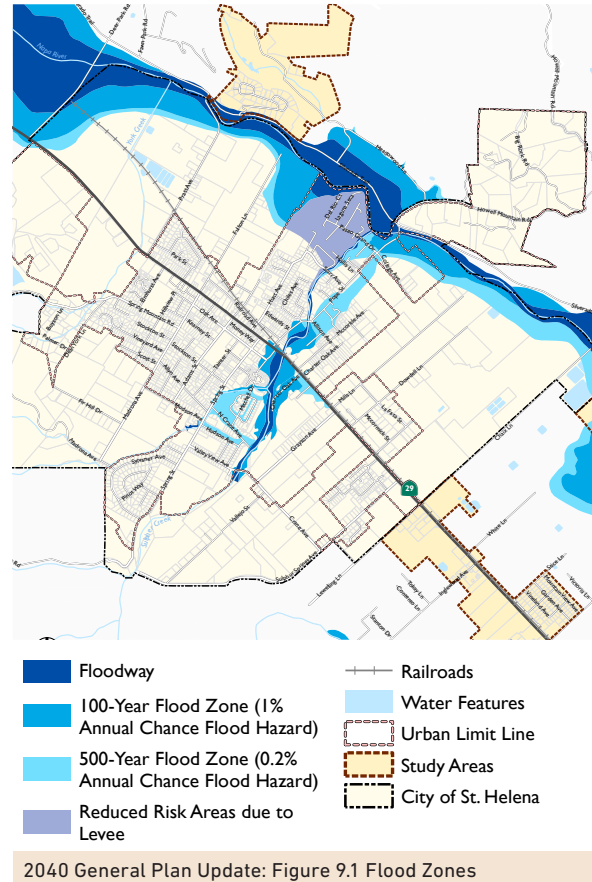
Green Infrastructure Measure	Impervious connection to vegetated areas	Interceptor Tree Planting and Preservation	Pervious Pavement Systems	Bioretention Facilities	Flow-Through Stormwater Control Measures	Subsurface Infiltration
Suitability Overview	Impervious connections to vegetated areas are especially effective for rural and residential roads, where the right-of-way (pervious area) is generally smaller than that of other street types. These streets also often have ample natural drainage areas due to larger building setbacks and green buffer spaces on either side.	Interceptor trees, for the purpose of stormwater management, are best suited for rural, industrial collector, and residential streets, which can accommodate larger landscape buffers that accomodate bigger tree species. These streets also have lower traffic volumes, allowing tree planting without major visibility or safety concerns.	Pervious paving suits mixed-use and residential streets with lower traffic volumes, reducing compaction and allowing water infiltration. Pervious paving can also contribute to the visual appeal of these pedestrian oriented street types.	Bioretention facilities are well-suited for more urban, space-constrained streetscapes, with higher pedestrian activity, and are suitable for downtown mixed-use and residential streets. Their space-efficient design manages stormwater while enhancing the aesthetic of the street.	Flow-through stormwater treatment suits industrial, downtown/mixed-use, and regional collector streets where dense infrastructure limits deep infiltration. Ideal for areas with compacted soils, high groundwater, or contamination risks, these systems manage runoff effectively without risking groundwater contamination or structural instability.	Residential streets are often the most suitable for implementing subsurface infiltration systems for stormwater management because they have limited space, lower vehicle volumes, and less impervious surface. This combination results in reduced runoff volumes and increased opportunities for effective infiltration.
Potential Applications	Large landscape buffers and/or areas outside the official right-of-way that can be used for landscaping and vegetation.	Trees can be planted/located in the sidewalk (planted in pits or boxes), landscape buffer zones, curb extensions, and plaza and courtyard spaces.	Pervious paving can be used in furnishing zones, shared-use paths, parking areas, edge treatemements, roadway shoulders, plaza and courtyard spaces.	Bioretention facilities can be integrated into curb extensions, medians, and buffer spaces, serving both stormwater management and aesthetic purposes.	Flow-through control measures can be integrated into vegetated planters, shallow vegetated channels, tree pits, curb extensions, pedestrian islands, and media filter vaults below hardscape.	Subsurface infiltration system can be applied beneath roadways, sidewalks, parking lanes, or green strips between the curb and sidewalk.
Street Type						
Open Space/ Rural						
Industrial Collector						
Residential						
Downtown/ Mixed Use						
Regional Collector						

Additional Considerations

Facilities Adjacent to Rivers and/or within the Floodplain

Portions of the city, particularly along the Napa River and Sulphur Creek, fall within FEMA's 1% and 0.5% annual chance special flood hazard zones (or protected by levee), meaning they are at risk of significant flooding. As climate change accelerates, these areas are expected to experience more frequent and severe flood events, making flood management strategies increasingly critical. In floodplain areas, green infrastructure measures play an essential role in absorbing rainfall, reducing runoff, and improving water quality. When incorporating green infrastructure into streetscapes adjacent to floodplains, careful planning is required to ensure effectiveness, resilience, and compliance with regulatory standards, ultimately enhancing the city's ability to manage stormwater and mitigate flood risks.

When implementing green infrastructure on streets in floodplain areas, it is essential that elements do not obstruct natural flood flows or increase flood risks. To effectively manage excess water, green infrastructure measures should prioritize detention and controlled release rather than relying solely on infiltration. Streets and trails may also need to be elevated to remain accessible. Strategies such as raised roadways and boardwalks can help accommodate water movement while maintaining connectivity. Additionally, using flood-resistant materials, such as high-strength, water-resistant pavements, enhances durability and reduces maintenance needs. To further improve resilience, breakaway or flexible infrastructure—such as floodable sidewalks and bioswales—can be integrated to withstand periodic inundation without long-term damage. Finally, incorporating emergency overflow channels ensures that excess water is safely directed away from streets and structures, minimizing the risk of localized flooding and enhancing overall floodplain management.



Elevated walkway over bioswale, Irvine, CA

Roadway Extensions + New Roadways

As St. Helena develops roadway extensions and new roadways into the future, there is an opportunity to strategically integrate green infrastructure measures. Extension projects, some of which navigate over the Napa River and Sulphur Creek and are located within designated floodways, require a stormwater management approach that prioritizes flood resilience, water quality improvements, and ecological health.

Roadway projects in flood prone areas should incorporate elevated roadways, floodable green spaces, and permeable infrastructure to reduce impacts on natural water flow. Bridges or raised sections could be designed to minimize disruption to floodplain hydrology while bioswales, rain gardens, and constructed wetlands could be incorporated along the road edges to manage runoff, improve infiltration, and enhance habitat connectivity. In areas where new crossings over the Napa River and Sulphur Creek are needed, designs should account for both hydraulic capacity and ecological restoration, ensuring that infrastructure does not exacerbate flood risks or degrade water quality.

Proactively integrating green infrastructure into these key roadway extensions would not only improve transportation connectivity in St. Helena but also strengthen resilience to flooding and climate change. These projects offer a unique opportunity to align transportation and stormwater planning, creating multi-functional roadways that serve both mobility and environmental sustainability goals.

Building on Planned Stormwater Improvements Projects

St. Helena should leverage existing stormwater improvement projects to strategically incorporate green infrastructure measures into planned and ongoing efforts. For example, in areas where new storm drains are being installed, complementary green infrastructure elements can be integrated to slow, filter, and absorb runoff before it enters the drainage system. Similarly, alongside ecosystem restoration efforts like the Upper York Creek project, the city can expand riparian buffer zones, reintroduce native vegetation, and create floodable green spaces that not only support habitat restoration but also improve stormwater infiltration and flood mitigation. Taking a strategic, multi-benefit approach to stormwater infrastructure will help St. Helena maximize environmental and community benefits while reducing the strain on traditional gray infrastructure. By incorporating green infrastructure into planned improvements, the city can enhance long-term resiliency and comply with regulatory requirements. Additionally, at the time of writing, the Water Management Plan by West Yost is reviewing all water resources as an opportunity to strengthen the City's overall water management and resiliency strategy, aligning with these integrated stormwater and ecosystem restoration goals.

St Helena Streets Master Plan

Streetscape Toolkits

St Helena Streets Master Plan

Appendix B

Community Engagement Summary Memo



St. Helena Streets Master Plan

Public Engagement Summary

March 2026



TOOLE
DESIGN

INTRODUCTION

Purpose

This summary describes the outreach and engagement efforts for the St. Helena Streets Master Plan, which are two distinct, but related activities:

Outreach is the act of distributing information and materials about the project to the public. Outreach is uni-directional: during outreach, information will flow from the City of St. Helena to the community. The purpose of outreach is to let target populations know when, where, and how to participate in engagement opportunities.

Engagement is interactive. Engagement requires multi-directional lines of communication: during engagement, information flows between City staff, partner organizations and agencies, and community members. During engagement, stakeholders and community members are active participants.

Goals

The goals of the outreach and engagement process are to:

- **Gather public feedback** to inform plan recommendations.
- **Energize and engage stakeholders and residents** familiar with St. Helena's planning efforts, so they can become active partners and advocates throughout and beyond the project.
- **Coordinate with the Downtown Specific Plan** engagement in effort to (1) clearly distinguish between the two project efforts and (2) reduce engagement fatigue.

Phasing

Outreach and engagement for the St. Helena Streets Master Plan will take place over the course of ten months. The process is divided into three phases, each with distinct goals, targeted strategies, and materials.



PHASE 1 – EXISTING CONDITIONS + PROPOSED PROJECTS: August – November 2024

The following summarizes the outreach and engagement efforts for Phase 1 of St. Helena Streets Master Plan, with a focus on key findings collected during virtual stakeholder interviews and in-person engagement.

The primary goals of Phase 1 were to:

- Get input on challenges related to the existing road network, including bike and pedestrian infrastructure
- Determine which of the proposed network-wide projects are the most critical and should be prioritized for further analysis and design
- Share findings from the technical studies, particularly the comprehensive list/map of proposed transportation infrastructure projects (sourced from previous planning efforts and recommended by the project team)

Engagement included the following key questions:

- What transportation and streetscape projects or improvements do you think should be prioritized for the city?
- Are there any challenges you face while navigating the city, and what changes would you like to see to address them?
- Which aspects of the city's current transportation and mobility infrastructure do you value and believe should be maintained?

Phase 1 By the Numbers

Outreach Successes:

- Emails distributed to promote the project and encourage participation in Stakeholder Interviews
- Project landing page launched on City website

Engagement Successes:

- 2 x Pop-up events (at the St. Helena Farmer's Market and the Harvest Festival), during which the project team spoke to approximately 80 people who live, work, and/or have a child who goes to school in St. Helena
- 3 x Focus groups with stakeholders and agency partners (12 participants in total)
- One-on-one interviews with planning commissioners and councilpersons

Engagement Techniques and Key Findings

The following provides a detailed summary of the engagement techniques and findings from Phase 1:

Focus Groups

To dive deeper into specific issues and opportunities, the project team facilitated three, one-hour focus group conversations. After a brief presentation on the project goals, process, and initial network-wide opportunities and constraints, the project team used the Miro digital whiteboard to gather feedback. Attendees were invited to respond to the following questions, with notes and ideas added to a live map for everyone to follow in real time:

- What challenges do you believe exist when navigating the city and what changes would help address them?
- Which aspects of the City's current transportation and mobility infrastructure do you value and believe should be maintained?
- What transportation and streetscape projects or improvements do you think should be prioritized for the city?

Details on focus group dates and attendees are provided below*:

Group 1: City Staff (8/27/24)

Attendees:

- Juan Gonzalez, Fire Chief
- Chris Hartley, Chief of Police
- Dave Jans, Director of Community Services
- Carlos Uribe, Interim Ops Public Works
- Mario Traverso, Project Manager for Public Works

Group 2: Transportation Stakeholders (8/28/24)

Attendees:

- Carlotta Sainato, Program Manager at Napa County Bicycle Coalition (NCBC)
- Kara Vernor, Executive Director, Napa County Bicycle Coalition (NCBC)
- John Pulliam, Kimley Horn (Consultant for the Vine Trail)
- Shawn Casey-White
- Danielle Schmitz, Napa Valley Transit Authority

Group 3: School Stakeholders (9/26/24)

Attendees:

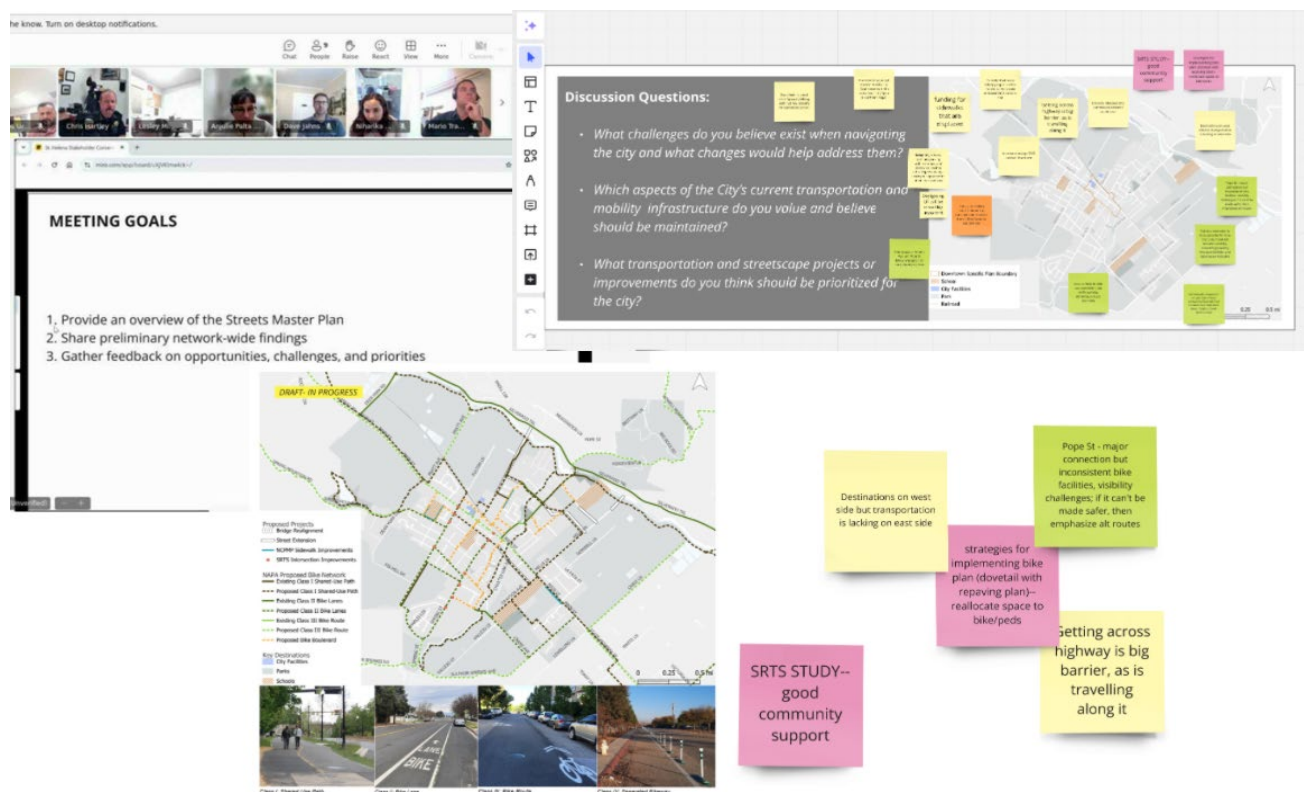
- Ted Stonbely, Assistant Head of School at St. Helena Montessori
- Mikhael Florez, Director Facilities & Operations, St. Helena Unified

** In addition to the groups above, the project team also held a one-on-one discussion with a City Council Member.*

Key Feedback from Focus Groups:

- Proposed improvements and bikeways on Madrona Avenue, Adams Avenue, and Pope Street should be prioritized.
 - Pope Street has inconsistent bike facilities and visibility challenges; considerations should include separated bike lanes and increased shade.
- New/improved bikeways on Sulphur Creek, Adams Avenue, and Pope Street could offer strong connections to the future Vine Trail
- Evacuation routes should be a priority for improvements

- If a future extension of Oak Avenue includes vehicles, high-quality bike and pedestrian facilities should be a top priority
- Consider bike- and pedestrian-only connections between cul-de-sacs
- Improve safety for those crossing Highway 29 (Main Street)
 - The Hunt and Main Street intersection feels particularly dangerous
 - Crossing improvements should be focused south of Downtown
- More north-south routes are needed on the east side of Main Street to create a complete, city-wide circulation network
- Expanding transit service options throughout the valley would help reduce vehicle dependence for school-aged children, parents, and the workforce
- Ensure that Class III (Bike Boulevards) include traffic calming elements, not just sharrows
- Encouraging school-age children to bike fosters a lifelong habit; prioritizing safe bikeways for all ages is essential
- The Vine Shuttle has helped reduce vehicle reliance for children commuting to St. Helena for school from the surrounding region
- Exploring the daylighting bill could improve visibility at intersections while serving as an opportunity to repurpose parking spaces for streetscape improvements
- This effort could champion and build upon the culture of recreational walking and biking that already exists in St. Helena
- Drop-off and pick-up times at St. Helena High School can be chaotic, with students often crossing outside crosswalks. Off-campus lunch for the highschoolers also increases midday foot traffic downtown and in the southwest part of the city on weekdays.



Images from Virtual Focus Groups conducted in Phase 1.

Pop-ups

The project team hosted a tent at two major city events with high foot traffic, engaging attendees already present and capitalizing on the built-in audience. The first pop-up took place on October 18, 2024, from 7:30 am to 12:00 pm at the St. Helena Farmer's Market, followed by a second on October 19, 2024, from 10:00 am to 4:00 pm at the annual Hometown Harvest Festival on Oak Street. At both events, the team distributed project flyers, invited attendees to complete a brief online survey, and led interactive activities to gather feedback.

The project team provided three activity boards where participants were asked to prioritize recommendations for **new bikeway projects, crossing improvements, and roadway extension and bridge realignment projects**. See Appendix A for photos of completed activity boards.



Images from the Pop-ups in Phase 1.

Key Feedback: Proposed Bikeway Projects

The project team asked participants to select the proposed bike facilities that were their top priority. A tally of the total votes for each project is presented on the following page. The three proposed bike facility projects that garnered the most community support include:

- **Project 6: 28 votes:** A shared-use path along the Napa River
- **Project 9 - 20 votes:** A shared-use path along Sulphur Creek from Sulphur Spring Rd to the Napa River Trail
- **Project 38 - 8 votes:** A new bikeway (facility TBD) along a proposed extension of Oak Avenue

The bikeway prioritization activity revealed a strong preference for bikeway projects that are entirely separated from car traffic. Verbal feedback also underscored a general preference for bikeway/trail facilities that prioritize enjoyment and leisure over transportation efficiency.

Additional Feedback and Themes

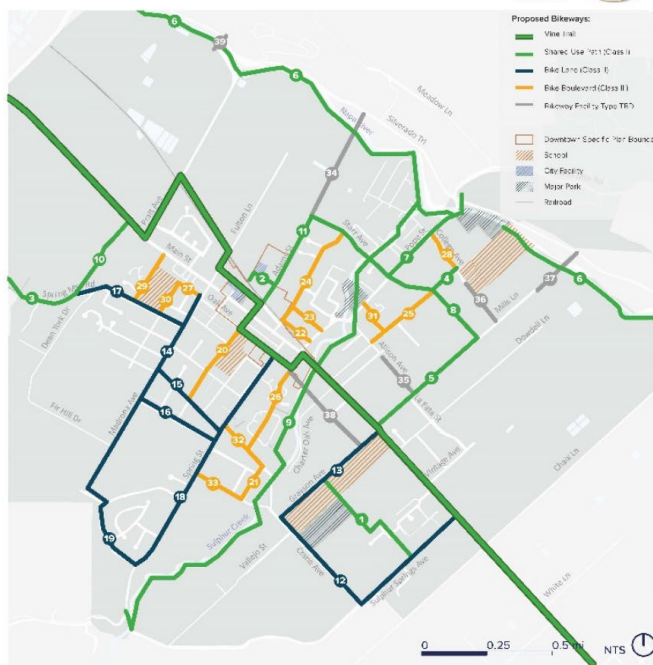
- Participants noted several off-street facilities that bicyclists and runners currently use as informal loops, including Fir Hill Drive and the green spaces and subdivisions east of Starr Avenue and south of Adams. They expressed a desire to formalize these areas and enhance connectivity to them.
- Policies and programs aimed at raising awareness of safe biking locations would be beneficial.
- Potholes pose a significant safety issue for bicyclists throughout the city, deterring biking. Sulphur Spring Avenue was specifically mentioned as a problem area.
- Several locations were identified as areas that need improvement:
 - Valley View Street, from Birch Avenue to Grayson Avenue, feels unsafe for some bicyclists, despite having Class II bike lanes, due to the visibility challenges at the bend in the road
 - Pope Street, from Chiles Avenue to Allison Avenue, was noted as another unsafe pinch point for bicyclists, due to the narrow road with no dedicated bike lanes combined with poor visibility at the curve
 - Adams Street, between Oak Avenue and Main Street, was highlighted as a particularly narrow roadway. Several participants suggested that removing street parking on one or both sides could improve safety for bicyclists.
- Silverado Trail is infrequently used by bicyclists because the bike lanes are too narrow and vehicles travel at high speeds, making it feel unsafe for biking. Because of this, a trail along the Napa River is a desirable alternative to the current Silverado facilities.
- Participants identified bridges as a low priority for biking and walking infrastructure, noting that there are currently no significant destinations to access east of the Napa River for pedestrians or bicyclists.
- There is a general excitement surrounding the Vine Trail and a strong desire to develop a better bike network that connects to this future facility.

Proposed Bikeways

Place up to three stickers next to the bikeway projects that should be prioritized.

1	Crane Park Path (to La Quinta Way) from Grayson Ave to Kennedy Ct	20	Adams St from Railroad Ave to Starr Ave
2	Library Lane Path	21	Birch Ave from Crane Ave to Valley View St
3	Lower Reservoir Loop Trail from city limits to Spring Mtn Rd	22	Church St from Hart Ave to Pope St
4	McCorkle Ave Path to College Ave	23	Edwards St from Hart Ave to Pope St
5	Mills Ln from Main St to Starr Ave Ext	24	Hart Ave from Church St to Starr Ave
6	Napa River Trail	25	McCorkle Ave from Allyn Ave to McCorkle Ave Path
7	Pope St from Starr Ave to Silverado Trl	26	Mitchell Dr from Main St to Crane Ave
8	Starr Ave from Mills to Adams St	27	Oak Ave from Hillview Pl to Madrona Ave
9	Sulphur Creek from Sulphur Spring Rd to Napa River Trail	28	College Ave from Pine St to end of College Ave
10	York Creek Path from Spring Mtn Rd to Vine Trail	29	Elmhurst Ave from Spring Mtn Rd to Main St
11	Adams St from Railroad to Starr Ave	30	Hillview Pl from Spring Mtn Rd to Oak Ave
12	S Crane Ave from Grayson Ave to Sulphur Springs Ave	31	Madrona Ln from Pope St to McCorkle Ave
13	Grayson Ave from Crane to Main St	32	Crane Ave from Spring St to Birch Ave
14	Madrona Ave from Riesling Wy to Oak Ave	33	Valley View from Spring St to Birch Ave
15	Allyn Ave from Madrona Ave to Spring St	34	Adams St from Crane Ave to Silverado Trl
16	Hudson Ave from Madrona Ave to Spring St	35	Allyn Ave from Crane Ave to Mills Ln
17	Spring Mtn Rd from Madrona Ave to Dean York Ln	36	College Ave from Crane Ave to Mills Ln
18	Spring St from Sulphur Ave to Oak Ave	37	Mills Ln extension to Silverado Trl
19	Silverado Ave from Spring Mtn Rd to Madrona Ave	38	Oak Ave extension to Canyon
		39	Pine Ave Bridge

The proposed bikeway projects were reviewed over the NVIA Countywide Bicycle Plan (2010). Additionally, the Sulphur Creek Path, located in the Crane Park to Lake Donohue network exhibit, was included in the list and map of proposed bikeway projects.



Proposed Bikeways Activity Board

Proposed Bikeway Project		Farmer's Market	Harvest Festival	Total Votes
1	Crane Park Path (to La Quinta Way) from Grayson Ave to Kennedy Ct		2	2
2	Library Lane Path		1	1
3	Lower Reservoir Loop Trail from city limits to Spring Mtn Rd	1		1
4	McCorkle Ave Path to College Ave			
5	Mills Ln from Main St to Starr Ave Ext			
6	Napa River Trail	5	25	28
7	Pope St from Starr Ave to Silverado Trl		3	3
8	Starr Ave from Mills to Adams St		1	1
9	Sulphur Creek from Sulphur Spring Rd to Napa River Trail	8	12	20
10	York Creek Path from Spring Mtn Rd to Vine Trail	1		1
11	Adams St from Railroad to Starr Ave		1	1
12	S Crane Ave from Grayson Ave to Sulphur Springs Ave		3	3
13	Grayson Ave from Crane to Main St	1		1
14	Madrona Ave from Riesling Wy to Oak Ave	1	1	2
15	Allyn Ave from Madrona Ave to Spring St	1		1
16	Hudson Ave from Madrona Ave to Spring St			

17	Spring Mtn Rd from Madrona Ave to Dean York Ln			
18	Spring St from Sylvaner Ave to Oak Ave	1	3	4
19	Sylvaner Ave from Spring St to Madrona Ave			
20	Adams St from Railroad Ave to Allyn Ave			
21	Birch Ave from Crane Ave to Valley View St			
22	Church St from Hunt Ave to Pope St			
23	Edwards St from Hunt Ave to Pope St	1	2	3
24	Hunt Ave from Church St to Starr Ave	1		1
25	McCorkle Ave from Allison Ave to McCorkle Ave Path			
26	Mitchell Dr from Main St to Crane Ave		1	1
27	Oak Ave from Hillview Pl to Madrona Ave			
28	College Ave from Pope St to end of College Ave		1	1
29	Elmhurst Ave from Spring Mtn Rd to Main St			
30	Hillview Pl from Spring Mtn Rd to Oak Ave			
31	Mariposa Ln from Pope St to McCorkle Ave			
32	Crane Ave from Spring St to Birch Ave			
33	Valley View from Spring St to Birch Ave		1	1
34	Adams St extension from Starr Ave to Silverado Trl		1	1
35	Allison Ave extension to Mills Ln			
36	College Ave extension to Mills Ln			
37	Mills Ln extension to Silverado Trl			
38	Oak Ave extension to Grayson		8	8
39	Pratt Ave Bridge			

Key Feedback: Proposed Crossing Improvements

The project team asked participants to select locations for proposed crossing improvements that were their top priority. A tally of the total votes for each project is presented on the following page. The three locations for crossing improvements that garnered the most community support include:

- **Project 6 – 5 votes:** Main Street at Grayson Avenue
- **Project 29 – 5 votes:** Spring Street at Valley View Avenue
- **Project 35 – 5 votes:** Pope Street at Allison Avenue

Votes for crossing improvements were more evenly distributed across projects/locations compared to the other two activity boards and their associated projects, leading to no clear priorities. However, Pope Street from Chiles Avenue to Allison Avenue was consistently identified as an unsafe location across all activities, with the intersection of Pope Street at Allison Avenue voted as one of the top priority locations for crossing improvements, highlighting the need for improvements in this area.

Additional Feedback and Themes

- The primary feedback focused on school-aged children and highlighted the need for improved crossings along routes to and from local schools.
- Improving safety, crossings, and pedestrian access along Pope Street was highlighted, with particular attention to the many children who walk to and from St. Helena Montessori School. Lighting was noted as an improvement that could improve crossing safety.

- Some participants noted that certain streets could benefit from traffic calming treatments to slow vehicles and make it safer to cross, including Madrona Avenue, Pope Street, and Spring Street.

Proposed Crossing Improvements

Place up to three stickers next to the projects that should be prioritized.

1*	Main St at Rimhurst Ave	22	Adams St at Allyn Ave
2*	Main St at Clella Ct	23	Spring St at Oak Ave
3	Main St at Fulton Ln/ Madrona Ave	24	Spring St at Kearney St
4	Main St at 1000 Main	25	Spring St at Stockton St
5*	Main St at Charter Oak Ave	26	Spring St at Crane Ave
6	Main St at Grayson Ave	27	Spring St at Allyn Ave
7	Pope St at Starr Ave	28	Spring St at Hudson Ave
8*	Pope St at Pisco Grand Drive	29	Spring St at Valley View Ave
9	Hunt Ave and Starr Ave	30	Grayson Ave at High School Entrance
10	Hunt Ave at Edwards St	31	Grayson Ave at S Crane Ave
11	Hillview Pl at Middle School	32*	Valley View Ave at Olive Ave
12*	Hillview Pl at Kearney St	33	Spring Mountain Rd at Eimhurst Ave
13	Hillview Pl at Spring Mountain Rd	34	Plett Ave at Main St
14	Madrona Ave at Oak Ave	35	Pope St at Allison Ave
15*	Madrona Ave at Kearney St	36	Spring Mtn Rd at Spring Mtn Ct
16	Madrona Ave at Stockton St	37	Pope St at Edwards St
17	Madrona Ave at Allyn Ave		
18	Nine St at Oak Ave		
19	Adams St at Oak Ave		
20*	Adams St at Kearney St		
21	Adams St at Stockton St		

*Intersection placement recommended.

"Locations for crossing improvements were identified by the project team as part of the St. Helena Streets Master Plan. Recommendations are planning level only and are for conceptual engineering review. All new recommendations considered as a result of a 30% completion, our maps, this list is not exhaustive and covers major streets only. Crossing improvements recommended within the Downtown Specific Plan boundary have been excluded from the map. Improvements in areas where a sidewalk is proposed, on one or both sides of the street, have been excluded, except at locations and sections identified through Major Transportation Improvement projects, as noted by city staff.



Proposed Crossing Improvements Activity Board.

Proposed Crossing Improvements		Farmer's Market	Harvest Festival	Total Votes
1*	Main St at Elmhurst Ave		1	1
2*	Main St at Crinella Ct		4	4
3	Main St at Fulton Ln/Madrona Ave	1	1	2
4	Main St at 1000 Main			
5*	Main St at Charter Oak Ave		3	3
6	Main St at Grayson Ave		5	5
7	Pope St at Starr Ave		4	4
8*	Pope St at Paseo Grand Drive		4	4
9	Hunt Ave and Starr Ave			
10	Hunt Ave at Edwards St		1	1
11	Hillview Pl at Middle School			
12*	Hillview Pl at Kearney St			
13	Hillview Pl at Spring Mountain Rd	2	2	4
14	Madrona Ave at Oak Ave		1	1
15*	Madrona Ave at Kearney St		1	1
16	Madrona Ave at Stockton St	1		1
17	Madrona Ave at Allyn Ave	1		1
18	Pine St at Oak Ave			
19	Adams St at Oak Ave		1	1
20*	Adams St at Kearney St			
21	Adams St at Stockton St			
22	Adams St at Allyn Ave			
23	Spring St at Oak Ave	1	1	2
24	Spring St at Kearney St			
25	Spring St at Stockton St			
26	Spring St at Crane Ave		1	1
27	Spring St at Allyn Ave	1		
28	Spring St at Hudson Ave	2	2	4
29	Spring St at Valley View Ave	2	3	5
30	Grayson Ave at High School Entrance			
31	Grayson Ave at S Crane Ave		1	1
32*	Valley View Ave at Olive Ave	1		1
33	Spring Mountain Rd at Elmhurst Ave		1	1
34	Pratt Ave at Main St		2	2
35	Pope St at Allison Ave		5	5
36	Spring Mtn Rd at Spring Mtn Ct		1	1
37	Pope St at Edwards St	1		1

Key Feedback: Proposed Roadway Extension and Bridge Realignment Projects

The project team asked participants to identify which proposed roadway extension and bridge realignment projects were their top priorities. The main goals of the roadway extension and bridge realignment projects are to improve roadway circulation, particularly to support population growth, and to provide sufficient evacuation routes out of the city. A tally of the total votes for each project is presented on the following page. The three projects that garnered the most community support include:

- **Project 9 – 27 votes:** Pope Street Bridge Realignment
- **Project 1 – 17 votes:** Adams Street Extension to Silverado Trail
- **Project 7 – 15 votes:** Oak Avenue Extension to Grayson Avenue

Many participants commented on the Pope Street Bridge as a significant bottleneck in the street network, with frequent congestion and traffic backups due to the extremely narrow roadway and visibility challenges. There was strong support for addressing this issue without compromising the bridge's historic character. Nearly all participants favored the City's most recent proposal to repurpose the existing bridge for pedestrian and bike traffic and construct a new bridge for vehicles. However, some noted that the bridge is not commonly used by pedestrians and bicyclists due to a lack of connections and destinations east of Silverado.

Participants also expressed interest in extending Adams Street, emphasizing the need for additional circulation and connection points to handle increased traffic expected from the Hunter Subdivision project. Additionally, many participants noted that enhancing connections on the city's east side was generally a priority, noting the lack of connectivity as a contributor to congestion throughout the network.

The Oak Avenue extension was another popular project, with participants viewing it primarily as a bike and pedestrian project that would offer a safer route for school-age children traveling to school, avoiding Main Street, which currently feels unsafe for walking and biking.

Additional Feedback and Themes

- Some participants were concerned about truck routing and the need to address this in all extension projects.
- Many participants felt that extending Starr Avenue or Allison Avenue would improve vehicular flow by allowing Vintage Avenue to serve as a turn-off from Main Street to access the east side of the city. This would enable drivers coming from the south to bypass Main Street traffic that would otherwise continue until Charter Oak Avenue.

Proposed Roadway Extension and Bridge Realignment Projects

Place up to two stickers next to the projects that should be prioritized.

1	Adams St extension from current terminus to Silverado Trl
2	Starr Ave extension north to Adams St
3	Allison Ave extension to Mills Ln
4	Starr Ave extension to Mills Ln
5	College Ave extension to Mills Ln
6	Mills Ln extension to Silverado Trl
7	Oak Ave extension to Grayson
8	Pratt Ave Bridge realignment
9	Pope St Bridge realignment

Roadway extension projects were sourced from the St. Helena 2040 General Plan, Figure 5.2 "Potential Future Roadway Extensions"

Have additional thoughts?
Leave a post-it here!



0 0.25 0.5 mi NTS

Proposed Roadway Extension and Bridge Realignment Activity Board

Proposed Roadway Extension and Bridge Realignment Projects		Farmer's Market	Harvest Festival	Total Votes
1	Adams St extension to Silverado Trl	7	10	17
2	Starr Ave extension north to Adams St	2	3	5
3	Allison Ave extension to Mills Ln	2	3	5
4	Starr Ave extension to Mills Ln	1		1
5	College Ave extension to Mills Ln	1	4	5
6	Mills Ln extension to Silverado Trl	1	5	6
7	Oak Ave extension to Grayson Ave	4	11	15
8	Pratt Ave Bridge realignment		4	4
9	Pope St Bridge realignment	11	16	27

Summary

The feedback from Phase 1 will be instrumental in refining the project team's recommendations to better align with community needs and project goals. Additionally, feedback will help prioritize which projects should receive greater consideration for advancement, focusing on those that resonate most with stakeholders and offer the highest potential impact. This prioritization will guide the project team's next steps, enabling efforts and resources to be concentrated on projects with strong support and alignment with the objectives.

PHASE 2 – PRIORITY PROJECTS + DRAFT CONCEPTUAL DESIGNS:

November 2024 – April 2025

The following summarizes the outreach and engagement efforts for Phase 2 of St. Helena Streets Master Plan, with a focus on key findings collected during a community workshop.

The primary goals of Phase 2 were to:

- Provide a high-level refresher of the project purpose, scope, and timeline
- Present the priority projects, including initial conceptual design
- Collect feedback on the priority project concepts, including what is working well and what may need improvement

Engagement included the following key questions:

- What transportation and streetscape projects or improvements do you think should be prioritized for the city?
- Are there any challenges you face while navigating the city, and what changes would you like to see to address them?
- Which aspects of the city's current transportation and mobility infrastructure do you value and believe should be maintained?

Engagement Techniques and Key Findings

The following provides a detailed summary of the engagement techniques and findings from Phase 2:

Active Transportation Steering Committee (ATSC) and City Council Meetings

On December 4, 2024, the project team presented to the Active Transportation Steering Committee (ATSC), followed by a Special City Council meeting on December 11, 2024. Both meetings served as an introduction and update on the project, providing an overview of the plan's vision, key opportunities and constraints, and a summary of the prioritized, network-wide projects. These priorities reflected significant community input gathered throughout the planning process. During the presentations, the groups were asked to consider two key questions:

- Whether they agreed with the list of priority projects by type — including bikeways, crossings, and roadway extension or bridge projects.
- If not, what changes or refinements they would recommend.

Overall, there was general agreement with the prioritized list of projects among both groups. Feedback focused primarily on refinements and implementation considerations rather than major changes to priorities.

General feedback included several recurring themes. Members expressed concern about the feasibility and financing plan, emphasizing the importance of ensuring that the proposed projects could realistically be executed and completed. There was also discussion about the sample size of public input, with some suggesting that the City share the engagement link more broadly to increase participation.

Participants noted Measure U as a potential new opportunity to fund projects through bond financing. Others recommended conducting prioritization after cost estimates were developed to ensure a more informed decision-

making process. Additionally, it was shared that the Bike Coalition had recently completed a bike network connectivity priority assessment that may be relevant to the work of the Streets Master Plan. Among the top-priority connections identified in the assessment were Pope Street, Madrona Avenue, and Adams Street.

In-Person Public Workshop

An in-person public workshop was held on April 30, 2025, from 5:30 to 7:00 PM at the Carnegie Building (1360 Oak Avenue, St. Helena, CA). Leading up to the event, the project team developed and distributed outreach materials, including a flyer, social media graphics, and an email script, which were shared through the City's social media channels and email listservs to advertise the meeting and encourage participation.

This meeting served as the second major engagement touchpoint with the community. The session included a presentation followed by an open discussion, during which participants could review conceptual designs and the prioritized project list in more detail. The presentation focused on network-wide recommendations that align with the City's broader transportation vision, as well as conceptual designs for the Adams Street Extension and Spring Street Streetscape projects.

Six community members attended the workshop. Attendees were generally supportive of the proposed designs, particularly those for Spring Street, which emphasize traffic calming and pedestrian safety. Discussion highlighted the community's desire to slow vehicle speeds, and the proposed inclusion of speed humps was received positively as a practical response to this concern.

For the Adams Street Extension, participants raised questions about connectivity to adjacent land uses, noting that the proposed segment would be elevated atop the levee along the city's north end. There was interest in exploring how this elevated portion could better connect to and relate with nearby properties and uses, ensuring that it supports accessibility and integration within the broader transportation network.

St. Helena Streets Master Plan

Public Meeting

Wednesday, April 30th 2025

5.30 to 7pm

Carnegie Building

1360 Oak Ave, St Helena, CA 94574



The City wants your input! Join us to explore citywide streetscape recommendations and draft concept designs for key streets. **Your feedback is crucial in creating safer, more connected, and accessible streets for all.**

Recommendations and designs (to be shared for feedback at the public meeting) were shaped by invaluable community input gathered in October 2024 by the project team.

During this meeting, the City and community members will review and discuss:



Prioritized, City-wide Projects to Improve Biking and Walking



Conceptual Design Ideas for Key Streets

Questions? Contact Rebecca White at rwhite@cityofstheleena.gov

PHASE 3 – FINAL CONCEPTUAL DESIGNS + DRAFT PLAN

April 2025 – March 2026

The following summarizes the outreach and engagement efforts for Phase 3 of St. Helena Streets Master Plan, with a focus on presenting the draft plan to the public for review and comment before final plan adoption.

The primary goals of Phase 3 were to:

- Preview the draft plan’s structure, organization, and key content with the Active Transportation Steering Committee (ATSC)
- Provide the public with an opportunity to review the full draft plan and appendices
- Collect feedback on the draft recommendations prior to final revisions and City Council adoption

Engagement included the following key questions:

- What transportation and streetscape projects or improvements do you think should be prioritized for the city?
- Are there any challenges you face while navigating the city, and what changes would you like to see to address them?
- Which aspects of the city’s current transportation and mobility infrastructure do you value and believe should be maintained?

Engagement Techniques and Key Findings

The following provides a detailed summary of the engagement techniques and findings from Phase 3:

Active Transportation Steering Committee (ATSC) Draft Plan Preview

In December 2025, the project team met with the Active Transportation Steering Committee (ATSC) to preview the contents and organization of the draft Streets Master Plan prior to its public release. This meeting provided committee members with an early look at the structure of the document and how the plan’s recommendations, network priorities, and supporting analysis were presented.

The discussion focused on ensuring the plan clearly communicated the project’s goals, recommended network improvements, and implementation strategy. Committee members also discussed how they would review the document once released and coordinate their comments to the consultant team to provide clear and consolidated feedback during the public review period.

Public Draft Plan Review Period

Following the ATSC preview, the City opened a public review period for the draft Streets Master Plan from January 22 to February 16. During this time, the full draft plan and supporting appendices were made available through an online virtual PDF, allowing community members to review the document and submit comments. A collated list of all comments can be found in Appendix A of this document.

The public review period was advertised through multiple City communication channels to maximize awareness and participation, including:

- City newsletter
- City homepage
- Public Works homepage
- Streets Master Plan project webpage
- City social media channels

A total of 68 comments were received during the review period. Of these, 46 comments (approximately 68 percent) were submitted by a single individual. All other participants submitted between one and six comments each.

Key Themes from Public Comments

Public comments during the draft review period focused on several recurring topics related to the proposed network and design recommendations. Major themes included:

- Questions and feedback regarding the bike network and facility selection, including the use of Class I, II, and III bikeway types.
- Interest in daylighting enforcement to improve visibility and safety at intersections.
- Requests for bulb-outs and curb extensions at key intersections to enhance pedestrian safety and shorten crossing distances.
- Concerns about sidewalk conditions and ADA-compliant surfaces, with participants emphasizing the need to prioritize accessibility improvements.
- Questions regarding cost estimates for Class I and Class II projects, particularly related to feasibility and implementation
- Concerns about the potential loss of on-street parking along Spring Street associated with proposed improvements.

Active Transportation Steering Committee (ATSC) Review of Public Feedback

Following the close of the public comment period, the project team reconvened with the Active Transportation Steering Committee in early March to review the feedback received and discuss proposed responses and adjustments to the draft plan. During this meeting, the committee reviewed key themes from public comments and discussed potential refinements to the proposed network. Based on this discussion, the ATSC recommended updating Madrona Avenue from a Class II bikeway to a Class III facility, reflecting both public feedback and committee input regarding the most appropriate facility type for the corridor.

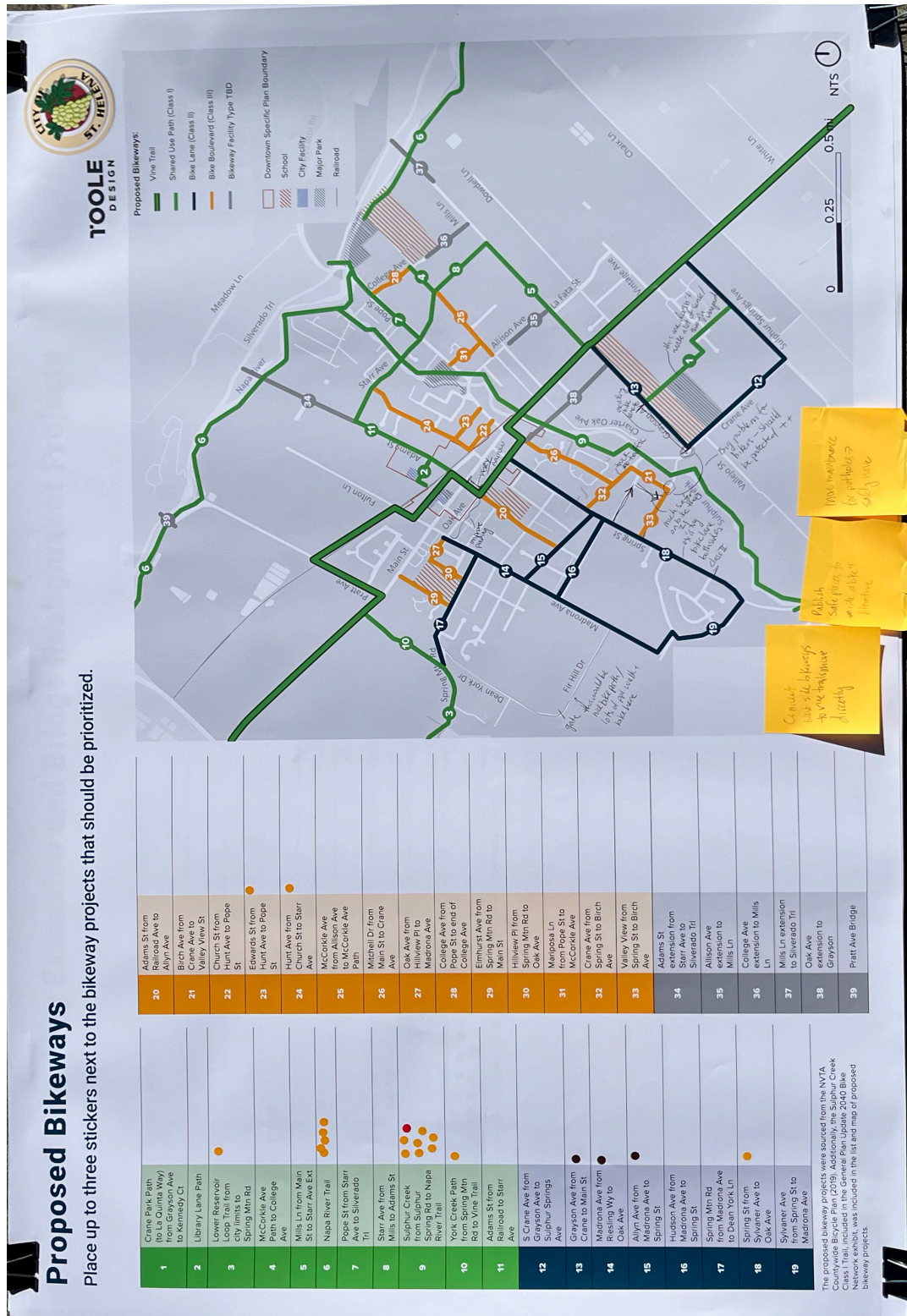
The committee also discussed the proposed roadway extension and bridge projects included in the plan. ATSC members provided recommendations for how these projects should be prioritized and evaluated as part of the City's long-term transportation strategy and offered guidance that would ultimately be forwarded to the City Council for consideration. Feedback from this session informed the final refinements to the Streets Master Plan before it was presented to the City Council for adoption.

St. Helena Streets Master Plan

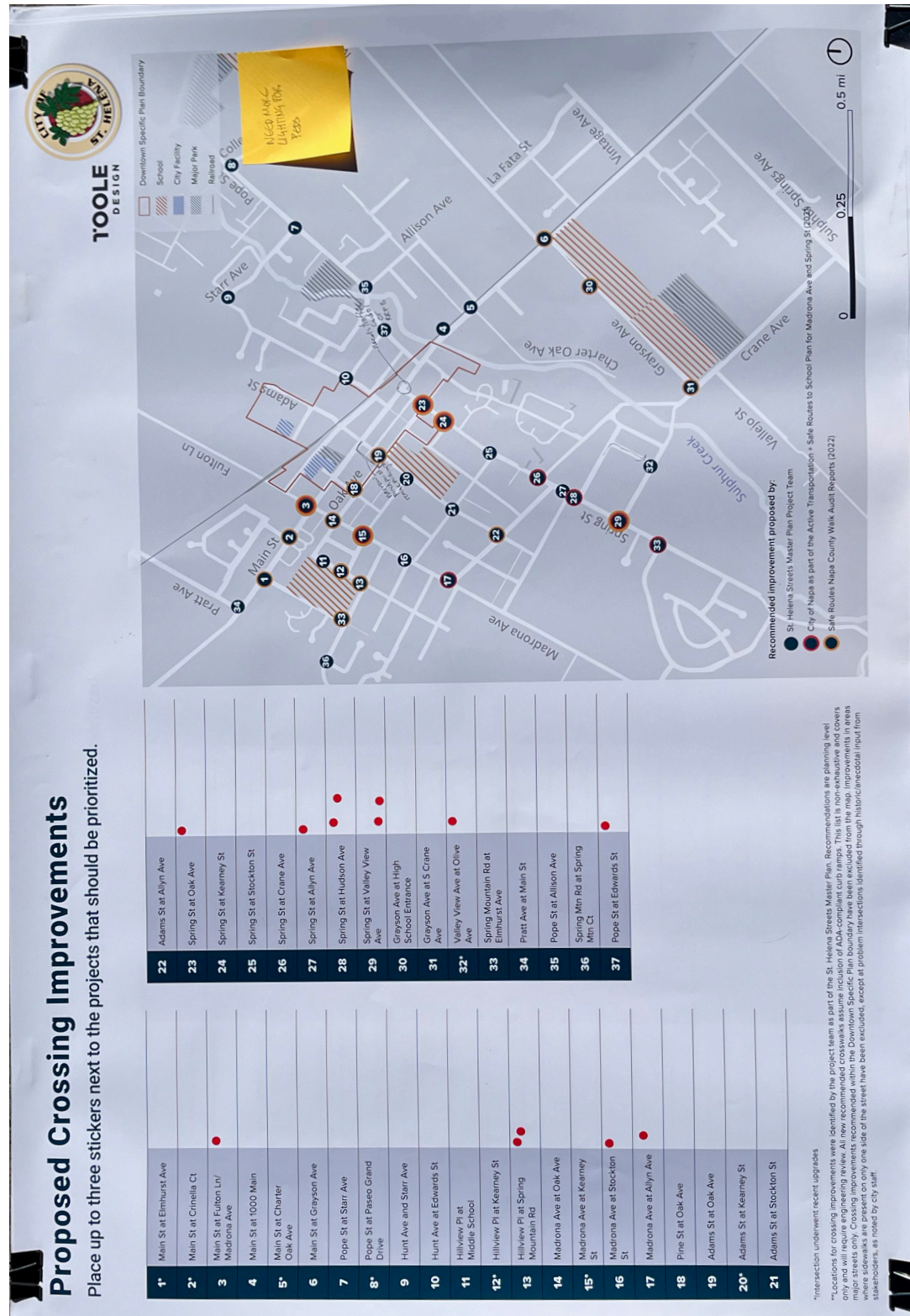
Public Engagement Summary

Appendix A

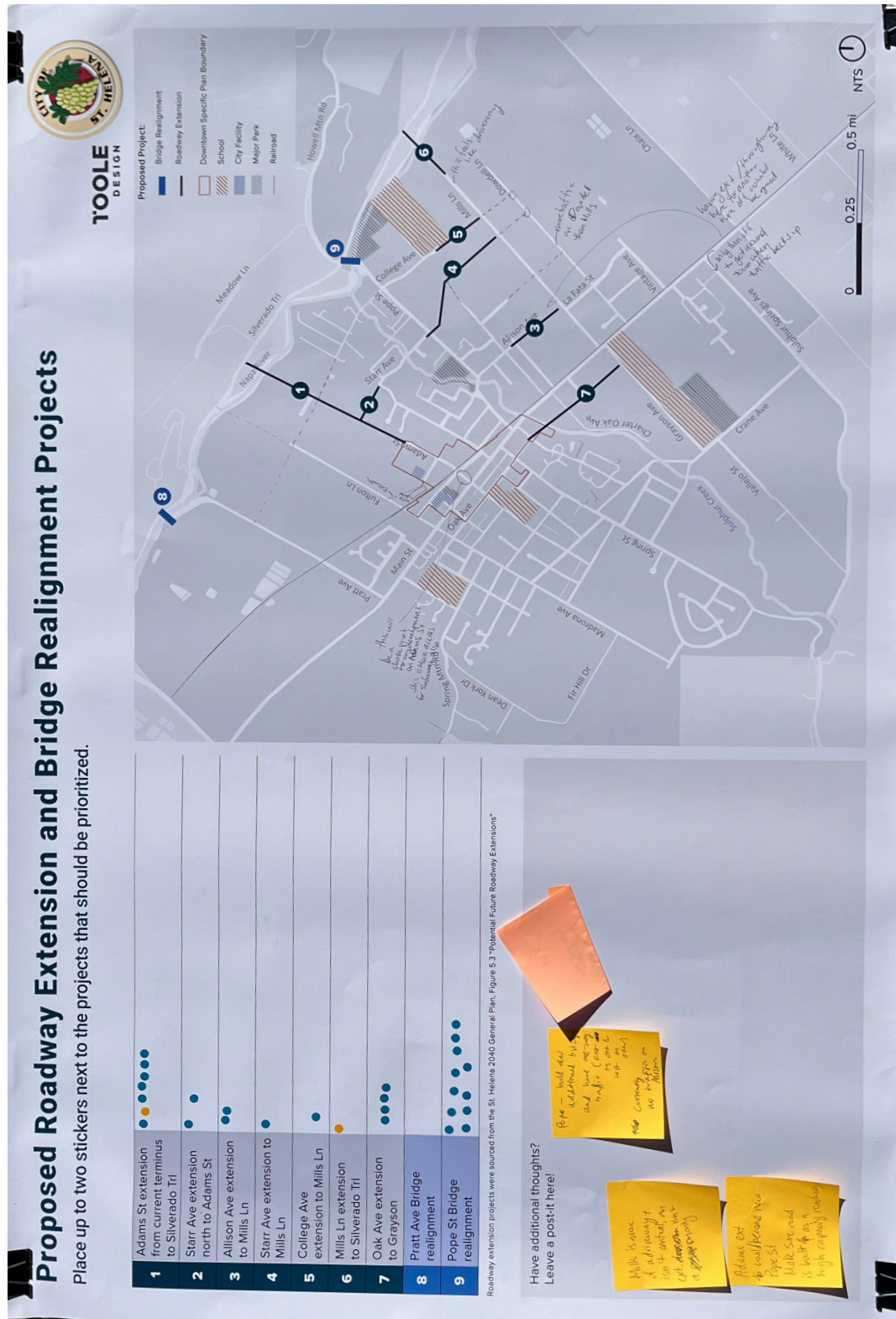
St. Helena Farmer's Market October 18, 2024 - Completed Activity Board



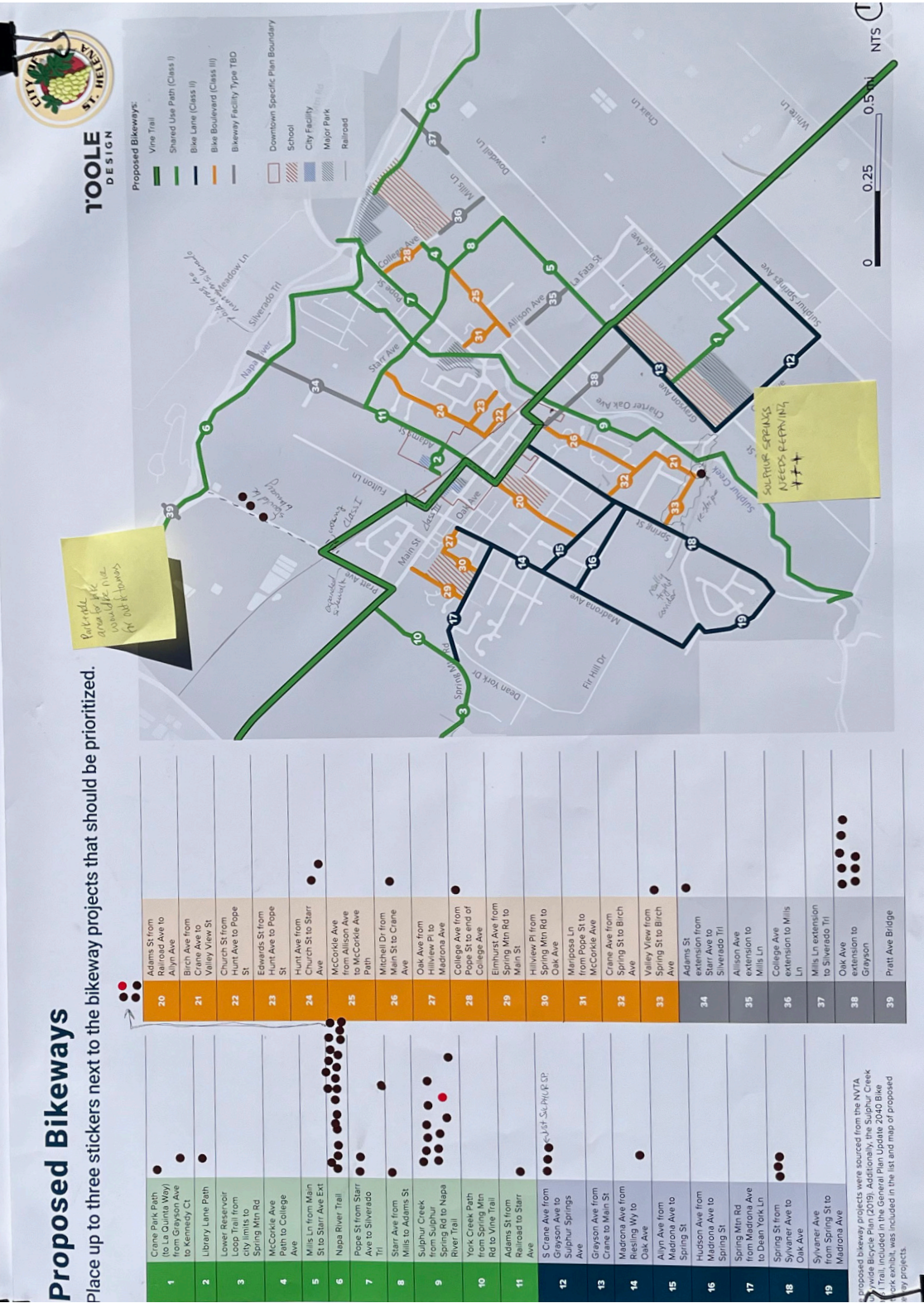
St. Helena Farmer's Market October 18, 2024 - Completed Activity Board



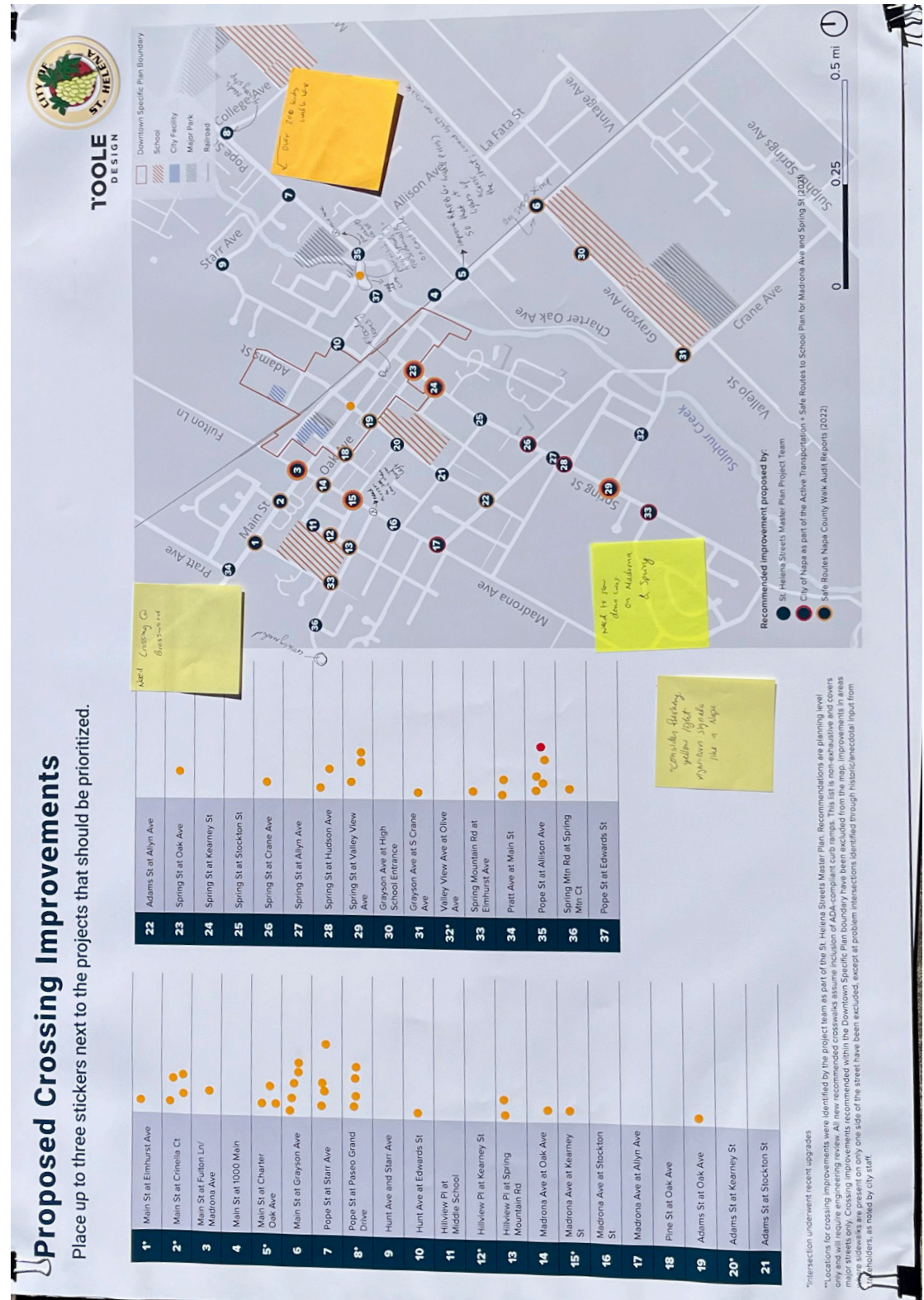
St. Helena Farmer's Market October 18, 2024 - Completed Activity Board



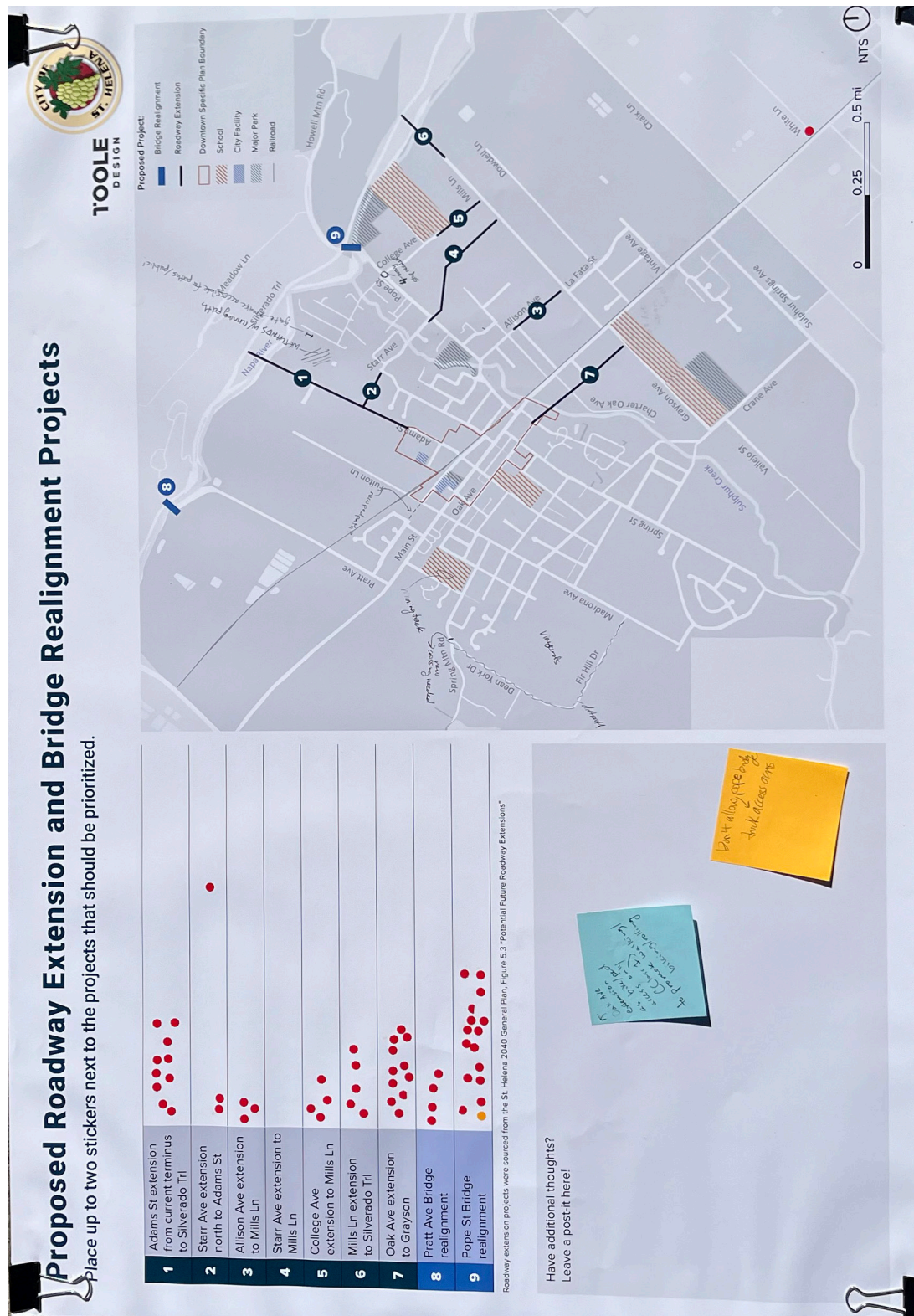
Hometown Harvest Festival October 19, 2024 - Completed Activity Board



Hometown Harvest Festival October 19, 2024 - Completed Activity Board



Hometown Harvest Festival October 19, 2024 - Completed Activity Board



St. Helena Streets Master Plan

January 2026 Draft Plan – Public Comment Summary

02.20.2026

PDF page #	Section	Comment
1	Cover	I think this is an excellent plan for St Helena. 1. On page 26, should the entitled Farmstead hotel project be included?
1	Cover	Please use the much needed extension of Adams Street to the Trail as an opportunity to design an aesthetically welcoming eastern entrance to St. Helena rather than simple street ingress/egress layout. Examples such as signage, decorative medium divider, and landscaping should be considered in the design development phase and budget. P. Scott
1	Cover	I am commenting on the yellow raised bumps which are not only irritating , but dangerous for handicapped people. Have you noticed how people avoid them. They are slippery when wet; impossible to navigate with a walker, wheel chair, cane or grocery cart.
1	Cover	2. The extension of Adams to the Trail is a definite priority and I hope the City's incremental cost to plan this project is included in the long-range planning work the Finance Committee is doing. And a multi-year time frame is added to any strategic planning process.
1	Cover	3. It would be could to begin public awareness of any major changes now so people get use to the idea. Most won't read this document in detail so including segments of info early and often wherever possible could be beneficial.
1	Cover	Approved
1	Cover	I realize these projects are intended to improve quality of life but what would really improve our lives is drinkable water. Our lives would be dramatically improved if we no longer had to drink and buy bottled water. Should we not prioritize a most basic human necessity like water over bike lanes and things of this nature?
3	Executive Summary	Remove the class II bike lanes on Spring from Valley View west to Sylvaner and stripe them to be consistent with the rest of Spring. Because of the narrow geometry vehicles traveling west are in the bike lane most of the time even if there is no on coming traffic. That bike lane is not safe for bikes. The map shows that this section of Spring should be a class III, the same as the rest of Spring to Oak.
4	Executive Summary	Is the funding cost for Adams St. Class III paid for by the Vine trail folks and the city? Is Caltrans paying for the cross walk improvements on Main Street?
4	Executive Summary	Are walking paths included in the Master Plan? An example is the path at the end of Paulson Ct connecting to Chiles Avenue and Miely Park. Another is the unpaved path from the middle of Hunt to the Adams dead end.
4	Executive Summary	Clarify that the cost listed for the Adams St Class I from Railroad to Silverado is the entire road extension project, not just the Class I. It makes it seem like the Class I alone costs \$59 million.
5	Executive Summary	The dollar figures for some of these projects are ridiculous and indicate to me that some of these 'dreamscapes' will never be built. The same group of protesters will stop things in their tracks and insist the CM be ousted and blamed for these expensive efforts when we have water issues and sidewalks to fix.
8	Project Overview	I support the Draft Streets Master Plan, especially its emphasis on safer walking and biking. Highway 29 currently divides the community, and improved crossings — including highly visible crosswalks, pedestrian signals, and refuge islands — are essential so residents, seniors, children (locals and visitors) can safely navigate our city. I also encourage the City to prioritize basic street maintenance. Neighborhood streets such as Sulfur Springs Avenue have deteriorated pavement that creates hazards for cyclists and pedestrians. Finally I support the long-term extension and bridge projects to create a better network and reduce congestion of Main Street.
10	Project Overview	The extra crosswalk proposed is only 30 feet from the existing crosswalk on the east side of Kerany at Spring Street. It is unnecessary. In addition, the curb extension to connect with the new crosswalk would eliminate a parking space. That parking space is heavily utilized daily, but especially during events from the churches and the Native Sons. Now that the Spring Grove project has been approved, parking on Spring Street will only increase, which is why the curb extension will exacerbate the problem. Richard Corsetti
10	Project Overview	I live at the intersection of Spring Street and Kearny. The extra crosswalk is unnecessary as proposed. The curb extension on the south side of Spring removes a parking spot. As it is Spring Street at that intersection is highly used for the churches and the Native Sons events. It will only intensify further if the hated Spring Grove project is built.
24	Existing Conditions	Street diagram shows bike lanes, not bike boulevards, so the option of including bike lanes should be included in the description.
24	Existing Conditions	The description for Regional Collector is limiting by stating that this street "supports cars, transit, and truck traffic," and excludes any active transportation, given that these are the most direct routes and sometimes unavoidable, as identified by the plan itself. These should have more separated, higher quality bike facilities if anything.
25	Existing Conditions	Please delete the "proposed path" through my private property at the end of Fulton In. It is NOT proposed and encourages trespassing through my property. I went through a great deal of trouble the last time this was falsely published and passed around at bike shops.
26	Existing Conditions	Include Class IV separated bikeways in Bike Facility Classifications. Though they aren't proposed for any streets in this plan, important to keep the tool in your toolbox. Should be included so people know they are an option and they aren't kept off the table in future discussions/studies, especially for streets and road extensions that don't have a bike facility designation yet.
28	Existing Conditions	Existing conditions on Sidewalk Network should include information about the poor quality and displacement of existing sidewalks throughout the City, as that is a commonly cited concern for pedestrians

30	Existing Conditions	Grocery stores should also be considered in key destinations
33	Existing Conditions	Spring Street going west beyond City limit on to White Sulphur Springs needs to be evaluated and included.
34	Existing Conditions	Crossing Assessment should include need for and recently passed state law regarding daylighting.
36	Existing Conditions	Key for Bicycle LTS labels roads as "arterial & collector" instead of Low or High LTS
38	Existing Conditions	When space gets constrained, the first solution tends to be to downgrade the bike facilities to shared-road facilities, even if that is not the lowest-stress or what is planned for the street – see Oak Avenue Vine Trail alignment, Spring Street discussions, and the Class III portions of South Crane and Grayson for examples. How can the City be better equipped to shift space away from vehicles and to appropriate bicycle facilities when the need calls for it?
38	Existing Conditions	Connectivity Needs Assessment should include gaps in bicycle network in its key challenges
39	Existing Conditions	Shared micromobility services should be integrated with accompanying education to avoid increasing unsafe road user behavior. Should also follow infrastructure improvements so that there are safe and comfortable facilities for these users to use to avoid unintentionally increasing road user conflicts (for example, e-scooters on sidewalks because road does not feel safe)
43	Network-wide Recommendations	Madrona from Hudson to Riesling is narrow. Suggest class III instead of bike lanes (class II)
43	Network-wide Recommendations	Include application of bike lane buffers and rumble strips on Silverado Trail for any Silverado Trail segment that falls under City jurisdiction where this is feasible
43	Network-wide Recommendations	Update College Ave to proposed Class I by widening existing sidewalk – the Montessori School has expressed interest in better, more separated bike facilities from Pope to the school and many kids & parents are not going to feel safe/comfortable bike on a Class III to the Montessori during drop-off period
43	Network-wide Recommendations	Are Class IIs realistic on Allyn & Hudson? With residences, unlikely that parking will be removable to make space. Might be better to make a Class III bike boulevard with traffic-calming. These are neighborhood streets that should be slowed down, especially as both motorists use them as cut-throughs and bicyclists use them to get to quieter side street routes.
43	Network-wide Recommendations	Elmhurst – Consider a Class II/Class III combo given steep incline, which could benefit from a separated space for bicyclists, especially given connection to Vine Trail
43	Network-wide Recommendations	Pratt Avenue along the Vine Trail alignment should be Class I, not Class II.
44	Network-wide Recommendations	Show proposed Class I path on Spring Street on the map and in the list of projects. Do not remove existing Class II bike lanes on Spring Street. If there are verified issues coming up around those bike lanes, try to adjust and problem solve before just removing bike lanes.
44	Network-wide Recommendations	Entire Pope Street corridor needs improvement, but it is only listed for a Class I from Starr to Silverado Trail and no other upgrades. This plan mentions earlier that bike facilities would be upgraded to Class I for entire corridor, but it isn't shown in proposed bike facilities. Also, existing facilities map shows Class II bike lanes where there are Class IIs.
45	Network-wide Recommendations	General comment on ADA requirements at crosswalks. The yellow raised bumps are very irritating to those in wheel chairs. There needs to be a smoother alternative to this while keeping it's purpose intact, presumably to help blind folks.
45	Network-wide Recommendations	Fill Oak Ave Class III gap for continuous access to middle school
45	Network-wide Recommendations	Fill bicycle facilities gap between where Class IIs are shown to end on Madrona and Vine Trail access on Fulton
45	Network-wide Recommendations	There should also be a proposed Class I on Mills according to other plans.
45	Network-wide Recommendations	Existing Class IIs on Starr Ave are not shown
46	Network-wide Recommendations	No mention in plan of the realignment of Mills Lane with Grayson Ave to create a new four-way intersection, which has significant implications given the high school and proposed housing
46	Network-wide Recommendations	Main at Vintage Ave needs crossing improvements with future Vine Trail installation given walkability from high school and location of pediatrician and orthodontist
46	Network-wide Recommendations	Main at Pratt needs bulb-outs and/or traffic-calming/gateway treatment for southbound traffic coming in at higher speeds
47	Network-wide Recommendations	Hunt & Edwards – include bulb-outs to help improve crossing and traffic-calm Hunt
47	Network-wide Recommendations	Add bulb-outs at Hillview at the middle school entrance – painted curb extensions show desire for this improvement
47	Network-wide Recommendations	Pope & Starr needs vegetation management to improve RRFB visibility
47	Network-wide Recommendations	#11 crossing at main/1000 main. Why needed. Close to Charter oak crossing
47	Network-wide Recommendations	Crossing improvements needed at Main & Grayson with Mills realignment, given upcoming Farmstead hotel project and Our Town St Helena affordable housing project going in. Crosswalks needed on all four legs of intersection, as well as sidewalk connection to intersection on south side of realigned Mills (on north end of affordable housing project).
47	Network-wide Recommendations	I live on Chiles Ave. and the situation the potential for a severe crash is huge when trying to turn left from Chiles Avenue onto Pope Street if there cars parked on Pope Street anywhere near the intersection. I couldn't find any reference to extending the red curbs along this stretch of road adjacent to the intersection even with the 20 feet of it as per the new law. But, quite frankly, 20 feet is not enough given the situation and likelihood of being struck by a car when trying to inch one's way safely from Chiles Avenue onto Pope Street.
48	Network-wide Recommendations	Supportive of bulb-outs at Spring & Kearney for traffic-calming and improved pedestrian visibility at uncontrolled crosswalk
48	Network-wide Recommendations	Spring & Valley View – add curb extensions

48	Network-wide Recommendations	Curb extensions at Madrona and Kearney need to be extended
48	Network-wide Recommendations	Adams & Oak should not be listed as not needing any improvements. We hear a lot of concern about this intersection given how heavily travelled it is and its vicinity to elementary school & downtown. Will also be a key intersection in Vine Trail alignment. Frequently hear and see people not stopping at stop signs. Should receive treatment like curb extensions or a raised intersection.
49	Network-wide Recommendations	There is desire for Hillview and Kearney to have bulb-outs given the paint put down there. Should not be listed as no improvements needed.
49	Network-wide Recommendations	Adams and Kearney – need to improve sightlines at crosswalks across Adams. Right now cars can park in loading zone or curbside too close to crosswalks especially in an elementary school zone. Need to add red curb or bulb-out.
49	Network-wide Recommendations	Fill bicycle facilities gap between where Class IIs are shown to end on Madrona and Vine Trail access on Fulton
50	Network-wide Recommendations	More bike traffic should be expected and accommodated crossing Silverado Trail at Pope with Howell Mountain Road segment being converted to bike/ped trail. Especially with plans discussed in Appendix to realign Pope Street to be a single intersection with Silverado Trail and Howell Mountain Road. The trail will not be adding parking so bicyclists will be directly accessing.
57	Implementation	Surprised at how low Main at Pratt is on prioritization – maybe this should be re-evaluated given NVTI Michelin Mobility Intelligence Road Safety Risk Report (2025) results, which identify this area as high-risk for vulnerable road users and motorists due to high traffic volumes, unsignalized crossings, and aggressive driving behaviors. They recorded frequent high-speed and severe braking events in this area.
58	Implementation	Address how roadway extension projects impact City General Plan goals around reducing VMT.
59	Implementation	Why are cost ranges only shown for bicycle facilities and not for other proposed projects in this plan? Show all cost ranges to provide complete context of what potential costs of projects.
59	Implementation	Cost ranges for bike facilities way too high, particularly for Class I and Class II. There may be some exceptional projects that are higher than the average cost, but the lower end of the cost range should definitely be lower.
68		Transitioning from a sidepath to slightly wider sidewalks closer to downtown will need to include a transition plan for bicyclists. Otherwise, bicyclists will continue on the sidewalk because it's more comfortable and separated and they may not know that it has shifted to a sidewalk rather than a sidepath.
69		Valley View to Hudson – narrow travel lanes to 10.5' and give that extra foot to the shared-use path. As much space as possible on the sidepath is necessary for safe and comfortable sharing between pedestrians, kids on bikes, and less confident bicyclists.
69		Spring St shared-use sidepath is going to need to be identified as usable by bicyclists and pedestrians, given the unconventional street design of the corridor with the sidepath and two sidewalks
70		We support the Kearney/Spring intersection improvements – will help calm Spring St traffic and improve pedestrian visibility and safety, as well as removing a parking space that shouldn't be used due to its visibility obstruction.
70		I live on Spring Street at the Kearny intersection. I disagree with the need to add another crosswalk to the one already existing. I also disagree with the curb extension. That would eliminate a parking spot. Parking is already a
71		The Adams St extension will place a new roadway on top of the city owned and operated levee. So, my questions are 1) If the Adams Extension Project costs \$60 million, and the levee fails, who will pay for the road to be replaced? And, who will be liable for the cost of the actual levee failure, levee replacement and property damage to the Hunter proposed project homes, Vineyard Valley and Hunt's Grove. (Presently, the City of St Helena took ALL financial liability for the levee in CA State Assembly Bill 1898). Question 2: The funding was granted on the basis of Flood Control Use only. How is the City going to get approval for using part of the levee for municipal purposes? Question 3: What is the process to get the private property owner on the east side of the river to grant right of way for the bridge and how much will that cost the City to purchase it or pay for eminent domain?
77		Plan should make it very clear that the diagrams of the proposed Oak Ave extension project are outdated and should not be used as guidance – 4-foot bike lanes on a street with 12' travel lanes would NOT be considered best practice today. Strongly oppose suggestions from previous, outdated plans that recommend a 40-mph speed limit; this extension should match the character of the existing Oak Avenue and neighborhoods around it. Plan should also recommend option of making extension a Class I shared-use path only if full road extension is not feasible.

St Helena Streets Master Plan

Appendix C

Project Prioritization Methodology + Detailed Results





1322 WEBSTER STREET
SUITE 208
OAKLAND, CA 94612

510.298.0740
TOOLEDESIGN.COM

November 11, 2024

To: Joseph Leach, City of St. Helena

From: Anjulie Palta and Lauren Pepe, Toole Design

Project: St. Helena Streets Master Plan

Re: Project Prioritization Methodology

All recommendations in the Streets Master Plan will take time and resources to implement. Recognizing funding and capacity constraints, as well as feasibility challenges, recommended infrastructure projects will be prioritized through a data-driven process, informed by public input. Bicycle facility, pedestrian crossing, bridge realignment, and road extension projects will be prioritized based on the criteria summarized in the table below and explained further on the following pages. Each project will receive points based on each criterion, with total points determining their relative ranking. Bicycle/pedestrian projects rely on different criteria than road/bridge projects.

The results of prioritization will help the project team develop an implementation plan and timeline with high, medium, and low priority projects. This process will also enable the team to strategically select a handful of high-impact initiatives to advance into conceptual design. By identifying top-priority projects, the team can focus on those with the greatest potential to benefit the community and achieve key project goals. This approach ensures that resources are allocated efficiently, concentrating efforts on projects that deliver the most meaningful impact and establishing a clear foundation for phased, effective progress.

Prioritization Overview

Prioritization Criterion	Description	Score
Bicycle and Pedestrian Projects		
Access	Prioritizing access to community-identified destinations with a specific emphasis on schools and parks	Yes (2 points) or No (0 points)
Safety	Prioritizing safety needs based on where crashes have occurred in the past	High (2 points), Medium (1 point), or Low (0 points)
Connectivity and Comfort	Prioritizing projects that fill gaps in the bicycle and pedestrian networks	High (2 points) or Medium (1 point)
Community Support	Prioritizing locations with strong public/stakeholder support	High (2 points) or Low/No (0 points)
Bonus: Activity	Prioritizing locations that currently have high levels of bicycle and pedestrian activity	Yes (1) or No (0)
Road Extension and Bridge Realignment Projects		
Feasibility	Prioritizing projects that do not have significant feasibility challenges	Yes (2 points) or No (0 points)
Community Support	Public/stakeholder support	High (2 points) or Low/No (0 points)

ENVISIONING WHAT COULD BE, THEN BUILDING IT

Bicycle and Pedestrian Project Prioritization Criteria

The following methodology was developed for ranking **bicycle facility and crossing improvement** projects.

Access

This criterion scores projects based on how well they improve access to schools, parks, and community facilities.

Score (Points)	Metric
High (2)	Project is directly adjacent to a school, major park, or community center
Medium (1)	Project is located within walking distance (0.25 mi) of a school, major park, or community center
Low (0)	Project is not located within walking distance (0.25 mi) of school, major park, or community center

Safety

Projects located near recent crash sites (per 2019-2024 crash data) may address key safety issues in St. Helena.

Score (Points)	Metric
High (2)	Project located within 100' of the site of: - One fatal or severe bicycle or pedestrian crash; or - Two or more bicycle or pedestrian crashes, regardless of severity
Medium (1)	Project located within 100' of the site of one non-fatal/severe bicycle or pedestrian crash
Low (0)	No crashes occurred within 100' of project site

Connectivity

This criterion evaluates whether a project fills a gap in the network (and thus improves bicycle/pedestrian connectivity) or improves the quality of an existing bikeway or crossing. Projects that fill critical gaps in the network receive slightly more points than those that enhance existing infrastructure.

Score (Points)	Metric
High (2)	Project fills a gap in bicycle or pedestrian network (i.e. new bikeway where it does not currently exist or
Medium (1)	Project enhances existing infrastructure

Community Support

Projects that address locations identified by community members as top priorities through public engagement receive two points, projects that received some support receive one point, and projects that received no community support receive 0 points. Project support will be quantified based on feedback received on the engagement boards presented to the St. Helena community during October 2024 engagement events.

Score (Points)	Metric
High (2)	Project scored among top-priority projects
Medium (1)	Project received some support, but didn't rank among top priorities
Low (0)	Project received no support

Bonus Point: Activity

Bicyclist and pedestrian count data was collected at select locations throughout the city as part of this planning process. Projects within 100' of a location with high relative pedestrian/bicyclist counts receive one bonus point as this demonstrates an area where improvements may benefit the most people. This criterion is only worth one point as it is limited only to the places where count data was collected.

Score (Points)	Metric
Yes (1)	Project within 100' of location with relatively high bicyclist/pedestrian counts
No (0)	Project not within 100' of location with relatively high bicyclist/pedestrian counts

Roadway Extension and Bridge Realignment Project Prioritization Criteria

The following methodology was developed for ranking **road extension and bridge realignment** projects.

Feasibility

Some of the road extension and bridge projects may require acquisition of privately owned land and therefore may not be realistic options for implementation. Projects that do not require the acquisition of private land receive 1 point. It should be noted that ultimately all road/bridge projects will involve complexity and will have varying constraints, such as need for an EIR.

Score (Points)	Metric
Yes (1)	Project does not require acquisition of private land
No (0)	Project requires acquisition of private land

Community Support

Projects that address locations identified by community members as top priorities through public engagement receive two points, projects that received some support receive one point, and projects that received no community support receive 0 points. Project support will be quantified based on feedback received on the engagement boards presented to the St. Helena community during October 2024 engagement events.

Score (Points)	Metric
High (2)	Project scored among top-priority projects
Medium (1)	Project received some support, but didn't rank among top priorities
Low (0)	Project received no support

PROPOSED BIKE FACILITIES

Project Location	Start	End	Access	Safety	Connect/ Comfort	Community Support	Activity	Total	Proposed Facility
Sulphur Creek Trail	Sulphur Springs Ave	Napa River	2	1	2	2		7	Class I Shared-Use Path
Napa River Trail	City limit near WWTP	City Limits (Deer Park Rd/Lower Reservoir Trl)	2	0	2	2		6	Class I Shared-Use Path
S Crane Ave	Grayson Ave	Sulphur Springs Ave	2	0	2	1	1	6	Class II Bike Lanes
Adams St	Railroad Ave	Allyn Ave	2	0	2	1	1	6	Class III Bike Boulevard
<i>Adams St extension</i>	<i>Starr Ave</i>	<i>Silverado Trl</i>	2	1	2	1		6	TBD
Crane Park Path (to La Quinta Way)	Grayson Ave	Kennedy Ct	2	0	2	1		5	Class I Shared-Use Path
Library Lane Path	Adams St	Vine Trail (along RR corridor)	2	0	2	1		5	Class I Shared-Use Path
College Ave	Pope St	Proposed class I @ SE end of College Ave	2	0	2	1		5	Class III Bike Boulevard
McCorkle Ave Path	McCorkle Ave cul-de-sac	College Ave	2	0	2	0		4	Class I Shared-Use Path
Pope St	Starr Ave	Silverado Trail	2	0	1	1		4	Class I Shared-Use Path
<i>Starr Ave Path extension</i>	<i>Adams St Extension</i>	<i>Mills Ln</i>	1	0	2	1		4	Class I Shared-Use Path
York Creek Path	Spring Mountain Rd	Vine Trail	1	0	2	1		4	Class I Shared-Use Path
Grayson Ave	Primary School driveway	Highway 29 (Main St)	2	0	1	1		4	Class II Bike Lanes
Madrona Ave- Riesling Way	Main St	Sylvaner Ave	1	0	2	1		4	Class II Bike Lanes
Spring St	White Sulphur Sp Rd at city limit	Oak Ave	1	0	2	1		4	Class III Bike Boulevard
Spring Mtn Rd	Dean York Ln	Madrona Ave	2	0	2	0		4	Class II Bike Lanes
Elmhurst Ave	Spring Mountain Rd	Main St	2	0	2	0		4	Class III Bike Boulevard
Edwards St	Hunt Ave	Pope St	1	0	2	1		4	Class III Bike Boulevard
Hillview Pl	Spring Mountain Rd	Oak St	2	0	2	0		4	Class III Bike Boulevard
Hunt Ave	Church St	Starr Ave	1	0	2	1		4	Class III Bike Boulevard
Mitchell Dr	Main St	Crane Ave	1	0	2	1		4	Class III Bike Boulevard
Valley View St	Spring St	Birch St	1	0	2	1		4	Class III Bike Boulevard
<i>Oak Ave extension to Grayson</i>	<i>Mitchell Dr</i>	<i>Grayson Ave</i>	1	0	2	1		4	TBD
Lower Reservoir Loop Trail	NW city limit	Loop Lower Reservoir + connect to Spring Mtn Rd	0	0	2	1		3	Class I Shared-Use Path
Mills Ln	Main St/SR 29	Proposed class I facility annex from Starr Ave	1	0	2	0		3	Class II Bike Lanes
Allyn Ave	Spring St	Madrona Ave	0	0	2	1		3	Class II Bike Lanes
Hudson Ave	Madrona Ave	Spring St	1	0	2	0		3	Class II Bike Lanes
Birch Ave	Crane Ave	Valley View St	1	0	2	0		3	Class III Bike Boulevard
Church St	Hunt Ave	Pope St	1	0	2	0		3	Class III Bike Boulevard
Hunt Ave	Railroad Ave	Church St	1	0	2	0		3	Class III Bike Boulevard
Mariposa Ln	Pope St	McCorkle Ave	1	0	2	0		3	Class III Bike Boulevard
McCorkle Ave	Alison Ave	Proposed class I facility 675' west of College Ave	1	0	2	0		3	Class III Bike Boulevard
N Crane Ave	Spring St	Birch St	1	0	2	0		3	Class III Bike Boulevard
Oak Ave	Hillview Pl	Madrona Ave	1	0	2	0		3	Class III Bike Boulevard
Railroad Ave	Adams St	Hunt Ave	1	0	2	0		3	Class III Bike Boulevard
Railroad Ave	Fulton Ln	Hunt Ave	1	0	2	0		3	Class III Bike Boulevard
<i>College Ave extension to Mills Ln</i>	<i>Terminus of College Ave</i>	<i>Mills Ln</i>	1	0	2	0		3	TBD
<i>Mills Ln extension to Silverado Trl</i>	<i>Mills Ln</i>	<i>Silverado Trl</i>	1	0	2	0		3	TBD
Pratt Ave	Railroad	Main St/SR 29	0	0	2	0		2	Class II Bike Lanes
Sulphur Springs Rd	S Crane Ave	Main St/SR 29	0	0	2	0		2	Class II Bike Lanes
Sylvaner Ave	Riesling Way	Spring St	0	0	2	0		2	Class II Bike Lanes
Chaix Ln	Main St/SR 29	Napa River Trail (proposed)	0	0	2	0		2	Class III Rural Bike Route
Pratt Ave	RR track/Vine Trail at Pratt Ave	Napa River Trail (proposed)	0	0	2	0		2	Class III Rural Bike Route
Spring Mountain Rd	St Helena city limit (West)	Dean York Ln	0	0	2	0		2	Class III Rural Bike Route
Sulphur Springs Ave	St Helena city limit	Spring St	0	0	2	0		2	Class III Rural Bike Route
Sulphur Springs Ave	Sulphur Creek	Crane Ave	0	0	2	0		2	Class III Rural Bike Route
<i>Allison Ave extension to Mills Ln</i>	<i>Charter Oak Ave</i>	<i>Mills Ln</i>	0	0	2	0		2	TBD

BUCKET

HIGH RANKING PROJECTS

MEDIUM HIGH RANKING PROJECTS

PROPOSED CROSSINGS

Intersection	Access	Safety	Connect/ Comfort	Community Support	Activity	Total
Main St at Grayson Ave	2	1	1	2		6
Pope St at Allison Ave	1	1	1	2		5
Hillview Pl and Spring Mountain Rd^	2	0	1	2		5
Main St at Crinella Ct^+	1	0	1	2		4
Main St at Madrona Ave**^+	1	1	1	1		4
Main St at Adams St+	1	2	1	0		4
Main St at Spring St*	1	2	1	0		4
Pope St at Starr Ave	1	0	1	2		4
Hillview Pl at Middle School	2	0	1	0	1	4
Spring St at Hudson Ave	0	0	2	2		4
Grayson Ave at Crane Ave	2	0	1	1		4
Main St at Elmhurst Ave^+	1	0	1	1		3
Main St at Pine St+	2	0	1	0		3
Main St at Charter Oak Ave	0	1	1	1		3
Pope St at Mariposa Ln	2	0	1	0		3
Hunt Ave and Railroad Crossing	1	0	2	0		3
Hunt Ave at Edwards St	1	0	1	1		3
Madrona Ave and Oak Ave*	1	0	1	1		3
Madrona Ave at Stockton St	1	0	1	1		3
Madrona Ave at Allyn Ave*	0	0	2	1		3
Spring St at Oak Ave*	1	0	1	1		3
Spring St at Crane Ave*	0	0	2	1		3
Spring St and Valley View Ave	0	0	1	2		3
Spring Mountain Rd at Spring Mountain Ct	1	0	2	0		3
Spring Mountain Rd at Elmhurst Ave^	1	0	1	1		3
Valley View Ave at Olive Ave	1	0	1	1		3
Main St at Pratt Ave+	1	0	1	0		2
Main St at Hunt Ave^+	1	0	1	0		2
Main St at Pope St	1	0	1	0		2
Main St at Mitchell Dr	1	0	1	0		2
Main St at 1000 Main	0	0	2	0		2
Pope St at Edwards St	1	0	1	0		2
Hunt Ave at Church St	1	0	1	0		2
Pine St and Oak Ave	1	0	1	0		2
Adams St at Stockton St	1	0	1	0		2
Adams St at Allyn Ave	1	0	1	0		2
Spring St at Kearney St*	1	0	1	0		2
Spring St at Stockton St	1	0	1	0		2
Hunt Ave and Starr Ave	0	0	1	0		1
Spring St at Allyn Ave	0	0	1	0		1

BUCKET

- HIGH RANKING PROJECTS
- MEDIUM HIGH RANKING PROJECTS

PROPOSED ROADWAY EXTENSION + BRIDGE PROJECTS

Project	Feasibility	Community Support	Functional Road Classification	Total
Adams St extension to Silverado Trl	1	2	2	5
Pope St Bridge realignment	0	2	2	4
Oak Ave extension to Grayson Ave	0	2	2	4
Starr Ave extension north to Adams St	1	1	1	3
Mills Ln extension to Silverado Trl	0	1	2	3
Pratt Ave Bridge realignment	0	1	2	3
Starr Ave extension to Mills Ln	0	1	1	2
Allison Ave extension to Mills Ln	0	1	0	1
College Ave extension to Mills Ln	0	1	0	1

BUCKET

HIGH RANKING PROJECTS
MEDIUM HIGH RANKING PROJECTS

METHODOLOGY

Prioritization Criterion	Description	Score
Bicycle and Pedestrian Projects		
Access	Project directly adjacent to school, park, or community facility	2
	Project within 0.25 mi of school, park, or community facility	1
Safety	Project located within 100' of 1 fatal or severe bicycle or pedestrian crash; or 2+ bicycle or pedestrian crashes, regardless of severity	2
	Project located within 100' of the site of one non-fatal/severe bicycle or pedestrian crash	1
Connectivity and Comfort	Project fills a gap in bicycle or pedestrian network (i.e. new bikeway where it does not currently exist or	2
	Project enhances existing infrastructure	1
Community Support	Project scored among top-priority projects	2
	Project received some support, but didn't rank among top priorities	1
Bonus: Activity	Bikeway project within 100' of location with relatively high bicyclist counts	1
	Pedestrian project within 100' of location with relatively high pedestrian counts	
Road Extension and Bridge Realignment Projects		
Feasibility	Projects without significant feasibility (i.e., will not require the taking of private property, or trigger environmental review) receive 2 points; otherwise, 0 points	2
Community Support	Project scored among top-priority projects	2
	Project received some support, but didn't rank among top priorities	1
Functional Road Classification	Project will provide a new or realigned connection to an arterial road	2
	Project will provide a new or realigned connection to a collector road	1
	Project will provide a new or realigned connection to a local road	0

St Helena Streets Master Plan

Appendix D

Network-wide Cost Opinions



St. Helena SMP Proposed Bicycle Facilities-Cost Opinions

Mar-26

Costs are based on 2024 Caltrans Cost data escalated to 2026 dollars. Bicycle Facility cost opinions do not include costs related to design fees, environmental, drainage, and utility impacts.

The primary data source for the bicycle projects listed below was the 2019 NVTA Countywide Bicycle Plan. Limited refinements have been incorporated to reflect more recent planning efforts, including updates to the Sulphur Creek Class I Trail extents consistent with the General Plan Update 2040 Bike Network exhibit, the reclassification of Madrona from a Class II to a Class III facility, and other minor adjustments. Facilities previously proposed for Main Street/Highway 29 prior to the implementation of the Vine Trail (including Class II and Class III facilities) have been excluded from the list below; furthermore, any facilities proposed for Main Street will require coordination with the Downtown Specific Plan.

					Cost opinion			
Score	Street/Trail Name	Begins	Ends	Length (Mi.)	Low cost	High cost		
	Class II Bike Lanes				\$	580,000.00	\$	3,160,000.00
	3 Allyn Ave	Spring St	Madrona Ave	0.34	\$	197,200.00	\$	1,074,400.00
	6 S Crane Ave	Grayson Ave	Sulphur Springs Ave	0.45	\$	261,000.00	\$	1,422,000.00
	4 Grayson Ave	Primary School driveway	Highway 29 (Main St)	0.50	\$	290,000.00	\$	1,580,000.00
	3 Hudson Ave	Madrona Ave	Spring St	0.32	\$	185,600.00	\$	1,011,200.00
	3 Mills Ln	Main St/SR 29	Proposed class I facility annex from Starr Ave	0.50	\$	290,000.00	\$	1,580,000.00
	4 Spring Mtn Rd	Dean York Ln	Madrona Ave	0.39	\$	226,200.00	\$	1,232,400.00
	2 Sulphur Springs Rd	S Crane Ave	Main St/SR 29	0.50	\$	290,000.00	\$	1,580,000.00
	2 Sylvaner Ave	Riesling Way	Spring St	0.30	\$	174,000.00	\$	948,000.00
	Class III Bike Boulevard				\$	780,000.00	\$	1,800,000.00
	6 Adams St	Railroad Ave	Allyn Ave	0.47	\$	366,600.00	\$	846,000.00
	3 Birch Ave	Crane Ave	Valley View St	0.15	\$	117,000.00	\$	270,000.00
	3 Church St	Hunt Ave	Pope St	0.13	\$	101,400.00	\$	234,000.00
	5 College Ave	Pope St	Proposed class I facility at SE end of College Ave	0.18	\$	140,400.00	\$	324,000.00
	4 Elmhurst Ave	Spring Mountain Rd	Main St	0.23	\$	179,400.00	\$	414,000.00
	4 Edwards St	Hunt Ave	Pope St	0.15	\$	117,000.00	\$	270,000.00
	4 Hillview Pl	Spring Mountain Rd	Oak St	0.14	\$	109,200.00	\$	252,000.00
	3 Hunt Ave	Railroad Ave	Church St	0.02	\$	15,600.00	\$	36,000.00
	4 Hunt Ave	Church St	Starr Ave	0.42	\$	327,600.00	\$	756,000.00
	4 Madrona Ave- Riesling Way	Main Street	Sylvaner Ave	1.03	\$	803,400.00	\$	1,854,000.00
	3 Mariposa Ln	Pope St	McCorkle Ave	0.14	\$	109,200.00	\$	252,000.00
	3 McCorkle Ave	Alison Ave	Proposed class I facility 675' west of College Ave	0.29	\$	226,200.00	\$	522,000.00
	4 Mitchell Dr	Main St	Crane Ave	0.44	\$	343,200.00	\$	792,000.00
	3 N Crane Ave	Spring St	Birch St	0.23	\$	179,400.00	\$	414,000.00
	3 Oak Ave	Hillview Pl	Madrona Ave	0.10	\$	78,000.00	\$	180,000.00
	3 Railroad Ave	Adams St	Hunt Ave	0.11	\$	85,800.00	\$	198,000.00
	3 Railroad Ave	Fulton Ln	Hunt Ave	0.21	\$	163,800.00	\$	378,000.00
	4 Spring St	Sylvaner Ave	White Sulphur Spring Rd	0.18	\$	140,400.00	\$	324,000.00
	4 Valley View St	Spring St	Birch St	0.20	\$	156,000.00	\$	360,000.00
	4 Spring St	Valley View St	Oak Ave	0.56	\$	3,129,120.00		
	Vine Trail	Fulton Ln (begins)	Main St/SR 29 (ends)	0.72	N/A		N/A	
	Class III Rural Bike Route				\$	300,000.00		
	2 Chaix Ln	Main St/SR 29	Napa River Trail (proposed)	1.07	\$	321,000.00		
	2 Pratt Ave	Main St/SR 29	Napa River Trail (proposed)	0.71	\$	213,000.00		
	2 Spring Mountain Rd	St Helena city limit (West)	Dean York Ln	0.69	\$	207,000.00		
	2 Sulphur Springs Ave	St Helena city limit	Spring St	0.16	\$	48,000.00		
	2 Sulphur Springs Ave	Sulphur Creek	Crane Ave	0.93	\$	279,000.00		
	Class I Shared-Use Path				\$	7,220,000.00	\$	7,220,000.00

high cost	5	Crane Park Path (to La Quinta Way)	Grayson Ave	Sulphur Springs Ave	0.50	\$	3,610,000.00	N/A
	5	Library Lane Path	Adams St	Vine Trail (along RR corridor)	0.13	\$	938,600.00	N/A
	3	Lower Reservoir Loop Trail	NW city limit	Loop around Lower Reservoir to connect to Spring Mountain Rd	1.25	\$	9,025,000.00	N/A
	4	McCorkle Ave Path	McCorkle Ave cul-de-sac	College Ave	0.14	\$	1,010,800.00	N/A
	6	Napa River Trail	St Helena city limit near wastewater treatment plant	St Helena city limit (Deer Park Rd / Lower Reservoir Trail)	3.04		N/A	\$ 21,948,800.00
	4	Pope St	Starr Ave	Silverado Trail	0.41	\$	2,960,200.00	N/A
		Vine Trail (Pratt Ave)	RR	Main St/SR 29	0.26		N/A	N/A
high cost		Vine Trail (Railroad)	Pratt Ave	Fulton Ln	0.33		N/A	N/A
	4	Starr Ave Path	Adams Ave (pending future extension)	Mills Ln	0.84	\$	6,064,800.00	N/A
	7	Sulphur Creek Trail	Sulphur Springs Ave	Napa River	2.19		N/A	\$ 15,811,800.00
		Vine Trail (excluding Class III segment, above)	St Helena City Limits (South)	St Helena City Limits (North)	2.44		N/A	N/A
	4	York Creek Path	Spring Mountain Rd	Main St (Vine Trail)	0.33	\$	2,382,600.00	N/A
	6	Adams St (pending future extension)	Railroad Ave	Silverado Trail	0.84		See separate cost opinion	
		Facility Type to Be Determined						
	2	Allison Avenue (pending future extension)	Charter Oak Ave	Mills Ln	0.21		N/A	N/A
	3	College Ave (pending future extension)	McCorkle Ave Path	Mills Ln	0.24		N/A	N/A
		Main St	Pratt Ave	Mitchell Dr	0.76		N/A	N/A
	3	Mills Ln (pending future extension)	Starr Ave	Silverado Trail	0.51		N/A	N/A
	4	Oak Ave (pending future extension)	Mitchell Dr	Grayson Ave	0.42		N/A	N/A

St. Helena SMP Proposed Crossing Improvements

Mar-26

Costs are based on 2024 Caltrans Cost data escalated to 2026 dollars. Crossing improvement cost opinions do not include costs related to design fees, environmental, drainage, and utility impacts.

Score	Intersection	Existing Conditions	Proposed Improvements	Item	Quantity	Itemized Cost	Subtotal Cost (2024 dollars)	Construction Contingency	Escalation Years	Escalation	Total Cost (2026 dollars)
2	Main St at Pratt Ave+	High-visibility crosswalk on south approach; high-visibility crosswalk and stop sign on minor approach; curb ramps have detectable warning surfaces	Install high-visibility crosswalk on north approach	High-visibility crosswalk	1	\$ 3,000	\$ 3,000	20%	2	7%	\$ 4,200
3	Main St at Elmhurst Ave++	Standard crosswalk on south approach; standard crosswalk and stop-sign on minor approach; "slight" curb extensions; curb ramps have detectable warning surfaces; RRFB.	Ensure high-visibility crosswalks on all approaches and advanced warning sign for RRFB	High-visibility crosswalk	3	\$ 9,000	\$ 10,480	20%	2	7%	\$ 14,400
				Signs	4	\$ 1,480					
4	Main St at Crinella Ct++	High-visibility crosswalk on all approaches; stop sign on minor approach; curb ramps have detectable warning surfaces	Install RRFB with advanced warning signs on either north or south approach	RRFB	1	\$ 15,000	\$ 16,480	20%	2	7%	\$ 22,700
				Signs	4	\$ 1,480					
4	Main St at Madrona Ave***	Signalized intersection; standard crosswalks; curb ramps not ADA-compliant	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant; install curb extensions	High-visibility crosswalk	4	\$ 12,000	\$ 45,600	20%	2	7%	\$ 62,700
				Curb extensions	4	\$ 21,600					
				Curb ramps	8	\$ 12,000					
3	Main St at Pine St+	Standard crosswalks on all approaches except north; stop signs on minor approaches; curb ramps not ADA-compliant	Ensure high-visibility crosswalks on all approaches; upgrade curb ramps to be ADA-compliant; install RRFB on either north or south approach	High-visibility crosswalk	4	\$ 12,000	\$ 39,000	20%	2	7%	\$ 53,600
				Curb ramps	8	\$ 12,000					
				RRFB	1	\$ 15,000					
4	Main St at Adams St+	Signalized intersection; standard crosswalks; curb ramps not ADA-compliant	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant; install curb extensions on both sides of Main St crossings	High-visibility crosswalk	4	\$ 12,000	\$ 45,600	20%	2	7%	\$ 62,700
				Curb ramps	8	\$ 12,000					
				Curb extensions	4	\$ 21,600					
2	Main St at Hunt Ave++	High-visibility crosswalk and stop sign on minor approach; high-visibility crosswalk on south approach; curb ramps not ADA-compliant	Install high-visibility crosswalk on north approach; upgrade curb ramps to be ADA-compliant; install curb extensions on all approaches	High-visibility crosswalk	3	\$ 9,000	\$ 39,600	20%	2	7%	\$ 54,500
				Curb ramps	6	\$ 9,000					
				Curb extensions	4	\$ 21,600					
4	Main St at Spring St++	High-visibility crosswalk and stop sign on minor approach; high-visibility crosswalk on southeast approach; curb ramps not ADA-compliant	Install curb extensions and RRFB on southeast approach; upgrade all curb ramps to be ADA-compliant	RRFB	3	\$ 45,000	\$ 75,600	20%	2	7%	\$ 103,900
				Curb extensions	4	\$ 21,600					
				Curb ramps	6	\$ 9,000					
2	Main St at Pope St+	Signalized intersection; standard crosswalks on all approaches except south; curb ramps not ADA-compliant	Ensure high-visibility crosswalks on all approaches; upgrade curb ramps to be ADA-compliant; install curb extensions on both sides of Main St crossings	High-visibility crosswalk	3	\$ 9,000	\$ 39,600	20%	2	7%	\$ 54,500
				Curb ramps	6	\$ 9,000					
				Curb extensions	4	\$ 21,600					
2	Main St at Mitchell Dr+	Signalized intersection; standard crosswalk on minor approach only; curb ramps not ADA-compliant	Ensure high-visibility crosswalks on all approaches (note that north approach of this intersection is south approach of SR29/Pope St intersection); install	High-visibility crosswalk	3	\$ 9,000	\$ 39,600	20%	2	7%	\$ 54,500
				Curb ramps	6	\$ 9,000					
				Curb extensions	4	\$ 21,600					
2	Main St at 1000 Main+	Currently no crossing here	Consider installing a crossing to improve pedestrian connectivity, reduce block lengths, and slow speeds.	High-visibility crosswalk	1	\$ 3,000	\$ 3,000	20%	2	7%	\$ 4,200

3	Main St at Charter Oak Ave+	High-visibility crossing with RRFB on north approach; stop control on minor approaches with standard crosswalk on west approach and no crosswalk on east approach; most curb ramps not ADA-compliant	Ensure high-visibility crosswalks on all approaches and upgrade curb ramps to be ADA-compliant. Modernize RRFB and/or install PHB (PHB already in City's CIP and dependent on private development funding)	High-visibility crosswalk	3	\$ 9,000	\$ 30,000	20%	2	7%	\$ 41,300
				Curb ramps	4	\$ 6,000					
				RRFB	1	\$ 15,000					
6	Main St at Grayson Ave	Signalized intersection; standard crosswalk on minor approach (no sidewalk/train tracks only on east side of street); curb ramps have detectable warning surfaces	Upgrade crosswalk to high visibility	High-visibility crosswalk	1	\$ 3,000	\$ 3,000	20%	2	7%	\$ 4,200
5	Pope St at Allison Ave	Stop-controlled crossing on minor approach (across Allison Ave) with high-visibility crosswalk with ADA-compliant ramps; no crossing across Pope St because there no sidewalk on north side and limited visibility at curve makes crossing dangerous.	Crossing cannot be installed here due to limited visibility and ROW constraints. Install speed reduction treatments on both approaches of Pope St at Allison Ave. Consider vegetation management to improve visibility.	Speed hump	2	\$ 14,000	\$ 14,000	20%	2	7%	\$ 19,300
3	Pope St at Mariposa Ln	Stop control and standard crosswalk on minor approach; high-visibility crosswalk on southwest approach	Install RRFB (Jacob Meily Park access)	RRFB	1	\$ 15,000	\$ 15,000	20%	2	7%	\$ 20,700
2	16. Pope St at Edwards St	High-visibility crosswalk on north approach across Edwards; stop-controlled crossing on minor approach (no crosswalk); ramps not ADA-compliant	Install high-visibility crosswalk on minor approach and upgrade ramps to be ADA-compliant. If crossing is not installed at Allison Ave, consider installing RRFB at this location instead.	High-visibility crosswalk	3	\$ 9,000	\$ 18,000	20%	2	7%	\$ 24,800
				Curb ramps	6	\$ 9,000					
4	Pope St at Starr Ave	High-visibility crosswalks on major approaches; standard crosswalk on minor approach; RRFB on west approach; one curb ramp not ADA-compliant	Ensure all crosswalks are high-visibility and that all curb ramps are ADA-compliant	High-visibility crosswalk	1	\$ 3,000	\$ 12,000	20%	2	7%	\$ 16,500
				Curb ramps	6	\$ 9,000					
	Hunt Ave and Railroad Crossing	Not ADA-compliant; poor visibility	Upgrade crossing to be ADA-compliant. Add vertical delineation or other formalized separation on west side of railroad tracks between tracks and Railroad Avenue to shorten crosswalk across the parking spaces. Remove the two parking stalls immediately adjacent to the crosswalk to improve pedestrian visibility.	High-visibility crosswalk	4	\$ 12,000	\$ 13,600	20%	2	7%	\$ 18,700
				Segmental Divider	20	\$ 1,600					
1	Hunt Ave and Starr Ave	Stop-controlled on all legs; no crosswalks; curb ramps missing and existing one is noncompliant	Install high-visibility crosswalks at both stop signs and ensure ADA-compliant curb ramps are present at all crossings	High-visibility crosswalk	3	\$ 9,000	\$ 18,000	20%	2	7%	\$ 24,800
				Curb ramps	6	\$ 9,000					
3	Hunt Ave at Edwards St	High-visibility crosswalk on west and south approaches; stop sign on south (minor) approach; curb ramps have detectable warning surfaces	Install high-visibility crosswalk on east approach	High-visibility crosswalk	3	\$ 9,000	\$ 18,370	20%	2	7%	\$ 25,300
				Signs	1	\$ 370					
				Curb ramps	6	\$ 9,000					
2	Hunt Ave at Church St	High-visibility crosswalk and stop sign on Railroad Ave approach; stop sign with no crosswalk at Church St approach; curb ramps have detectable warning surfaces	Install high-visibility crosswalk at Church St, just east of the railroad tracks; upgrade Church crosswalk to high-visibility	High-visibility crosswalk	2	\$ 6,000	\$ 6,000	20%	2	7%	\$ 8,300
4	Hillview Pl at Middle School	Standard crosswalk; one ramp not ADA-compliant	Upgrade to high-visibility crosswalk and upgrade ramp to be ADA-compliant; install RRFB	High-visibility crosswalk	1	\$ 3,000	\$ 31,800	20%	2	7%	\$ 43,700
				Curb ramps	2	\$ 3,000					
				Curb extensions	2	\$ 10,800					
				RRFB	1	\$ 15,000					
5	Hillview Pl and Spring Mountain Rd^	Stop control on minor approaches; standard crosswalks; curb ramps not ADA-compliant	Install stop-control on all approaches and curb extensions on all corners, upgrade all crosswalks to high visibility, and upgrade all curb ramps to be ADA-compliant	Signs	8	\$ 2,960	\$ 48,560	20%	2	7%	\$ 66,800
				Curb extensions	4	\$ 21,600					
				High-visibility crosswalk	4	\$ 12,000					
				Curb ramps	8	\$ 12,000					
3	Madrona Ave and Oak Ave^	All-way stop control with standard crosswalks; noncompliant curb ramps	Upgrade crosswalks to be high-visibility and upgrade curb ramps to ADA-compliant; extend red curb to daylight the intersection; install curb extensions on all corners	High-visibility crosswalk	4	\$ 12,000	\$ 45,600	20%	2	7%	\$ 62,700
				Curb ramps	8	\$ 12,000					
				Curb extensions	4	\$ 21,600					

3	Madrona Ave at Stockton St	No crosswalks; stop control on minor approach; one curb ramp not ADA-compliant	Install high-visibility crosswalk on minor approach and across the NE approach on Madrona Ave; ensure all curb ramps are ADA-compliant	High-visibility crosswalk	4	\$ 12,000	\$ 24,000	20%	2	7%	\$ 33,000
				Curb ramps	8	\$ 12,000					
3	Madrona Ave at Allyn Ave*	No crosswalks; stop control on minor approach; curb ramps have detectable warning surfaces	Install high-visibility crosswalk on minor approach and across the SW approach on Madrona Ave	High-visibility crosswalk	3	\$ 9,000	\$ 9,000	20%	2	7%	\$ 12,400
2	Pine St and Oak Ave	All-way stop control with standard crosswalks; noncompliant curb ramps	Upgrade crosswalks to be high-visibility and upgrade curb ramps to ADA-compliant	High-visibility crosswalk	4	\$ 12,000	\$ 24,000	20%	2	7%	\$ 33,000
				Curb ramps	8	\$ 12,000					
2	Adams St at Stockton St	All-way stop control with standard crosswalks; curb ramps either non-compliant or missing	Upgrade crosswalks to be high-visibility and upgrade curb ramps to ADA-compliant	High-visibility crosswalk	4	\$ 12,000	\$ 24,000	20%	2	7%	\$ 33,000
				Curb ramps	8	\$ 12,000					
2	Adams St at Allyn Ave	All-way stop control with no crosswalks; curb ramps have detectable warning surfaces	Upgrade crosswalks to be high visibility	High-visibility crosswalk	4	\$ 12,000	\$ 12,000	20%	2	7%	\$ 16,500
3	Spring Mountain Rd at Spring Mountain Ct	Three-legged intersection with stop control on two of the approaches; no crosswalks nor curb ramps present	Install high-visibility crosswalk and ADA-compliant curb ramps on east approach.	High-visibility crosswalk	3	\$ 9,000	\$ 18,000	20%	2	7%	\$ 24,800
				Curb ramps	6	\$ 9,000					
3	Spring Mountain Rd at Elmhurst Ave^	Stop control and standard crosswalk on minor approach and high-visibility crosswalk on southeast approach; all curb ramps either missing or non-compliant	Install high-visibility crosswalk on minor approach, ADA-compliant curb ramps, and curb extensions	High-visibility crosswalk	3	\$ 9,000	\$ 18,000	20%	2	7%	\$ 24,800
				Curb ramps	6	\$ 9,000					
4	Grayson Ave at Crane Ave	All-way stop control; high-visibility crosswalk across Grayson Ave; curb ramps have detectable warning surfaces	None - there are currently no sidewalks on the rural side of Crane Ave				\$ -	20%	2	7%	\$ -
3	Valley View Ave at Olive Ave	Stop control on minor approach; standard crosswalks on minor approach and across SE approach of Valley View Ave; curb ramps have detectable warning surfaces	Upgrade crosswalks to high visibility	High-visibility crosswalk	3	\$ 9,000	\$ 9,000	20%	2	7%	\$ 12,400
Crossings that were reviewed and that do not need improvements											
	Pope St at Paseo Grand Drive	High-visibility crosswalks on all approaches except vineyard entrance (standard crosswalk); RRFB on north approach; stop control on minor approaches; curb ramps have detectable warning surfaces	None	NO COST OPINION NEEDED							
	Adams St at Oak Ave	All-way stop control with high-visibility crosswalks and curb ramps with detectable warning surfaces	None	NO COST OPINION NEEDED							
	Madrona Ave and Kearney St	Stop control on minor approaches, high visibility crosswalks, curb extensions; curb ramps have detectable warning surfaces	None	NO COST OPINION NEEDED							
	Adams St at Kearney St	All-way stop control with high-visibility crosswalks; ADA-compliant curb ramps	None	NO COST OPINION NEEDED							
	Hillview Pl at Kearney St	High-visibility crosswalks; stop control on minor approach; curb ramps have detectable warning surfaces	None; however curb extensions may be considered pending configuration study.	NO COST OPINION NEEDED							
	Grayson Ave at High School Entrance	High-visibility crosswalk and RRFB; curb ramps have detectable warning surfaces	None	NO COST OPINION NEEDED							
Crossings that are included in the Spring St. concept cost opinion											
3	Spring St and Valley View Ave	Stop control and standard crosswalk on minor approach; high-visibility crosswalk on NE approach and non-compliant curb ramps	Install RRFB on NE approach and upgrade curb ramp to be ADA-compliant; upgrade standard crosswalk to high-visibility	NO COST OPINION NEEDED							
4	Spring St at Hudson	Stop control on minor approach; missing curb ramps; no crosswalks	Install high-visibility crosswalks on minor approach	NO COST OPINION NEEDED							
1	Spring St at Allyn Ave	Stop control and high-visibility crosswalk on minor approach; curb ramps have detectable warning surfaces	Install high-visibility crosswalk on NE approach	NO COST OPINION NEEDED							
3	Spring St at Crane Ave*	Stop control and no crosswalk on minor approach; non-compliant curb ramps	Upgrade curb ramp to be ADA-compliant. Install high-visibility crosswalk on NE approach	NO COST OPINION NEEDED							
2	Spring St at Stockton St	Stop control and high-visibility crosswalk on minor approach; curb ramps have detectable warning surfaces	Install high-visibility crosswalk on NE approach	NO COST OPINION NEEDED							
2	Spring St at Kearney St*	Stop control and high-visibility crosswalk on minor approach; high-visibility crosswalk on NE approach; two ramps are not ADA-compliant and one does not exist	Install ADA-compliant ramps at all crossings	NO COST OPINION NEEDED							
3	Spring St at Oak Ave*	All-way stop control with standard crosswalks on three of the approaches	Ensure high-visibility crosswalks exist on all	NO COST OPINION NEEDED							

PER MILE COSTS BY BICYCLE FACILITY CLASSIFICATION

The following pages provide backup documentation for the calculation of per-mile costs by bicycle facility type. These unit costs were used to develop planning-level estimates for each discrete proposed bicycle facility. For every recommended segment, the appropriate facility type, and corresponding low- or high-cost treatment, was assigned and then multiplied by the relevant per-mile cost to generate a segment-level estimate.

City of St Helena Streets Master Plan
Per Mile Cost Opinion

Mar-26

Table 1 shows planning-level bikeway per mile cost estimates. Cost estimates are based on the unit cost and soft cost values provided in the Master Unit & Soft Costs tab (based primarily on available Caltrans 2024 data).
Refer to the following tabs for detailed assumptions for each facility type
This cost opinion was developed in October 2025. The latest National Highway Construction Cost index for Q1 2025 is 3.167
This cost opinion was developed in October 2025 and the ENR Construction Cost index is 15,459

Table 1: Planning-Level Per-Mile Costs

Facility Type	Rounded Per Mile Cost Estimate (Presented in 2026 dollars)			
	Low Cost	High Cost	Low Cost Description	High Cost Description
Class I	\$ 7,220,000	\$ 7,220,000	Replace existing 5' sidewalk to 12' shared use path + 5' physical barrier along curb line	Class I next to river or creek
Class II	\$ 580,000	\$ 3,160,000	Eradicate existing markings and stripe bike lanes	Resurface street and stripe bike lanes
Class III - Bike Boulevard	\$ 780,000	\$ 1,800,000	Shared lane pavement markings and signage. Only speed humps, signing and striping	Shared lane pavement markings and signage. Speed humps, signing, striping, and traffic circles every third intersection
Class III - Rural Bike Route	\$ 300,000		Shared lane pavement markings and signage	

Replace existing 5' sidewalk to 12' shared use path + 5' physical barrier along curb line

Assumptions

2 intersections

4 lanes

56 ft

56 ft

12 ft

6 inches

Hot Mix Asphalt (Type A)

313.6 sf

8 ramps

0 10

Actual costs may vary based on project scope and current market conditions.
Caltrans maintains historical cost indices and forecast at:

Actual costs may vary based on project scope and current market conditions.

Caltrans maintains historical cost indices and forecast at:

Class I next to river or creek

Unit prices per recent Bid Items on Caltrans Contract Cost Data.
All costs adjusted to 2026 dollars.

- Continuous raised path, 2 intersections each end
- bike lane symbol every 250' x2 for two way
- Roadway section
- Street curb to curb width
- Average side street width
- Width of shared use path
- Pavement depth
- Pavement material
- 14' wide crosswalks, 24" lines, 5' spacing
- Unidirectional curb ramps per intersection
- 2 D11-1 signs per intersection
- Total Class I length

2 intersections
4 lanes
56 ft
56 ft
12 ft
6 inches
Hot Mix Asphalt (Type A)
313.6 sf
8 ramps
5280 ft

[illegible]

Actual costs may vary based on project scope and current market conditions.
Caltrans maintains historical cost indices and forecast at:

Class II

Eradicate existing markings and stripe bike lanes

Unit prices per recent Bid Items on Caltrans Contract Cost Data.
All costs adjusted to 2026 dollars.

Assumptions

1mile =	5280 ft
Average block distance	400 ft
Estimated total intersections in 1 mile:	13 intersections
all-way stop intersections in 1 mile	4 intersections
Signalized intersections in 1 mile	1 intersection
Bike lane markings	4 at each intersection
Street curb to curb width	40 ft
Average side street width	40 ft
10' wide crosswalks, 24" lines, 5' spacing	160 sf
Width of bike lane	6 ft
R81A signs per intersection	2
One travel lane and one bike lane each direction	

CALTRANS ITEM DESCRIPTION	ITEM NOTES	UNIT	UNIT COST (2024)	QUANTITY	TOTAL COST
ROADSIDE SIGN - ONE POST	R81A (BIKE LANE)	EA	\$ 500.00	26	\$ 13,200.00
REMOVE THERMOPLASTIC TRAFFIC STRIPE	REMOVE EXISTING THERMOPLASTIC TRAFFIC STRIPE	LF	\$ 3.00	4752	\$ 14,256.00
6" THERMOPLASTIC TRAFFIC STRIPE (DETAIL 28)	DETAIL 28 (6" SOLID DOUBLE YELLOW LINES)	LF	\$ 5.00	4752	\$ 23,760.00
6" THERMOPLASTIC TRAFFIC STRIPE (DETAIL 39)	DETAIL 39 (6" SOLID WHITE LINE)	LF	\$ 4.00	9504	\$ 38,016.00
6" THERMOPLASTIC TRAFFIC STRIPE (BROKEN 8-4)	DETAIL 39A (6" BROKEN WHITE LINE)	LF	\$ 4.00	2112	\$ 8,448.00
THERMOPLASTIC PAVEMENT MARKING	BIKE LANE MARKING	SQFT	\$ 15.00	1230	\$ 18,453.60
THERMOPLASTIC CROSSWALK AND PAVEMENT MARKING	HIGH VISIBILITY CROSSWALK	SQFT	\$ 20.00	3755	\$ 75,093.33
12" THERMOPLASTIC TRAFFIC STRIPE	LIMIT LINE (12" SOLID WHITE LINE)	LF	\$ 4.00	469	\$ 1,877.33
GREEN THERMOPLASTIC PAINT	CONFLICT MARKINGS	SQFT	\$ 19.50	3168	\$ 61,776.00
					\$ -
					\$ -
Material Cost Subtotal					\$ 254,880.27
Mobilization				5%	\$ 12,744.01
Traffic Control				5%	\$ 12,744.01
Construction Cost Contingency				20%	\$ 50,976.05
Utility Contingency				5%	\$ 12,744.01
Drainage Contingency				5%	\$ 12,744.01
Environmental Contingency				5%	\$ 12,744.01
Subtotal					\$ 114,696.12
Construction Cost Subtotal					\$ 369,576.39
Engineering and Design Costs				15%	\$ 55,436.46
Construction Management				20%	\$ 73,915.28
Subtotal					\$ 129,351.74
Total Cost/Mile (2024 dollars)					\$ 498,928.12
Total Cost/Mile (2026 dollars)	Years:	2		7%	\$ 571,222.81
Rounded Cost/Mile					\$ 580,000.00

Actual costs may vary based on project scope and current market conditions.
Caltrans maintains historical cost indices and forecast at:

Class II	
Resurface street and stripe bike lanes	
Unit prices per recent Bid Items on Caltrans Contract Cost Data. All costs adjusted to 2026 dollars.	
Assumptions	
1mile =	5280 ft
Average block distance	400 ft
Estimated total intersections in 1 mile:	13 intersections
all-way stop intersections in 1 mile	4 intersections
Signalized intersections in 1 mile	1 intersection
Bike lane markings	4 at each intersection
Street curb to curb width	40 ft
Average side street width	40 ft
10' wide crosswalks, 24" lines, 5' spacing	160 sf
Width of bike lane	6 ft
R81A signs per intersection	2
One travel lane and one bike lane each direction	

CALTRANS ITEM DESCRIPTION	ITEM NOTES	UNIT	UNIT COST (2024)	QUANTITY	TOTAL COST
ROADSIDE SIGN - ONE POST	R81A (BIKE LANE)	EA	\$ 500.00	26	\$ 13,200.00
COLD PLANE ASPHALT CONCRETE PAVEMENT		SQYD	\$ 25.00	23467	\$ 586,666.67
HOT MIX ASPHALT (TYPE A)	0	TON	\$ 220.00	2640	\$ 580,800.00
6" THERMOPLASTIC TRAFFIC STRIPE (DETAIL 28)	DETAIL 28 (6" SOLID DOUBLE YELLOW LINES)	LF	\$ 5.00	4752	\$ 23,760.00
6" THERMOPLASTIC TRAFFIC STRIPE (DETAIL 39)	DETAIL 39 (6" SOLID WHITE LINE)	LF	\$ 4.00	9504	\$ 38,016.00
6" THERMOPLASTIC TRAFFIC STRIPE (BROKEN 8-4)	DETAIL 39A (6" BROKEN WHITE LINE)	LF	\$ 4.00	2112	\$ 8,448.00
THERMOPLASTIC PAVEMENT MARKING	BIKE LANE MARKING	SQFT	\$ 15.00	1230	\$ 18,453.60
THERMOPLASTIC CROSSWALK AND PAVEMENT MARKING	HIGH VISIBILITY CROSSWALK	SQFT	\$ 20.00	3755	\$ 75,093.33
12" THERMOPLASTIC TRAFFIC STRIPE	LIMIT LINE (12"SOLID WHITE LINE)	LF	\$ 4.00	469	\$ 1,877.33
GREEN THERMOPLASTIC PAINT	CONFLICT MARKINGS	SQFT	\$ 19.50	3168	\$ 61,776.00
					\$ -
					\$ -
Material Cost Subtotal					\$ 1,408,090.93
Mobilization			5%	\$	70,404.55
Traffic Control			5%	\$	70,404.55
Construction Cost Contingency			20%	\$	281,618.19
Utility Contingency			5%	\$	70,404.55
Drainage Contingency			5%	\$	70,404.55
Environmental Contingency			5%	\$	70,404.55
Subtotal				\$	633,640.92
Construction Cost Subtotal					\$ 2,041,731.85
Engineering and Design Costs			15%	\$	306,259.78
Construction Management			20%	\$	408,346.37
Subtotal				\$	714,606.15
Total Cost/Mile (2024 dollars)					\$ 2,756,338.00
Total Cost/Mile (2026 dollars)					\$ 3,155,731.38
Rounded Cost/Mile					\$ 3,160,000.00

Actual costs may vary based on project scope and current market conditions.
Caltrans maintains historical cost indices and forecast at:

Class III - Bike Route	
Shared lane pavement markings and signage	
Unit prices per recent Bid Items on Caltrans Contract Cost Data. All costs adjusted to 2026 dollars.	
<i>Assumptions</i>	
1 mile =	5280 ft
Average block distance	400 ft
Estimated total intersections in 1 mile:	13 intersections
all-way stop intersections in 1 mile	4 intersections
Signalized intersections in 1 mile	1 intersection
Street curb to curb width	35 ft
Average side street width	35 ft
Shared lane marking spacing	200 ft
Restriping double yellow at each stop-controlled or signalized leg	50 ft
Intersections with proposed traffic circles assumed to include 8 new directional curb ramps each	
10' wide crosswalks, 24" lines, 5' spacing	140 sf
D11-1 signs per intersection	2
Total bike route distance	1 mi

CALTRANS ITEM DESCRIPTION	ITEM NOTES	UNIT	UNIT COST (2024)	QUANTITY	TOTAL COST
THERMOPLASTIC PAVEMENT MARKING	SHARED LANE MARKING, EVERY 200' EACH WAY	SQFT	\$ 15.00	1056	\$ 15,840.00
ROADSIDE SIGN - ONE POST	D11-1 (BIKE ROUTE)	EA	\$ 500.00	26	\$ 13,200.00
THERMOPLASTIC CROSSWALK AND PAVEMENT MARKING	HIGH VISIBILITY CROSSWALK	SQFT	\$ 20.00	3024	\$ 60,480.00
6" THERMOPLASTIC TRAFFIC STRIPE (DETAIL 28)	DETAIL 28 (6" SOLID DOUBLE YELLOW LINES)	LF	\$ 5.00	4818	\$ 24,090.00
12" THERMOPLASTIC TRAFFIC STRIPE	LIMIT LINE (12" SOLID WHITE LINE)	LF	\$ 4.00	651	\$ 2,604.00
REMOVE THERMOPLASTIC TRAFFIC STRIPE		LF	\$ 3.00	4818	\$ 14,454.00
Material Cost Subtotal					\$ 130,668.00
Mobilization			5%	\$	6,533.40
Traffic Control			5%	\$	6,533.40
Construction Cost Contingency			20%	\$	26,133.60
Utility Contingency			5%	\$	6,533.40
Drainage Contingency			5%	\$	6,533.40
Environmental Contingency			5%	\$	6,533.40
Subtotal				\$	58,800.60
Construction Cost Subtotal					\$ 189,468.60
Engineering and Design Costs			15%	\$	28,420.29
Construction Management			20%	\$	37,893.72
Subtotal				\$	66,314.01
Total Cost/Mile (2024 dollars)					\$ 255,782.61
Total Cost/Mile (2026 dollars)					\$ 292,845.51
Rounded Cost/Mile					\$ 300,000.00

Actual costs may vary based on project scope and current market conditions.
Caltrans maintains historical cost indices and forecast at:

Class III - Bike Boulevard	
Shared lane pavement markings and signage. Only speed humps, signing and striping	
Unit prices per recent Bid Items on Caltrans Contract Cost Data. All costs adjusted to 2026 dollars.	
Assumptions	
1mile =	5280 ft
Average block distance	400 ft
Estimated total intersections in 1 mile:	13 intersections/blocks
all-way stop intersections in 1 mile	4 intersections
Signalized intersections in 1 mile	1 intersection
Street curb to curb width	35 ft
Average side street width	35 ft
Shared lane marking spacing	200 ft
Restriping double yellow at each stop-controlled or signalized leg	50 ft
Intersections with proposed traffic circles assumed to include 8 new directional curb ramps each	
10' wide crosswalks, 24" lines, 5' spacing	140 sf
posts per speed cushion (2 signs per post at each block)	2
D11-1 signs per intersection	2
Total bike boulevard distance	1 mi

CALTRANS ITEM DESCRIPTION	ITEM NOTES	UNIT	UNIT COST (2024)	QUANTITY	TOTAL COST
THERMOPLASTIC PAVEMENT MARKING	SHARED LANE MARKING, EVERY 200' EACH WAY	SQFT	\$ 15.00	1056	\$ 15,840.00
SPEED HUMP		EA	\$ 7,000.00	26	\$ 184,800.00
ROADSIDE SIGN - ONE POST	D11-1 (BIKE ROUTE)	EA	\$ 500.00	26	\$ 13,200.00
ROADSIDE SIGN - ONE POST	SPEED CUSHION SIGN	EA	\$ 500.00	26	\$ 13,200.00
	W13-1P (ADVISORY SPEED PLAQUE UNDER SPEED CUSHION SIGN)	EA	\$ 370.00	26	\$ 9,768.00
THERMOPLASTIC CROSSWALK AND PAVEMENT MARKING	HIGH VISIBILITY CROSSWALK	SQFT	\$ 20.00	3024	\$ 60,480.00
6" THERMOPLASTIC TRAFFIC STRIPE (DETAIL 28)	DETAIL 28 (6" SOLID DOUBLE YELLOW LINES)	LF	\$ 5.00	4818	\$ 24,090.00
12" THERMOPLASTIC TRAFFIC STRIPE	LIMIT LINE (12" SOLID WHITE LINE)	LF	\$ 4.00	651	\$ 2,604.00
REMOVE THERMOPLASTIC TRAFFIC STRIPE		LF	\$ 3.00	4818	\$ 14,454.00
THERMOPLASTIC PAVEMENT MARKING	SPEED HUMP MARKING (2 PER CUSHION)	SQFT	\$ 15.00	634	\$ 9,504.00
Material Cost Subtotal					\$ 347,940.00
Mobilization			5%	\$	17,397.00
Traffic Control			5%	\$	17,397.00
Construction Cost Contingency			20%	\$	69,588.00
Utility Contingency			5%	\$	17,397.00
Drainage Contingency			5%	\$	17,397.00
Environmental Contingency			5%	\$	17,397.00
Subtotal				\$	156,573.00
Construction Cost Subtotal					\$ 504,513.00
Engineering and Design Costs			15%	\$	75,676.95
Construction Management			20%	\$	100,902.60
Subtotal				\$	176,579.55
Total Cost/Mile (2024 dollars)					\$ 681,092.55
Total Cost/Mile (2026 dollars)					\$ 779,782.86
Rounded Cost/Mile					\$ 780,000.00

Actual costs may vary based on project scope and current market conditions.
Caltrans maintains historical cost indices and forecast at:

MASTER UNIT + SOFT COSTS

City of St Helena Streets Master Plan
Per Mile Cost Opinion
Mar-26

The unit costs and soft costs/contingencies applied to all cost estimates can be found on this sheet. Unit costs are presented in Table 1, and soft costs/contingencies are in Table 2. These values can be updated, as needed.

Opinions of probable cost were developed by identifying major pay items and establishing rough quantities to determine a rough order of magnitude cost. Contingencies are included to cover items that are undefined or are typically unknown early in the planning phase of a project. Unit costs are based on 2024 dollars and were assigned based on historical cost data from the Caltrans Contract Cost Data. Cost opinions do not include easement and right-of-way acquisition; permitting; surveying, geotechnical investigation, environmental documentation, special site remediation, escalation, or the cost for ongoing maintenance. A general cost has been assigned to certain general categories such as utility relocations; however, these costs can vary widely depending on the exact details and nature of the work. The overall cost opinions are intended to be general and used only for planning purposes. TDG Engineering, Inc. makes no guarantees or warranties regarding the cost estimate herein. Construction costs will vary based on the ultimate project scope, actual site conditions and constraints, schedule, and economic conditions at the time of construction.

Table 1: Materials Unit Costs

CALTRANS ITEM NO.	CALTRANS ITEM DESCRIPTION	ITEM NOTES	UNIT	UNIT COST (2024)	UNIT COST DATA SOURCE
1	DEMOLITION	INCLUDES EXCAVATION, ALL CONCRETE REMOVAL, AND REPROFILING	CY	\$240.00	Caltrans Contract Cost Data
390132	HOT MIX ASPHALT (TYPE A)		TON	\$220.00	Caltrans Contract Cost Data
730010	MINOR CONCRETE (CURB)		LF	\$140.00	Caltrans Contract Cost Data
731504	MINOR CONCRETE (CURB AND GUTTER)		LF	\$160.00	Caltrans Contract Cost Data
731521	MINOR CONCRETE (SIDEWALK)		CY	\$830.00	Caltrans Contract Cost Data
731623	MINOR CONCRETE (CURB RAMP)	ASSUMING 1 CY PER UNIDIRECTIONAL CURB RAMP	CY	\$1,500.00	Caltrans Contract Cost Data
730070	DETECTABLE WARNING SURFACE		SQFT	\$60.00	Caltrans Contract Cost Data
250201	CLASS 2 AGGREGATE SUBBASE		CY	\$120.00	Caltrans Contract Cost Data
840519	THERMOPLASTIC CROSSWALK AND PAVEMENT MARKING	HIGH VISIBILITY CROSSWALK	SQFT	\$20.00	City of Glendale North Brand Blvd. Complete Streets Demonstration Project Bid Comparison
840505	6" THERMOPLASTIC TRAFFIC STRIPE (BROKEN YELLOW)	6" BROKEN YELLOW	LF	\$4.00	Caltrans Contract Cost Data
840505	6" THERMOPLASTIC TRAFFIC STRIPE (SOLID WHITE)	6" SOLID WHITE	LF	\$4.00	Caltrans Contract Cost Data
840530	6" THERMOPLASTIC TRAFFIC STRIPE (BROKEN 17-7)	DETAIL 8 (6" BROKEN WHITE LINE)	LF	\$4.00	Caltrans Contract Cost Data
840505	6" THERMOPLASTIC TRAFFIC STRIPE (DETAIL 28)	DETAIL 28 (6" SOLID DOUBLE YELLOW LINES)	LF	\$5.00	Caltrans Contract Cost Data
840505	6" THERMOPLASTIC TRAFFIC STRIPE (DETAIL 39)	DETAIL 39 (6" SOLID WHITE LINE)	LF	\$4.00	Caltrans Contract Cost Data
840507	6" THERMOPLASTIC TRAFFIC STRIPE (BROKEN 8-4)	DETAIL 39A (6" BROKEN WHITE LINE)	LF	\$4.00	Caltrans Contract Cost Data
840506	8" THERMOPLASTIC TRAFFIC STRIPE	DETAIL 38A (8" SOLID WHITE LINE)	LF	\$4.00	Caltrans Contract Cost Data
840555	12" THERMOPLASTIC TRAFFIC STRIPE	LIMIT LINE (12" SOLID WHITE LINE)	LF	\$4.00	Caltrans Contract Cost Data
840519	THERMOPLASTIC CROSSWALK AND PAVEMENT MARKING	HIGH VISIBILITY CROSSWALK	SQFT	\$15.00	Caltrans Contract Cost Data
840515	THERMOPLASTIC PAVEMENT MARKING		SQFT	\$15.00	Caltrans Contract Cost Data
846026	REMOVE PAVEMENT MARKING	REMOVE EXISTING PAVEMENT MARKING	SQFT	\$20.00	Caltrans Contract Cost Data
846030	REMOVE THERMOPLASTIC TRAFFIC STRIPE	REMOVE EXISTING THERMOPLASTIC TRAFFIC STRIPE	LF	\$3.00	Caltrans Contract Cost Data
	REMOVE PAVEMENT MARKINGS (THERMOPLASTIC)	REMOVE CROSSWALK	SQFT	\$3.00	https://dow.lacounty.gov/general/pds/pdf/RDC0016284.pdf
820840	ROADSIDE SIGN - ONE POST	R81A (BIKE LANE)	EA	\$500.00	Caltrans Contract Cost Data
820250	REMOVE ROADSIDE SIGN		EA	\$180.00	Caltrans Contract Cost Data
820590	RELOCATE ROADSIDE SIGN-ONE POST	TRAFFIC CIRCLE STOP SIGN RELOCATION	EA	\$285.00	Caltrans Contract Cost Data
	MODIFYING SIGNAL	LEADING PEDESTRIAN INTERVAL	LS	\$3,500.00	http://www.pedbikesafe.org/pedsafe/countermeasures_detail.cfm?CM_NUM=12

Table 2: Soft Costs and Contingencies

Contingency	Percentage
Engineering and Design Costs	15%
Mobilization	5%
Traffic Control	5%
Construction Management	20%
Construction Cost Contingency	20%
Utility Contingency	5%
Drainage Contingency	5%
Environmental Contingency	5%
Escalation to 2026 dollars	7%

Soft Costs and Contingencies

As applicable, contingencies for construction, environmental impacts, drainage, utilities, and design are assumed. Contingencies that vary facility type to facility type are based upon our experience with the complexities of implementing them.

870111	INDUCTIVE LOOP DETECTOR	BIKE DETECTION LOOPS	EA	\$1,800.00	La Crescenta Bid Comparison
810170	DELINEATOR (CLASS 1)	BOLLARD (K-71)	EA	\$360.00	La Crescenta Bid Comparison
780433	PAINT CURB (2-COAT)	RED CURB	LF	\$8.00	Caltrans Contract Cost Data
2	SEGMENTAL DIVIDERS	ZEBRA BIKE LANE DIVIDERS / ARMADILLOS	EA	\$80.00	https://mtc.ca.gov/sites/default/files/MTC_Crossroad_Lab_Quick_Build_04092020.pdf
3	GREEN THERMOPLASTIC PAINT	CONFLICT MARKINGS	SQFT	\$19.50	Bid Comparison San Fernando Beautification
4	INSTALL CONCRETE K-RAIL		LF	\$65.00	City of Glendale North Brand Blvd. Complete Streets Demonstration Project Bid Comparison
5	SPEED HUMP		EA	\$7,000.00	https://lacity.primegov.com/meeting/attachment/406211.pdf?name=Report%20from%20Los%20Angeles%20Department%20of%20Transportation%20dated%203-31-22
8	TRAFFIC CIRCLE	INCLUDES LANDSCAPE, NO RAMPS.	EA	\$100,000.00	AHSC Round 7 Public Works_Transportation Unit Cost Estimates
820860	INSTALL SIGN (STRAP AND SADDLE BRACKET METHOD)	W13-1P (ADVISORY SPEED PLAQUE UNDER SPEED CUSHION SIGN)	EA	\$370.00	Bid Comparison San Fernando Beautification
9	CURB EXTENSIONS		EA	\$55,000.00	AHSC Round 7 Public Works_Transportation Unit Cost Estimates
398200	COLD PLANE ASPHALT CONCRETE PAVEMENT		SQYD	\$25.00	Caltrans Contract Cost Data
10	TRAFFIC SIGNAL MODIFICATION		EA	\$30,000.00	AHSC Round 7 Public Works_Transportation Unit Cost Estimates
11	PRECAST CONCRETE BUFFER		LF	\$75.00	
12	LANDSCAPE		SF	\$15.00	

THE BELOW COSTS ARE FOR THE PROPOSED CROSSING IMPROVEMENTS

HIGH-VISIBILITY CROSSWALK	40' LONG, 10' WIDE	EA	\$3,000.00	
SIGNS	W13-1P (ADVISORY SPEED PLAQUE UNDER SPEED CUSHION SIGN)	EA	\$370	
RRFB		EA	\$15,000.00	
CURB EXTENSIONS	350 SF at 6" depth	EA	\$5,400.00	Caltrans Contract Cost Data for Minor Concrete (Sidewalk)
CURB RAMPS	ASSUMING 1 CY PER UNIDIRECTIONAL CURB RAMP	EA	\$1,500.00	Caltrans Contract Cost Data
SEGMENTAL DIVIDER	ZEBRA BIKE LANE DIVIDERS / ARMADILLOS	EA	\$80	https://mtc.ca.gov/sites/default/files/MTC_Crossroad_Lab_Quick_Build_04092020.pdf
SPEED HUMP		EA	\$7,000	https://mtc.ca.gov/sites/default/files/MTC_Crossroad_Lab_Quick_Build_04092020.pdf

Cost Data Sources

Cost data was pulled from recent bid items per the Caltrans Contract Cost Database, and City of Glendale North Brand Blvd. Complete Streets Demonstration Project Bid Comparison (11/02/2023)

Cells of this color do not have a Caltrans Item Number

St Helena Streets Master Plan

Appendix E

Project Cost Opinions



Preliminary Opinion of Probable Cost

City of St. Helena
St. Helena Streets Master Plan
October 2025
Spring Street

DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
Roadway Excavation	500	CY	\$300.00	\$150,000
Cold Plane Asphalt Concrete Pavement	13400	SY	\$25.00	\$335,000
Hot Mix Asphalt (Type A)	2244	TON	\$300.00	\$673,333
Minor Concrete (Sidewalk)	220	CY	\$830.00	\$182,600
Class 2 Aggregate Base	590	CY	\$120.00	\$70,767
Curb Ramps	32	EA	\$1,500.00	\$48,000
Detectable Warning Surface	320	SF	\$60.00	\$19,200
Minor Concrete (Curb and Gutter)	3620	LF	\$180.00	\$651,600
Speed Humps	6	EA	\$7,000.00	\$42,000
Pavement Markings Symbols	48	SF	\$15.00	\$720
24" Pavement Markings Crosswalks	5880	SF	\$20.00	\$117,600
12" Thermoplastic Traffic Stripe	260	LF	\$4.00	\$1,040
6" Thermoplastic Traffic Stripe (White)	5720	LF	\$5.00	\$28,600
6" Thermoplastic Double Yellow Line	2720	LF	\$5.00	\$13,600
Street Trees	34	EA	\$200.00	\$6,760
Landscape	5408	SF	\$15.00	\$81,120
Traffic Signs & Posts	1	LS	\$7,500.00	\$7,500
Drainage and Utility Modifications/Adjustments (15%)	1	LS	\$364,416.11	\$364,416
Mobilization (5%)	1	LS	\$139,692.84	\$139,693
Maintenance of Traffic (5%)	1	LS	\$139,692.84	\$139,693
Erosion and Sediment Control (2%)	1	LS	\$55,877.14	\$55,877
SUBTOTAL =				\$3,129,120
CONTINGENCIES				
15% ENGINEERING AND DESIGN COSTS =				\$469,368
20% CONSTRUCTION MANAGEMENT =				\$625,824
35% CONTINGENCY =				\$1,095,192
TOTAL =				\$5,319,503

General Assumptions and Exclusions:

- Unit prices are based on Caltrans District 4 Contract Cost Data, using the most recent available data from this time period.
- The opinion does not include environmental permitting, easement, or property acquisition.
- The opinion does not include construction administration and inspection services.
- The opinion does not include public outreach, funding planning, or client management services.
- The Drainage and Utility Modifications lump sum unit price assumes: 15% cost of project.
- This cost opinion was developed in October 2025. The latest National Highway Construction Cost index for Q1 2025 is 3.167
- The ENR Construction Cost Index at the time of this estimate is 15,459

Opinions of probable costs were developed by identifying major pay items and establishing rough quantities to determine a rough order of magnitude cost. Additional pay items have been assigned approximate lump sum prices based on a percentage of the anticipated construction cost. Planning-level cost opinions include a 35% contingency to cover items that are undefined or are typically unknown early in the planning phase of a project. Unit costs are based on 2025 dollars and were assigned based on historical cost data from Caltrans Contract District 4 Cost Data. Cost opinions do not include easement and right-of-way acquisition; permitting, inspection, or construction management; engineering, surveying, geotechnical investigation, environmental documentation, special site remediation, escalation, or the cost for ongoing maintenance. A cost range has been assigned to certain general categories such as utility relocations; however, these costs can vary widely depending on the exact details and nature of the work. The overall cost opinions are intended to be general and used only for planning purposes. Toole Design Group, LLC makes no guarantees or warranties regarding the cost estimate herein. Construction costs will vary based on the ultimate project scope, actual site conditions and constraints, schedule, and economic conditions at the time of construction.

Preliminary Opinion of Probable Cost

City of St. Helena
St. Helena Streets Master Plan
October 2025
Adams Street

DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
Clearing & Grubbing	1	LS	\$340,000.00	\$340,000
Hot Mix Asphalt	903	TON	\$300.00	\$270,904
Class 2 Aggregate Base	1548	CY	\$120.00	\$185,724
Minor Concrete (Sidewalk)	140	SY	\$830.00	\$116,200
Curb Ramps	11	EA	\$1,500.00	\$16,500
Detectable Warning Surface	110	SF	\$60.00	\$6,600
Minor Concrete (Curb and Gutter)	0	LF	\$180.00	\$0
Pavement Markings Symbols	11	SF	\$15.00	\$165
24" Pavement Markings Crosswalks	840	SF	\$20.00	\$16,800
12" Thermoplastic Traffic Stripe	125	LF	\$20.00	\$2,500
6" Thermoplastic Traffic Stripe (Yellow)	2500	LF	\$5.00	\$12,500
6" Thermoplastic Traffic Stripe (White)	3500	LF	\$5.00	\$17,500
6" Thermoplastic Double Yellow Line	2500	LF	\$5.00	\$12,500
Midwest Guardrail System	2500	LF	\$60.00	\$150,000
Traffic Signal Modifications	1	LS	\$300,000.00	\$300,000
Street Lighting	1	LS	\$550,000.00	\$550,000
Misc Street Furniture (1%)	1	LS	\$19,978.94	\$19,979
Drainage and Utility Modifications/Adjustments (15%)	1	LS	\$299,684.08	\$299,684
Bridge and Levee Structure	1	LS	\$32,571,000.00	\$32,571,000
Mobilization (5%)	1	LS	\$99,894.69	\$99,895
Maintenance of Traffic (5%)	1	LS	\$99,894.69	\$99,895
Erosion and Sediment Control (2%)	1	LS	\$39,957.88	\$39,958
SUBTOTAL =				\$34,788,304
CONTINGENCIES				
15% ENGINEERING AND DESIGN COSTS =				\$5,218,246
20% CONSTRUCTION MANAGEMENT =				\$6,957,661
35% CONTINGENCY =				\$12,175,906
TOTAL =				\$59,140,117

See Nov 2025
Adams
Street bridge
costing for
more information

General Assumptions and Exclusions:

- Unit prices are based on Caltrans District 4 Contract Cost Data, using the most recent available data from this time period.
- The opinion does not include environmental permitting, easement, or property acquisition.
- The opinion does not include construction administration and inspection services.
- The opinion does not include public outreach, funding planning, or client management services.
- The Traffic Signal Modifications lump sum unit price assumes: New traffic signal infrastructure at Adams Street and Silverado Trail N.
- The New Drainage and Utility lump sum unit price assumes: 15% cost of project.
- The Street Lighting Adjustments lump sum unit price assumes: New streetlights every 100' O.C.
- This cost opinion was developed in October 2025. The latest National Highway Construction Cost index for Q1 2025 is 3.167
- The ENR Construction Cost Index at the time of this estimate is 15,459
- This estimate does not include right-of-way acquisition, building demolition, hazard remediation, permit and inspection fees, and testing
- This engineer's opinion is based on extending Adams Street from Starr Ave to Silverado Trail N including a bridge over the Napa River
- This engineer's opinion does not include any agency fees
- This engineer's opinion is for informational and planning purposes only. Accrual costs should be provided by a contractor
- This engineer's opinion does not include any landscaping or irrigation work

Opinions of probable costs were developed by identifying major pay items and establishing rough quantities to determine a rough order of magnitude cost. Additional pay items have been assigned approximate lump sum prices based on a percentage of the anticipated construction cost. Planning-level cost opinions include a 35% contingency to cover items that are undefined or are typically unknown early in the planning phase of a project. Unit costs are based on 2025 dollars and were assigned based on historical cost data from Caltrans Contract District 4 Cost Data. Cost opinions do not include easement and right-of-way acquisition; permitting, inspection, or construction management; engineering, surveying, geotechnical investigation, environmental documentation, special site remediation, escalation, or the cost for ongoing maintenance. A cost range has been assigned to certain general categories such as utility relocations; however, these costs can vary widely depending on the exact details and nature of the work. The overall cost opinions are intended to be general and used only for planning purposes. Toole Design Group, LLC makes no guarantees or warranties regarding the cost estimate herein. Construction costs will vary based on the ultimate project scope, actual site conditions and constraints, schedule, and economic conditions at the time of construction.



**Engineer's Preliminary Opinion of Probable
Construction Costs for
Adams Street Bridge Improvements**

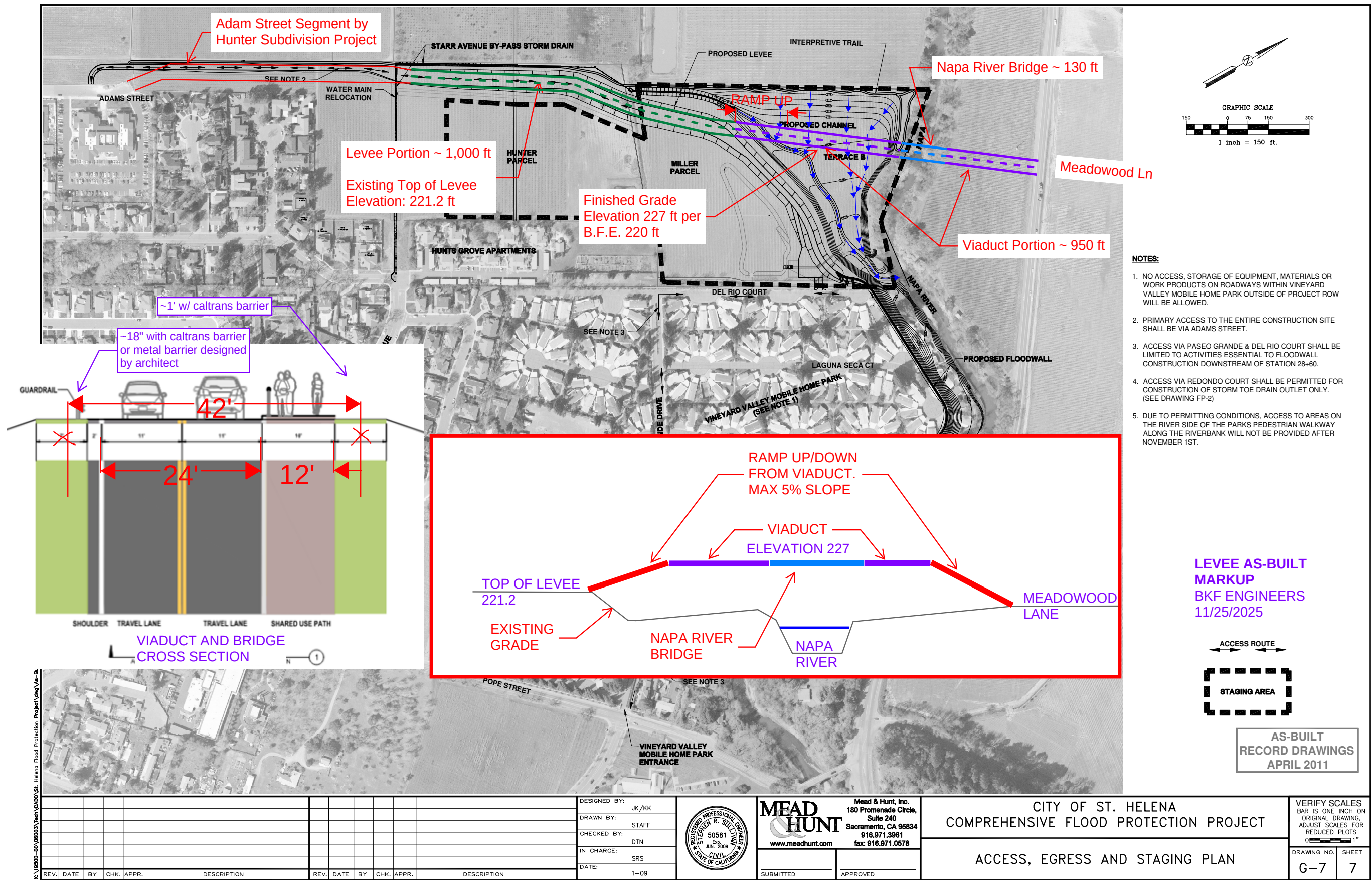
Redwood City
255 ShoreLine Drive, Suite 200
Redwood City, CA 94065
Tel: 650.482.6300
Fax: 650.482.6399

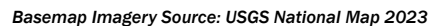
Date: 11/25/2025

Adams Street Extension

BKF Job #: 232531

ADAMS STREET EXTENSION CONSTRUCTION						
ITEM	DESCRIPTION	UNIT PRICE	QUANTITY	UNIT	TOTAL	NOTES
A. STRUCTURES						
1.	Viaduct (Flat slab on pile extensions)	\$700	39,900	SF	\$27,930,000	Quantity is based on a 42' width and 950' length.
2.	Napa River Clear Span (5' deep precast girder with 10" thick deck)	\$850	5,460	SF	\$4,641,000	Quantity is based on a 42' width and 130' length.
STRUCTURES SUB-TOTAL:					\$32,571,000	
1.	Contingency	30%	1	LS	\$9,772,000	
FINAL TOTAL:					\$42,343,000	
NOTES						
1.	This estimate does not include right-of-way acquisition, building demolition, hazard remediation, permit and inspection fees, and testing					
2.	This engineer's opinion is based on extending Adams Street from Starr Ave to Silverado Trail N including a bridge over the Napa River					
3.	This engineer's opinion does not include any agency fees					
4.	This engineer's opinion is for informational and planning purposes only. Actual costs should be provided by a contractor					
5.	This engineer's opinion does not include any lighting, landscaping, or irrigation work					
6.	Subcontractor mobilization and general contractor costs are excluded from this estimate					
7.	Unit costs for the viaduct and Napa River bridge were developed by reviewing the 2023 Caltrans Comparative Bridge Costs and consulting with Biggs Cardosa Structural Engineers.					
	Unit costs are informed by recent construction cost estimates on comparable projects and engineering judgement.					





SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **11/25/2025 at 11:56 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



TECHNICAL MEMORANDUM

Date: November 25, 2025

BKF Job Number: 20232531

Deliver To: Anju Palta
Toole Design – Transmitted Via Email: apalta@tooledesign.com

From: Patrick Connors, PE
Andy Snitovsky, PE
BKF Engineers, Redwood City, CA 94065

Subject: St. Helena Streets Master Plan – Adams Street Extension Levee Impact Review

This memorandum provides an overview of the proposed Adams Street roadway extension from the existing levee to Silverado Trail N. A proposed bridge and road through the flood plain are required for this roadway extension. Below is BKF's review including a street design summary, stormwater management, and geotechnical considerations.

OVERVIEW

The Adams Street extension is planned to extend from Starr Avenue to Silverado Trail N including a bridge across Napa River. The roadway coincides with a levee for about 1000 feet, before diverging to cross a Habitat Restoration Area and the Napa River until eventually reaching the Silverado Trail N and Meadwood Lane intersection. A diagram of the road extension is provided below for reference and in the attached markup.



BKF ENGINEERS

Redwood City Office: 255 Shoreline Drive, Suite 200, Redwood City, CA 94065 | 650.482.6300

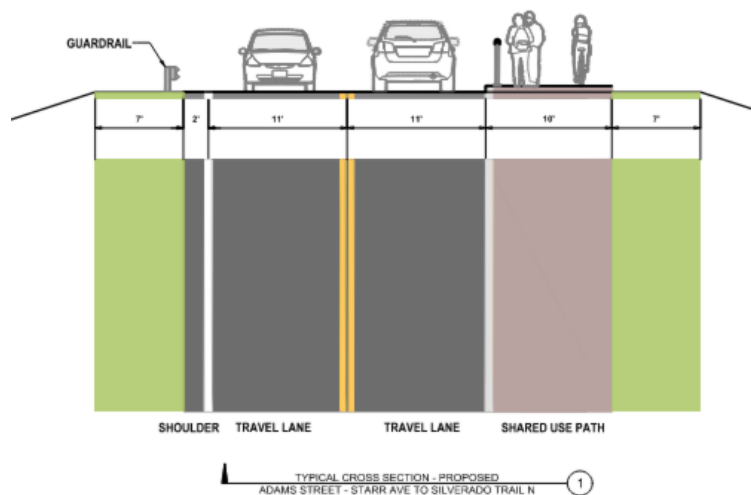
November 25, 2025

STREETSCAPE DESIGN

The of the crown on the levee is 48 feet wide, and the planned Adams Street cross-section is 44 feet which will sit on the crown with an additional 2' of existing levee on either side. The proposed roadway will consist of two 11' travel lanes, a 10' shared-use path, and two 6' shoulders. Guardrails are expected on either side of the travel lanes since the existing levee slopes are steeper than 4:1.

Below is a June 2025 version of the Proposed Typical Cross Section from the "Adams Street Conceptual Plan". To match the above plan, the following updates are required:

- The curb and gutter along the shared use path will be removed and the path will be placed at-grade with the travel lanes to allow stormwater sheet flow off the side of the levee
- The right-side guardrail will be placed between the shared use path and the travel lane to protect the shared-use path from adjacent traffic
- The right-side shoulder will remain to the right of the shared use path



Where the street crosses bridge structures, the cross-section would look similar to the one above consisting of:

- Two 12' Travel Lanes
 - One 12' Shared Use Path
 - Two 3' Shoulders with Sidewalls/Guardrails
- 42' Total Structure Width

The existing top of levee elevation is 221.2 per record drawings, which is approximately 1.2' above the FEMA base flood elevation on the outboard side of the levee. We anticipate that the top of roadway elevation would need to be set at approximately elevation 227 to allow for adequate structure depth and freeboard to the existing FEMA base flood elevation. An embankment should be considered where the viaduct structure connects to the top of levee and to the Silverado Trail/Meadwood intersection. The extent of the embankment should be minimized to avoid displacement of floodwaters. This



November 25, 2025

embankment would serve as a transition to the viaduct structure and also allow for the roadway to start sloping up to achieve the required top of roadway structure elevation.

Hydrologic and Hydraulic study would be needed to determine allowable extent of embankment and required drainage measures to be implemented such as culverts.

STORMWATER MANAGEMENT

Under California's Municipal Regional Stormwater Permit, provision C.3 requires stormwater runoff management for roadway projects that produce over 10,000 square feet in impervious surface [Provisions C.3.b.ii.(4)]. C.3 recommends a design strategy of directing runoff from sidewalks, walkways, driveways, and parking lots to vegetated areas [Provisions C.3.c.i.(2)(a)(v)] and that 100% of the amount of runoff identified by Provisions C.3.d be treated via LID, including infiltration, evapotranspiration, and biotreatment measures [Provisions C.3.c.i.(2)(b)].

The surroundings of the levee can be used as an LID self-retaining area, meaning stormwater could be conveyed off the paved areas directly via sheet flow. This should be facilitated by grading impervious surfaces to pervious surfaces at a maximum ratio of 2:1. Flowlines in this area and under the viaduct can be viewed on the attached markup.

Addition of the paved roadway atop the levee will create new impervious surface and result in an incremental increase in stormwater runoff. The rate of runoff should be reviewed to verify that the existing detention basin and pump station on the inboard side of the levee have adequate capacity for the additional runoff.

OTHER CONSIDERATIONS

Other items include geotechnical and environmental design considerations:

- The existing top of levee elevations should be maintained when building the new roadway to avoid compromising the FEMA accreditation for the levee.
- Due to asphalt concrete pavement being heavier than existing natural soil, geotechnical review will need to be completed to determine if settlement will become a concern with the additional weight. Vehicular loading (live load) should also be evaluated and added to the dead load of the pavement section. One method to compensate for settlement may be to raise grades for the proposed roadway.
- Where the roadway diverges from the top of the levee and extends toward the Napa River, a viaduct structure is anticipated to be constructed. This structure would pass through a Habitat Restoration area which is permanently preserved by a conservation agreement under the Land Trust of Napa County. Environmental permitting specialists should be consulted to advise on the implications of constructing a roadway structure through this area. A roadway alignment west of the Habitat Restoration area may be considered to avoid the area.

ATTACHMENTS

1. Levee As-Built Markup, by BKF Engineers
2. National Flood Hazard Layer FEMA FIRMETTE
3. Adams Street Cost Estimate for Viaduct and Bridge, by BKF Engineers



November 25, 2025

SITE VISIT PHOTOS



Figure 1. View from top of levee looking back toward Starr Avenue



Figure 2. View from top of levee looking toward Napa River/Silverado Trail



November 25, 2025



Figure 3. Habitat restoration area signage

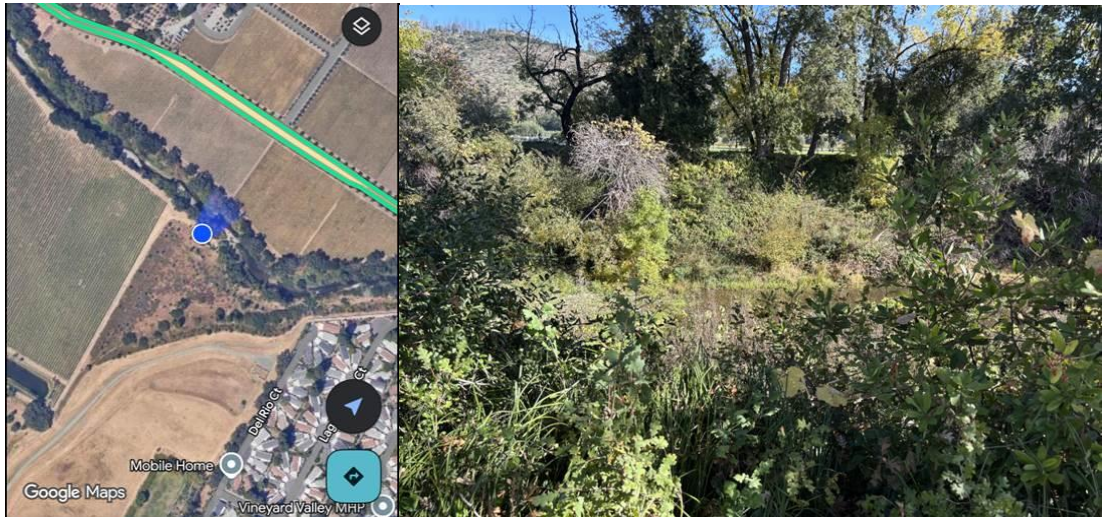


Figure 4. Looking across Napa River at approximate bridge location

November 25, 2025



Figure 5 Habitat restoration area looking back towards levee from Napa River





**Engineer's Preliminary Opinion of Probable
Construction Costs for
Oak Avenue Improvements**

Redwood City
255 Shoreline Drive, Suite 200
Redwood City, CA 94065
Tel: 650.482.6300
Fax: 650.482.6399

Date: 1/16/2026

Oak Avenue Extension

BKF Job #: 232531

OAK AVENUE EXTENSION CONSTRUCTION

ITEM	DESCRIPTION	UNIT COST ¹ 2001	ESCALATED ³ UNIT COST 2025	BKF SUGGESTED UNIT COST 2025	QUANTITY ¹	UNIT	TOTAL 2001	ESCALATED TOTAL 2025	BKF SUGGESTED TOTAL 2025	NOTES
A. SEGMENT 1: MITCHELL DRIVE TO CHARTER OAK AVENUE										
1.	Earthwork: Cut	\$5	\$20	\$40	575	CY	\$2,875	\$11,500	\$23,000	
2.	Earthwork: Fill	\$15	\$58	\$60	2,873	CY	\$43,095	\$167,000	\$173,000	
3.	Roadway: 40' Asphalt Pavement	\$2	\$6	\$6	25,795	SF	\$38,693	\$155,000	\$155,000	
4.	Roadway: 1.50' Aggregate Base	\$3	\$12	\$15	25,795	SF	\$77,385	\$310,000	\$387,000	
5.	Roadway: Curb and Gutter	\$15	\$58	\$75	1,302	LF	\$19,530	\$76,000	\$98,000	
6.	Roadway: Sidewalk	\$5	\$20	\$25	7,660	SF	\$38,300	\$154,000	\$192,000	
7.	Roadway: Planter Strip	\$4	\$16	\$25	4,864	SF	\$19,456	\$78,000	\$122,000	
8.	Utilities: 10" Water	\$70	\$269	\$350	843	LF	\$59,010	\$227,000	\$296,000	
9.	Utilities: 6" Reclaimed Water	\$60	\$231	\$300	843	LF	\$50,580	\$195,000	\$253,000	
10.	Utilities: Street Lights	\$15	\$58	\$530	733	LF	\$10,995	\$43,000	\$389,000	Assuming a street light every 30' on both sides of the street.
11.	Structures: Bridge over Sulphur Creek	\$2,750,000	\$10,562,050	\$20,000,000	1	EA	\$2,750,000	\$10,563,000	\$20,000,000	Assumes supports mid-span. Unit cost is based on 60' width, 400' length and approximately \$850/SF.
12.	Traffic Control: Signing and Striping	\$7,660	\$29,421	\$75,000	1	LS	\$7,660	\$30,000	\$75,000	
13.	Street Monumentation	\$1,499	\$5,759	\$25,000	1	LS	\$1,499	\$6,000	\$25,000	
14.	Erosion Control	\$14,077	\$54,066	\$90,000	1	LS	\$14,077	\$55,000	\$90,000	
15.	Clearing and Grubbing	3%	3%	3%	1	LS	\$93,995	\$363,000	\$669,000	
16.	Mobilization	10%	10%	10%	1	LS	\$313,315	\$1,208,000	\$2,228,000	
17.	Right-of-Way Acquisition	-	-	-	1	LS	\$2,389,240	\$2,389,240	\$2,389,240	See note 4
SEGMENT 1 SUBTOTAL:							\$5,929,705	\$16,030,740	\$27,564,240	
Contingency		35%	35%	35%	1	LS	\$2,075,397	\$5,610,759	\$9,647,484	
SEGMENT 1 TOTAL:							\$8,005,102	\$21,641,499	\$37,211,724	
B. SEGMENT 2: CHARTER OAK AVENUE TO GRAYSON AVENUE										
1.	Earthwork: Cut	\$5	\$20	\$40	925	CY	\$4,625	\$18,500	\$37,000	
2.	Earthwork: Fill	\$15	\$58	\$60	4,627	CY	\$69,405	\$269,000	\$278,000	
3.	Roadway: 40' Asphalt Pavement	\$2	\$6	\$6	41,555	SF	\$62,333	\$250,000	\$250,000	
4.	Roadway: 1.50' Aggregate Base	\$3	\$12	\$15	41,555	SF	\$124,665	\$499,000	\$624,000	
5.	Roadway: Curb and Gutter	\$15	\$58	\$75	2,098	LF	\$31,470	\$122,000	\$158,000	
6.	Roadway: Sidewalk	\$5	\$20	\$25	12,340	SF	\$61,700	\$247,000	\$309,000	
7.	Roadway: Planter Strip	\$4	\$16	\$25	7,836	SF	\$31,344	\$126,000	\$196,000	
8.	Utilities: 24" RCP Storm Drain	\$75	\$289	\$375	1,400	LF	\$105,000	\$405,000	\$525,000	
9.	Utilities: 10" Water	\$70	\$269	\$350	1,357	LF	\$94,990	\$366,000	\$475,000	
10.	Utilities: 12" Sewer	\$70	\$269	\$400	1,350	LF	\$94,500	\$364,000	\$540,000	
11.	Utilities: 6" Reclaimed Water	\$60	\$231	\$300	1,357	LF	\$81,420	\$314,000	\$408,000	
12.	Utilities: Joint Trench	\$130	\$500	\$600	2,200	LF	\$286,000	\$1,100,000	\$1,320,000	
13.	Utilities: Street Lights	\$15	\$58	\$530	1,467	LF	\$22,005	\$86,000	\$778,000	
14.	Traffic Control: Signing and Striping	\$12,340	\$47,395	\$75,000	1	LS	\$12,340	\$48,000	\$75,000	
15.	Street Monumentation	\$3,001	\$11,525	\$25,000	1	LS	\$3,001	\$12,000	\$25,000	
16.	Erosion Control	\$26,173	\$108,206	\$75,000	1	LS	\$26,173	\$109,000	\$75,000	
17.	Clearing and Grubbing	3%	3%	3%	1	LS	\$33,389	\$131,000	\$183,000	
17.	Mobilization	10%	10%	10%	1	LS	\$111,297	\$434,000	\$608,000	
18.	Right-of-Way Acquisition	-	-	-	1	LS	\$4,530,540	\$4,530,540	\$4,530,540	See note 4
SEGMENT 2 SUBTOTAL:							\$5,788,196	\$9,431,040	\$11,394,540	
Contingency		35%	35%	35%	1	LS	\$2,025,869	\$3,300,864	\$3,988,089	
SEGMENT 2 TOTAL:							\$7,814,065	\$12,731,904	\$15,382,629	
FINAL TOTAL:							\$15,819,167	\$34,373,403	\$52,594,353	
NOTES										
1.	Quantities and 2001 cost estimates are sourced from Highway 29 Corridor Specific Plan Conceptual Design Cost Estimate sheet dated Feb 28, 2001									
2.	This estimate does not include building demolition, hazard remediation, permit and inspection fees, and testing									
3.	2025 ENR unit costs are calculated from the 2001 costs multiplied by ENR CCI escalation rate of 3.84 (for ENR Rate column)									
4.	Right-of-way acquisition costs are based on an estimate provided by Toole Design dated December 2025.									

December 22, 2025
Toole Design and Economic & Planning Systems (EPS)
St. Helena Streets Master Plan

Re: Oak Avenue Extension Acquisition Estimate

Parcel number	Current Land Use	Zoning District	Est. acreage needed	Est. cost per acre	Est. cost	Feasibility notes
Segment 1: Mitchell Drive to Charter Oak Ave						
009-263-005-000	Vacant	Public/Quasi-Public	0.21	\$0	\$0	No assessed value; public land.
009-263-014-000	Vacant commercial with misc. improvements	Mixed Use	0.23	\$2,254,000	\$518,420	Alignment doesn't appear to intersect with existing structures. Est. acreage assumes alignment only.
009-263-007-000	Motel - B&B	Mixed Use	0.39	\$2,254,000	\$879,060	Alignment might be able to route around existing structure. Est. acreage assumes more land than alignment is needed to render viable parcels.
009-180-036-000	Commercial improved	Industrial	0.34	\$2,254,000	\$766,360	Alignment doesn't appear to intersect with existing structures. Est. acreage assumes alignment only.
009-180-039-000	Commercial improved	Industrial	0.1	\$2,254,000	\$225,400	Alignment doesn't appear to intersect with existing structures. Est. acreage assumes alignment only.
TOTAL SEGMENT 1			1.27		\$2,389,240	
Segment 2: Charter Oak Avenue to Grayson Avenue						
009-180-035-000	Retail	Service Commercial	0.36	\$2,254,000	\$811,440	Alignment doesn't appear to intersect with existing structures. Est. acreage assumes alignment only.
009-180-040-000	Commercial improved	Mixed-Use	0.19	\$2,254,000	\$428,260	Clif Family Winery lot; alignment appears to intentionally avoid intersecting with Enoteca building. Est. acreage assumes alignment only.
009-180-041-000	Commercial improved	Mixed-Use	0.94	\$2,254,000	\$2,118,760	Alignment doesn't appear to intersect with existing structures. Est. acreage assumes more land than alignment is needed to render viable parcels.
009-180-027-000	Single-Family Residential	High-Density Residential	0.52	\$2,254,000	\$1,172,080	Alignment intersects with existing structures. Est. acreage assumes entire parcel is needed.
TOTAL SEGMENT 2			2.01		\$4,530,540	

ASSUMPTIONS

1. Assumed land values on a per-acre basis are informed by the Economic & Planning Systems (EPS) analysis memorandum delivered on December 17, 2025, and are used as inputs for planning-level cost estimation rather than site-specific appraisals.
2. The assumed right-of-way (ROW) width of 60 feet reflects the conceptual design identified in the 2001 Highway 29 Specific Plan and is used as a consistent planning assumption for estimating potential acquisition needs.
3. Where the proposed alignment is anticipated to divide a parcel such that the remaining portion would likely not support development or economically viable use, the estimate assumes acquisition of both the ROW area and the additional remainder area that is presumed to be unviable for development.
4. Where the alignment is not expected to impair the parcel's ability to support reasonable economic use, the acquisition estimate assumes only the land area within the conceptual 60-foot ROW, calculated based on the length of the alignment through the parcel.
5. Judgments regarding the potential viability of remainder parcels are made at a conceptual, planning level for the purpose of estimating costs only and do not constitute legal determinations.
6. Land values reflect prevailing market conditions for broadly comparable properties in St. Helena at the time of analysis and are presented in current (non-inflated) dollars.
7. The acquisition estimate includes land acquisition only and excludes improvements, relocation assistance, utility relocation, environmental mitigation, legal costs, and construction-related expenses.



**Economic & Planning
Systems, Inc.**
The Economics of Land Use

OAKLAND
SACRAMENTO
LOS ANGELES
DENVER

Memorandum

To: Anjulie Palta, Toole Design Group

From: Jason Moody and Rosanna Ren, Economic & Planning Systems

Subject: St. Helena Right-of-Way Land Acquisition Cost Estimates
EPS #251075

Date: December 17, 2025

This memorandum summarizes the methodology and resulting estimates for right-of-way land acquisition costs needed for the Oak Avenue extension project proposed in the St. Helena Streets Master Plan. The analysis has been prepared by Economic & Planning Systems (EPS) as part of a consultant team led by Toole Design Group and retained by the City of St. Helena to prepare the Streets Master Plan.

The proposed Oak Avenue extension improvements included in the Plan would connect Mitchell Drive to Grayson Avenue, running parallel to Highway 29, and require the acquisition of several largely undeveloped land parcels. EPS estimated the likely land acquisition costs based on readily available data of comparable sales in the region. The information is designed to support the planning process and does not constitute a formal appraisal for any specific site.

Summary of Results

Table 1 below summarizes the sites used as comparables for the cost estimate and their approximate land sale value in 2025 dollars. On average, land value is estimated at **\$2,254,000 per acre**, with a likely range of **\$2.1 million to \$2.4 million per acre**. The estimates are based on 33 land sale comparables going back to 2020 but have been adjusted for inflation and are reported in 2025 dollars.

Table 1 Summary of CoStar and City Land Appraisal Comparables and Average Land Sale Value

Land Use Description	Number of Sites	Location	Est. Land Sale Price per Acre (2025\$) ¹
CoStar Averages of Prior Land Sales in St. Helena (2020-2025)			
Agricultural	19 sites	St. Helena	\$2,363,000
Commercial	4 sites	St. Helena	\$313,000
Residential	3 sites	St. Helena	\$2,061,000
Average of All Costar Sites	26 sites	St. Helena	\$2,013,000
Comparables from City Land Appraisals²			
Commercial ^{3,4}		St. Helena	\$3,289,000
Commercial ⁴		Napa	\$2,798,000
Commercial ³		Napa	\$3,383,000
Commercial ^{3,4}		Healdsburg	\$2,593,000
Commercial ^{3,4}		Yountville	\$3,516,000
Commercial ³		Napa	\$4,168,000
Residential ⁴		St. Helena	\$2,293,000
Average of City Land Appraisals			\$3,149,000
Combined Average of Costar and City Appraisal Comparables			
Agricultural	19 sites		\$2,363,000
Commercial	10 sites		\$2,100,000
Residential	4 sites		\$2,119,000
Average of All Comparables	33 sites		\$2,254,000

[1] Removes the cost of improvements, if any, based on the proportion of improvements in the parcel's assessed value. All sale data are presented on a per-acre basis and adjusted to 2025 dollars based on the BLS Consumer Price Index. Values are rounded to nearest thousand.

[2] Sale comparables for city land appraisals included eight unique sites. EPS removed one outlier site, valued at \$12.7 million per acre.

[3] Comparable was cited in appraisal report of the St. Helena Police Station and City Hall (1480 Main St), which estimated the value at \$4,950,000, or \$6,973,000 per acre in 2025 dollars.

[4] Comparable was cited in appraisal report of vacant commercially zoned Adams St/Library Ln site, which estimated the value at \$18,300,000, or \$3,448,000 per acre in 2025 dollars.

Source: Bureau of Labor Statistics; City of St. Helena; CoStar Group; Economic & Planning Systems

Data Sources and Methodology

EPS evaluated property sales data from available data sources to estimate the likely “arms-length” purchase price to acquire the necessary right-of-way for the Oak Avenue extension project. Based on the City’s zoning map, the proposed Oak Avenue extension runs through land zoned High-Density Residential, Service Commercial, Public/Quasi-Public, Industrial, and Mixed-Use. As a result, EPS considered property sales covering agricultural, commercial (including mixed-use), and residential land uses, from the following sources:

- **CoStar Data:** EPS reviewed property sales from the CoStar Group, a subscription-based commercial real estate database covering both residential and commercial transactions. CoStar identified 26 land sale transactions in St. Helena from 2020 to 2025.
- **Recently Completed Appraisal Reports:** The City provided EPS with two land appraisal reports, which included a sample of six comparable sales in Sonoma County and Napa County.¹

To ensure “apples-to-apples” comparison of land sales of different sizes and across different years, EPS converted all sale prices to 2025 dollars (adjusted using the Consumer Price Index) and presented values on a per-acre basis. Recognizing that several of the transactions included sites with structural improvements that likely affected the sale value, EPS made further adjustments to estimate the portion of the sale price that accounts for the land value only. This was estimated using assessed value data from the Napa County Assessor’s Office, by taking the percentage of the AV that is the land value for each parcel and applying it to the sale price.

¹ EPS removed two additional sites from analysis: One outlier which estimated a land value of \$12.7 million per acre and another site for which assessed value data was not available.

St Helena Streets Master Plan

Appendix F

Synchro Analysis for Key Extension and Bridge Projects



Fehr & Peers

Memorandum

Date: March 2, 2026

To: Anju Palta, Toole Design Group

From: Ian Barnes, PE, and Gillian Zhao, Fehr & Peers

Subject: Saint Helena Streets Master Plan Roadway Project Alternatives Analysis

Executive Summary

This technical memorandum presents the transportation operations analysis for the proposed roadway project alternatives (hereafter referred to as “study alternatives”) under the Saint Helena Streets Master Plan. The Streets Master Plan project team considered three roadway project alternatives for transportation operations analysis. The goal is to reduce congestion along State Route 29/State Route 128/Main Street (hereafter referred to as “Main Street”), provide additional connections within the City, and support the other goals of the Streets Master Plan. The additional connections will enhance emergency response by providing additional access routes and adding redundancy for emergency vehicle routing. The dispersal of motor vehicle volumes will improve the multimodal environment and provide a more comfortable experience for all users. The roadway project alternatives will incorporate traffic calming measures and signage to reinforce the intended functions of the new connections per the Streets Master Plan.

The study alternatives include the following:

- Adams Street extension from its current eastern terminus at 899 Adams Street to Silverado Trail via a new bridge over the Napa River
- Oak Avenue extension between Mitchell Drive and either Grayson Avenue or Charter Oak Avenue (two southern terminus options), including a new bridge over Sulphur Creek
- Pope Street Bridge improvements across the Napa River, which also includes realignment of Pope Street to meet Silverado Trail and Howell Mountain Road at a single intersection

Fehr & Peers performed operations analysis using the Synchro 12 software, which considers traffic volumes, lane configurations, signal timings, and other pertinent design, traffic volume, and operational parameters contributing to intersection operations. Study intersections were analyzed using procedures and methodologies contained in the *Highway Capacity Manual*, 7th Edition (Transportation Research Board, 2022). Intersection operations Levels of Service (LOS) during the weekday morning (AM), weekday evening (PM), and weekend midday (MD) peak hours were evaluated to assess each study alternative’s effect on intersection operations across the City. More detailed information is presented in the **Procedures and Methodologies** section.

Results show that, as the new street connections and improvements provide alternative routes for travelers, providing varying levels of congestion reductions on Main Street and throughout the City.

Among the alternatives, the Oak Avenue extension (Grayson Avenue terminus) alternative offers the greatest benefit in traffic operations, followed by the Adams Street extension alternative and Oak Avenue extension (Charter Oak Avenue terminus) alternative as they offer similar congestion reduction benefits. The Pope Street Bridge improvement alternative provides more modest benefits along Main Street. **Table 1** is organized into two parts that summarize the LOS results at key intersections. **Table 1A** presents the LOS results under Existing Conditions, Cumulative No Project, Adams Street Extension Alternative and Pope Street Bridge Improvement Alternative. **Table 1B** summarizes the LOS results under Oak Avenue Extension Alternative (Grayson Avenue terminus) and Oak Avenue Extension Alternative (Charter Oak Avenue terminus).

Table 1A. Intersection LOS at Key Intersections

Int. ID	Intersection	Existing Traffic Control	Peak Hour	Existing Conditions		Cumulative Conditions					
				No Project		No Project		Adams Street Extension		Pope Street Bridge Improvement	
				Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
10	Main Street/Madrona Avenue-Fulton Lane	Signal	Weekday AM	18.0	B	49.0	D	49.0	D	49.0	D
			Weekday PM	14.4	B	25.3	C	25.3	C	25.3	C
			Weekend MD	33.5	C	33.6	C	25.4	C	33.6	C
12	Main Street/Adams Street	Signal	Weekday AM	22.5	C	35.2	D	38.1	D	35.2	D
			Weekday PM	23.6	C	34.3	C	44.1	D	34.3	C
			Weekend MD	41.9	D	59.2	E	41.1	D	59.2	E
18	Main Street/Pope Street-Mitchell Drive	Signal	Weekday AM	115.6	F	>120	F	71.7	E	>120	F
			Weekday PM	97.8	F	>120	F	75.6	E	>120	F
			Weekend MD	100.5	F	109.3	F	66.1	E	93.4	F
19	Main Street/Grayson Avenue	Signal	Weekday AM	37.6	D	68.5	E	48.9	D	65.0	E
			Weekday PM	19.6	B	52.9	D	42.4	D	50.8	D
			Weekend MD	23.4	C	28.7	C	19.8	B	25.5	C
26	Silverado Trail/Pope Street	SSSC*	Weekday AM	3.7 (18.8)	A (C)	9.6 (54.8)	A (F)	9.3 (66.7)	A (F)	38.2	D
			Weekday PM	3.3 (19.4)	A (C)	25.6 (>120)	D (F)	24.3 (>120)	C (F)	53.4	D
			Weekend MD	2.1 (14.3)	A (B)	2.9 (20.2)	A (C)	2.4 (23.4)	A (C)	23.4	C
28	Main Street/Charter Oak Avenue	SSSC	Weekday AM	5.3 (>120)	A (F)	36.4 (111.6)	E (F)	22.7 (71.0)	C (F)	33.7 (103.0)	D (F)
			Weekday PM	6.9 (119.2)	A (F)	48.4 (>120)	E (F)	33.8 (99.1)	D (F)	45.8 (>120)	E (F)
			Weekend MD	5.3 (89.3)	A (F)	19.0 (>120)	C (F)	10.7 (>120)	B (F)	17.8 (>120)	C (F)
34	Silverado Trail/Adams Street	Signal	Weekday AM	<i>Intersection Does Not Exist in this Scenario</i>		<i>Intersection Does Not Exist in this Scenario</i>		18.1	B	<i>Intersection Does Not Exist in this Scenario</i>	
			Weekday PM					17.9	B		
			Weekend MD					14.6	B		

Notes:

*Silverado Trail/Howell Mountain Road-Pope Street has been modeled as one signalized intersection under the Pope Street Bridge Improvement Alternative Scenario as an operational improvement. The county may also consider converting this intersection to a roundabout as described in the Napa County General Plan.

1. Delay for signalized and all-way stop-controlled intersections presented as whole-intersection average delay. Delay for side-street stop-controlled intersections presented as whole-intersection average delay (delay on worst movement or single-lane approach).
2. LOS per *Highway Capacity Manual*, 7th Edition.
3. **Bold** indicates unacceptable operations.
4. AWSC = All-Way Stop-Controlled, SSSC = Side-Street Stop-Controlled.
5. Oak Avenue Extension LOS results presented in **Table 1B**.

Source: Fehr & Peers, 2026.

Table 1B. Intersection LOS at Key Intersections (Oak Avenue Extension)

Int. ID	Intersection	Existing Traffic Control	Peak Hour	Cumulative Conditions			
				Oak Avenue Extension			
				Grayson Avenue Terminus		Charter Oak Avenue Terminus	
				Delay (s)	LOS	Delay (s)	LOS
10	Main Street/Madrona Avenue–Fulton Lane	Signal	Weekday AM	54.0	D	57.1	E
			Weekday PM	34.8	C	34.5	C
			Weekend MD	27.5	C	27.5	C
12	Main Street/Adams Street	Signal	Weekday AM	35.3	D	35.8	D
			Weekday PM	37.2	D	37.7	D
			Weekend MD	37.6	D	37.6	D
18	Main Street/Pope Street–Mitchell Drive	Signal	Weekday AM	63.5	E	81.3	F
			Weekday PM	68.9	E	78.7	E
			Weekend MD	63.6	E	68.9	E
19	Main Street/Grayson Avenue	Signal	Weekday AM	38.6	D	71.9	E
			Weekday PM	43.0	D	55.6	E
			Weekend MD	24.3	C	29.3	C
26	Silverado Trail/Pope Street	SSSC	Weekday AM	9.6 (54.8)	A (F)	9.6 (54.8)	A (F)
			Weekday PM	25.6 (>120)	D (F)	25.6 (>120)	D (F)
			Weekend MD	2.9 (20.2)	A (C)	2.9 (20.2)	A (C)
28	Main Street/Charter Oak Avenue	SSSC**	Weekday AM	16.7 (56.3)	C (F)	31.1	C
			Weekday PM	27.0 (78.2)	D (F)	29.8	C
			Weekend MD	11.3 (>120)	B (F)	27.6	C
35	Oak Avenue/Grayson Avenue	SSSC	Weekday AM	4.9 (13.2)	A (B)	Intersection Does Not Exist in this Scenario	
			Weekday PM	3.8 (11.7)	A (B)		
			Weekend MD	3.7 (9.9)	A (A)		
36	Oak Avenue/Charter Oak Avenue	SSSC	Weekday AM	3.7 (12.7)	A (B)	4.0 (10.2)	A (B)
			Weekday PM	4.0 (12.0)	A (B)	3.6 (9.9)	A (A)
			Weekend MD	5.1 (11.3)	A (B)	3.5 (10.0)	A (A)

Notes:

** Main Street/Charter Oak Avenue has been modeled as one signalized intersection under the Oak Avenue Extension (Charter Oak Avenue terminus) Alternative Scenario as an operational improvement.

1. Delay for signalized and all-way stop-controlled intersections presented as whole-intersection average delay. Delay for side-street stop-controlled intersections presented as whole-intersection average delay (delay on worst movement or single-lane approach).
 2. LOS per *Highway Capacity Manual*, 7th Edition.
 3. **Bold** indicates unacceptable operations.
 4. AWSC = All-Way Stop-Controlled, SSSC = Side-Street Stop-Controlled.
- Source: Fehr & Peers, 2026.

The Adams Street extension alternative would make the Silverado Trail and Adams Street route combination a more attractive route versus No Project conditions. As shown in **Table 1A**, it would result in a rerouting of traffic volumes and provide congestion reductions at key intersections along Main Street, including Main Street/Pope Street–Mitchell Drive and Main Street/Grayson Avenue. While traffic volumes would increase at locations such as Main Street/Adams Street and Silverado Trail/Pope Street, these intersections are generally expected to operate at a LOS similar to the No Project scenario. The new Silverado Trail/Adams Street intersection meets traffic signal warrant requirements and is expected to operate at LOS B with traffic signal installation, and would operate similarly well if a roundabout is implemented in lieu of a traffic signal. In addition to the congestion reduction benefit, the extension is envisioned to include a shared-use path for pedestrians and bicyclists to support bicycle and pedestrian connectivity throughout the City.

The Pope Street Bridge improvement alternative would improve motorists' driving experience on the Pope Street Bridge; therefore, it is assumed this alternative will entice more drivers to use the Silverado Trail and Pope Street route. However, because these travelers would still need to navigate existing intersections that are congested, the diversion potential is smaller than the Adams Street alternative. As shown in **Table 1A**, the Pope Street Bridge improvement alternative would provide modest congestion reductions at key intersections along Main Street including Main Street/Pope Street–Mitchell Drive and Main Street/Grayson Avenue. While traffic volumes would increase at intersections along Pope Street, these intersections are generally expected to continue to operate at a LOS similar to No Project conditions. However, it is noted some intersections, such as Pope Street/Starr Avenue, will need complementary improvements (e.g., traffic control configurations such as all-way stop-control) to operate at LOS C or better. The Silverado Trail/Pope Street–Howell Mountain Road intersection meets traffic signal warrant requirements and is expected to operate at LOS D or better with traffic signal installation, and would operate similarly well if a roundabout is implemented in lieu of a traffic signal. In addition to vehicle circulation improvements, the Pope Street Bridge improvement would provide upgrades to pedestrian and bicyclists facilities to strengthen the multimodal network.

The Oak Avenue extension alternative would provide a new roadway connection parallel to the most congested segments along Main Street. As shown in **Table 1B**, both the Grayson Avenue terminus and the Charter Oak Avenue terminus alternative would reduce traffic volumes at key intersections along Main Street, including Main Street/Pope Street–Mitchell Drive. While traffic volumes would increase at intersections along Oak Avenue, the affected intersections are expected to operate at LOS C or better. Specifically, key intersections along the extended segment of Oak Avenue, including Oak Avenue/Grayson Avenue and Oak Avenue/Charter Oak Avenue, are expected to operate at LOS C or better with side-street stop-controlled configurations. The intersections along the existing segment of Oak Avenue between Madrona Avenue and Grayson Avenue are expected to operate at LOS C or better with their existing stop control configurations (i.e. all-way stop-controlled and side-street stop-controlled). Under the Charter Oak Avenue terminus alternative, the Main Street/Charter Oak Avenue intersection meets traffic signal warrant requirements and is expected to operate at LOS C with traffic signal installation. While the traffic volumes would increase at locations along Oak Avenue, the overall volume along the corridor is expected to remain low to moderate. Wayfinding signages would be provided to improve driver awareness of the connection to key community locations, and the corridor would incorporate traffic calming measures to manage operating speeds and support a livable, multimodal street environment.

All study alternatives would allow drivers to utilize alternative routes and thus reduce congestion along Main Street within the City of Saint Helena. The Oak Avenue extension (Grayson Avenue

terminus) alternative provides the highest congestion reduction benefits across the study alternatives, as it provides the shortest re-route from Main Street, and enables drivers to travel on a route directly parallel to Main Street. The Oak Avenue extension (Charter Oak Avenue terminus) alternative also provides congestion reduction benefits. However, compared to the Grayson Avenue terminus alternative, the congestion reduction benefits are more modest because the extension will be shorter distance and drivers would still experience delays south of Charter Oak Avenue along Main Street before turning on to Oak Street. The Adams Street extension alternative provides the second highest congestion reduction benefits, as it provides a high-quality route to directly bypass congestion along Main Street. The Pope Street Bridge alternative offers a more comfortable driving experience for drivers willing to take the combination of Silverado Trail and Pope Street; however, drivers would still experience delays north of Pope Street along Main Street. By reducing vehicle demand and providing congestion reductions along Main Street, the study alternatives would also improve the multimodal environment, making the travel experience for all users more comfortable and safer.

Additional descriptions are provided in the **Operations Assessment** section. **Appendix A** presents the delays and LOS for all study intersections for reference. **Appendix B** presents the collected counts. **Appendix C** presents the calculations worksheets.

Introduction

This technical memorandum presents the transportation operations analysis for the street extension and/or improvement study alternatives under the Saint Helena Streets Master Plan. The operations assessment for the City's General Plan Update 2040 was completed in 2018; the Saint Helena General Plan Update 2040 (hereafter referred to as "General Plan") was adopted in 2019. The analysis builds upon the transportation operations analysis and traffic operations analysis models prepared for the adopted General Plan and has been prepared in a manner consistent with the traffic operations analysis for the adopted General Plan and Environmental Impact Report (EIR). The work updated the Synchro traffic operations analysis model developed for the General Plan, incorporates revised traffic volume forecasts reflecting the roadway project build-out scenarios, and summarizes the traffic operations results of study alternatives.

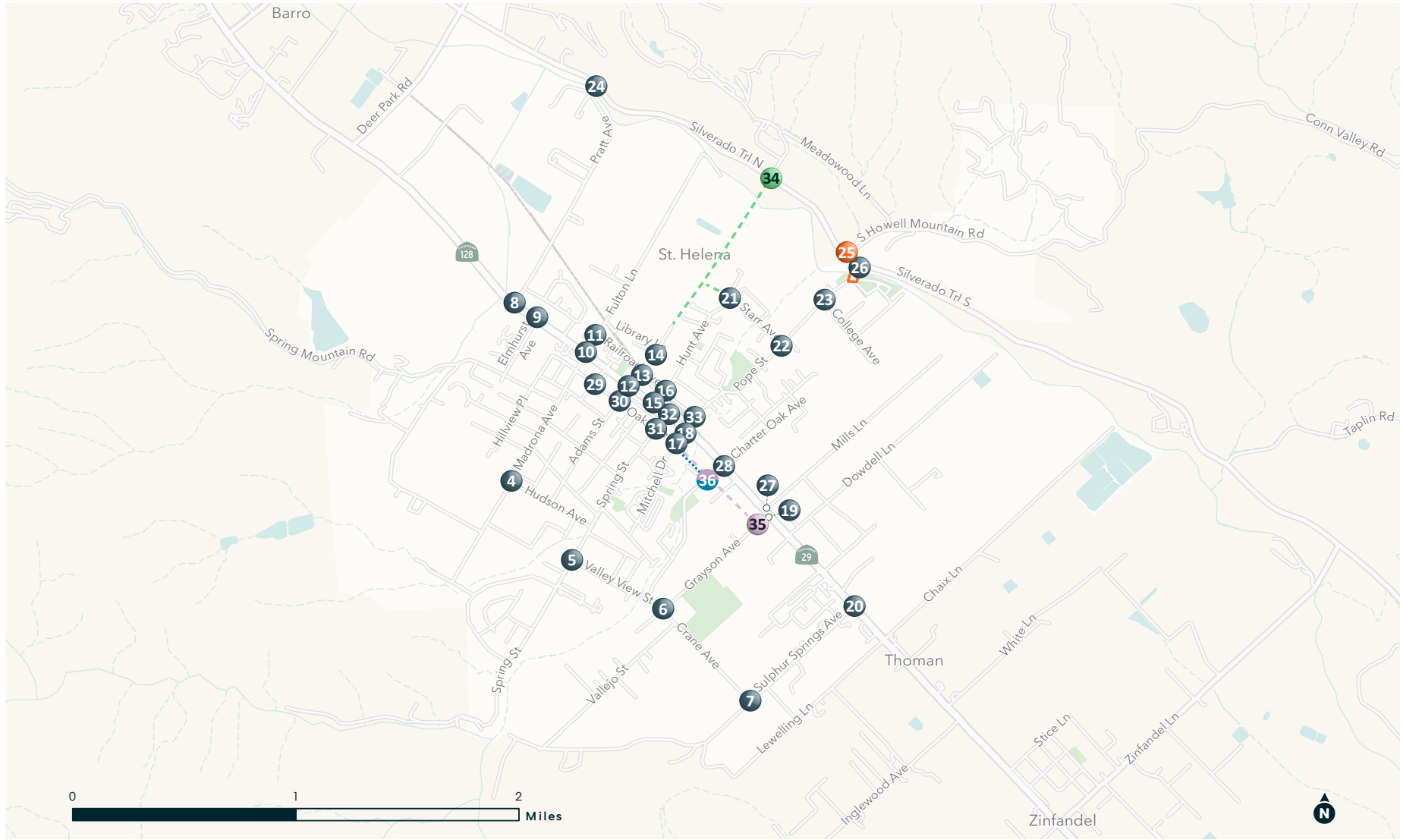
Project Description

The existing transportation infrastructure and development pattern in the City of Saint Helena supports a walkable community and provides access to local and regional destinations. However, the City faces challenges including congestion along Main Street, limited low-stress multimodal options for residents and visitors, and intersection LOS grades that frequently fall below the standards set forth in the General Plan. The Saint Helena Streets Master Plan (hereafter referred to as "Streets Master Plan") project aims to produce a conceptual design plan for the transportation network throughout the City, except for the Downtown Specific Plan ("DSP") area. The Streets Master Plan will enhance and supplement the City's circulation element goal of encouraging development of a multimodal transportation network and supportive land use decisions to boost alternative modes of transportation.

At the direction of the City, the Streets Master Plan project team considered three street extension alternatives for transportation operations analysis. The goal is to reduce traffic demand on Main Street and provide additional connections within the City. The additional connections will enhance emergency planning and response by providing additional access routes and adding redundancies for emergency vehicles. The study alternatives include the following:

- Adams Street extension from its current eastern terminus at 899 Adams Street to Silverado Trail via a new bridge over the Napa River
- Oak Avenue extension between Mitchell Drive and either Grayson Avenue or Charter Oak Avenue (two southern terminus options), including a new bridge over Sulphur Creek
- Pope Street Bridge improvements across the Napa River, which also includes realignment of Pope Street to meet Silverado Trail and Howell Mountain Road at a single intersection

Figure 1 presents the study intersections and proposed extensions.



- # Study Intersection
- 35/36 Oak Avenue Extension Scenario Study Intersection (Grayson Avenue Terminus)
- 36 Oak Avenue Extension Scenario Study Intersection (Charter Oak Avenue Terminus)
- 34 Adams Street Extension Scenario Study Intersection
- Adams Street Extension
- 25 Pope Street Improvement Scenario Study Intersection
- Pope Street Bridge Improvement

FIGURE 1

Project Site Vicinity and Study Intersection Locations

Fehr&Peers

Procedures and Methodologies

The study intersections were analyzed using procedures and methodologies contained in the *Highway Capacity Manual, 7th Edition* (Transportation Research Board, 2022). These methodologies were applied using Synchro 12 software, which considers traffic volumes, lane configurations, signal timings, and other pertinent design, traffic volume, and operational parameters contributing to intersection operations.

The following describes specific inputs, model parameters, and other aspects of Synchro modeling based on data collection efforts.

- Peak hour volumes collected at the study intersections in 2024 and 2025 were used for Existing Conditions. Local schools were in session and weather conditions were clear when the data was collected. **Appendix B** presents the collected counts.
- Volume forecasts were based on the General Plan transportation operations analysis buildout forecasts. For the study alternatives, forecasts were developed using output from the most appropriate version of the Solano-Napa Activity Based Model (SNABM). Specifically, the output was used to determine shifts in traffic volumes throughout the City resulting from the study alternatives, along with manual adjustments informed by travel time and traffic volume elasticity assessments.
- Intersection configurations were entered based on aerial imagery and anticipated complementary improvements.
- The observed existing conditions weekday morning, weekday evening, and weekend midday peak hour factor (PHF), which is a measure of peaking of traffic volumes during the busiest 15-minutes of the peak hour (lower values represent more peaking) at each intersection, was used.
- The observed weekday morning, weekday evening, and weekend midday peak hour heavy vehicle percentage (HVP) at each intersection was used. Observed bicycle and pedestrian volumes were used. However, in cases where the HVP was two percent or less, a minimum of three percent was applied to account for potential variations in vehicle composition.

Level of Service Definition

This study analyzes intersection operations using automobile delay and LOS as the primary measure of performance. Automobile LOS is a qualitative description of traffic flow from the perspective of motorists. The *Highway Capacity Manual, 7th Edition* (HCM) defines six levels of service, from LOS A representing the least congested traffic conditions to LOS F representing the most congested traffic conditions. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving, as well as speed, travel time, traffic interruptions, and freedom to maneuver.

The HCM methodology determines the LOS at intersections by calculating the weighted average delay per vehicle. At unsignalized side-street stop-controlled intersections, LOS is also reported for the worst approach. **Table 2** displays LOS criteria for both signalized and unsignalized intersections.

Table 2. Intersection Level of Service (LOS) Definitions

Level of Service	LOS Criteria (Delay in Seconds)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10.0	≤ 10.0
B	>10.0 to 20.0	>10.0 to 15.0
C	>20.0 to 35.0	>15.0 to 25.0
D	>35.0 to 55.0	>25.0 to 35.0
E	>55.0 to 80.0	>35.0 to 50.0
F	>80.0	>50.0

Source: *Highway Capacity Manual*, 7th Edition, Transportation Research Board.

Intersection Substantial Operational Effect Criteria

Intersection operations LOS was evaluated to assess the study alternatives' effect on intersection operations and identify the potential need for enhancements to the transportation network. Based on the Transportation Performance Measures of the adopted General Plan, the City has augmented performance measures to look beyond the traditional automobile LOS for the purpose of developing a meaningful nexus to improve multimodal circulation and provide congestion reductions. However, for the purpose of evaluating intersection operations for automobile LOS to illustrate the operational effect between study alternatives, thresholds consistent with the Saint Helena General Plan Update 2035 (April 2016), the Saint Helena General Plan Update 2040 Environmental Impact Report (October 2018), and the Napa County General Plan (February 2019) were used to inform if the study alternatives would result in unacceptable operations. In City of Saint Helena, the standard is LOS C for signalized and unsignalized intersections, except along Main Street where LOS D for signalized intersections shall be permitted. For intersections outside the City of Saint Helena boundary, the standard is LOS D at signalized intersections. Complementary improvements (e.g., traffic control configurations such as traffic signal or roundabout) were tested at key new intersections with the study alternatives.

Signal Warrant Analysis

The peak hour signal warrants (Warrant 3A and Warrant 3B) from the *Manual on Uniform Traffic Control Devices* (MUTCD) were used to determine if a traffic signal is warranted at the new intersections.¹ The warrants are based on volumes under cumulative conditions with respective study alternatives.

¹ Warrant 3A and 3B are more rigorous than warrant 4C and were therefore selected as the basis for the signal warrant analysis. While the community's population falls below the typical thresholds for 3A and 3B, applying these warrants at the planning level provides a more conservative analysis. This is especially relevant given the community's tourist population, where seasonal and visitor traffic can result in volumes that exceed what the resident population alone would suggest.

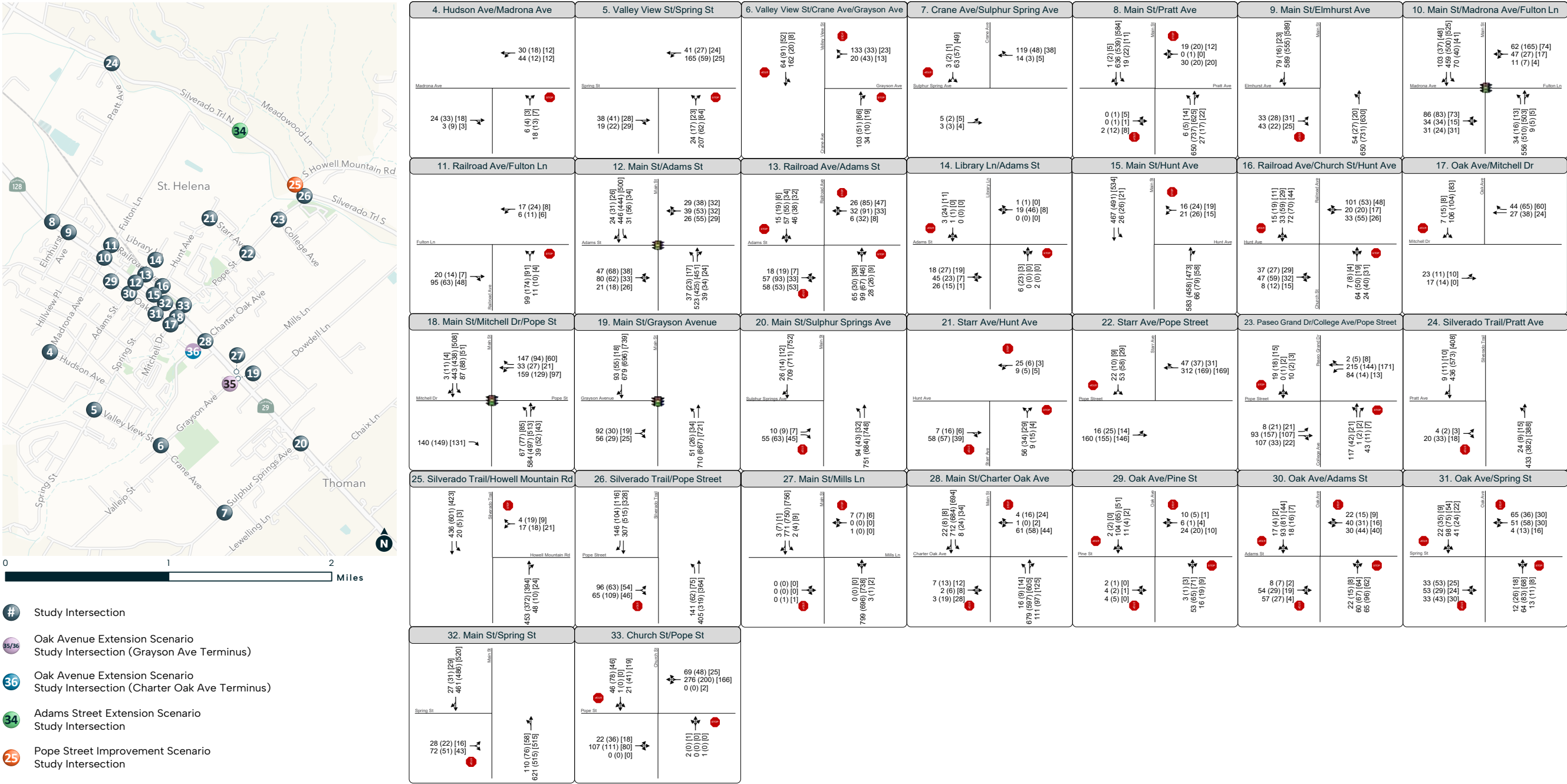
Operations Assessment

Existing Conditions

Fehr & Peers performed operations analysis for intersections under Existing Conditions, based on the traffic volumes and lane configurations shown in **Figure 2**. The analysis found that while most intersections operate acceptably under Existing Conditions, intersections that operate unacceptably during at least one peak hour include the following:

- Main Street/Pratt Avenue
- Main Street/Elmhurst Avenue
- Main Street/Pope Street–Mitchell Drive
- Main Street/Charter Oak Avenue
- Main Street/Spring Street

A summary table presenting the delays and LOS for all study intersections is provided in **Appendix A** for reference.



XX (YY) [ZZ] Weekday AM (Weekday PM) [Weekend MD] Signalized Intersection Stop Sign

FIGURE 2

Existing Conditions Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Control

Cumulative Conditions

Fehr & Peers performed Cumulative Conditions intersection operations analysis based on the traffic volumes and lane configurations shown in **Figure 3**. Under Cumulative Conditions without study alternatives, the analysis found that, because traffic volumes are expected to grow between Existing Conditions and Cumulative Conditions, several additional intersections operate unacceptably during at least one peak hour.

Intersections that were operating unacceptably during at least one peak hour under Existing Conditions and would continue to operate unacceptably include the following:

- Main Street/Pratt Avenue
- Main Street/Elmhurst Avenue
- Main Street/Pope Street–Mitchell Drive
- Main Street/Charter Oak Avenue
- Main Street/Spring Street

In addition, the following intersections which were operating acceptably under Existing Conditions are expected to degrade to unacceptable operations during at least one peak hour under Cumulative Conditions:

- Main Street/Adams Street
- Main Street/Hunt Avenue
- Main Street/Grayson Avenue
- Main Street/Sulphur Springs Avenue
- Pope Street/Paseo Grande Drive–College Avenue
- Silverado Trail/Pratt Avenue
- Silverado Trail/Pope Street
- Main Street/Mills Lane
- Main Street/Spring Street

As the study alternatives provide new roadway connections, traffic volumes were assumed to reroute and provide various degrees of congestion reductions for Main Street. **Figure 4, Figure 5, and Figure 6**. Reference source not found. present the expected rerouted traffic volume under each study alternative. **Figure 7, Figure 8, and Figure 9**. Reference source not found. present the traffic volume and lane configuration under each study alternative. Figures for the Oak Avenue extension alternative are organized into two parts (A and B) for the Grayson Avenue terminus and Charter Oak Avenue terminus alternatives.

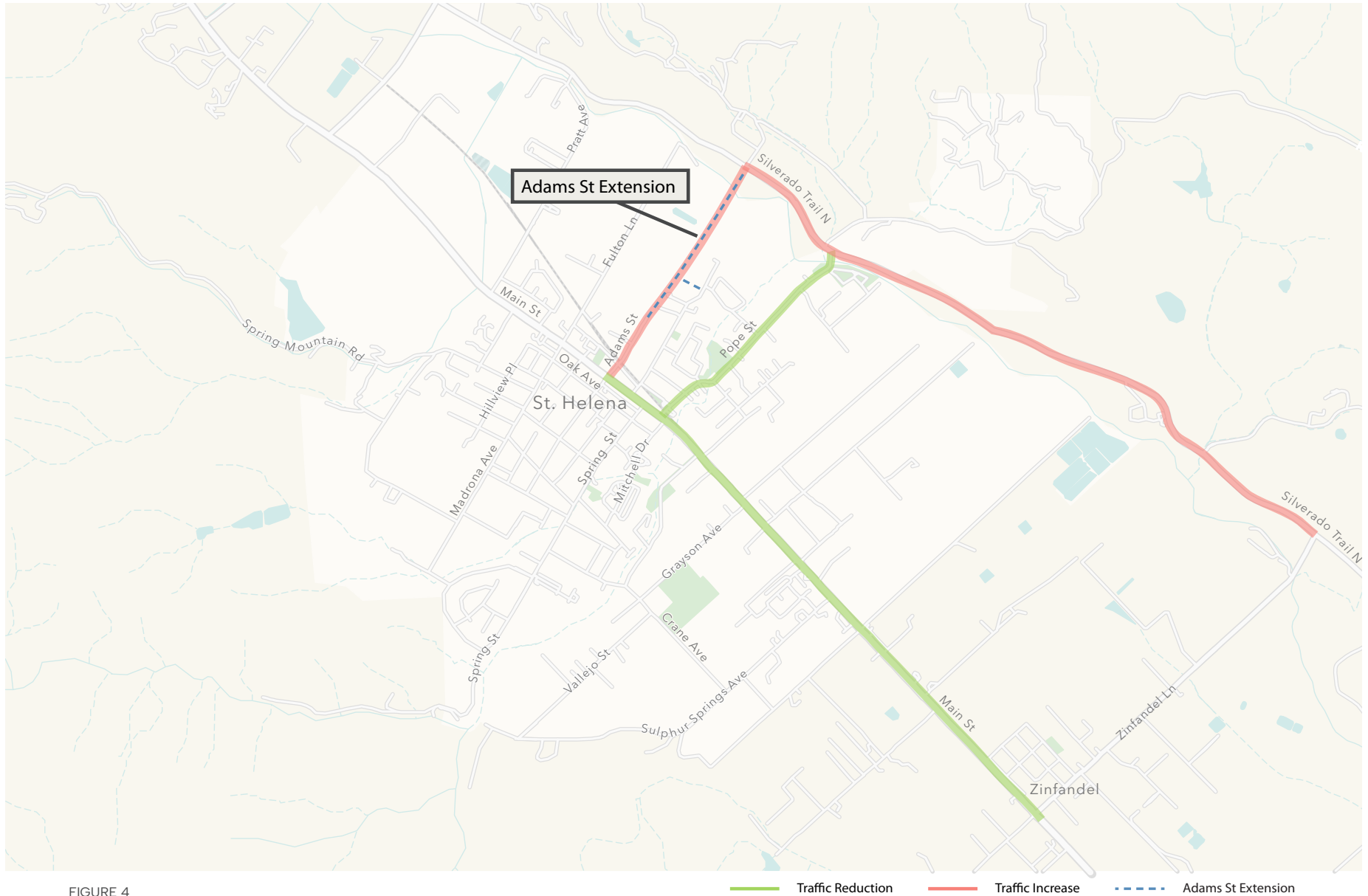


FIGURE 4

Adams Street Extension Traffic Rerouting Assumptions

Fehr&Peers

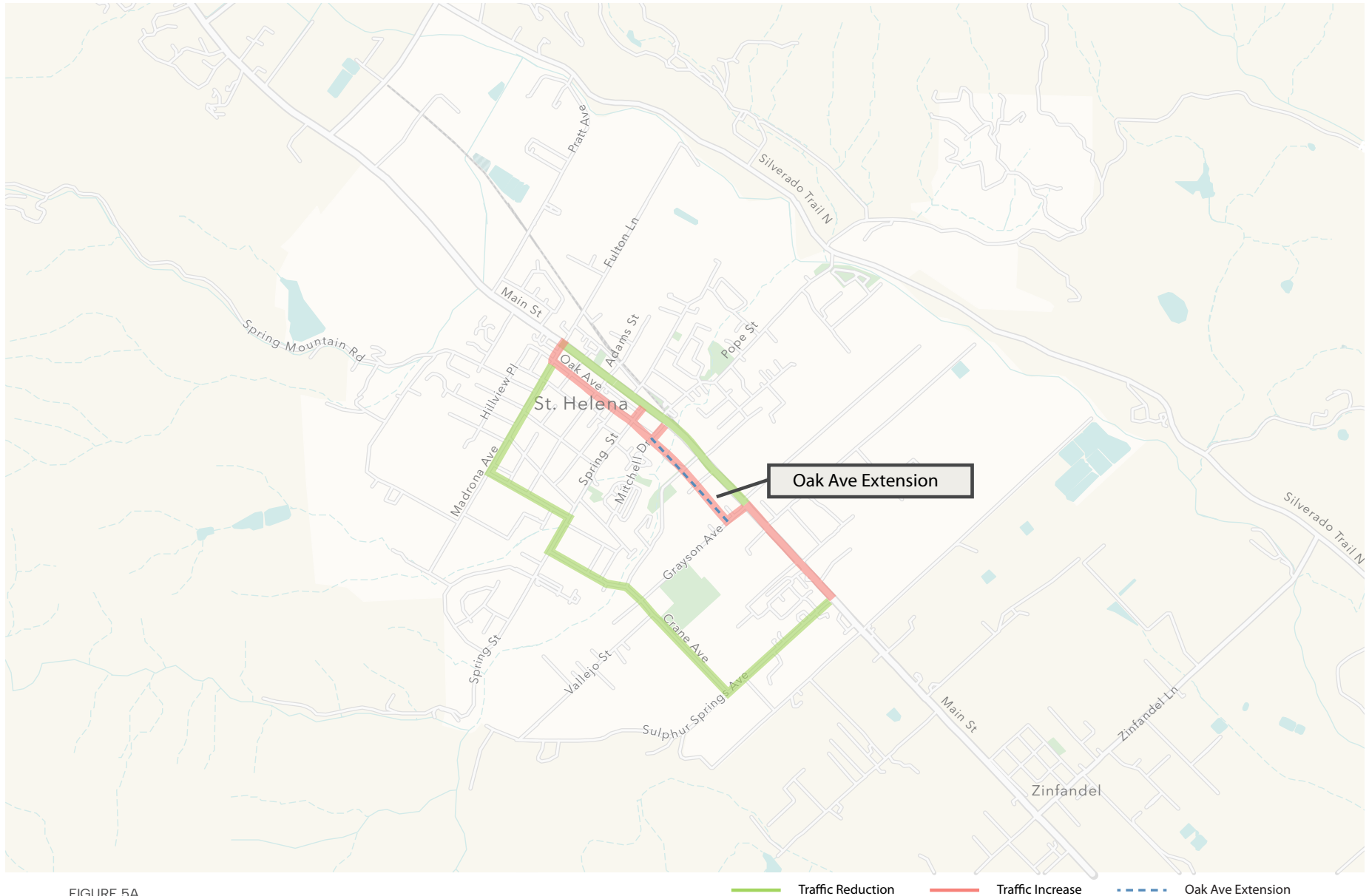


FIGURE 5A

Oak Ave Extension (Grayson Avenue Terminus) Traffic Rerouting Assumptions

Fehr & Peers

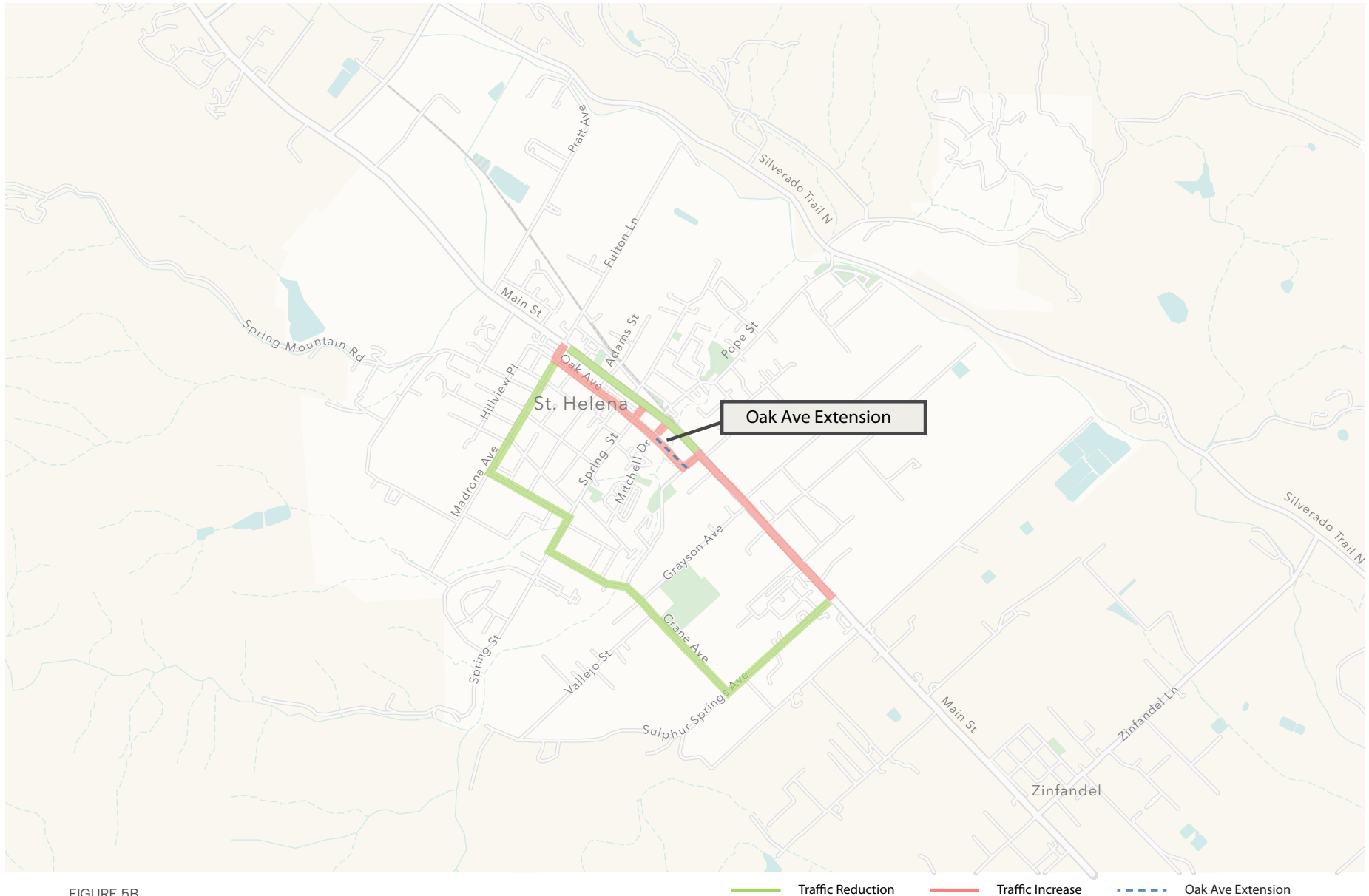


FIGURE 5B

Oak Ave Extension (Charter Oak Terminus) Traffic Rerouting Assumptions

Fehr&Peers

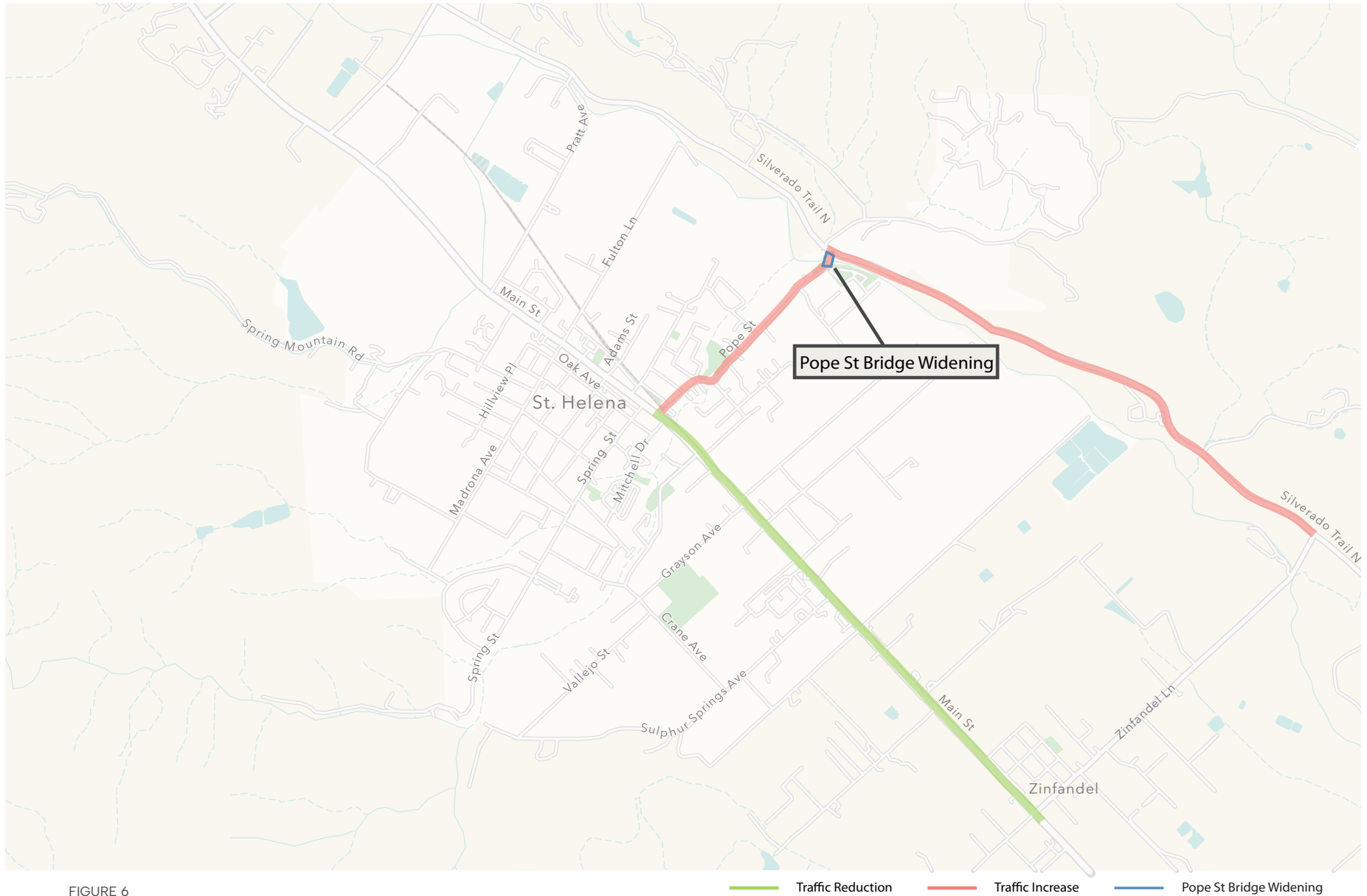
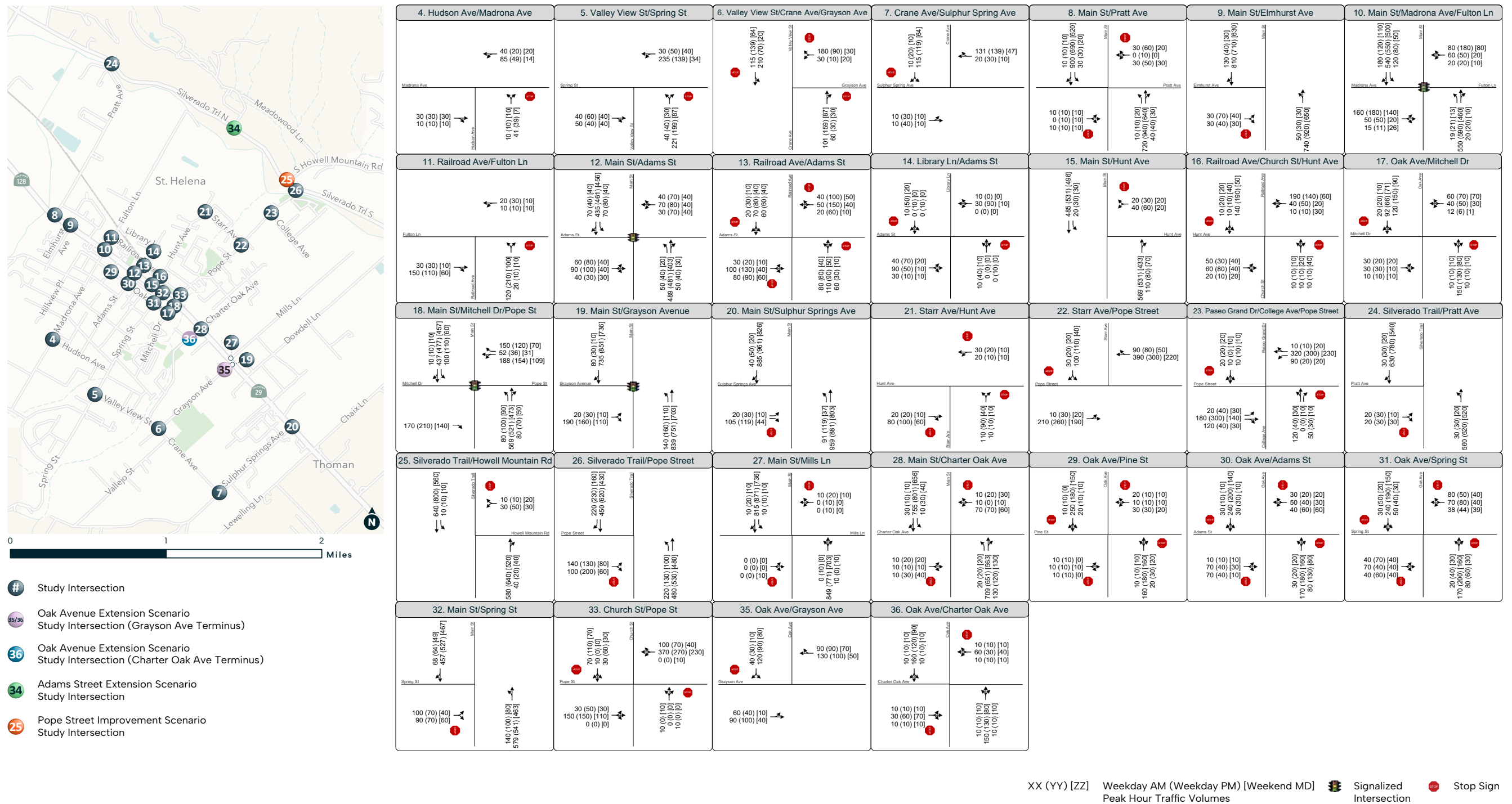


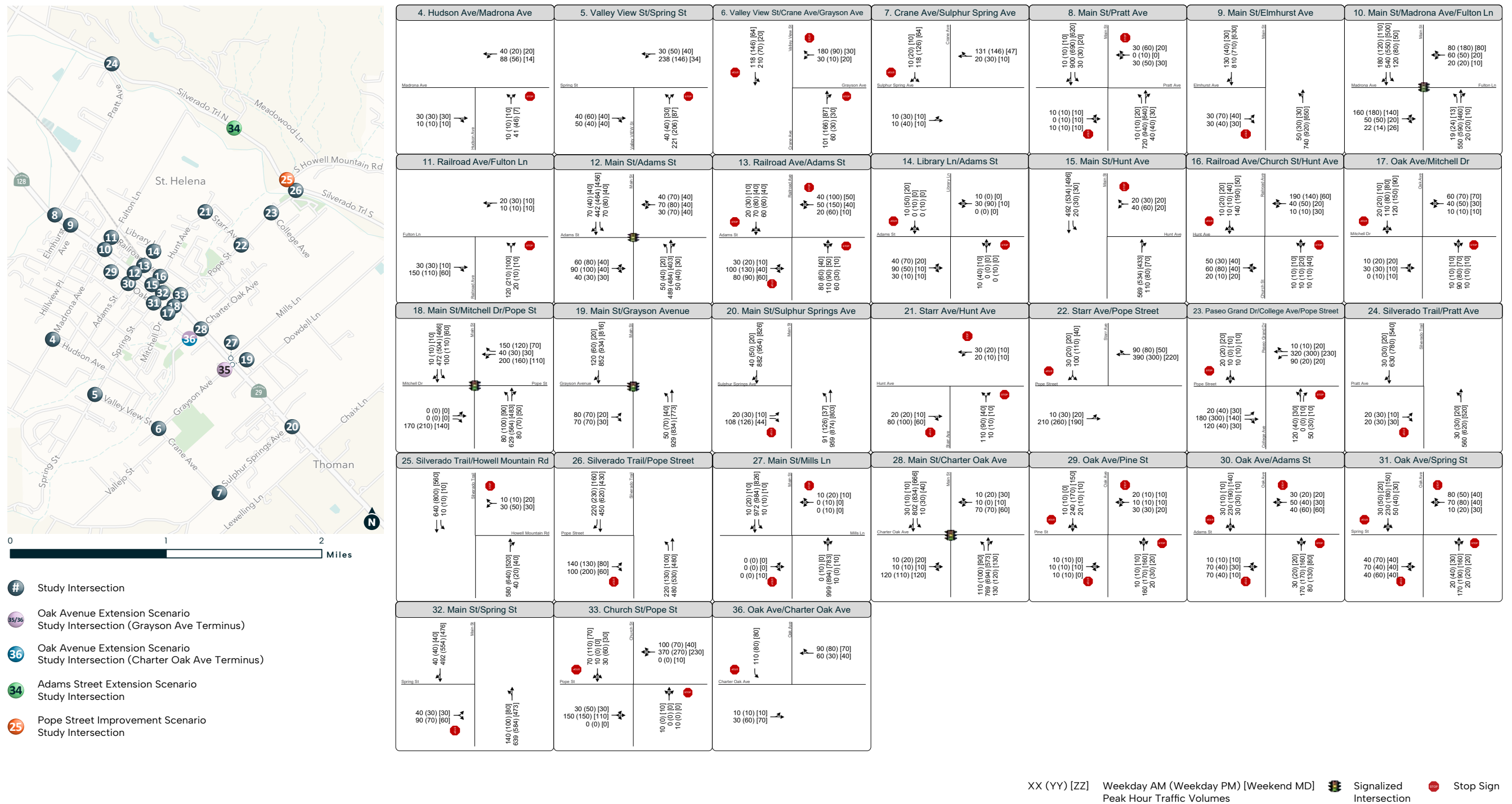
FIGURE 6

Pope Street Bridge Widening Traffic Rerouting Assumptions

Fehr & Peers



Cumulative Plus Project Conditions Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Control — Oak Avenue Extension (Grayson Avenue Terminus)



Adams Street Extension Alternative

The extension of Adams Street from its current eastern terminus at 899 Adams Street to Silverado Trail via a new bridge over the Napa River will provide a new east–west connection between Silverado Trail and Main Street. Because a portion of this new connection extends outside the City boundary, the extension of Adams Street will provide a new connection benefiting both the City and the County. As such, the extension will result in a rerouting of traffic volumes from Main Street to Silverado Trail and Adams Street because it will provide a new, desirable route to bypass congestion on Main Street. Additionally, it is also expected to reroute traffic volumes from Pope Street to Silverado Trail and Adams Street.

Intersection operations analysis results with Adams Street extension illustrate that the extension will provide congestion reductions along Main Street. Notably, at Main Street/Pope Street–Mitchell Drive, the LOS is improved from LOS F to LOS E for the weekday AM, weekday PM, and weekend MD peak hours; this indicates that (at the whole–intersection level), the intersection will operate at–capacity instead of over–capacity with the construction of the Adams Street extension. In addition, the following intersections are projected to improve from unacceptable operations without the Adams Street extension to acceptable operations with the extension for at least one peak hour:

- Main Street/Adams Street
- Main Street/Hunt Avenue
- Main Street/Grayson Avenue

The extension of Adams Street will introduce a new intersection at Silverado Trail/Adams Street. The new intersection is expected to operate at LOS B with traffic signal installation, and would operate similarly well if a roundabout is implemented in lieu of a traffic signal.

The rerouting of traffic volumes would increase traffic volume at additional locations, including segments along Silverado Trail between Pope Street and Adams Street, and Adams Street between Silverado Trail and Main Street. As such, traffic volume is expected to increase at intersection locations such as Main Street/Adams Street and Silverado Trail/Pope Street. However, the analysis indicates that these intersections are still expected to operate at a LOS similar to or better than the No Project scenario, with the exception of Silverado Trail/Howell Mountain Road which worst approach delay would degrade from a high LOS C to a low LOS D for the weekday PM peak hour.

In addition to improving vehicular circulation, the extension is envisioned to include a shared–use path for pedestrians and bicyclists to support bicycle and pedestrian connectivity throughout the City.

Oak Avenue Extension Alternative

The extension of Oak Avenue – either between Mitchell Drive and Grayson Avenue or between Mitchell Drive and Charter Oak Avenue – will provide a new north–south connection within the City along with a new crossing of Sulphur Creek. The extension provides a new, desirable route to bypass the most congested stretch of Main Street and balance the existing high demand for Main Street. It will shift traffic volume traveling north and south along Main Street and the Valley View Street–Crane Avenue corridor to the new Oak Avenue extension.

Intersection operations analysis results with Oak Avenue extension alternative illustrate that the extension, with either southern terminus options, will generally provide improved operations along

Main Street. For example, at Main Street/Pope Street–Mitchell Drive, the LOS is improved from a high LOS F to a LOS E or low F for the weekday AM, weekday PM, and weekend MD peak hours. This indicates that (at the whole-intersection level), the intersection will operate at-capacity instead of over-capacity with the construction of the Oak Avenue extension.

In addition, the following intersections are projected to improve from unacceptable operations without the Oak Avenue extension to acceptable operations with the extension for at least one peak hour:

- Main Street/Adams Street
- Main Street/Hunt Avenue
- Main Street/Grayson Avenue (*Grayson Avenue terminus alternative only*)

While traffic volumes would increase at intersections along Oak Avenue, the affected intersections are generally expected to operate at LOS C or better. Specifically, key intersections along the extended segment of Oak Avenue, including Oak Avenue/Grayson Avenue and Oak Avenue/Charter Oak Avenue, are expected to operate at LOS C or better with side-street stop-controlled configurations. The intersections along the existing segment of Oak Avenue are expected to operate at LOS C or better with their existing stop control configurations (i.e. all-way stop-controlled and side-street stop-controlled).

Between the Oak Avenue extension (Grayson Avenue terminus) alternative and Oak Avenue extension (Charter Oak Avenue terminus) alternative, the Charter Oak Avenue terminus provides congestion reduction benefits in a similar manner to the Grayson Avenue terminus alternative. However, compared to the Grayson Avenue terminus alternative, because the Charter Oak Avenue terminus will extend Oak Avenue over a shorter distance, drivers are expected to experience some delays south of Charter Oak Avenue along Main Street before turning on to Oak Street. Therefore, the congestion reduction benefits would be more modest. For example, at Main Street/Pope Street–Mitchell Drive, while the delay is expected to improve substantially with the extension, the weekday AM peak hour is expected to operate at LOS F rather than LOS E; however, the average delay is slightly above the LOS E/F threshold of 80 seconds, indicating that the signal operates only slightly over-capacity. In addition, the Main Street/Charter Oak Avenue intersection meets traffic signal warrant requirements and is expected to operate at LOS C with installation of a traffic signal.

It is noted that the rerouting of traffic volumes would affect traffic movements at additional locations including segments along Main Street between the Oak extension southern terminus (Grayson Avenue or Charter Oak Avenue) and Sulphur Springs Avenue, as volumes are attracted from Sulphur Springs Avenue to take the new Oak Avenue extension. While delays are expected to fluctuate given the shifts in turning movements, affected intersections are expected to operate at a LOS level similar to No Project conditions.

While the traffic volumes would increase at locations along Oak Avenue, the overall volume along the corridor is expected to remain low to moderate. Wayfinding signages would be provided to improve driver awareness of the connection to key community destinations, and the corridor would incorporate traffic calming measures to manage operating speeds and support a livable, multimodal street environment.

Pope Street Bridge Improvement Alternative

The Pope Street Bridge alternative includes the improvement of the Pope Street Bridge and the realignment of Pope Street to create a single intersection with Silverado Trail and Howell Mountain Road. Improving the Pope Street Bridge will enhance the driving experience as the widened Pope Street Bridge will be more comfortable to navigate. As such, it is expected to attract drivers traveling north and south along Main Street to use a combination of Silverado Trail and Pope Street. However, because these travelers would still need to navigate existing intersections that are congested north of Pope Street, the diversion potential is smaller than the Adams Street alternative and the Oak Avenue alternative.

Intersection operations analysis results with the Pope Street Bridge Improvement alternative indicate that the alternative will provide modest congestion reductions along Main Street. For example, the delays would decrease at Main Street/Pope Street–Mitchell Drive but the LOS would maintain a grade of LOS F for the weekday AM, weekday PM, and weekend MD peak hour; this indicates that, after construction of the Pope Street Bridge improvement, the Main Street corridor would continue to operate in an over-capacity condition. No intersections are projected to improve from unacceptable operations without the Pope Street Bridge improvement to acceptable operations with the improvement.

The Pope Street Bridge Improvement alternative includes realignment of Pope Street to meet Silverado Trail and Howell Mountain Road at a single intersection. This new intersection will need complementary improvements (e.g., traffic control configurations such as traffic signal or roundabout) to operate at LOS D or better.

While traffic volumes would increase at intersections along Pope Street, these intersections are generally expected to continue to operate at a LOS level similar to No Project conditions. However, intersections such as Pope Street/Starr Avenue will need complementary improvements (e.g., traffic control configurations such as all-way stop–controlled) to operate at LOS C or better.

In addition to improving traffic operations, the Pope Street Bridge Improvement alternative would improve walking and biking infrastructure, supporting an enhanced multimodal transportation network.

A summary table presenting the delays and LOS for all study intersections is provided in **Appendix A** for reference.

Appendix A. Intersection Delay and LOS

Table A: Intersection Delay and LOS

Int. ID	Intersection	Existing Traffic Control	Peak Hour	Existing Conditions		Cumulative Conditions									
				No Project		No Project		Adams Street Extension		Oak Avenue Extension				Pope Street Bridge Improvement	
										Grayson Avenue terminus		Charter Oak Avenue terminus			
				Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
4	Madrona Avenue/Hudson Avenue	SSSC	Weekday AM	4.4 (9.0)	A (A)	5.6 (9.5)	A (A)	5.6 (9.5)	A (A)	5.2 (9.4)	A (A)	5.3 (9.4)	A (A)	5.6 (9.5)	A (A)
			Weekday PM	2.7 (8.7)	A (A)	5.8 (9.1)	A (A)	5.8 (9.1)	A (A)	5.1 (9.0)	A (A)	5.4 (9.0)	A (A)	5.8 (9.1)	A (A)
			Weekend MD	3.2 (8.6)	A (A)	3.3 (9.0)	A (A)	3.3 (9.0)	A (A)	2.8 (9.0)	A (A)	2.8 (9.0)	A (A)	3.3 (9.0)	A (A)
5	Spring Street/Valley View Street	SSSC	Weekday AM	8.3 (12.1)	A (B)	10.9 (18.2)	B (C)	10.9 (18.2)	B (C)	10.4 (17.0)	B (C)	10.4 (17.2)	B (C)	10.9 (18.2)	B (C)
			Weekday PM	5.2 (9.3)	A (A)	7.7 (12.0)	A (B)	7.7 (12.0)	A (B)	7.3 (11.6)	A (B)	7.4 (11.7)	A (B)	7.7 (12.0)	A (B)
			Weekend MD	5.2 (9.4)	A (A)	5.4 (10.0)	A (B)	5.4 (10.0)	A (B)	5.2 (9.9)	A (A)	5.2 (9.9)	A (A)	5.4 (10.0)	A (B)
6	Grayson Road/Crane Avenue	AWSC	Weekday AM	10.2	B	15.1	C	15.1	C	14.2 (17.5)	B (C)	14.4	B	15.1	C
			Weekday PM	7.8	A	9.4	A	9.4	A	9.0 (9.5)	A (A)	9.2	A	9.4	A
			Weekend MD	7.6	A	8.1	A	8.1	A	8.0 (8.1)	A (A)	8.0	A	8.1	A
7	Sulphur Springs Avenue/Crane Avenue	SSSC	Weekday AM	3.3 (9.7)	A (A)	5.0 (10.8)	A (B)	5.0 (10.8)	A (B)	4.7 (10.6)	A (B)	4.8 (10.6)	A (B)	5.0 (10.8)	A (B)
			Weekday PM	4.8 (9.1)	A (A)	5.1 (12.0)	A (B)	5.1 (12.0)	A (B)	4.8 (11.5)	A (B)	4.9 (11.7)	A (B)	5.1 (12.0)	A (B)
			Weekend MD	4.8 (9.1)	A (A)	5.2 (9.6)	A (A)	5.2 (9.6)	A (A)	5.1 (9.5)	A (A)	5.1 (9.5)	A (A)	5.2 (9.6)	A (A)

Int. ID	Intersection	Existing Traffic Control	Peak Hour	Existing Conditions		Cumulative Conditions									
				No Project	No Project	Adams Street Extension	Oak Avenue Extension				Pope Street Bridge Improvement				
							Grayson Avenue terminus		Charter Oak Avenue terminus						
				Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
8	Main Street/Pratt Avenue	SSSC	Weekday AM	1.7 (41.7)	A (E)	4.4 (103.3)	A (F)	4.4 (103.3)	A (F)	4.4 (103.3)	A (F)	4.4 (103.3)	A (F)	4.4 (103.3)	A (F)
			Weekday PM	1.7 (44.1)	A (E)	50.4 (>120)	F (F)	50.4 (>120)	F (F)	50.4 (>120)	F (F)	50.4 (188.2)	F (F)	50.4 (>120)	F (F)
			Weekend MD	1.2 (31.0)	A (D)	2.6 (44.6)	A (E)	2.6 (44.6)	A (E)	2.6 (44.6)	A (E)	2.6 (44.6)	A (E)	2.6 (44.6)	A (E)
9	Main Street/Elmhurst Avenue	SSSC	Weekday AM	2.1 (32.6)	A (D)	2.5 (65.5)	A (F)	2.5 (65.5)	A (F)	2.5 (65.5)	A (F)	2.5 (65.5)	A (F)	2.5 (65.5)	A (F)
			Weekday PM	1.5 (35.2)	A (E)	19.7 (>120)	C (F)	19.7 (>120)	C (F)	19.7 (>120)	C (F)	19.7 (>120)	C (F)	19.7 (>120)	C (F)
			Weekend MD	1.2 (24.6)	A (C)	1.7 (31.0)	A (D)	1.7 (31.0)	A (D)	1.7 (31.0)	A (D)	1.7 (31.0)	A (D)	1.7 (31.0)	A (D)
10	Main Street/Madrona Avenue-Fulton Lane	Signal	Weekday AM	18.0	B	49.0	D	49.0	D	54.0	D	57.1	E	49.0	D
			Weekday PM	14.4	B	25.3	C	25.3	C	34.8	C	34.5	C	25.3	C
			Weekend MD	33.5	C	33.6	C	25.4	C	27.5	C	27.5	C	33.6	C
11	Fulton Lane/Railroad Avenue	SSSC	Weekday AM	4.8 (10.3)	A (B)	4.8 (11.4)	A (B)	4.8 (11.4)	A (B)	4.8 (11.4)	A (B)	4.8 (11.4)	A (B)	4.8 (11.4)	A (B)
			Weekday PM	6.7 (10.4)	A (B)	6.4 (11.2)	A (B)	6.4 (11.2)	A (B)	6.4 (11.2)	A (B)	6.4 (11.2)	A (B)	6.4 (11.2)	A (B)
			Weekend MD	5.8 (9.5)	A (A)	5.7 (9.8)	A (A)	5.7 (9.8)	A (A)	5.7 (9.8)	A (A)	5.7 (9.8)	A (A)	5.7 (9.8)	A (A)
12	Main Street/Adams Street	Signal	Weekday AM	22.5	C	35.2	D	38.1	D	35.3	D	35.8	D	35.2	D
			Weekday PM	23.6	C	34.3	C	44.1	D	37.2	D	37.7	D	34.3	C
			Weekend MD	41.9	D	59.2	E	41.1	D	37.6	D	37.6	D	59.2	E

Int. ID	Intersection	Existing Traffic Control	Peak Hour	Existing Conditions		Cumulative Conditions									
				No Project		No Project		Adams Street Extension		Oak Avenue Extension				Pope Street Bridge Improvement	
										Grayson Avenue terminus		Charter Oak Avenue terminus			
				Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
13	Adams Street/Railroad Avenue	AWSC	Weekday AM	9.2 (9.8)	A (A)	11.4	B	17.6	C	11.4	B	11.4	B	11.4	B
			Weekday PM	9.4 (9.6)	A (A)	12.8	B	20.2	C	12.8	B	12.8	B	12.8	B
			Weekend MD	7.9 (8.2)	A (A)	8.1	A	9.6	A	8.1	A	8.1	A	8.1	A
14	Adams Street/Library Lane	SSSC	Weekday AM	2.0 (9.4)	A (A)	2.2 (10.9)	A (B)	1.2 (15.0)	A (C)	2.2 (10.9)	A (B)	2.2 (10.9)	A (B)	2.2 (10.9)	A (B)
			Weekday PM	4.0 (9.7)	A (A)	5.3 (11.4)	A (B)	3.8 (14.2)	A (B)	5.3 (11.4)	A (B)	5.3 (11.4)	A (B)	5.3 (11.4)	A (B)
			Weekend MD	5.3 (9.2)	A (A)	5.1 (9.4)	A (A)	1.5 (12.3)	A (B)	5.1 (9.4)	A (A)	5.1 (9.4)	A (A)	5.1 (9.4)	A (A)
15	Main Street/Hunt Avenue	SSSC	Weekday AM	0.7 (16.3)	A (C)	1.0 (20.3)	A (C)	1.0 (16.9)	A (C)	1.0 (17.9)	A (C)	1.0 (17.9)	A (C)	1.0 (20.3)	A (C)
			Weekday PM	1.0 (17.0)	A (C)	1.9 (25.9)	A (D)	1.8 (21.4)	A (C)	1.9 (22.8)	A (C)	1.9 (22.9)	A (C)	1.9 (25.9)	A (D)
			Weekend MD	0.9 (23.9)	A (C)	1.2 (26.5)	A (D)	1.3 (22.6)	A (C)	1.2 (24.1)	A (C)	1.2 (24.1)	A (C)	1.2 (26.5)	A (D)
16	Hunt Avenue/Railroad Avenue	SSSC	Weekday AM	8.4 (16.7)	A (C)	6.7 (18.3)	A (C)	6.7 (18.3)	A (C)	6.7 (18.3)	A (C)	6.7 (18.3)	A (C)	6.7 (18.3)	A (C)
			Weekday PM	8.7 (15.5)	A (C)	7.6 (16.7)	A (C)	7.6 (16.7)	A (C)	7.6 (16.7)	A (C)	7.6 (16.7)	A (C)	7.6 (16.7)	A (C)
			Weekend MD	6.7 (12.3)	A (B)	7.2 (13.5)	A (B)	7.2 (13.5)	A (B)	7.2 (13.5)	A (B)	7.2 (13.5)	A (B)	7.2 (13.5)	A (B)
17	Mitchell Drive/Oak Avenue	SSSC	Weekday AM	5.7 (9.8)	A (A)	5.6 (10.3)	A (B)	5.6 (10.3)	A (B)	11.1 (17.3)	B (C)	9.5 (14.0)	A (B)	5.6 (10.3)	A (B)
			Weekday PM	5.0 (9.7)	A (A)	5.7 (10.5)	A (B)	5.7 (10.5)	A (B)	10.2 (16.2)	B (C)	9.5 (15.1)	A (C)	5.7 (10.5)	A (B)
			Weekend MD	5.0 (9.3)	A (A)	5.1 (9.6)	A (A)	5.1 (9.6)	A (A)	8.0 (12.4)	A (B)	8.2 (12.7)	A (B)	5.1 (9.6)	A (A)

Int. ID	Intersection	Existing Traffic Control	Peak Hour	Existing Conditions		Cumulative Conditions									
				No Project		No Project		Adams Street Extension		Oak Avenue Extension				Pope Street Bridge Improvement	
										Grayson Avenue terminus		Charter Oak Avenue terminus			
				Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
18	Main Street/Pope Street-Mitchell Drive	Signal	Weekday AM	115.6	F	>120	F	71.7	E	63.5	E	81.3	F	>120	F
			Weekday PM	97.8	F	>120	F	75.6	E	68.9	E	78.7	E	>120	F
			Weekend MD	100.5	F	109.3	F	66.1	E	63.6	E	68.9	E	93.4	F
19	Main Street/Grayson Avenue	Signal	Weekday AM	37.6	D	68.5	E	48.9	D	38.6	D	71.9	E	65.0	E
			Weekday PM	19.6	B	52.9	D	42.4	D	43.0	D	55.6	E	50.8	D
			Weekend MD	23.4	C	28.7	C	19.8	B	24.3	C	29.3	C	25.5	C
20	Main Street/Sulphur Springs Avenue	SSSC	Weekday AM	1.2 (16.3)	A (C)	2.1 (23.5)	A (C)	2.1 (20.7)	A (C)	1.8 (23.0)	A (C)	1.9 (23.1)	A (C)	2.1 (23.1)	A (C)
			Weekday PM	1.0 (16.4)	A (C)	3.4 (33.2)	A (D)	3.2 (29.1)	A (D)	2.8 (31.3)	A (D)	3.0 (31.9)	A (D)	3.4 (32.5)	A (D)
			Weekend MD	0.7 (16.0)	A (C)	0.8 (17.7)	A (C)	0.9 (16.0)	A (C)	0.8 (17.7)	A (C)	0.8 (17.7)	A (C)	0.8 (17.5)	A (C)
21	Hunt Avenue/Starr Avenue	AWSC	Weekday AM	7.3	A	7.9	A	7.9	A	7.9	A	7.9	A	7.9	A
			Weekday PM	7.1	A	7.7	A	7.7	A	7.7	A	7.7	A	7.7	A
			Weekend MD	7.1	A	7.3	A	7.3	A	7.3	A	7.3	A	7.3	A
22	Pope Street/Starr Avenue	SSSC	Weekday AM	2.1 (14.9)	A (B)	3.8 (23.3)	A (C)	3.5 (20.0)	A (C)	3.8 (23.3)	A (C)	3.8 (23.3)	A (C)	3.9 (25.0)	A (D)
			Weekday PM	2.3 (12.2)	A (B)	3.5 (19.9)	A (C)	3.5 (17.6)	A (C)	3.5 (19.9)	A (C)	3.5 (19.9)	A (C)	3.6 (20.6)	A (C)
			Weekend MD	1.3 (10.8)	A (B)	1.6 (11.9)	A (B)	1.7 (11.4)	A (B)	1.6 (11.9)	A (B)	1.6 (11.9)	A (B)	1.6 (12.1)	A (B)

Int. ID	Intersection	Existing Traffic Control	Peak Hour	Existing Conditions		Cumulative Conditions									
				No Project		No Project		Adams Street Extension		Oak Avenue Extension				Pope Street Bridge Improvement	
										Grayson Avenue terminus		Charter Oak Avenue terminus			
				Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
23	Pope Street/Paseo Grande Drive–College Avenue	SSSC	Weekday AM	7.0 (23.4)	A (C)	15.9 (78.6)	C (F)	12.1 (52.8)	B (F)	15.9 (78.6)	C (F)	15.9 (78.6)	C (F)	18.1 (94.0)	C (F)
			Weekday PM	2.6 (12.6)	A (B)	2.7 (17.9)	A (C)	2.7 (16.2)	A (C)	2.7 (17.9)	A (C)	2.7 (17.9)	A (C)	2.7 (18.4)	A (C)
			Weekend MD	2.1 (11.4)	A (B)	2.8 (13.8)	A (B)	3.0 (13.1)	A (B)	2.8 (13.8)	A (B)	2.8 (13.8)	A (B)	2.8 (14.2)	A (B)
24	Silverado Trail/Pratt Avenue	SSSC	Weekday AM	0.5 (12.7)	A (B)	0.9 (23.4)	A (C)	0.9 (23.4)	A (C)	0.9 (23.4)	A (C)	0.9 (23.4)	A (C)	0.9 (23.4)	A (C)
			Weekday PM	0.6 (13.9)	A (B)	2.0 (45.7)	A (E)	2.0 (45.7)	A (E)	2.0 (45.7)	A (E)	2.0 (45.7)	A (E)	2.0 (45.7)	A (E)
			Weekend MD	0.5 (12.3)	A (B)	0.8 (17.0)	A (C)	0.8 (17.0)	A (C)	0.8 (17.0)	A (C)	0.8 (17.0)	A (C)	0.8 (17.0)	A (C)
25	Silverado Trail/Howell Mountain Road	SSSC*	Weekday AM	0.5 (14.0)	A (B)	0.6 (16.9)	A (C)	0.6 (18.9)	A (C)	0.6 (16.9)	A (C)	0.6 (16.9)	A (C)	38.2	D
			Weekday PM	0.5 (13.8)	A (B)	1.0 (24.6)	A (C)	1.0 (26.1)	A (D)	1.0 (24.6)	A (C)	1.0 (24.6)	A (C)	53.4	D
			Weekend MD	0.5 (13.3)	A (B)	0.8 (16.1)	A (C)	0.7 (17.9)	A (C)	0.8 (16.1)	A (C)	0.8 (16.1)	A (C)	23.4	C
26	Silverado Trail/Pope Street	SSSC*	Weekday AM	3.7 (18.8)	A (C)	9.6 (54.8)	A (F)	9.3 (66.7)	A (F)	9.6 (54.8)	A (F)	9.6 (54.8)	A (F)	-	-
			Weekday PM	3.3 (19.4)	A (C)	25.6 (120)	D (F)	24.3 (120)	C (F)	25.6 (120)	D (F)	25.6 (138.4)	D (F)	-	-
			Weekend MD	2.1 (14.3)	A (B)	2.9 (20.2)	A (C)	2.4 (23.4)	A (C)	2.9 (20.2)	A (C)	2.9 (20.2)	A (C)	-	-
27	Main Street/Mills Lane	SSSC	Weekday AM	0.1 (21.1)	A (C)	0.2 (19.4)	A (C)	0.2 (17.4)	A (C)	0.2 (16.6)	A (C)	0.2 (19.6)	A (C)	0.2 (19.0)	A (C)
			Weekday PM	0.1 (14.7)	A (B)	2.1 (95.5)	A (F)	1.6 (68.8)	A (F)	1.5 (57.7)	A (F)	2.2 (103)	A (F)	2.0 (90.6)	A (F)
			Weekend MD	0.1 (14.1)	A (B)	0.2 (15.2)	A (C)	0.2 (14.0)	A (B)	0.2 (14.1)	A (B)	0.2 (15.3)	A (C)	0.2 (15.1)	A (C)

Int. ID	Intersection	Existing Traffic Control	Peak Hour	Existing Conditions		Cumulative Conditions									
				No Project	No Project	Adams Street Extension	Oak Avenue Extension				Pope Street Bridge Improvement				
							Grayson Avenue terminus		Charter Oak Avenue terminus						
				Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
28	Main Street/Charter Oak Avenue	SSSC**	Weekday AM	5.3 (>120)	A (F)	36.4 (111.6)	E (F)	22.7 (71.0)	C (F)	16.7 (56.3)	C (F)	31.1	C	33.7 (103.0)	D (F)
			Weekday PM	6.9 (119.2)	A (F)	48.4 (>120)	E (F)	33.8 (99.1)	D (F)	27.0 (78.2)	C (F)	29.8	C	45.8 (>120)	E (F)
			Weekend MD	5.3 (89.3)	A (F)	19.0 (>120)	C (F)	10.7 (>120)	B (F)	11.3 (>120)	B (F)	27.6	C	17.8 (>120)	C (F)
29	Oak Avenue/Pine Street	AWSC	Weekday AM	8.1	A	9.0	A	9.0	A	12.4	B	12.1	B	9.0	A
			Weekday PM	7.5	A	8.0	A	8.0	A	9.2	A	9.0	A	8.0	A
			Weekend MD	7.4	A	7.7	A	7.7	A	8.4	A	8.4	A	7.7	A
30	Oak Avenue/Adams Street	AWSC	Weekday AM	9.6	A	11.7	B	11.7	B	20.9	C	20	C	11.7	B
			Weekday PM	8.3	A	9.3	A	9.3	A	11.3	B	10.9	B	9.3	A
			Weekend MD	7.9	A	8.8	A	8.8	A	10	A	10	A	8.8	A
31	Oak Avenue/Spring Street	AWSC	Weekday AM	9.5	A	11.2	B	11.2	B	24.1	C	17.4	C	11.2	B
			Weekday PM	8.7	A	9.9	A	9.9	A	13.1	B	11.8	B	9.9	A
			Weekend MD	8.1	A	9.0	A	9.0	A	10.6	B	10.3	B	9.0	A
32	Main Street/Spring Street	SSSC	Weekday AM	2.0 (16.7)	A (C)	2.8 (24.6)	A (C)	2.8 (19.6)	A (C)	5.2 (32.0)	A (D)	2.8 (20.4)	A (C)	2.8 (24.6)	A (C)
			Weekday PM	1.7 (17.6)	A (C)	2.3 (25.0)	A (D)	2.3 (21.0)	A (C)	3.7 (29.2)	A (D)	2.3 (22.1)	A (C)	2.3 (25.0)	A (D)
			Weekend MD	1.9 (27.5)	A (D)	3.3 (37.0)	A (E)	3.3 (29.3)	A (D)	3.7 (33.8)	A (D)	3.2 (31.7)	A (D)	3.3 (37.0)	A (E)

Int. ID	Intersection	Existing Traffic Control	Peak Hour	Existing Conditions		Cumulative Conditions									
				No Project		No Project		Adams Street Extension		Oak Avenue Extension				Pope Street Bridge Improvement	
										Grayson Avenue terminus		Charter Oak Avenue terminus			
				Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
33	Pope Street/Church Street	SSSC	Weekday AM	1.9 (12.1)	A (B)	2.9 (15.5)	A (C)	2.9 (14.3)	A (B)	2.9 (15.5)	A (C)	2.9 (15.5)	A (C)	2.8 (16.1)	A (C)
			Weekday PM	3.3 (12.1)	A (B)	4.3 (15.4)	A (C)	4.4 (14.2)	A (B)	4.3 (15.4)	A (C)	4.3 (15.4)	A (C)	4.3 (15.8)	A (C)
			Weekend MD	2.4 (11.4)	A (B)	3.1 (13.8)	A (B)	3.3 (13.0)	A (B)	3.1 (13.8)	A (B)	3.1 (13.8)	A (B)	3.1 (14.1)	A (B)
34	Silverado Trail/Adams Street	Signal	Weekday AM	Intersection Does Not Exist in this Scenario		Intersection Does Not Exist in this Scenario		18.1	B	Intersection Does Not Exist in this Scenario		Intersection Does Not Exist in this Scenario		Intersection Does Not Exist in this Scenario	
			Weekday PM					17.9	B						
			Weekend MD					14.6	B						
35	Oak Avenue/Grayson Avenue	SSSC	Weekday AM	Intersection Does Not Exist in this Scenario		Intersection Does Not Exist in this Scenario		Intersection Does Not Exist in this Scenario		4.9 (13.2)	A (B)	Intersection Does Not Exist in this Scenario		Intersection Does Not Exist in this Scenario	
			Weekday PM							3.8 (11.7)	A (B)				
			Weekend MD							3.7 (9.9)	A (A)				
36	Oak Avenue/Charter Oak Avenue	SSSC	Weekday AM	Intersection Does Not Exist in this Scenario		Intersection Does Not Exist in this Scenario		Intersection Does Not Exist in this Scenario		3.7 (12.7)	A (B)	4.0 (10.2)	A (B)	Intersection Does Not Exist in this Scenario	
			Weekday PM							4.0 (12.0)	A (B)	3.6 (9.9)	A (A)		
			Weekend MD							5.1 (11.3)	A (B)	3.5 (10.0)	A (A)		

Notes:

* Silverado Trail/Howell Mountain Road–Pope Street has been modeled as one signalized intersection under Pope Street Bridge Improvement Alternative Scenario as an operational improvement. The County may also consider converting this intersection to a roundabout as described in the Napa County General Plan.

** Main Street/Charter Oak Avenue has been modeled as one signalized intersection under the Oak Avenue Extension (Charter Oak Avenue terminus) Alternative Scenario as an operational improvement.

1. Delay for signalized and all-way stop-controlled intersections presented as whole-intersection average delay. Delay for side-street stop-controlled intersections presented as whole-intersection average delay (delay on worst movement or single-lane approach).

2. LOS per *Highway Capacity Manual*, 7th Edition

3. **Bold** indicates unacceptable operations.

4. AWSC = All-Way Stop-Controlled, SSSC = Side-Street Stop-Controlled.

Source: Fehr & Peers, 2026.

Appendix B. Traffic Counts

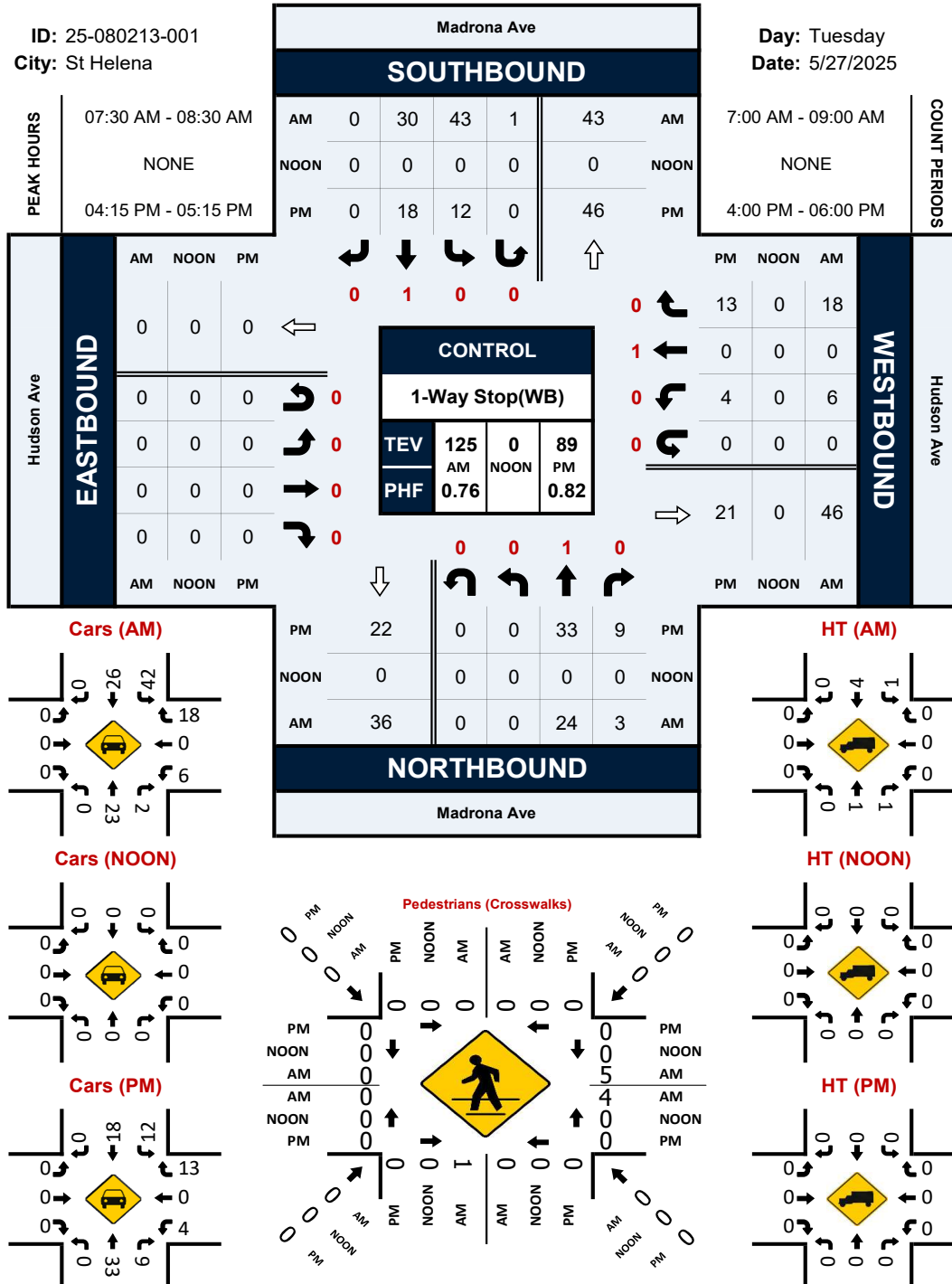
Prepared by National Data & Surveying Services

Madrona Ave & Hudson Ave

Peak Hour Turning Movement Count

ID: 25-080213-001
City: St Helena

Day: Tuesday
Date: 5/27/2025



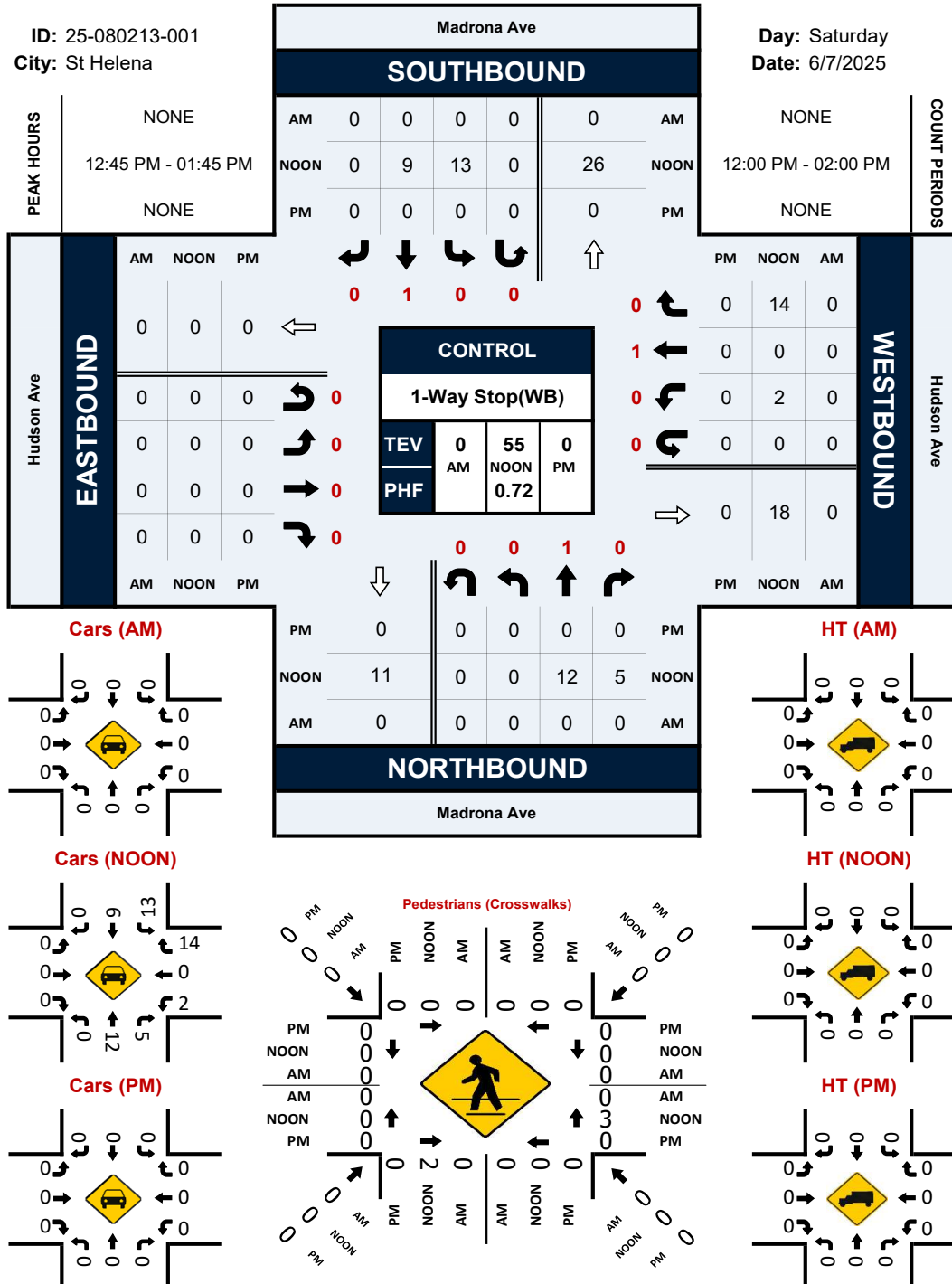
Prepared by National Data & Surveying Services

Madrona Ave & Hudson Ave

Peak Hour Turning Movement Count

ID: 25-080213-001
City: St Helena

Day: Saturday
Date: 6/7/2025



Prepared by National Data & Surveying Services

Spring St & Valley View St

Peak Hour Turning Movement Count

ID: 25-080213-002

City: St Helena

Day: Tuesday

Date: 5/27/2025

PEAK HOURS

07:45 AM - 08:45 AM	AM	0	41	165	0	245	AM	7:00 AM - 09:00 AM
NONE	NOON	0	0	0	0	0	NOON	NONE
04:00 PM - 05:00 PM	PM	0	27	59	0	103	PM	4:00 PM - 06:00 PM

COUNT PERIODS

AM	NOON	PM
0	0	0
0	0	0
0	0	0
0	0	0
AM	NOON	PM

CONTROL

1-Way Stop(WB)

TEV	494 AM	0 NOON	228 PM
PHF	0.69		0.86

NORTHBOUND

Spring St

Cars (AM)

Cars (PM)

HT (AM)

HT (PM)

Pedestrians (Crosswalks)

Prepared by National Data & Surveying Services

Spring St & Valley View St

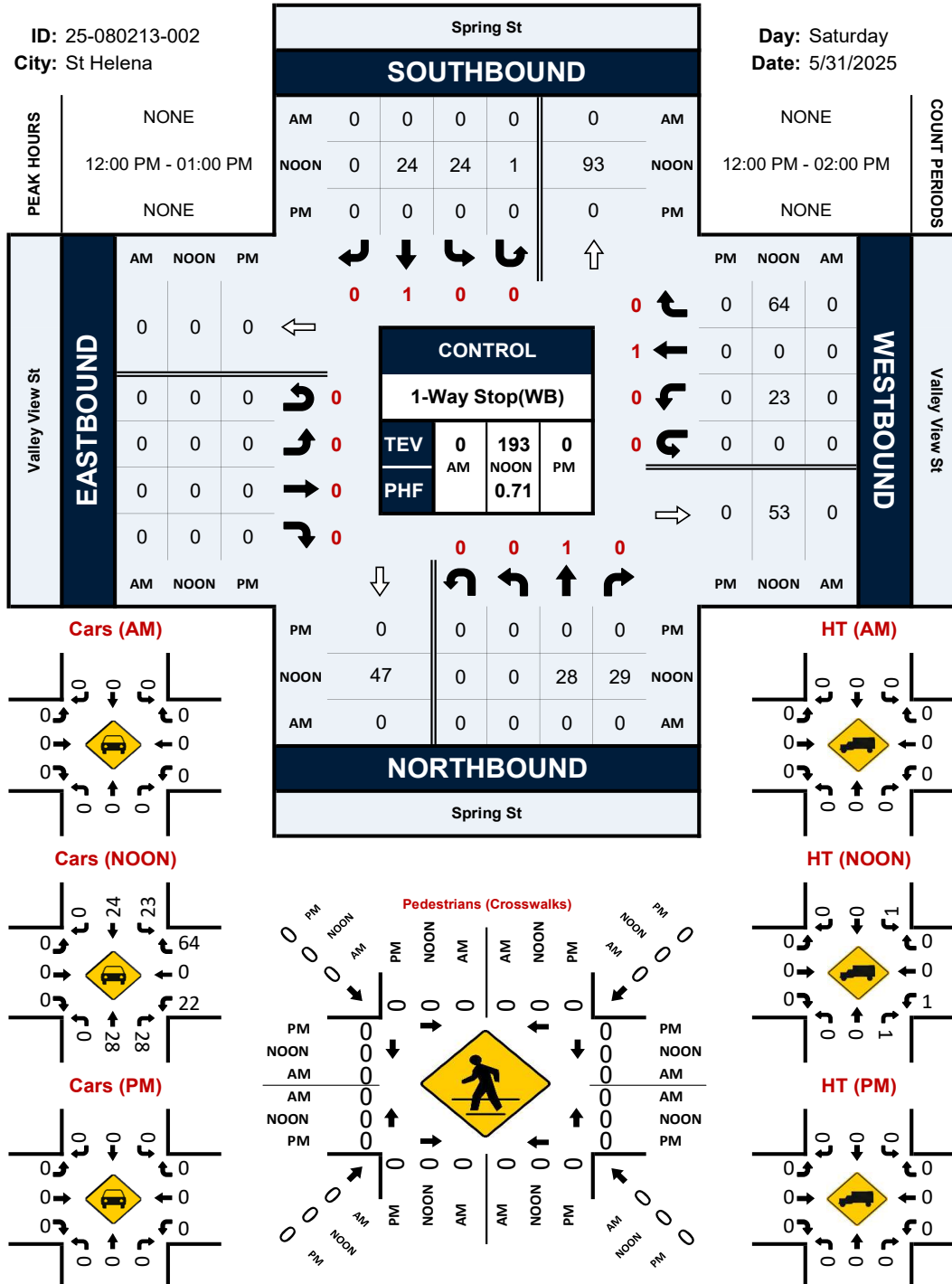
Peak Hour Turning Movement Count

ID: 25-080213-002

City: St Helena

Day: Saturday

Date: 5/31/2025



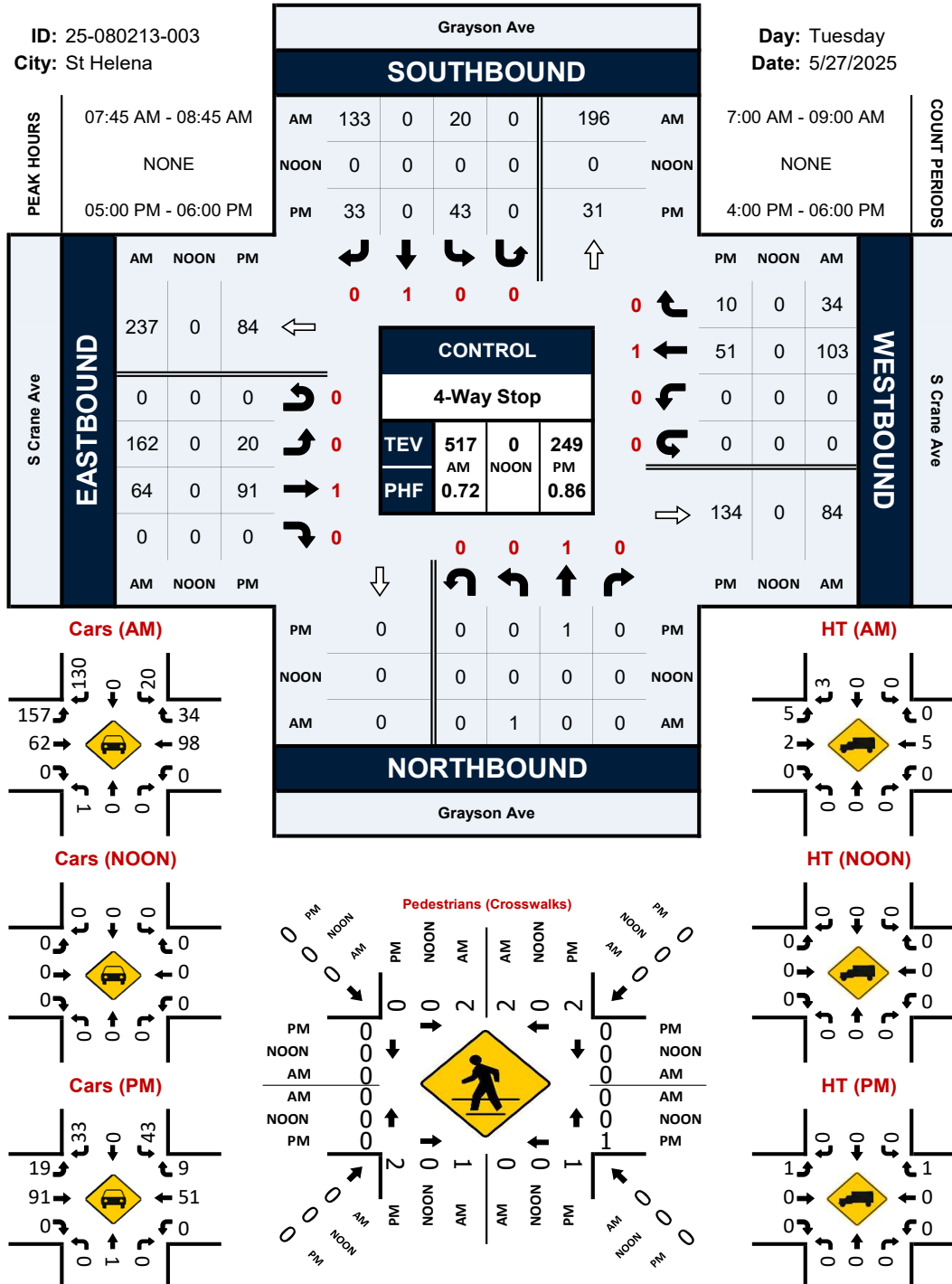
Prepared by National Data & Surveying Services

Grayson Ave & S Crane Ave

Peak Hour Turning Movement Count

ID: 25-080213-003
City: St Helena

Day: Tuesday
Date: 5/27/2025



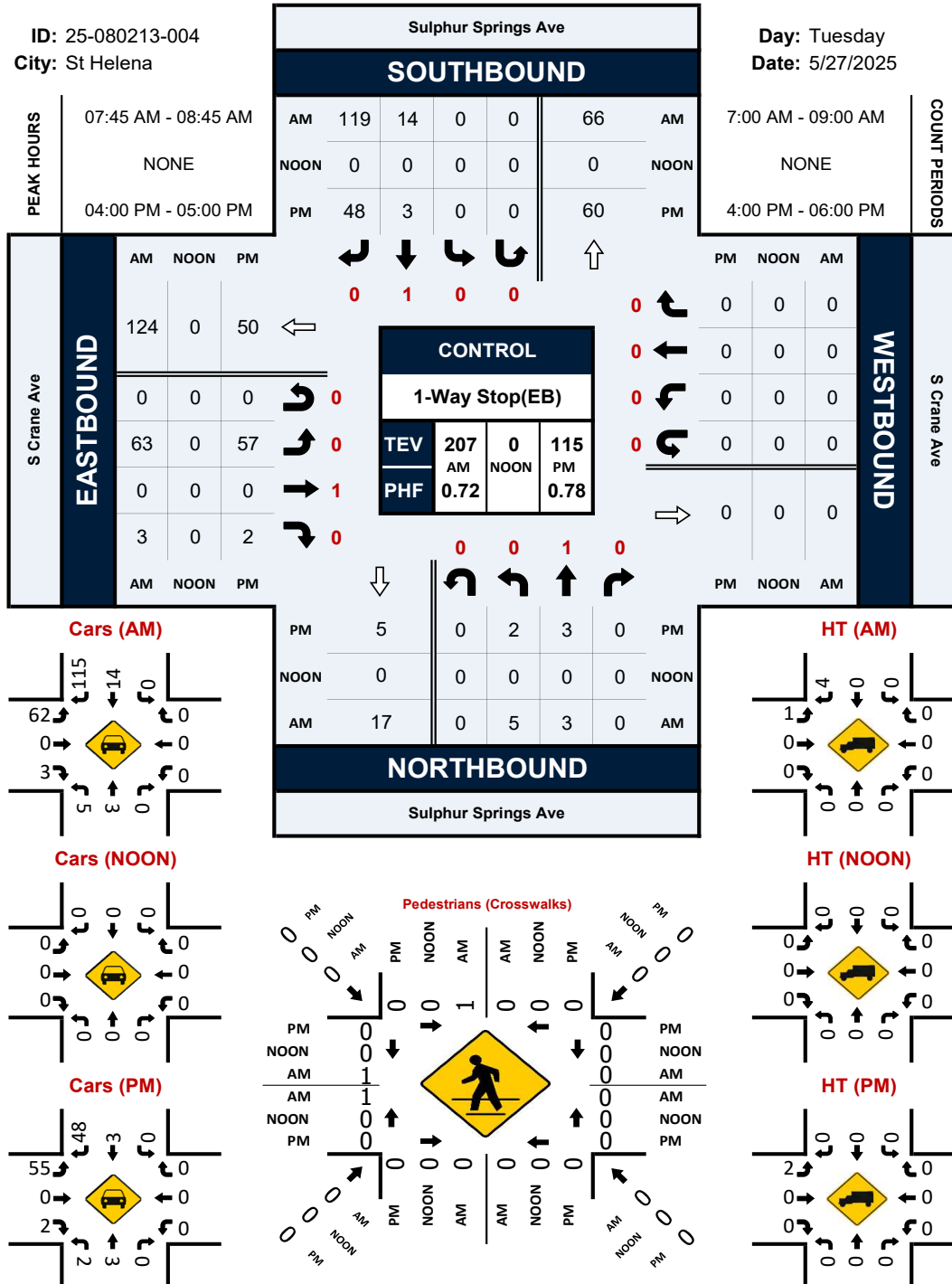
Prepared by National Data & Surveying Services

Sulphur Springs Ave & S Crane Ave

Peak Hour Turning Movement Count

ID: 25-080213-004
City: St Helena

Day: Tuesday
Date: 5/27/2025



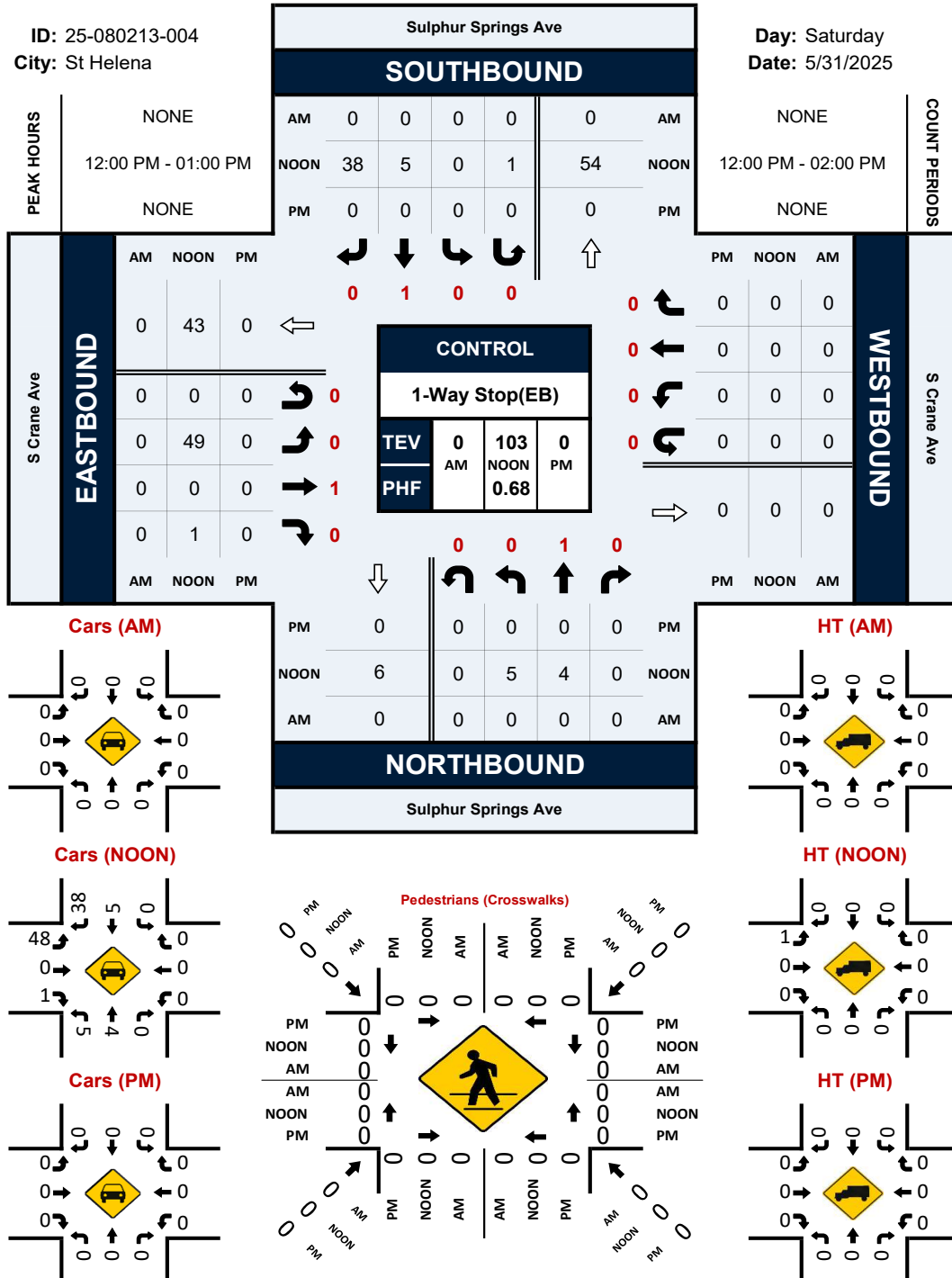
Prepared by National Data & Surveying Services

Sulphur Springs Ave & S Crane Ave

Peak Hour Turning Movement Count

ID: 25-080213-004
City: St Helena

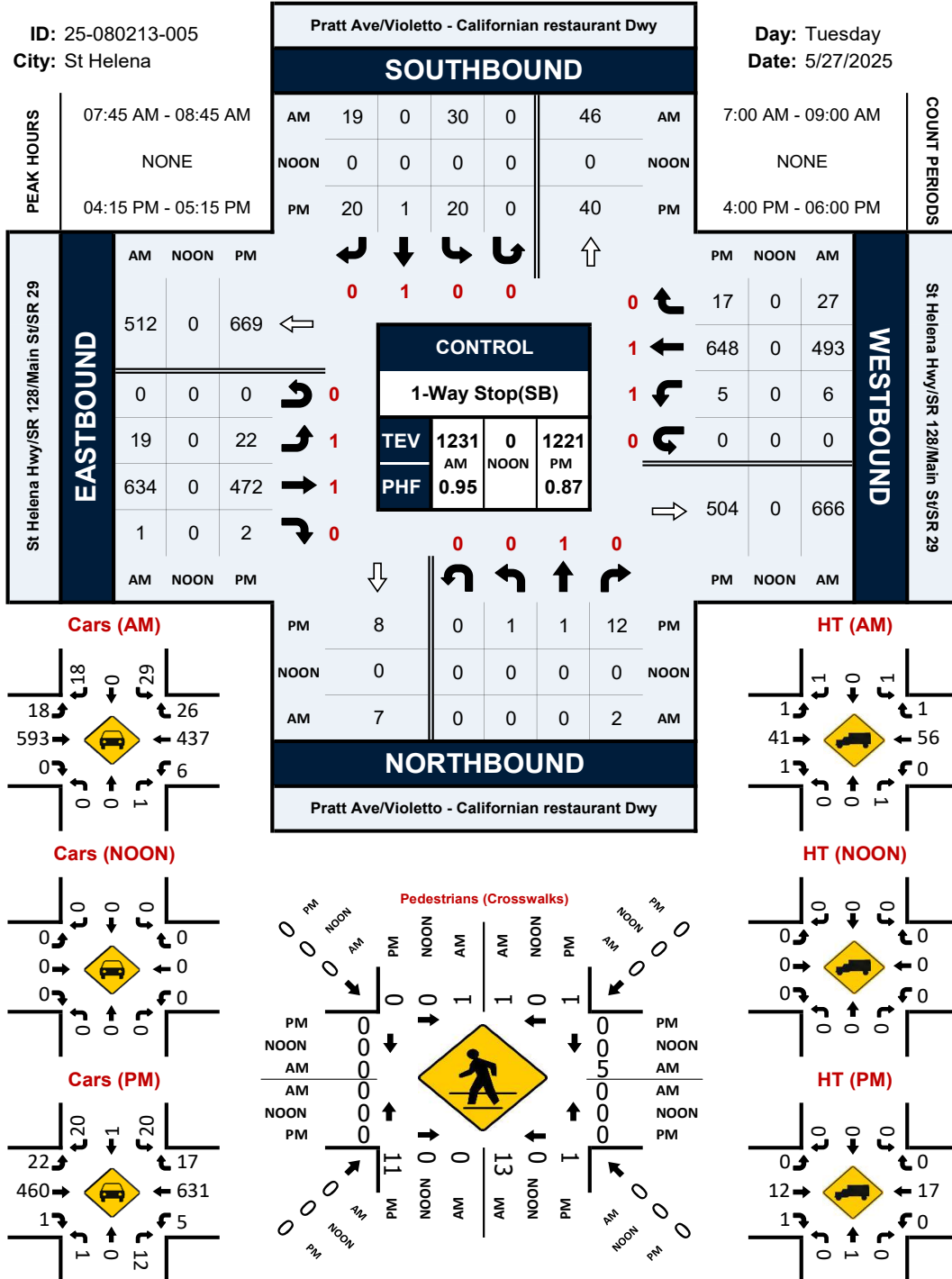
Day: Saturday
Date: 5/31/2025



Prepared by National Data & Surveying Services

Pratt Ave/Violetto - Californian restaurant Dwy & St Helena Hwy/SR 128/Main St/SR 29

Peak Hour Turning Movement Count



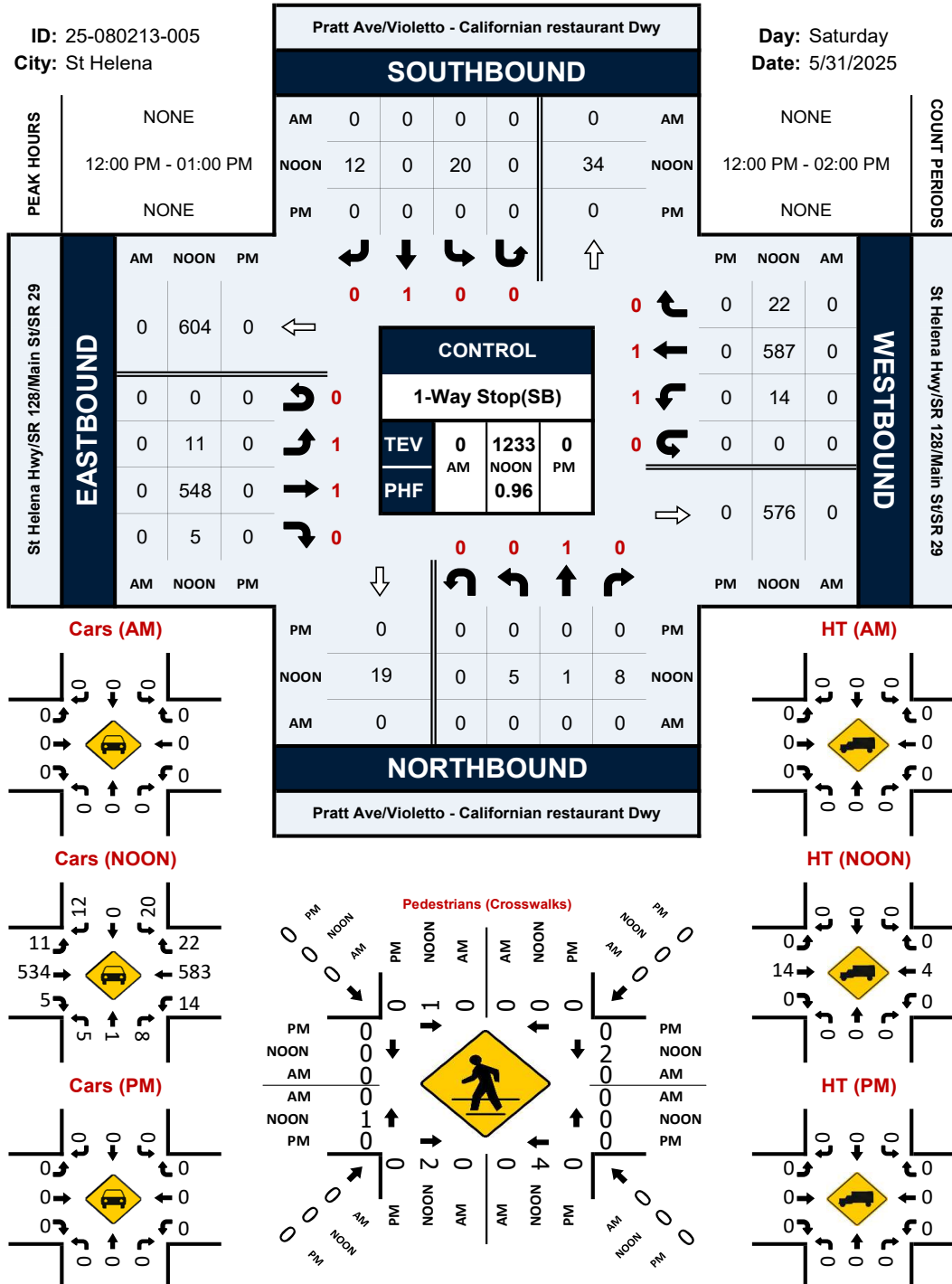
Prepared by National Data & Surveying Services

Pratt Ave/Violetto - Californian restaurant Dwy & St Helena Hwy/SR 128/Main St/SR 29

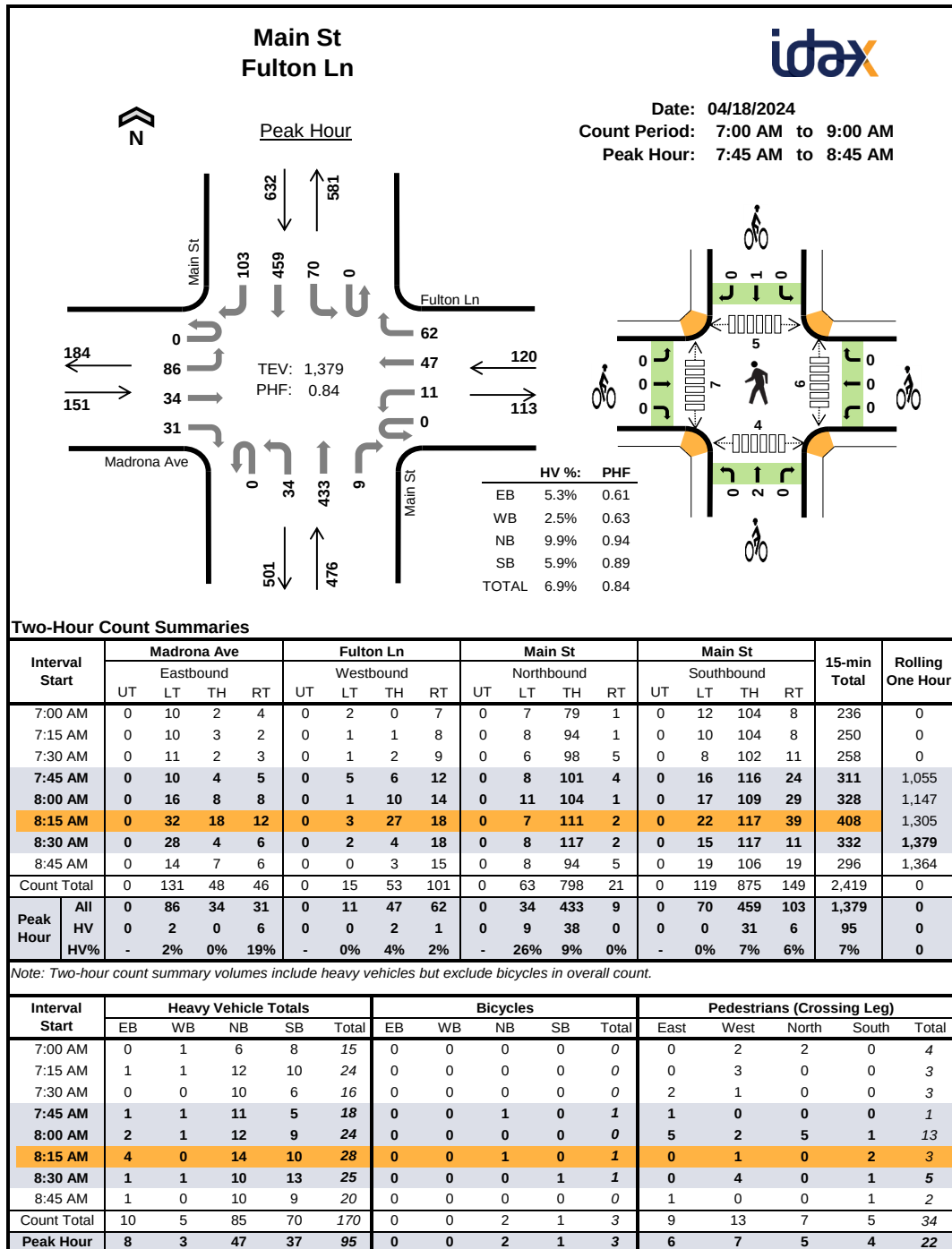
Peak Hour Turning Movement Count

ID: 25-080213-005
City: St Helena

Day: Saturday
Date: 5/31/2025



www.idaxdata.com



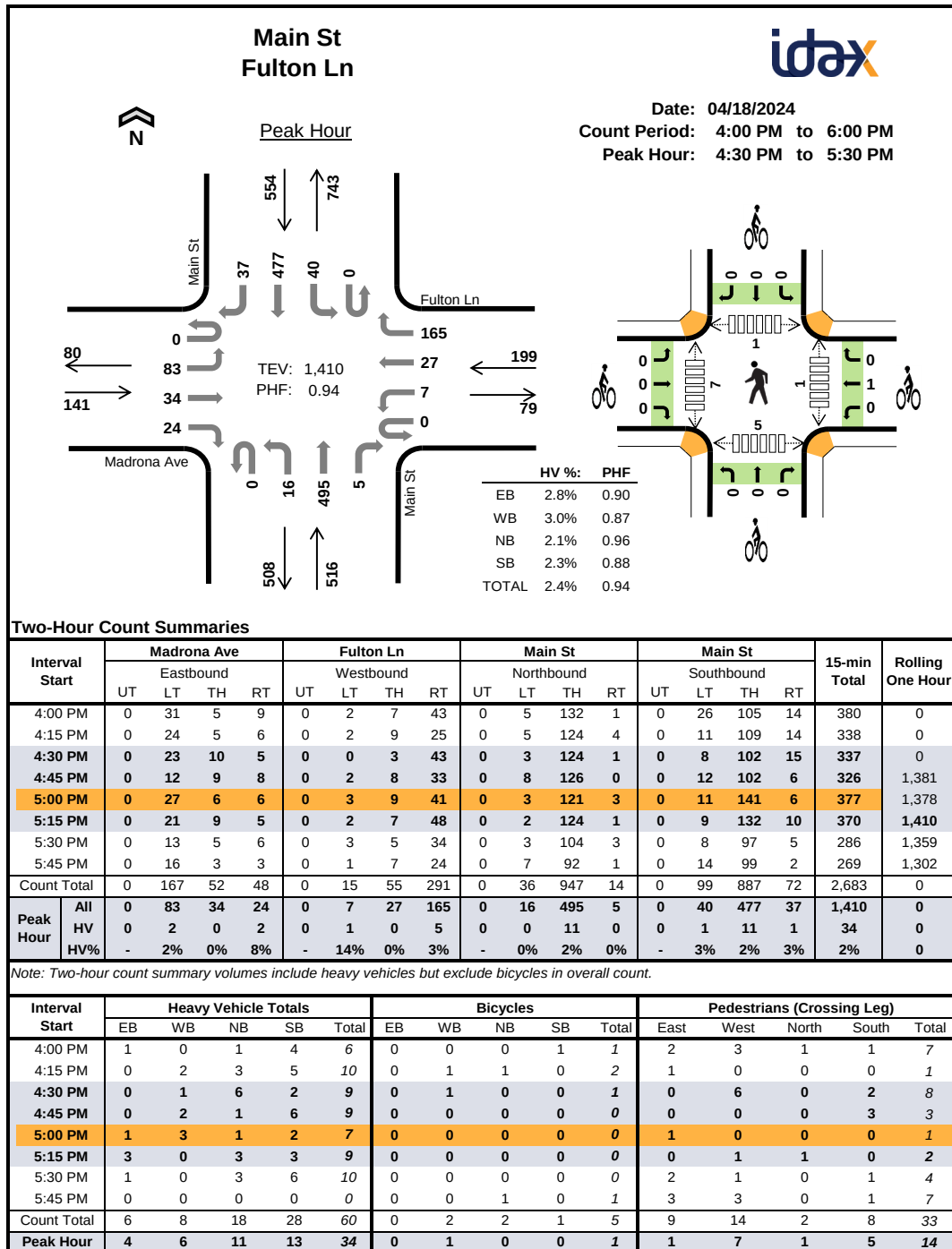
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Madrona Ave				Fulton Ln				Main St			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
7:00 AM	0	0	0	0	0	1	0	0	0	2	4	0
7:15 AM	0	1	0	0	0	0	1	0	0	1	11	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	9	1
7:45 AM	0	1	0	0	0	0	1	0	0	3	8	0
8:00 AM	0	0	0	2	0	0	1	0	0	3	9	0
8:15 AM	0	1	0	3	0	0	0	0	0	2	12	0
8:30 AM	0	0	0	1	0	0	0	1	0	1	9	0
8:45 AM	0	1	0	0	0	0	0	0	0	1	8	1
Count Total	0	4	0	6	0	1	3	1	0	13	70	2
Peak Hour	0	2	0	6	0	0	2	1	0	9	38	0
Two-Hour Count Summaries - Bikes												
Interval Start	Madrona Ave			Fulton Ln			Main St			Main St		
	Eastbound			Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	1	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	1	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	2	0	0	1	0
Peak Hour	0	0	0	0	0	0	0	2	0	0	1	0
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



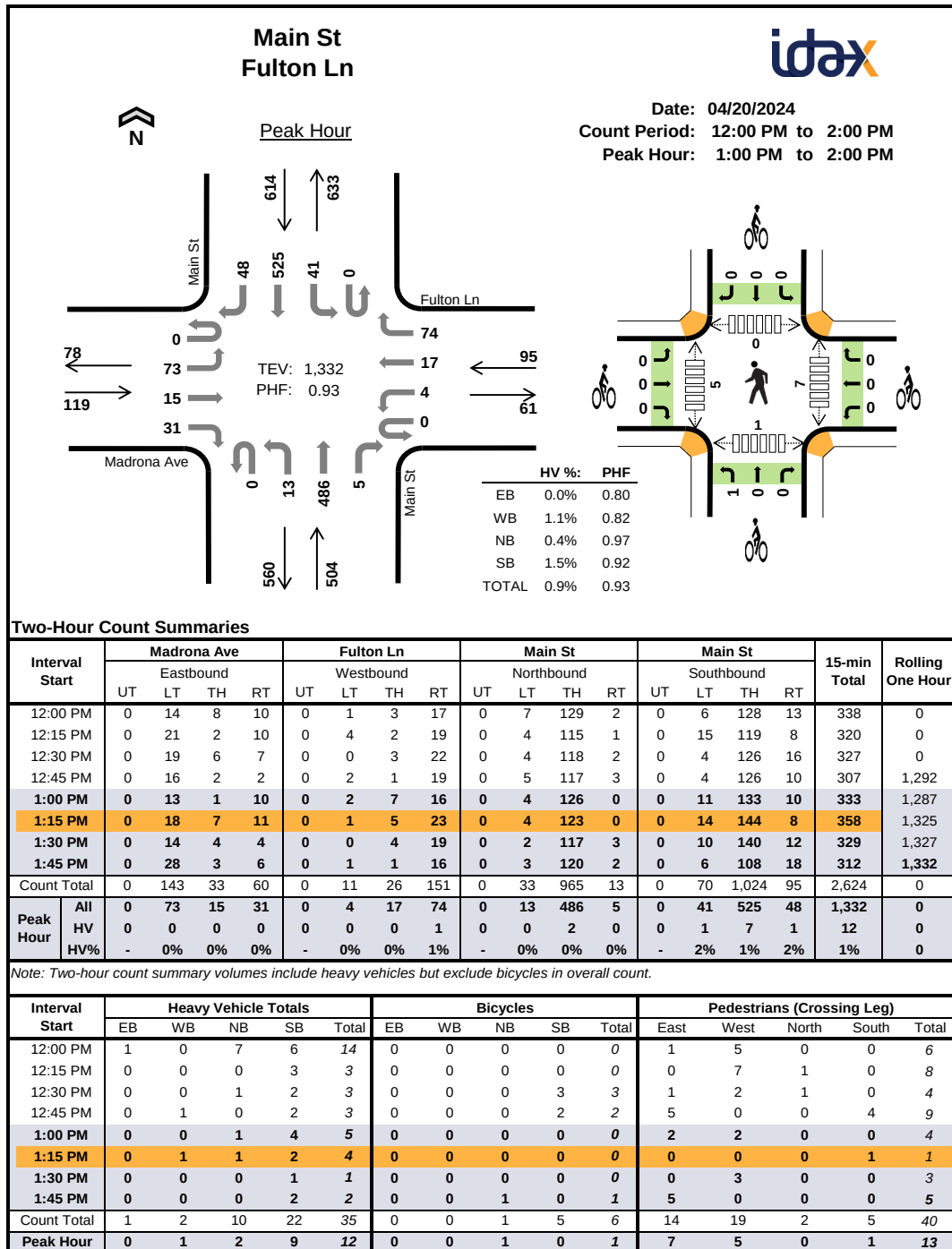
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Madrona Ave				Fulton Ln				Main St			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
4:00 PM	0	1	0	0	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	2	0	1	1	1
4:30 PM	0	0	0	0	0	0	0	1	0	0	6	0
4:45 PM	0	0	0	0	0	1	0	1	0	0	1	0
5:00 PM	0	0	0	1	0	0	0	3	0	0	1	0
5:15 PM	0	2	0	1	0	0	0	0	0	0	3	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	3	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	4	0	2	0	1	0	7	0	1	16	1
Peak Hour	0	2	0	2	0	1	0	5	0	0	11	0
Two-Hour Count Summaries - Bikes												
Interval Start	Madrona Ave			Fulton Ln			Main St			Main St		
	Eastbound			Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	1	0	1	0	0	0	0
4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	1	0	0	0	0
Count Total	0	0	0	0	1	1	0	2	0	0	1	0
Peak Hour	0	0	0	0	1	0	0	0	0	0	0	0
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



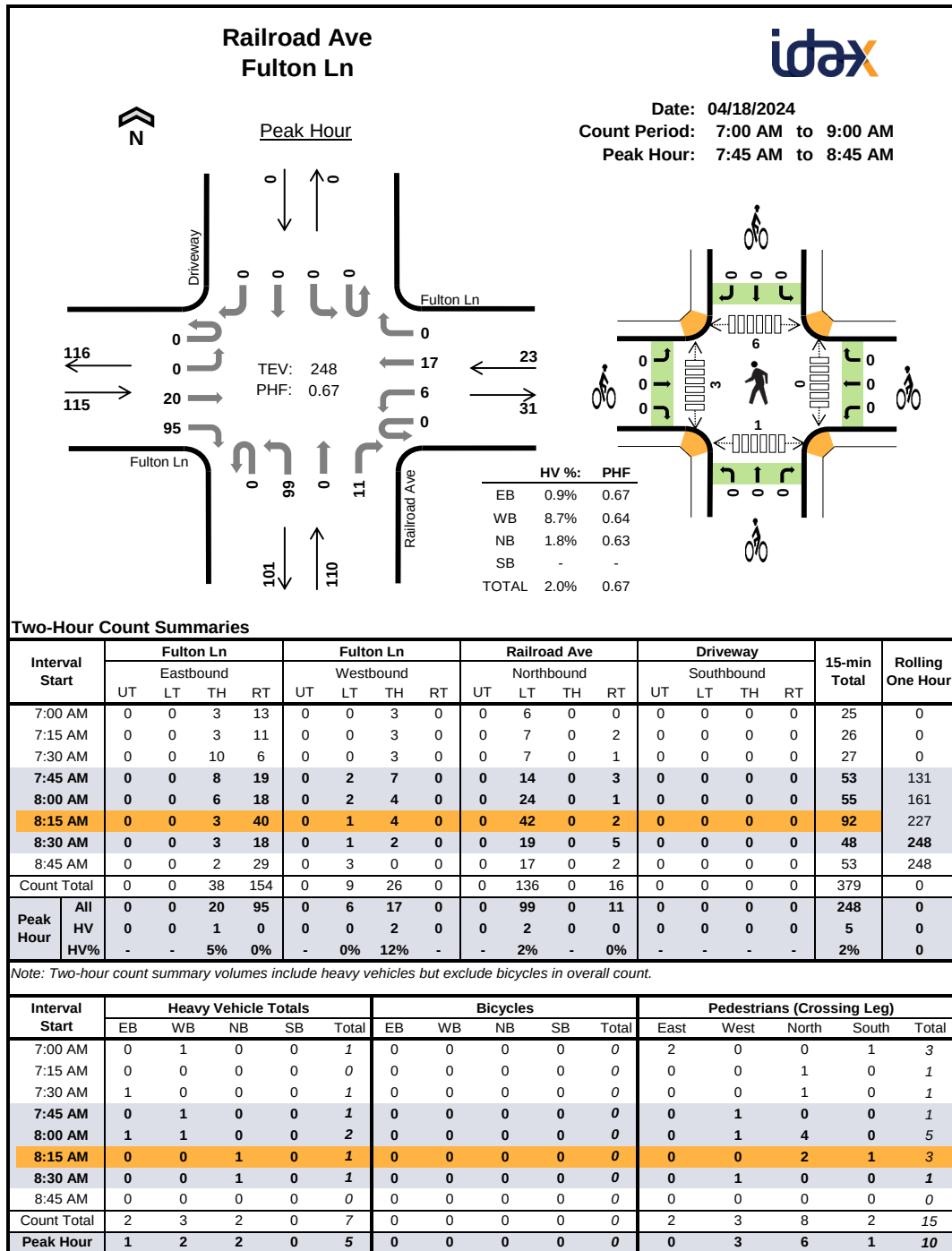
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Madrona Ave				Fulton Ln				Main St			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
12:00 PM	0	0	0	1	0	0	0	0	0	0	7	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	3	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	1	1
12:45 PM	0	0	0	0	0	0	0	1	0	0	2	0
1:00 PM	0	0	0	0	0	0	0	0	0	1	2	1
1:15 PM	0	0	0	0	0	0	0	1	0	0	2	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	1	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	2	0
Count Total	0	0	0	1	0	0	0	2	0	1	19	2
Peak Hour	0	0	0	0	0	0	0	1	0	1	7	1
Two-Hour Count Summaries - Bikes												
Interval Start	Madrona Ave			Fulton Ln			Main St			Main St		
	Eastbound			Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	1	2	3
12:45 PM	0	0	0	0	0	0	0	0	0	2	0	2
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	1	0	0	0	0	0
Count Total	0	0	0	0	0	0	1	0	0	3	2	6
Peak Hour	0	0	0	0	0	0	1	0	0	0	0	0
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

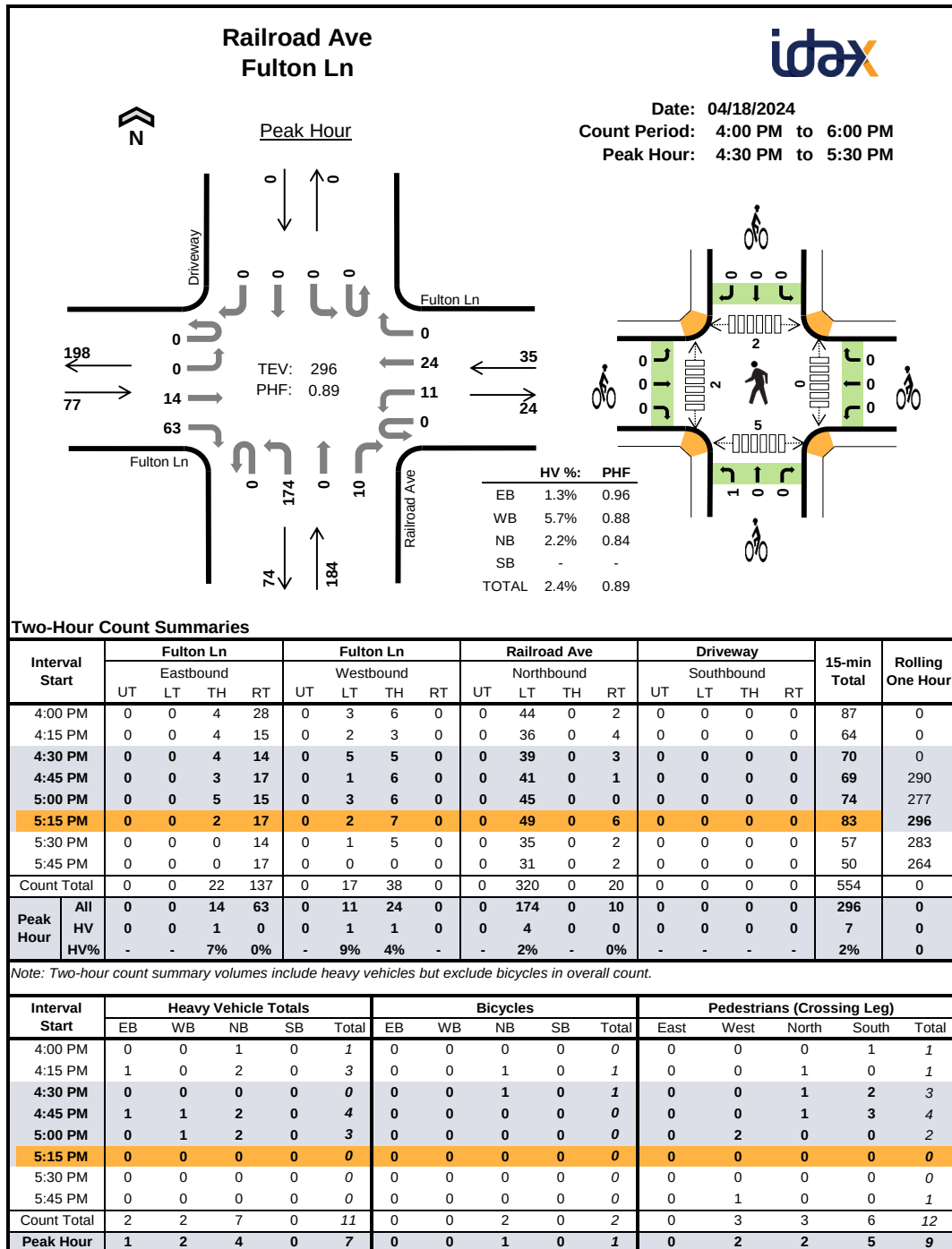
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Fulton Ln				Fulton Ln				Railroad Ave				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
7:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	3	
8:00 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	4	
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	5	
8:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	5	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
Count Total	0	0	2	0	0	0	3	0	0	2	0	0	0	0	0	7	0	
Peak Hour	0	0	1	0	0	0	2	0	0	2	0	0	0	0	0	5	0	

Two-Hour Count Summaries - Bikes														
Interval Start	Fulton Ln			Fulton Ln			Railroad Ave			Driveway			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

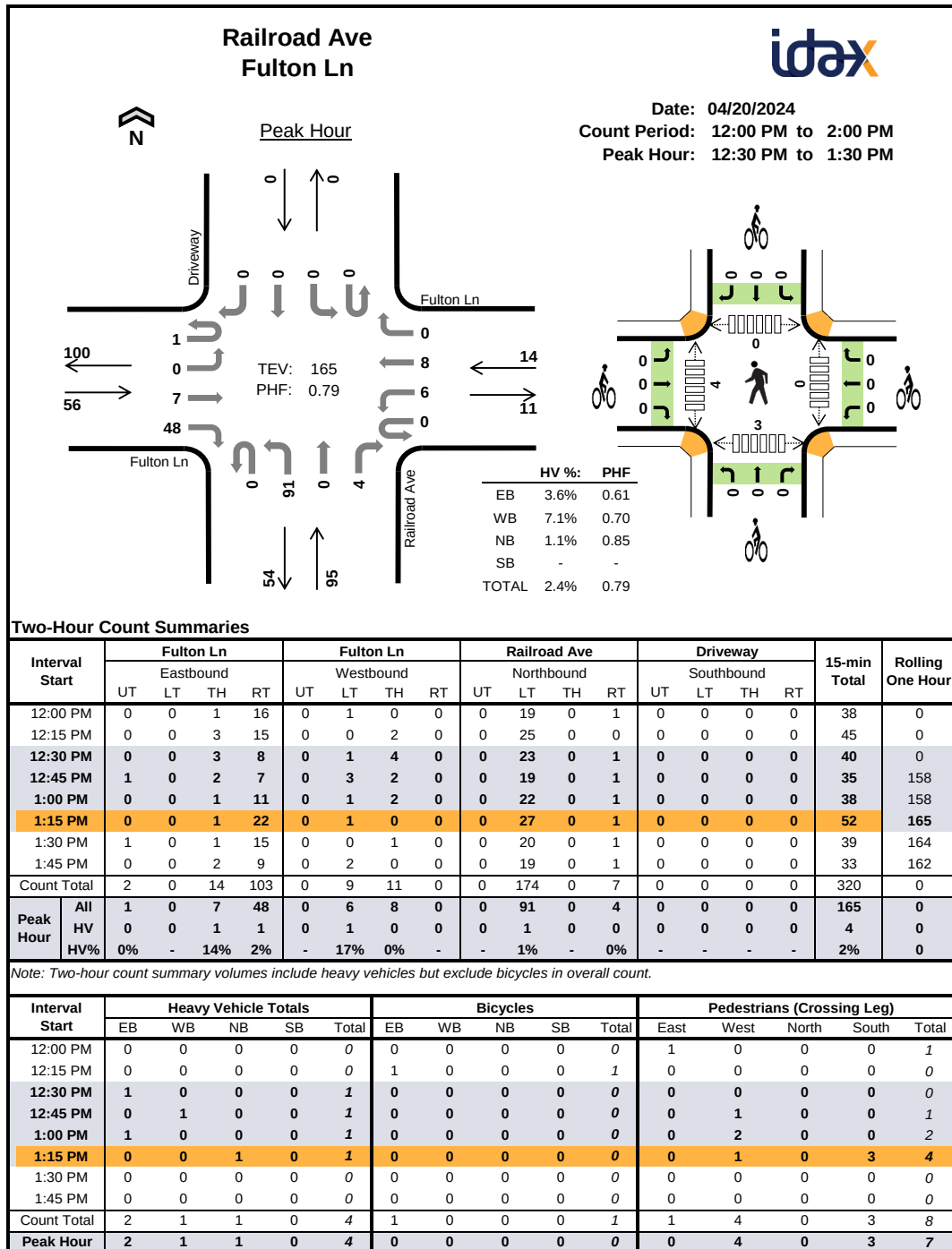
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Fulton Ln				Fulton Ln				Railroad Ave				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
4:15 PM	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	3	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	0	0	0	1	0	0	2	0	0	0	0	0	0	4	8
5:00 PM	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	3	10
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	2	0	0	1	1	0	0	7	0	0	0	0	0	0	11	0
Peak Hour	0	0	1	0	0	1	1	0	0	4	0	0	0	0	0	0	7	0

Two-Hour Count Summaries - Bikes														
Interval Start	Fulton Ln			Fulton Ln			Railroad Ave			Driveway			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	1	0
4:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	1	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	2	0	0	0	0	0	2	0
Peak Hour	0	0	0	0	0	0	1	0	0	0	0	0	1	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

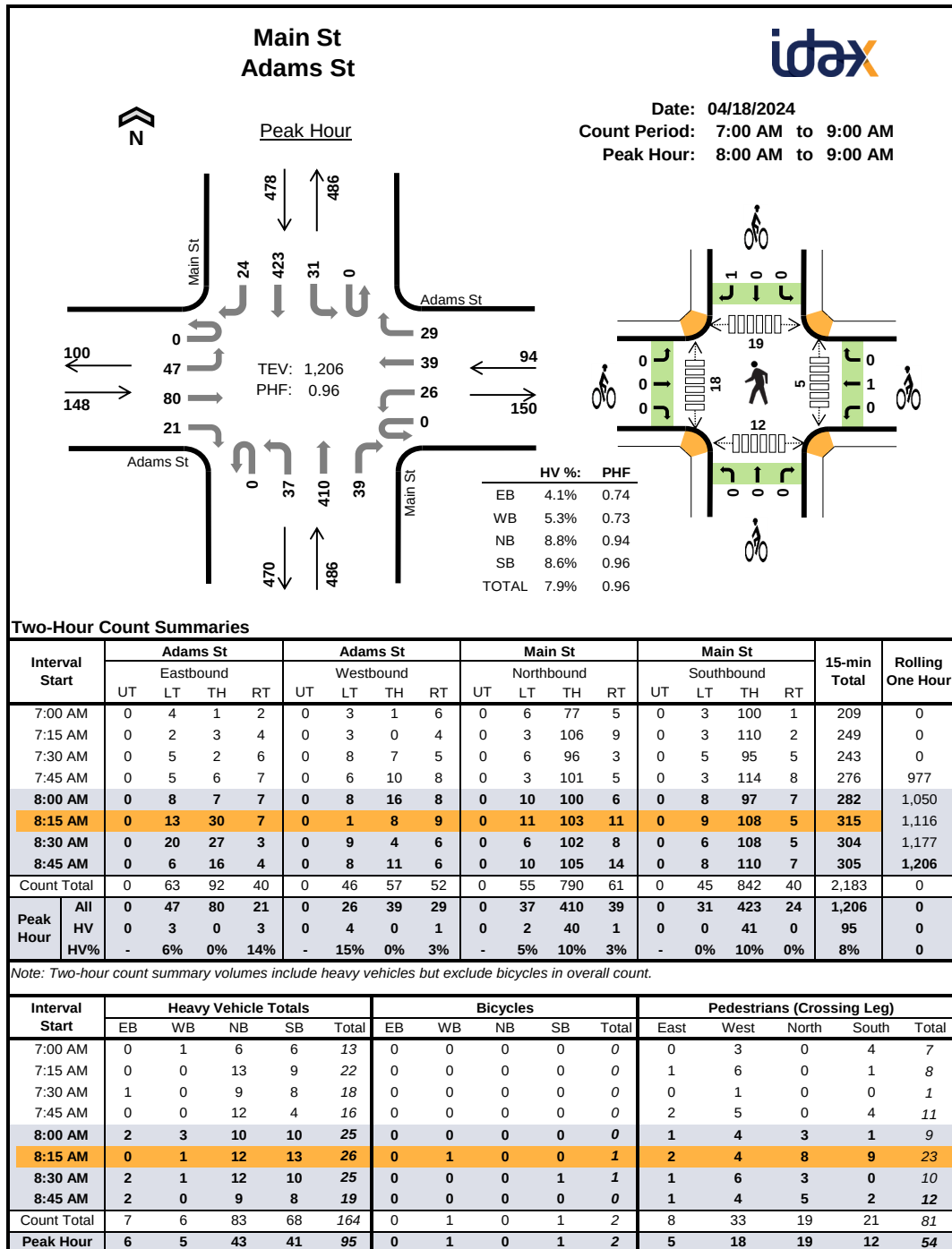
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Fulton Ln				Fulton Ln				Railroad Ave				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
12:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2
1:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	3
1:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	4
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	4	0
Peak Hour	0	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	4	0

Two-Hour Count Summaries - Bikes														
Interval Start	Fulton Ln			Fulton Ln			Railroad Ave			Driveway			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

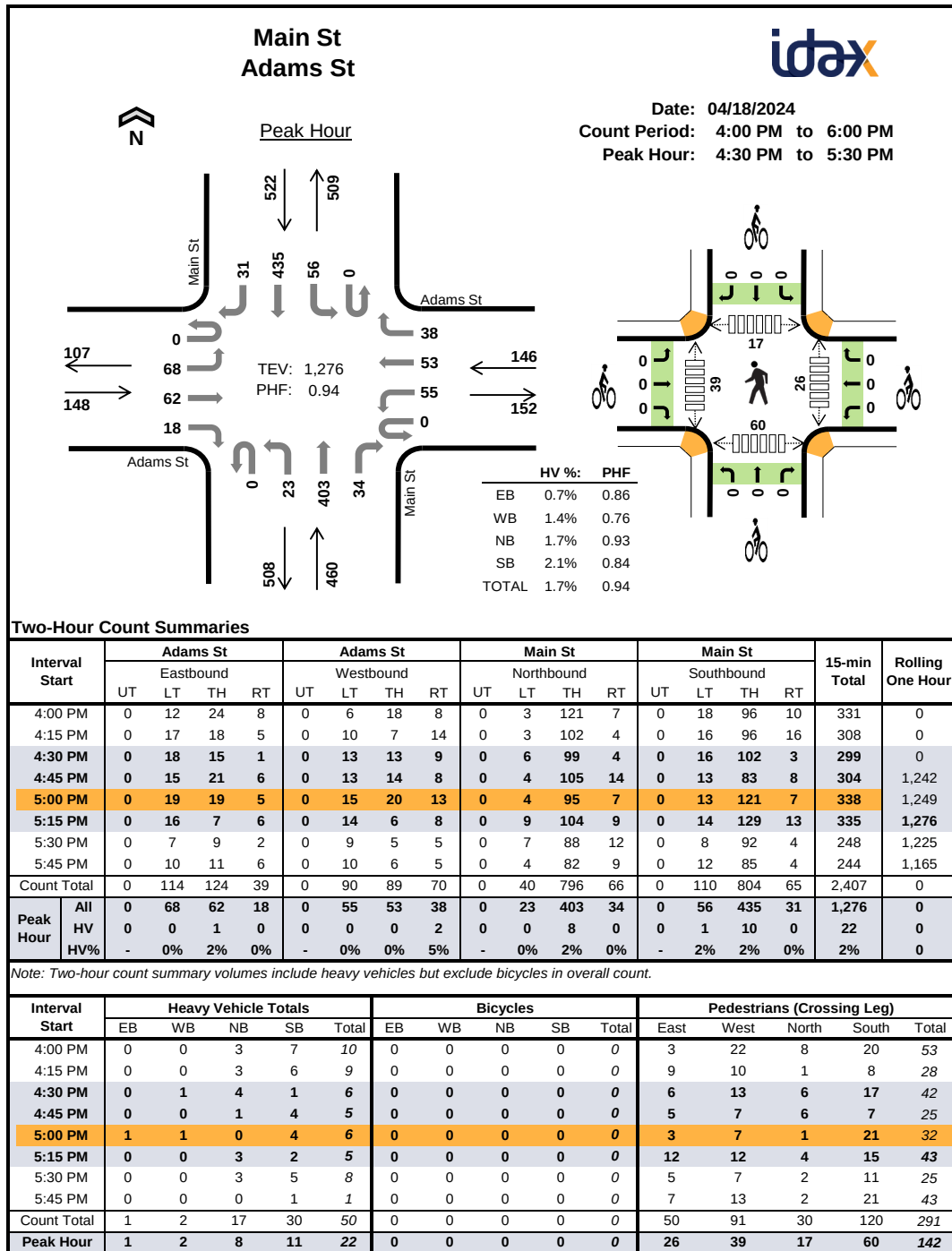
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Adams St				Adams St				Main St				Main St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	1	0	0	0	0	6	0	0	0	6	0	13	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	13	0	0	1	8	0	22	0
7:30 AM	0	0	1	0	0	0	0	0	0	0	9	0	0	1	7	0	18	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	12	0	0	0	4	0	16	69
8:00 AM	0	1	0	1	0	3	0	0	0	0	10	0	0	0	10	0	25	81
8:15 AM	0	0	0	0	0	0	0	1	0	0	12	0	0	0	13	0	26	85
8:30 AM	0	1	0	1	0	1	0	0	0	1	10	1	0	0	10	0	25	92
8:45 AM	0	1	0	1	0	0	0	0	0	1	8	0	0	0	8	0	19	95
Count Total	0	3	1	3	0	5	0	1	0	2	80	1	0	2	66	0	164	0
Peak Hour	0	3	0	3	0	4	0	1	0	2	40	1	0	0	41	0	95	0

Two-Hour Count Summaries - Bikes														
Interval Start	Adams St			Adams St			Main St			Main St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	1	0	0	0	0	0	0	0	1	2
Peak Hour	0	0	0	0	1	0	0	0	0	0	0	0	1	2

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

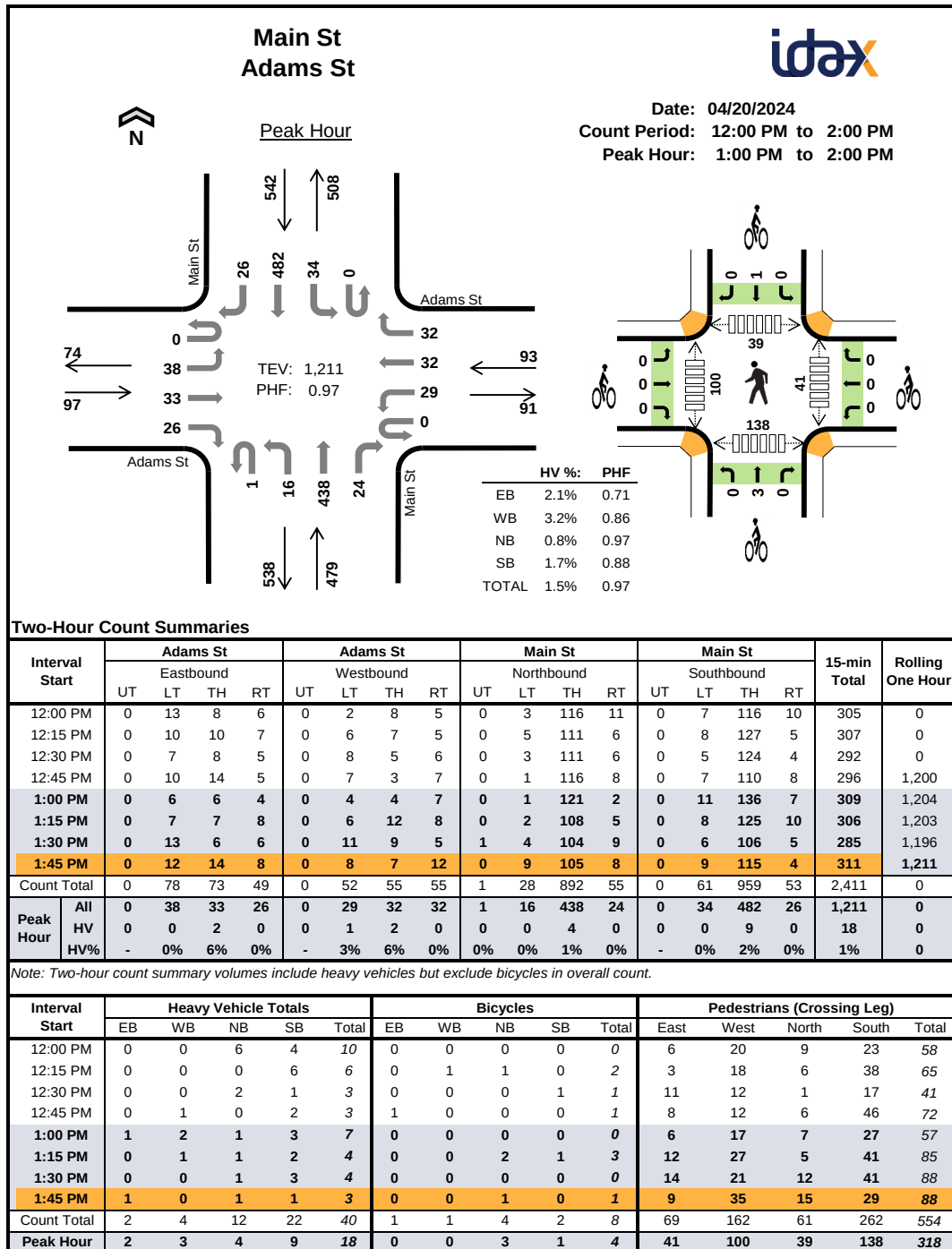
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																			
Interval Start	Adams St				Adams St				Main St				Main St				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	7	0	10	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	4	1	9	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	4	0	0	0	0	1	0	6	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	4	0	5	30
5:00 PM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	3	0	6	26
5:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	2	0	5	22
5:30 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	4	0	8	24
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	20
Count Total	0	0	1	0	0	0	0	2	0	0	16	1	0	3	26	1		50	0
Peak Hour	0	0	1	0	0	0	0	2	0	0	8	0	0	0	1	10	0	22	0

Two-Hour Count Summaries - Bikes															
Interval Start	Adams St			Adams St			Main St			Main St			15-min Total	Rolling One Hour	
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



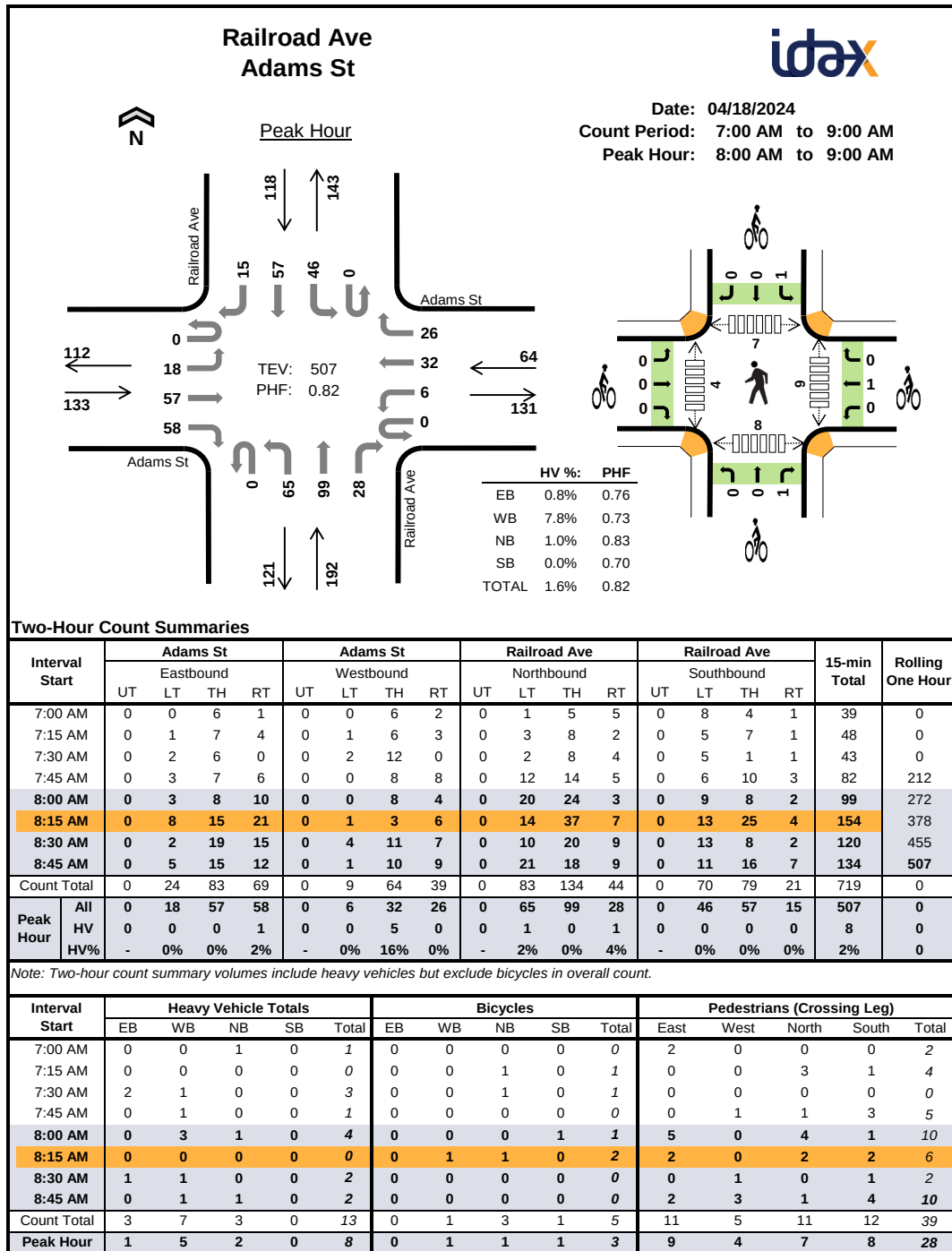
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Adams St				Adams St				Main St			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
12:00 PM	0	0	0	0	0	0	0	0	0	0	6	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	6	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	1	0
12:45 PM	0	0	0	0	0	0	1	0	0	0	2	0
1:00 PM	0	0	1	0	0	1	1	0	0	0	3	0
1:15 PM	0	0	0	0	0	0	1	0	0	0	2	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	3	0
1:45 PM	0	0	1	0	0	0	0	0	0	0	1	0
Count Total	0	0	2	0	0	1	3	0	0	0	22	0
Peak Hour	0	0	2	0	0	1	2	0	0	0	9	0
Two-Hour Count Summaries - Bikes												
Interval Start	Adams St			Adams St			Main St			Main St		
	Eastbound			Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	1	0	1	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	1	0
12:45 PM	0	0	1	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	2	0	0	1	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	1	0	0	0	0
Count Total	0	0	1	0	1	0	1	3	0	0	2	0
Peak Hour	0	0	0	0	0	0	0	3	0	0	1	0
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

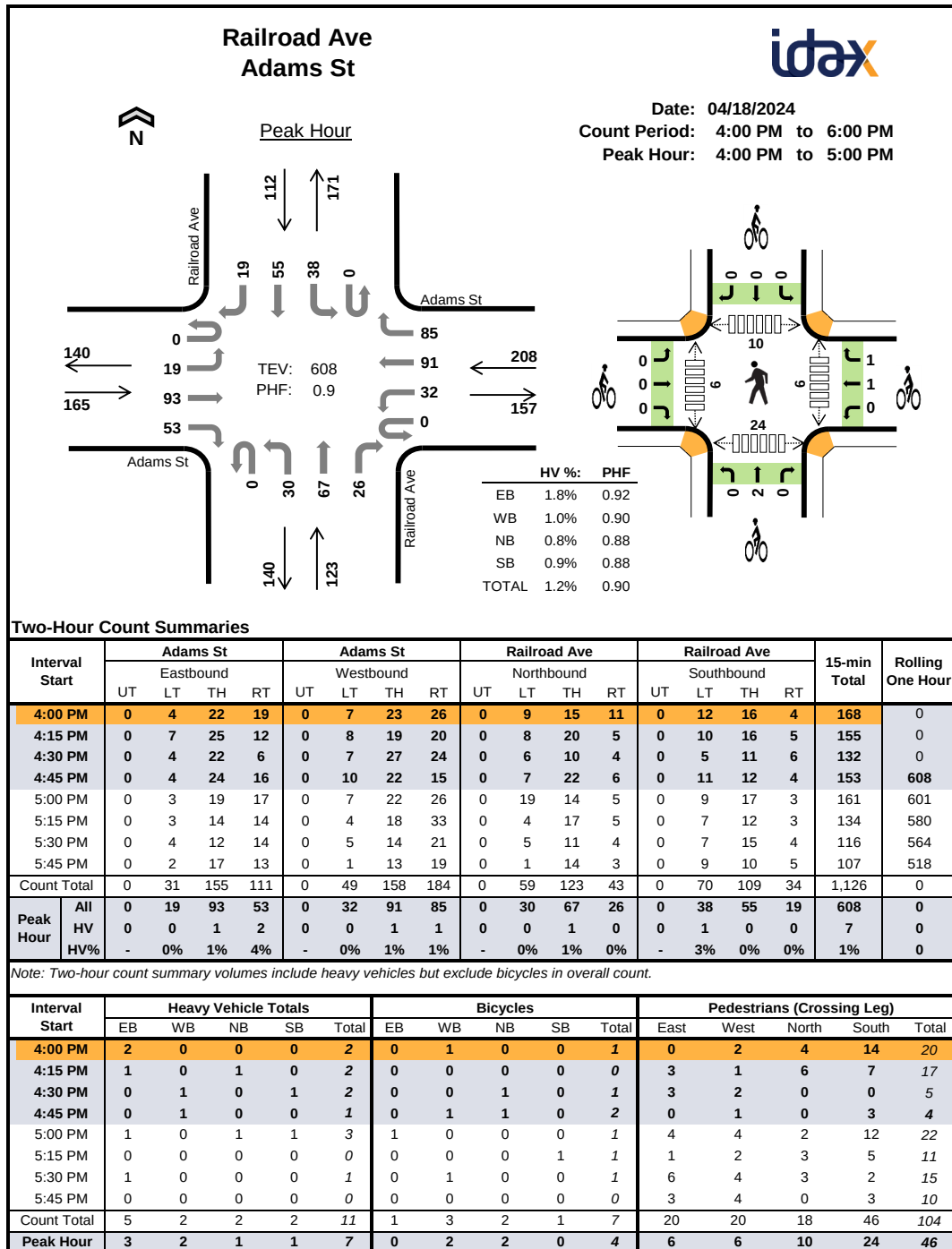
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Adams St				Adams St				Railroad Ave				Railroad Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
7:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	5
8:00 AM	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	0	4	8
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
8:30 AM	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2	7
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	2	8
Count Total	0	0	2	1	0	0	7	0	0	1	0	2	0	0	0	0	13	0
Peak Hour	0	0	0	1	0	0	5	0	0	1	0	1	0	0	0	0	8	0

Two-Hour Count Summaries - Bikes														
Interval Start	Adams St			Adams St			Railroad Ave			Railroad Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:15 AM	0	0	0	0	1	0	0	0	1	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	1	0	1	1	1	1	0	0	0	5
Peak Hour	0	0	0	0	1	0	0	0	1	1	0	0	0	3

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



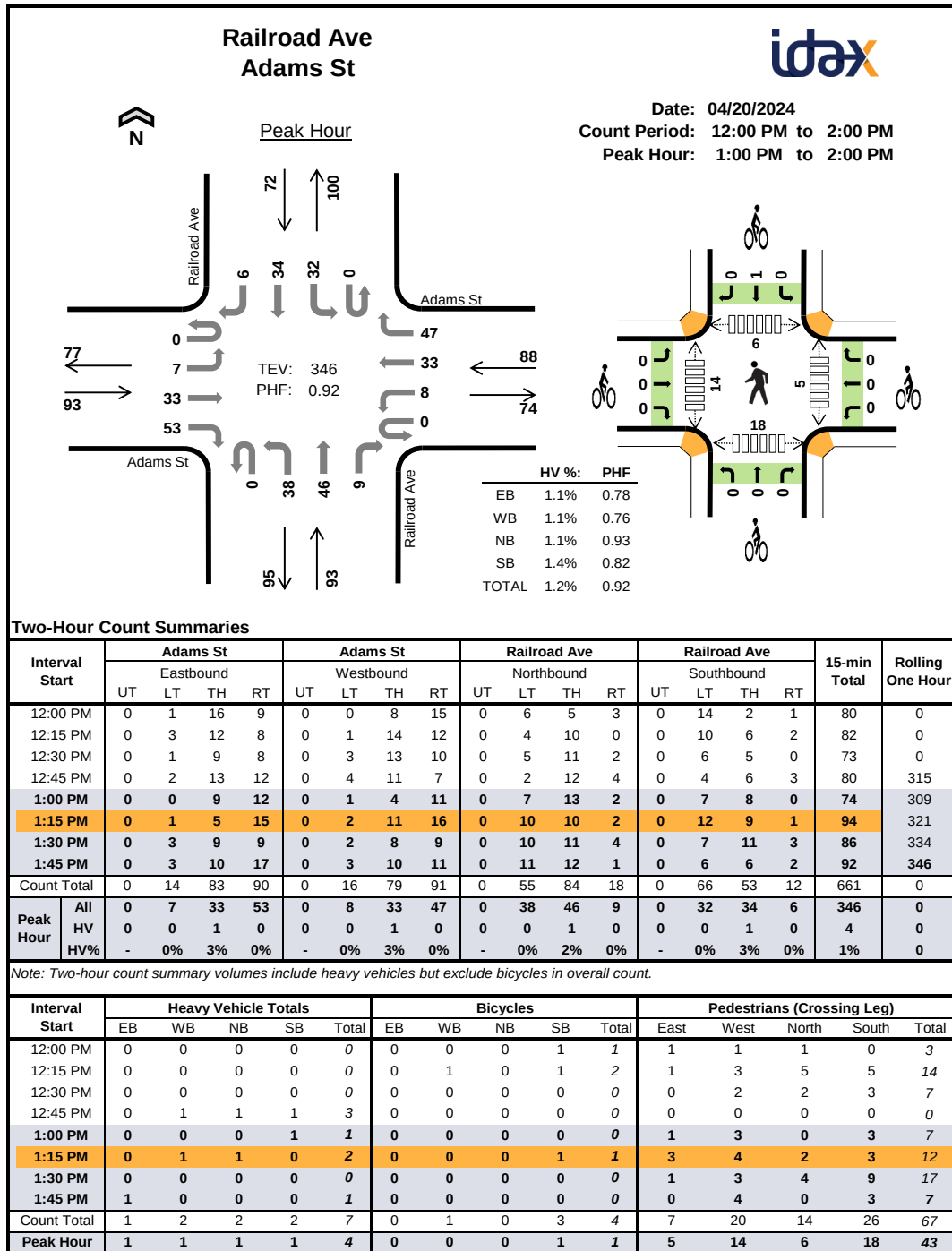
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Adams St				Adams St				Railroad Ave			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
4:00 PM	0	0	0	2	0	0	0	0	0	0	0	0
4:15 PM	0	0	1	0	0	0	0	0	0	0	1	0
4:30 PM	0	0	0	0	0	0	1	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	1	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	0	0	1	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	1	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	1	2	2	0	0	1	1	0	0	2	0
Peak Hour	0	0	1	2	0	0	1	1	0	0	1	0
Two-Hour Count Summaries - Bikes												
Interval Start	Adams St				Adams St				Railroad Ave			
	Eastbound				Westbound				Northbound			
	LT	TH	RT		LT	TH	RT		LT	TH	RT	
4:00 PM	0	0	0		0	0	1		0	0	0	
4:15 PM	0	0	0		0	0	0		0	0	0	
4:30 PM	0	0	0		0	0	0		0	1	0	
4:45 PM	0	0	0		0	1	0		0	1	0	
5:00 PM	0	0	1		0	0	0		0	0	0	
5:15 PM	0	0	0		0	0	0		0	0	0	
5:30 PM	0	0	0		1	0	0		0	0	0	
5:45 PM	0	0	0		0	0	0		0	0	0	
Count Total	0	0	1		1	1	1		0	2	0	
Peak Hour	0	0	0		0	1	1		0	2	0	
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

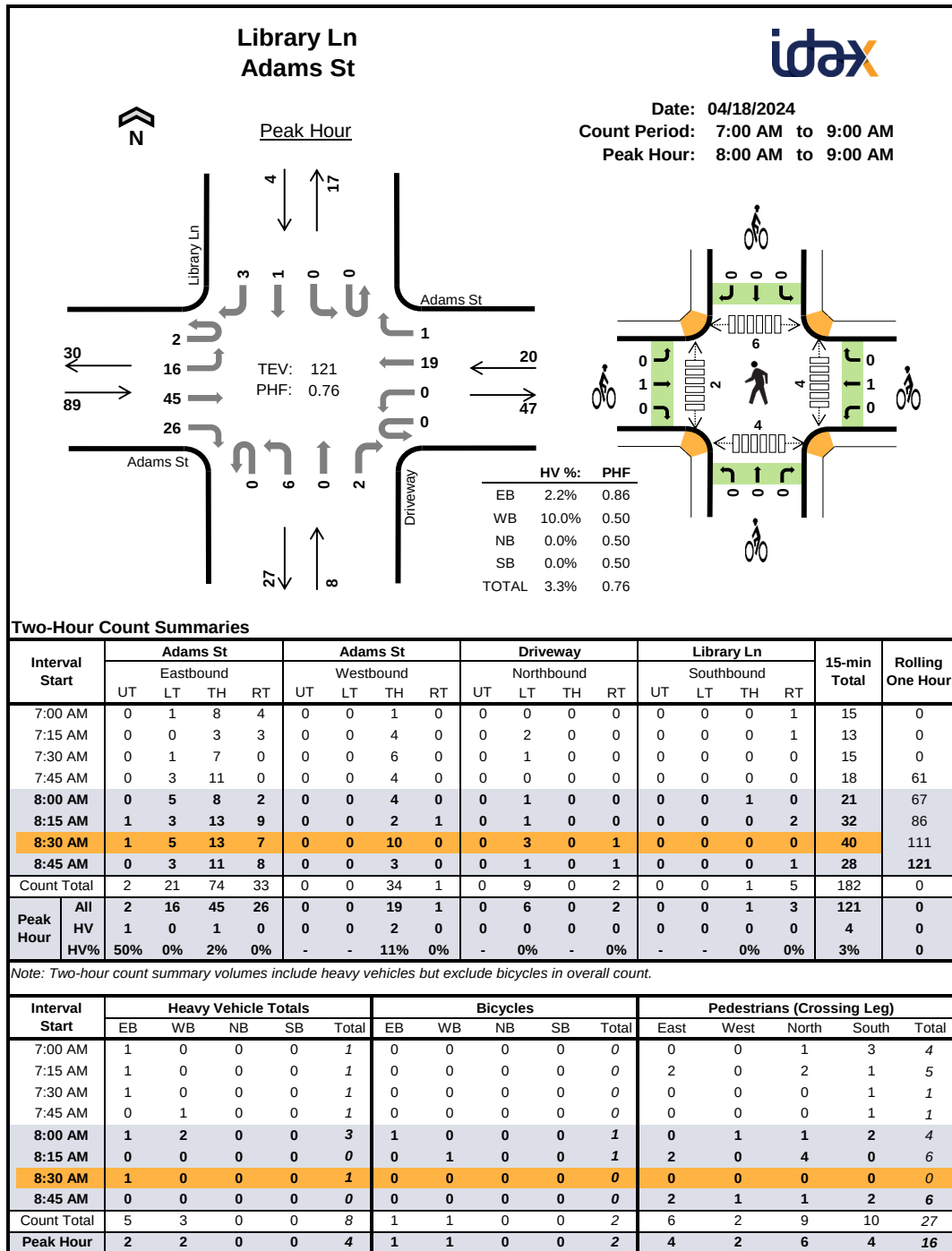
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Adams St				Adams St				Railroad Ave				Railroad Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	3	3
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
1:15 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	6
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
Count Total	0	0	1	0	0	0	2	0	0	0	2	0	0	1	1	0	7	0
Peak Hour	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	4	0

Two-Hour Count Summaries - Bikes														
Interval Start	Adams St			Adams St			Railroad Ave			Railroad Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
12:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0
12:15 PM	0	0	0	0	1	0	0	0	0	1	0	0	2	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	1
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	1	0	0	0	0	2	1	0	4	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	1	0	1	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

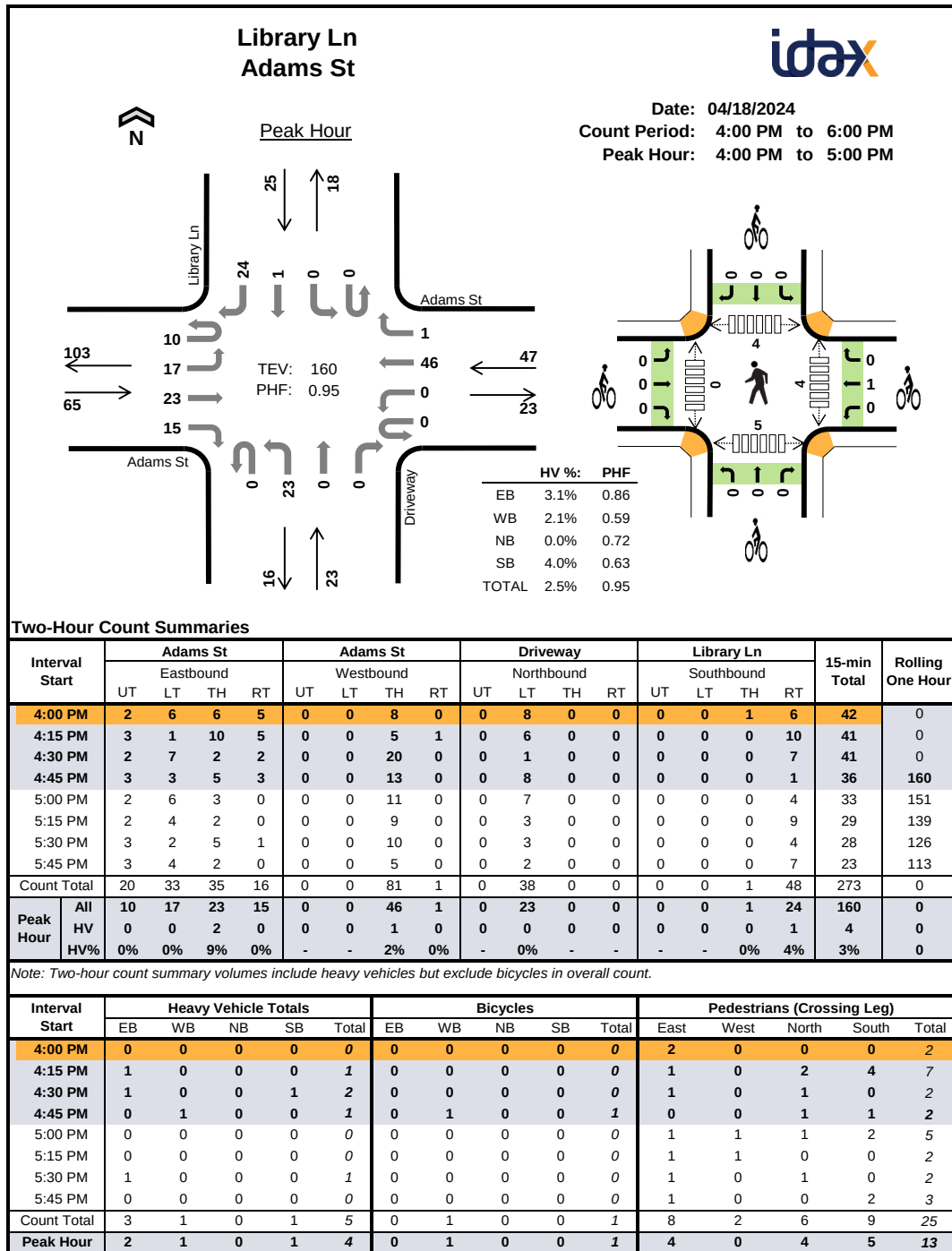
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Adams St				Adams St				Driveway				Library Ln				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
8:00 AM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	6
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
8:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Count Total	1	0	4	0	0	0	3	0	0	0	0	0	0	0	0	0	8	0
Peak Hour	1	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	4	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Adams St			Adams St			Driveway			Library Ln			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1		
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	2	2		
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2		
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2		
Count Total	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0		
Peak Hour	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0		

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

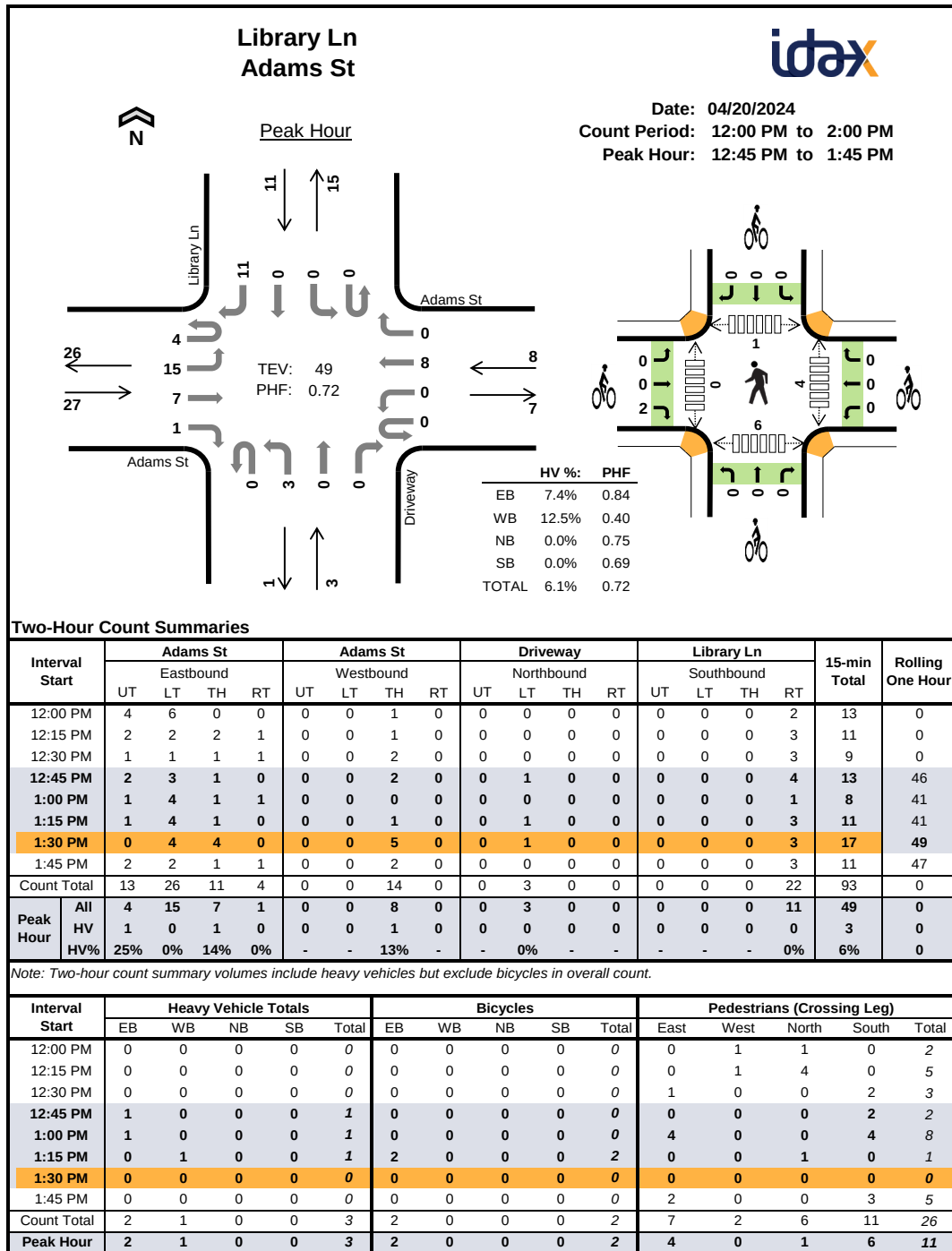
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Adams St				Adams St				Driveway				Library Ln				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
4:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	1	5	0
Peak Hour	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	1	4	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Adams St				Adams St				Driveway				Library Ln				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	LT	TH	RT		LT	TH	RT		LT	TH	RT		LT	TH	RT			
4:00 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
4:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
4:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
4:45 PM	0	0	0		0	1	0		0	0	0		0	0	0		1	1
5:00 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	1
5:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	1
5:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	1
5:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
Count Total	0	0	0		0	1	0		0	0	0		0	0	0		1	0
Peak Hour	0	0	0		0	1	0		0	0	0		0	0	0		1	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

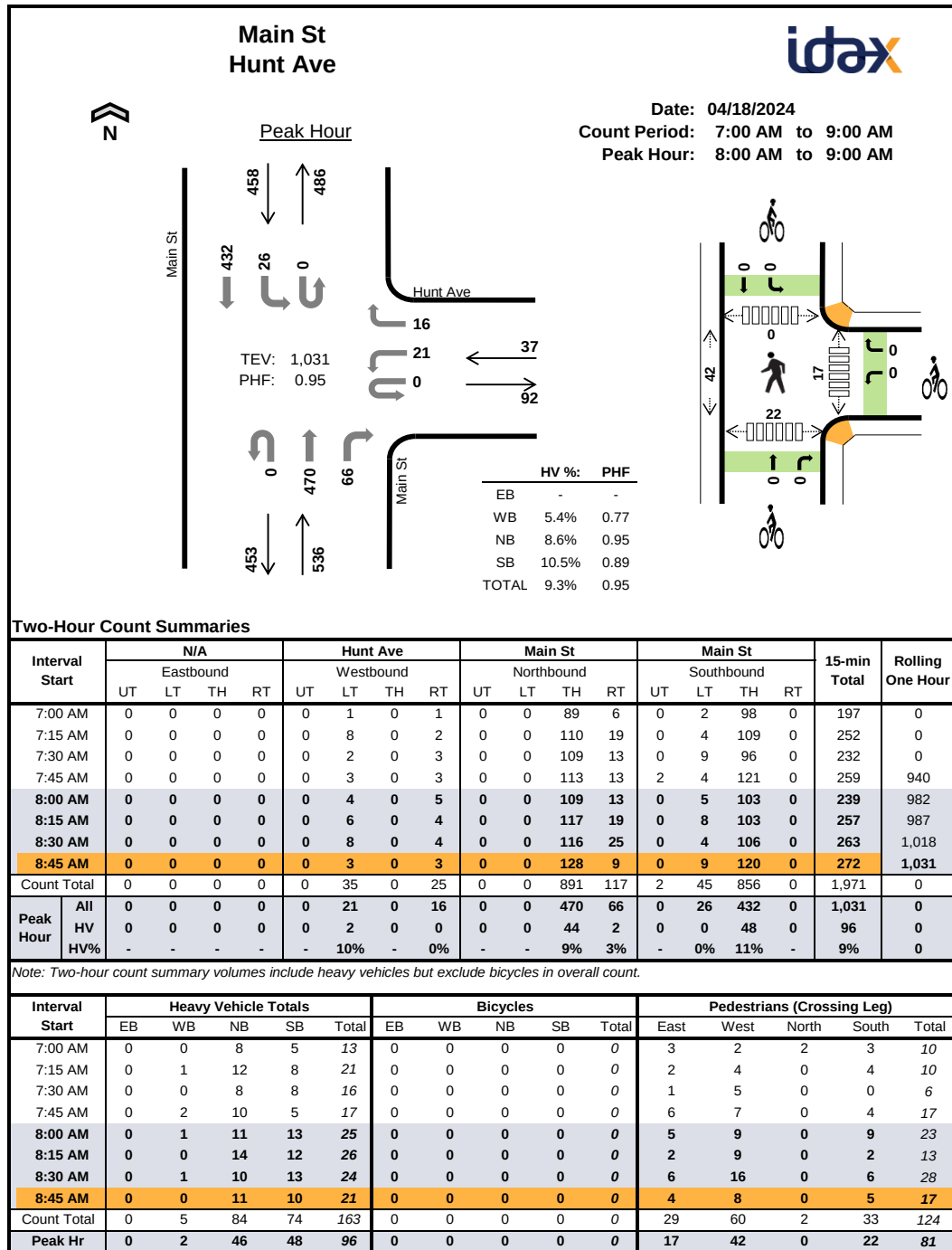
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Adams St				Adams St				Driveway				Library Ln				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
1:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
1:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
Count Total	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	3	
Peak Hour	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	3	

Two-Hour Count Summaries - Bikes																
Interval Start	Adams St			Adams St			Driveway			Library Ln			15-min Total	Rolling One Hour		
	Eastbound			Westbound			Northbound			Southbound						
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0				
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0				
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0				
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0				
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0				
1:15 PM	0	0	2	0	0	0	0	0	0	0	0	0				
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0				
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0				
Count Total	0	0	2	0	0	0	0	0	0	0	0	0				
Peak Hour	0	0	2	0	0	0	0	0	0	0	0	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



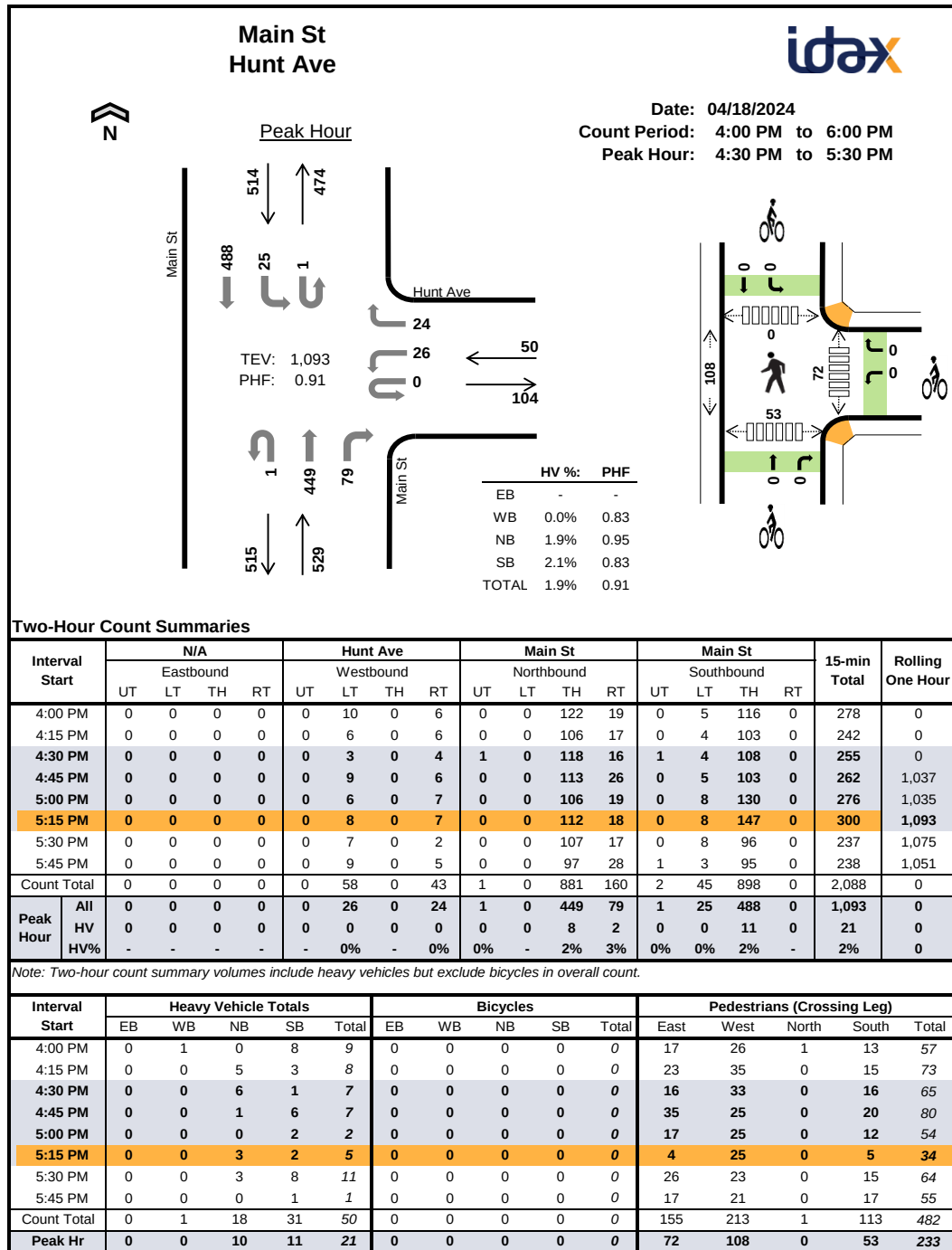
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	N/A				Hunt Ave				Main St			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
7:00 AM	0	0	0	0	0	0	0	0	0	0	7	1
7:15 AM	0	0	0	0	0	1	0	0	0	0	12	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	8	0
7:45 AM	0	0	0	0	0	1	0	1	0	0	10	0
8:00 AM	0	0	0	0	0	1	0	0	0	0	11	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	14	0
8:30 AM	0	0	0	0	0	1	0	0	0	0	9	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	10	1
Count Total	0	0	0	0	0	4	0	1	0	0	81	3
Peak Hour	0	0	0	0	0	2	0	0	0	0	44	2
Two-Hour Count Summaries - Bikes												
Interval Start	N/A				Hunt Ave				Main St			
	Eastbound				Westbound				Northbound			
	LT	TH	RT		LT	TH	RT		LT	TH	RT	
7:00 AM	0	0	0		0	0	0		0	0	0	
7:15 AM	0	0	0		0	0	0		0	0	0	
7:30 AM	0	0	0		0	0	0		0	0	0	
7:45 AM	0	0	0		0	0	0		0	0	0	
8:00 AM	0	0	0		0	0	0		0	0	0	
8:15 AM	0	0	0		0	0	0		0	0	0	
8:30 AM	0	0	0		0	0	0		0	0	0	
8:45 AM	0	0	0		0	0	0		0	0	0	
Count Total	0	0	0		0	0	0		0	0	0	
Peak Hour	0	0	0		0	0	0		0	0	0	
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



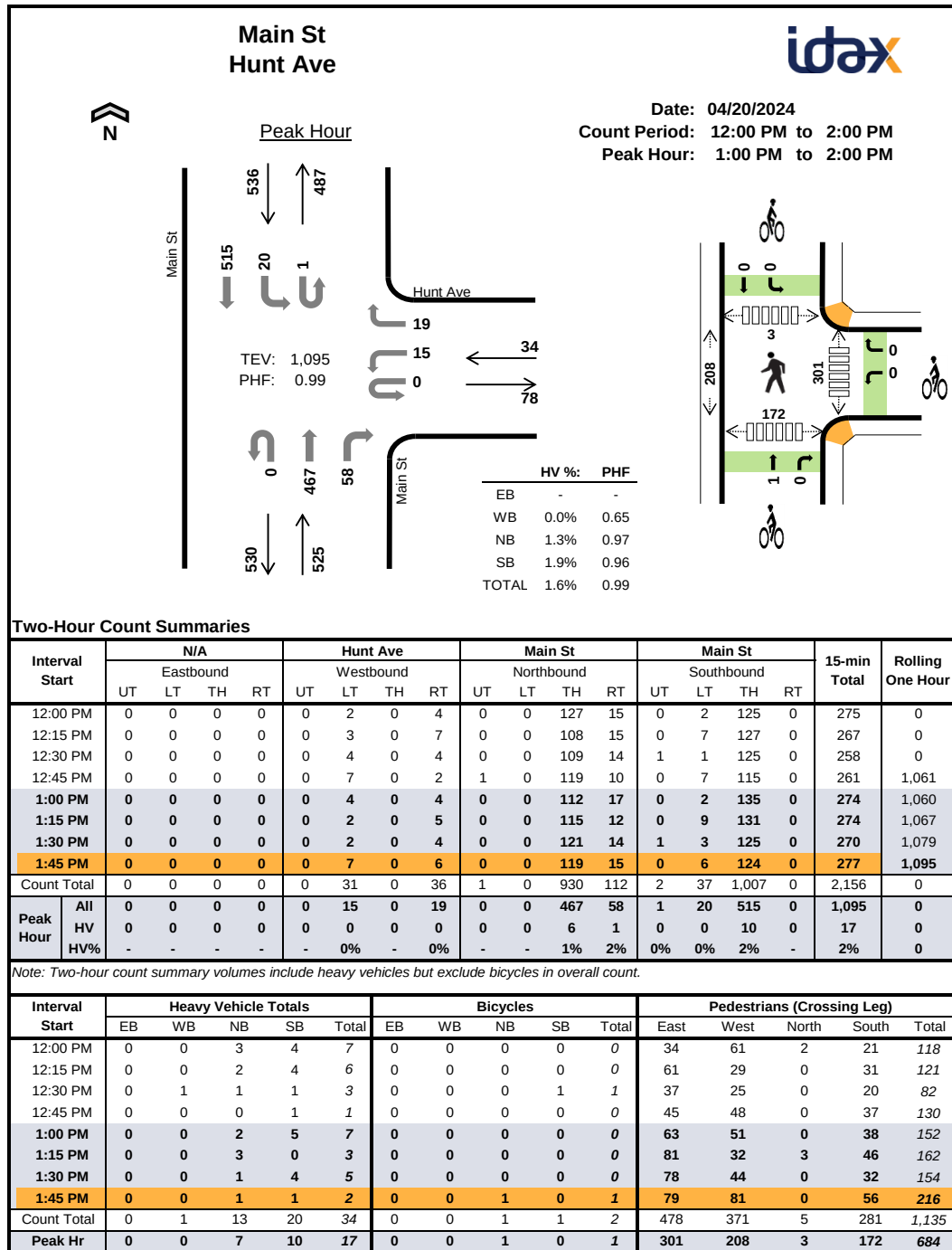
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	N/A				Hunt Ave				Main St			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	5	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	6	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	2	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	3	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	1	0	0	0	0	16	2
Peak Hour	0	0	0	0	0	0	0	0	0	0	8	2
Two-Hour Count Summaries - Bikes												
Interval Start	N/A				Hunt Ave				Main St			
	Eastbound				Westbound				Northbound			
	LT	TH	RT		LT	TH	RT		LT	TH	RT	
4:00 PM	0	0	0		0	0	0		0	0	0	
4:15 PM	0	0	0		0	0	0		0	0	0	
4:30 PM	0	0	0		0	0	0		0	0	0	
4:45 PM	0	0	0		0	0	0		0	0	0	
5:00 PM	0	0	0		0	0	0		0	0	0	
5:15 PM	0	0	0		0	0	0		0	0	0	
5:30 PM	0	0	0		0	0	0		0	0	0	
5:45 PM	0	0	0		0	0	0		0	0	0	
Count Total	0	0	0		0	0	0		0	0	0	
Peak Hour	0	0	0		0	0	0		0	0	0	
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



Project Manager: (415) 310-6469

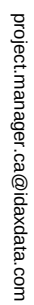
project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	N/A				Hunt Ave				Main St				15-min Total	Rolling One Hour				
	Eastbound				Westbound				Northbound						Main St			
	Southbound																	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0		
12:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0		
12:30 PM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0		
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0		
1:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	5	0		
1:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0		
1:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0		
1:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0		
Count Total	0	0	0	0	0	0	0	1	0	0	12	1	0	0	20	0		
Peak Hour	0	0	0	0	0	0	0	0	0	0	6	1	0	0	10	0		

Two-Hour Count Summaries - Bikes																		
Interval Start	N/A				Hunt Ave				Main St				15-min Total	Rolling One Hour				
	Eastbound				Westbound				Main St						Main St			
	Southbound																	
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0			
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0			
Peak Hour	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



www.idaxdata.com

Two-Hour Count Summaries																											
Interval Start	Hunt Ave					Hunt Ave					Church St					Railroad Ave					Driveway					15-min Total	Rolling One Hour
	Eastbound		Westbound			Northbound		Southbound			Northbound		Southbound														
UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR			
7:00 AM	0	2	4	0	0	0	3	0	1	5	0	0	1	5	2	0	1	2	1	0	0	0	0	0	27	0	
7:15 AM	1	9	13	0	0	0	5	0	7	4	0	1	2	2	3	0	4	3	0	1	0	1	1	1	58	0	
7:30 AM	0	5	13	0	2	0	4	1	3	7	0	0	0	3	2	0	2	0	0	1	0	0	0	2	45	0	
7:45 AM	0	5	10	1	3	0	9	0	5	17	0	0	2	10	2	0	11	4	0	1	0	1	0	0	81	211	
8:00 AM	0	7	10	0	1	0	8	0	2	35	0	1	1	12	4	0	9	3	1	5	0	1	0	1	101	285	
8:15 AM	0	13	12	1	2	0	9	0	6	32	0	0	0	14	4	0	32	10	2	4	0	1	1	0	144	371	
8:30 AM	0	11	13	2	1	0	3	1	9	10	0	1	0	20	3	0	19	6	0	3	0	0	0	2	104	430	
8:45 AM	0	6	12	1	0	0	12	0	3	24	0	1	0	16	8	0	12	9	2	3	0	1	1	1	112	461	
Count Total	1	58	87	5	9	0	53	2	36	134	0	4	6	82	28	0	90	37	6	18	0	4	3	2	7	672	0
Peak	0	37	47	4	4	0	32	1	20	101	0	3	1	62	19	0	72	28	5	15	0	3	3	1	4	461	0
Hour	0	1	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	1	0	0	8	0
HV%	-	3%	2%	0%	0%	-	3%	0%	0%	0%	-	33%	0%	0%	0%	-	0%	0%	0%	20%	-	0%	50%	0%	0%	2%	0
Note: Two-hour count summaries include heavy vehicles but exclude bicycles in overall count.																											

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	NEB	Total	EB	WB	NB	SB	NEB	Total	East	West	North
7:00 AM	1	0	0	0	0	1	0	0	0	0	0	0	1	2	0
7:15 AM	1	0	0	1	0	2	0	1	0	0	0	1	0	1	0
7:30 AM	2	1	0	0	0	3	0	0	1	0	0	1	0	1	0
7:45 AM	0	3	0	1	0	4	0	0	0	0	0	0	1	3	0
8:00 AM	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1
8:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
8:30 AM	1	0	1	0	0	2	0	0	0	0	0	0	3	2	1
8:45 AM	1	1	1	1	1	4	0	0	0	0	0	0	0	0	1
Count Total	6	5	1	5	1	18	1	2	1	0	0	1	6	10	7
Peak Hr	2	1	1	3	1	8	1	1	0	0	0	2	4	3	4
															16
															26
															77
															41

Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

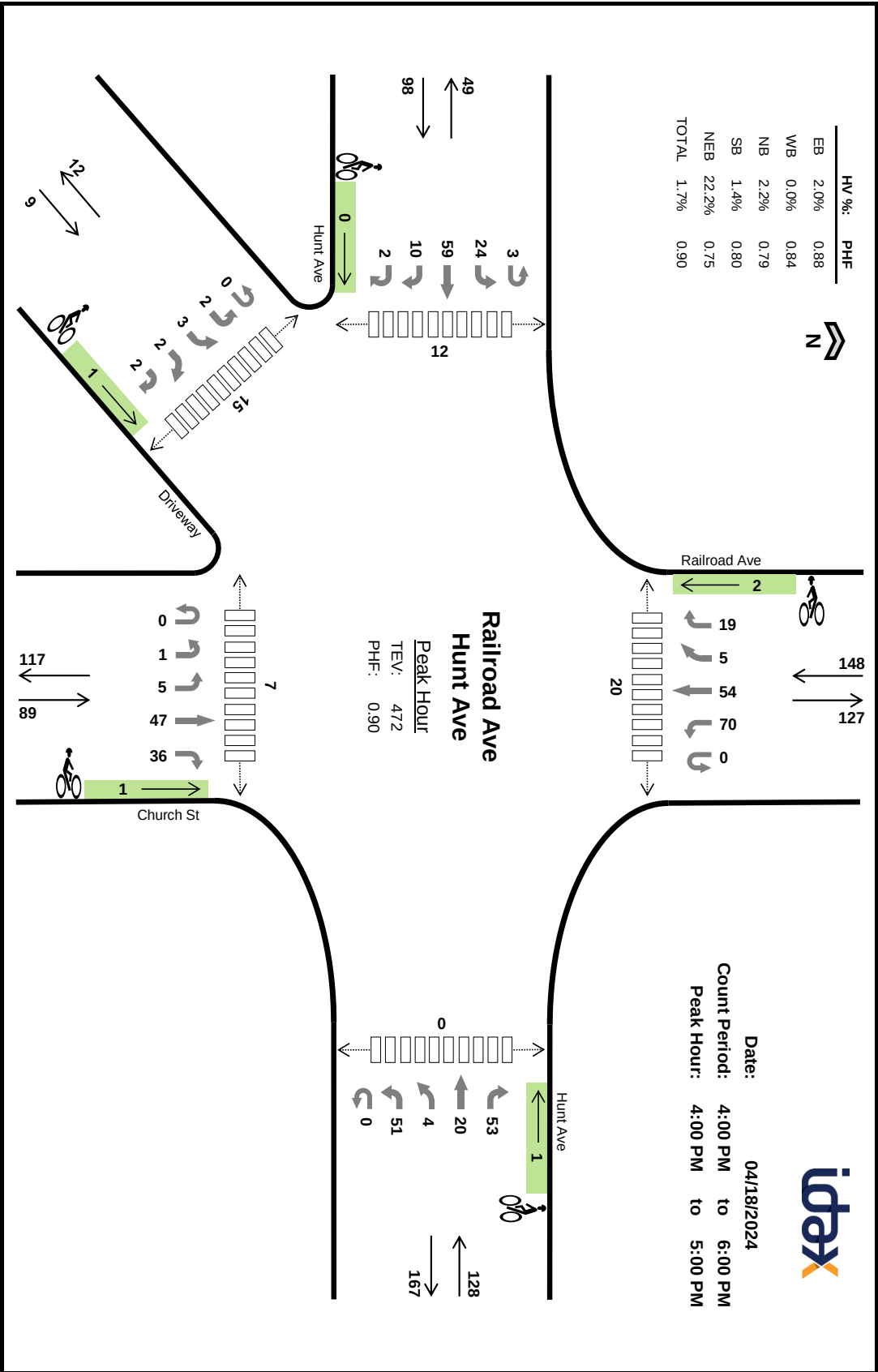
Two-Hour Count Summaries - Heavy Vehicles																												
Interval Start	Hunt Ave					Hunt Ave					Church St					Railroad Ave					Driveway					15-min Total	Rolling One Hour	
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR			
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0
7:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0
7:30 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	4	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	10	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8	0
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	8	0
Count Total	1	3	2	0	0	0	2	0	3	0	0	1	0	0	0	0	0	0	2	0	0	0	1	0	0	17	0	0
Peak Hour	0	1	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	1	0	0	8	0	0

Two-Hour Count Summaries - Bikes																											
Interval Start	Hunt Ave					Hunt Ave					Church St					Railroad Ave					Driveway					15-min Total	Rolling Hour
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
Count Total	0	1	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	
Peak Hour	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	

Project Manager: (415) 310-6469

project.manager_ca@idaxdata.com

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager_ca@idaxdata.com

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Project Manager: (415) 310-6469

www.idaxdata.com

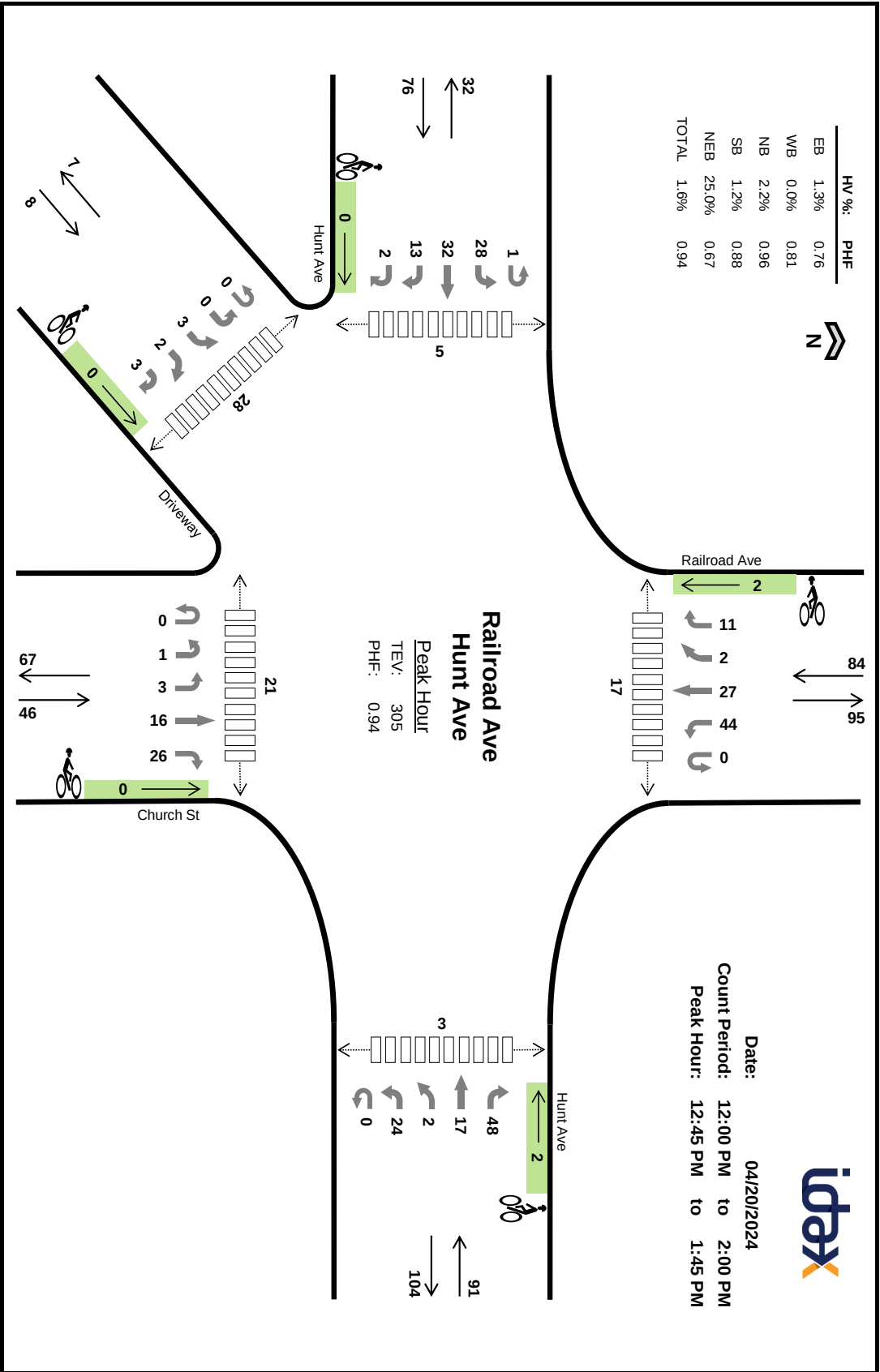
Two-Hour Count Summaries - Heavy Vehicles																											
Interval Start	Hunt Ave					Hunt Ave					Church St					Railroad Ave					Driveway					15-min Total	Rolling One Hour
	Eastbound		Westbound			Eastbound		Westbound			Northbound		Southbound			Northbound		Southbound									
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	1	0	0	0	
4:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0		
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:30 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Count Total	0	1	4	0	0	0	2	0	0	0	0	0	1	1	0	0	0	0	2	0	0	2	0	0	0		
Peak Hour	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	2	0	0	0		

Interval Start	Hunt Ave					Hunt Ave					Church St				
	Eastbound		Westbound			Eastbound		Westbound			Eastbound		Westbound		
	UT	LT	TH	RT	HR	UT	LT	TH	RT	HR	UT	LT	TH	RT	HR
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

Project Manager: (415) 310-6469

project.manager_ca@idaxdata.com

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager_ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries																												
Interval Start		Hunt Ave					Hunt Ave					Church St					Railroad Ave					Driveway			15-min Total		Rolling One Hour	
		Eastbound		Westbound			Northbound		Southbound			Northeastbound																
UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	RT	HR				
12:00 PM	2	4	8	2	2	0	6	1	4	8	0	2	1	5	1	0	6	2	1	2	0	0	2	3	61	0		
12:15 PM	0	7	11	1	3	0	9	0	5	4	0	1	2	4	5	0	4	5	2	3	0	1	2	0	72	0		
12:30 PM	2	5	7	2	2	0	6	0	9	4	0	1	1	4	4	0	6	2	0	3	0	1	2	1	0	62	0	
12:45 PM	0	8	5	4	0	0	6	2	6	11	0	1	0	2	9	0	13	8	0	3	0	0	1	1	81	276		
1:00 PM	0	3	11	2	1	0	8	0	4	16	0	0	0	5	6	0	7	4	2	3	0	0	0	2	74	289		
1:15 PM	0	10	8	6	0	0	5	0	4	8	0	0	2	6	3	0	10	10	0	4	0	2	1	0	80	297		
1:30 PM	0	7	8	1	1	0	5	0	3	13	0	0	1	3	8	0	14	5	0	1	0	0	0	0	70	305		
1:45 PM	1	4	1	4	1	0	5	0	5	10	0	0	2	6	8	0	6	10	1	4	0	1	0	0	69	293		
Count Total	6	48	59	22	10	0	50	3	40	74	0	5	9	35	44	0	66	46	6	23	0	3	7	5	8	569	0	
Peak	1	28	32	13	2	0	24	2	17	48	0	1	3	16	26	0	44	27	2	11	0	0	3	2	3	305	0	
Hour	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0	5	0	0	
Hour	0%	0%	3%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	4%	-	0%	0%	50%	0%	-	-	67%	0%	0%	2%	0	
Note: Two-hour count summary and totals include heavy vehicles but exclude bicycles in overall count																												

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	NEB	EB	WB	NB	SB	NEB	East	West	North	South	Southwest
12:00 PM	0	0	0	0	0	0	1	0	0	0	1	3	4	0	4
12:15 PM	0	0	0	0	0	0	0	0	0	0	2	2	8	2	5
12:30 PM	0	1	1	0	0	0	0	0	0	0	0	1	3	1	2
12:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	3	16	24
1:00 PM	1	0	0	1	0	0	2	0	0	0	0	0	2	0	2
1:15 PM	0	0	0	0	1	0	0	0	2	0	1	0	0	0	4
1:30 PM	0	0	1	0	0	0	0	0	0	0	2	5	4	1	4
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	3	7	3	3
Count Total	1	1	2	1	2	0	3	0	2	0	6	14	39	27	42
Peak Hr	1	0	1	1	2	0	2	0	2	0	3	5	17	21	28
															74

Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

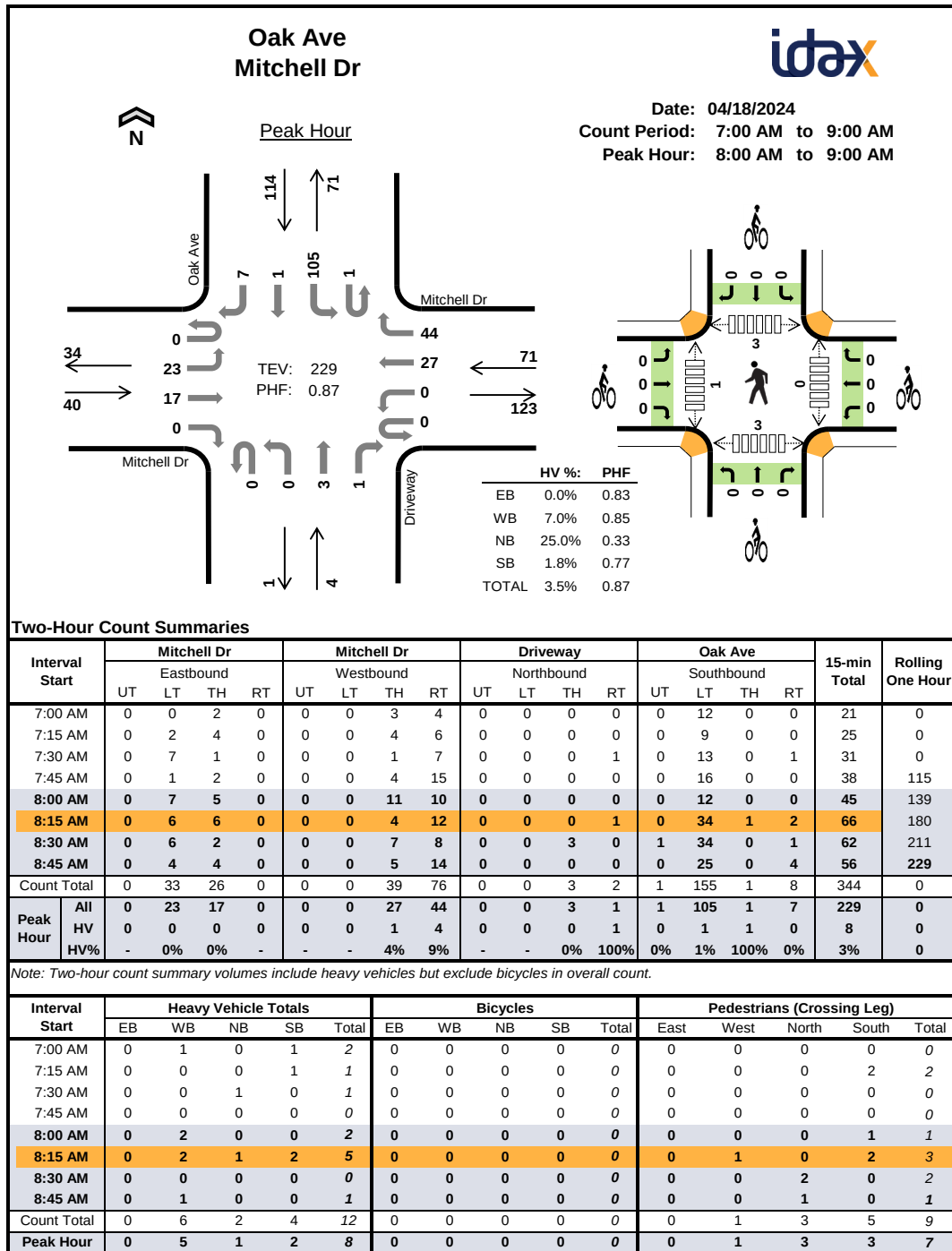
Two-Hour Count Summaries - Heavy Vehicles																											
Interval Start	Hunt Ave					Hunt Ave					Church St					Railroad Ave					Driveway					15-min Total	Rolling One Hour
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
1:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5	
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
Count Total	0	0	1	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	2	0	0	7	
Peak Hour	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	0	0	5	0	

Two-Hour Count Summaries - Bikes																											
Interval Start	Hunt Ave					Hunt Ave					Church St					Railroad Ave					Driveway					15-min Total	Rolling One Hour
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
12:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	4	4
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4
1:45 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4
Count Total	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	4	0
Peak Hour	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	4	0

Project Manager: (415) 310-6469

project.manager_ca@idaxdata.com

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

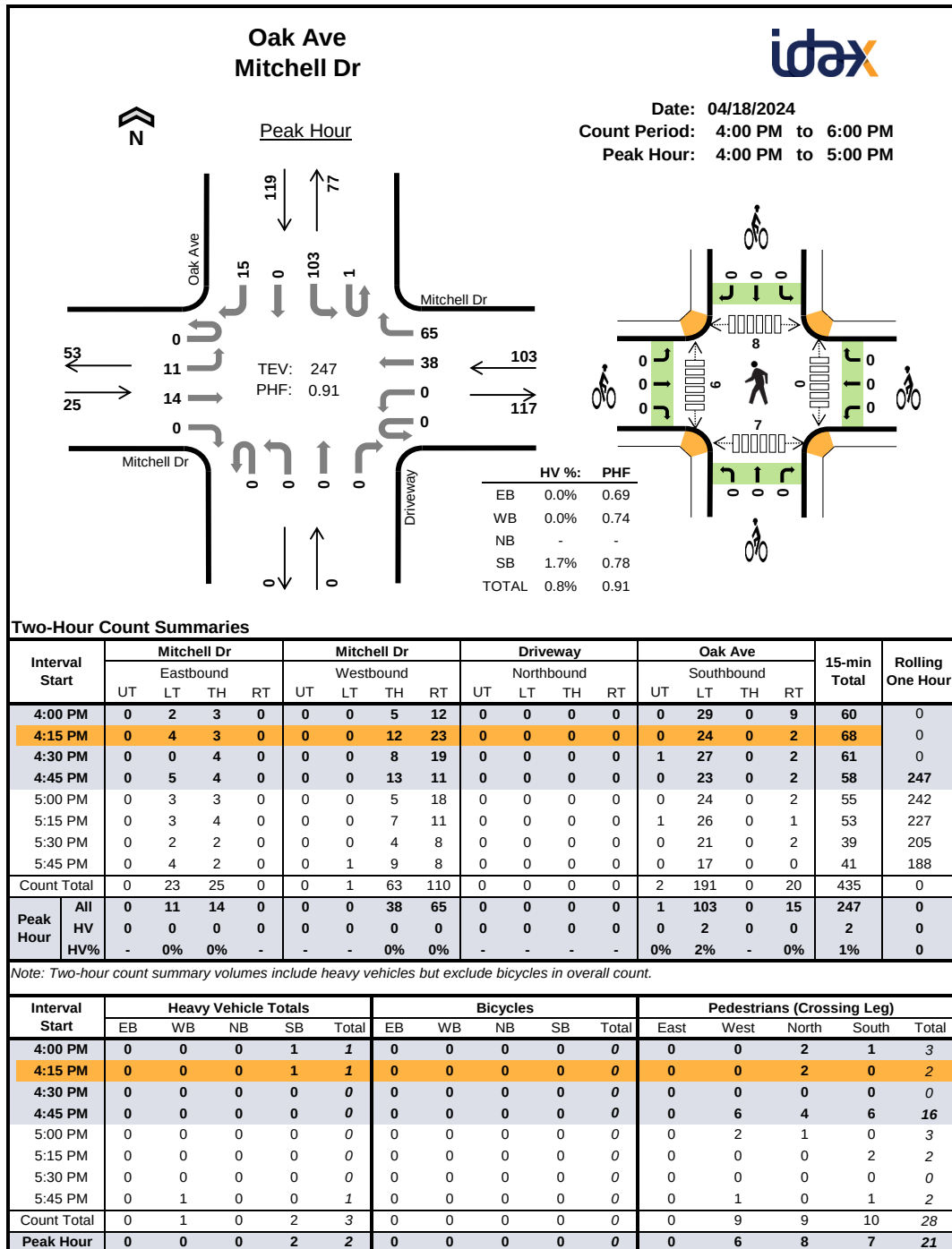
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Mitchell Dr				Mitchell Dr				Driveway				Oak Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	4
8:15 AM	0	0	0	0	0	0	0	2	0	0	0	1	0	1	1	0	5	8
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
8:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	8
Count Total	0	0	0	0	0	0	1	5	0	0	0	2	0	3	1	0	12	0
Peak Hour	0	0	0	0	0	0	1	4	0	0	0	1	0	1	1	0	8	0

Two-Hour Count Summaries - Bikes														
Interval Start	Mitchell Dr			Mitchell Dr			Driveway			Oak Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

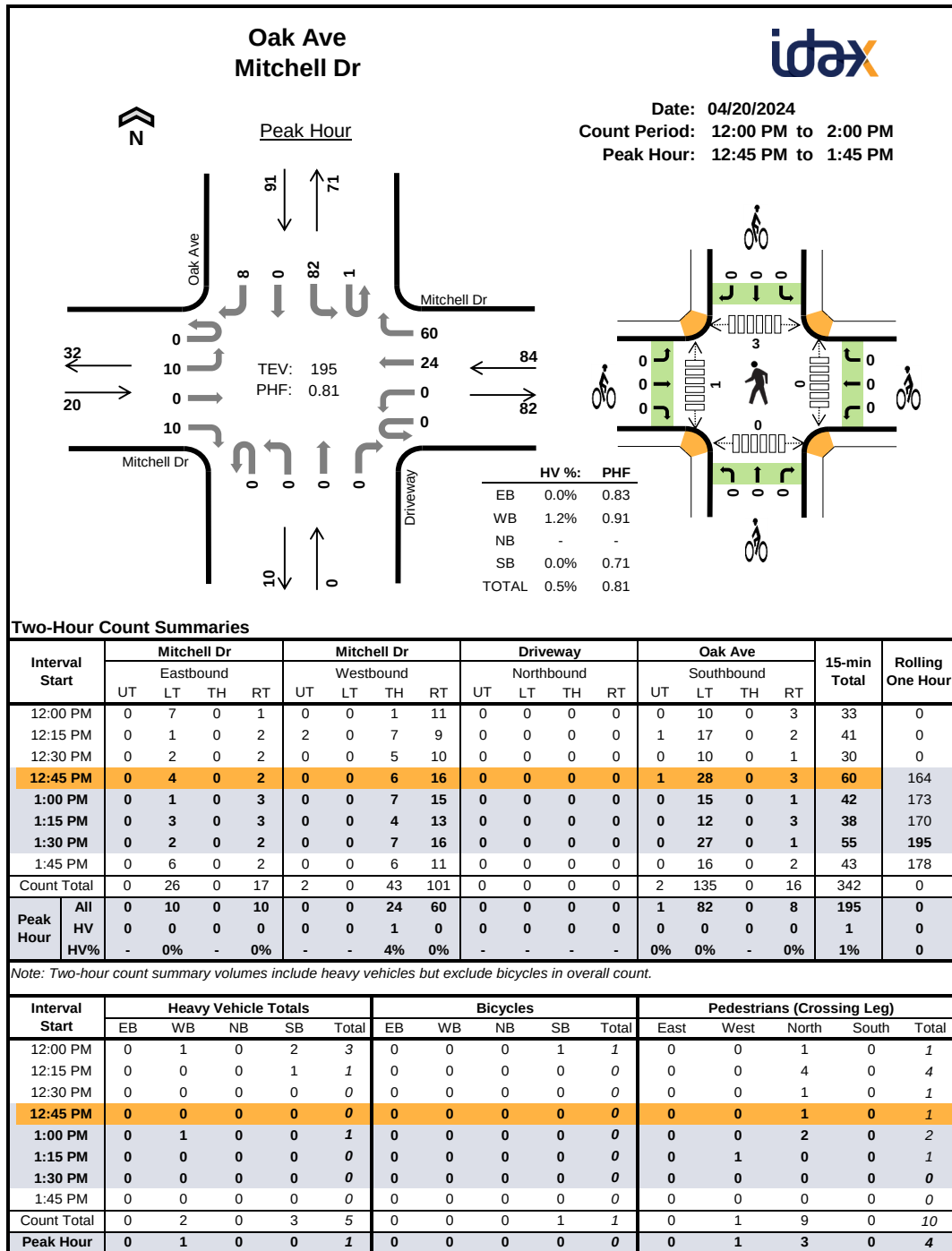
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Mitchell Dr				Mitchell Dr				Driveway				Oak Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1
Count Total	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0

Two-Hour Count Summaries - Bikes															
Interval Start	Mitchell Dr			Mitchell Dr			Driveway			Oak Ave			15-min Total	Rolling One Hour	
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

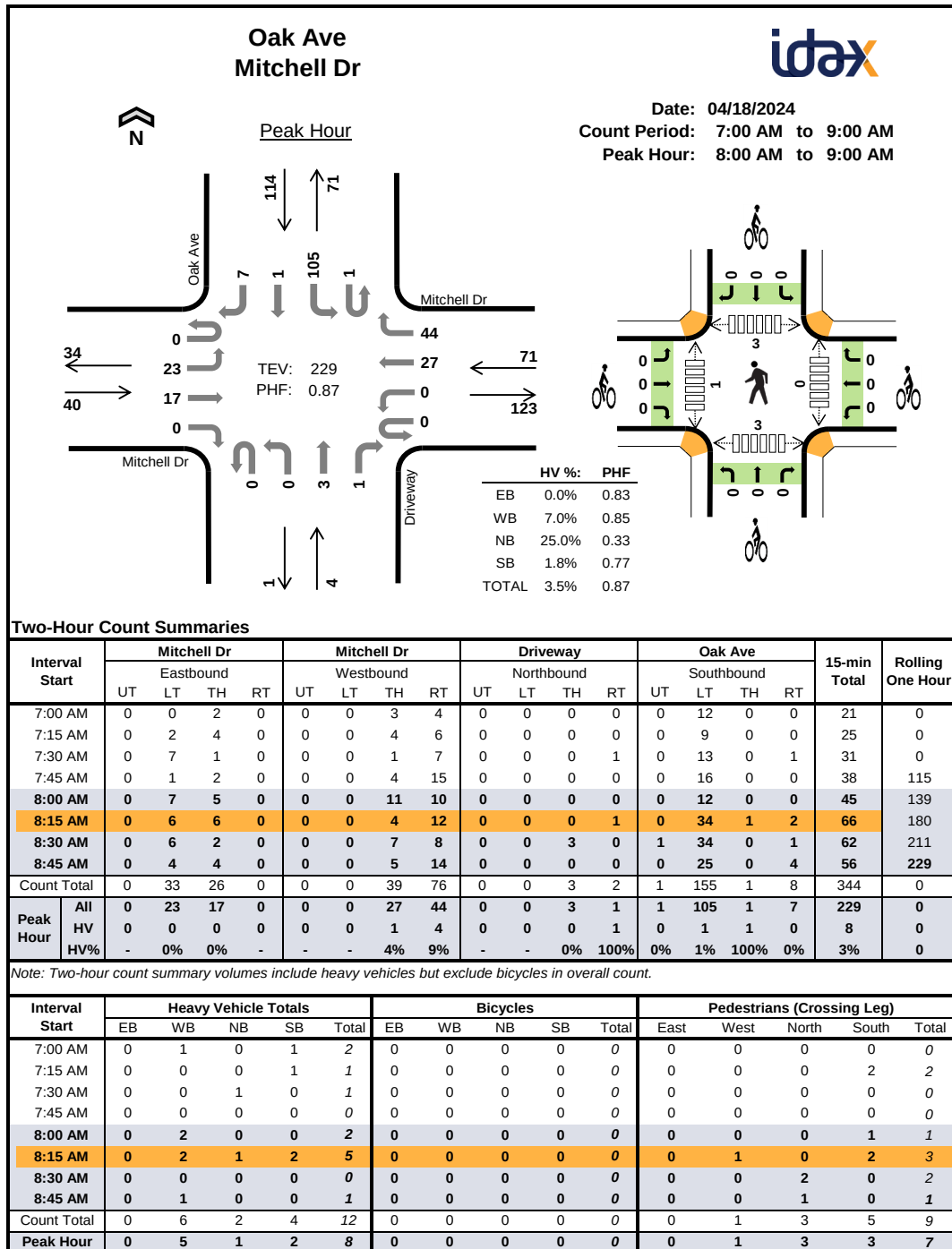
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Mitchell Dr				Mitchell Dr				Driveway				Oak Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	3	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	2	5	0
Peak Hour	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0

Two-Hour Count Summaries - Bikes																
Interval Start	Mitchell Dr			Mitchell Dr			Driveway			Oak Ave			15-min Total	Rolling One Hour		
	Eastbound			Westbound			Northbound			Southbound						
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				
12:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0		
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Count Total	0	0	0	0	0	0	0	0	0	1	0	0	1	0		
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

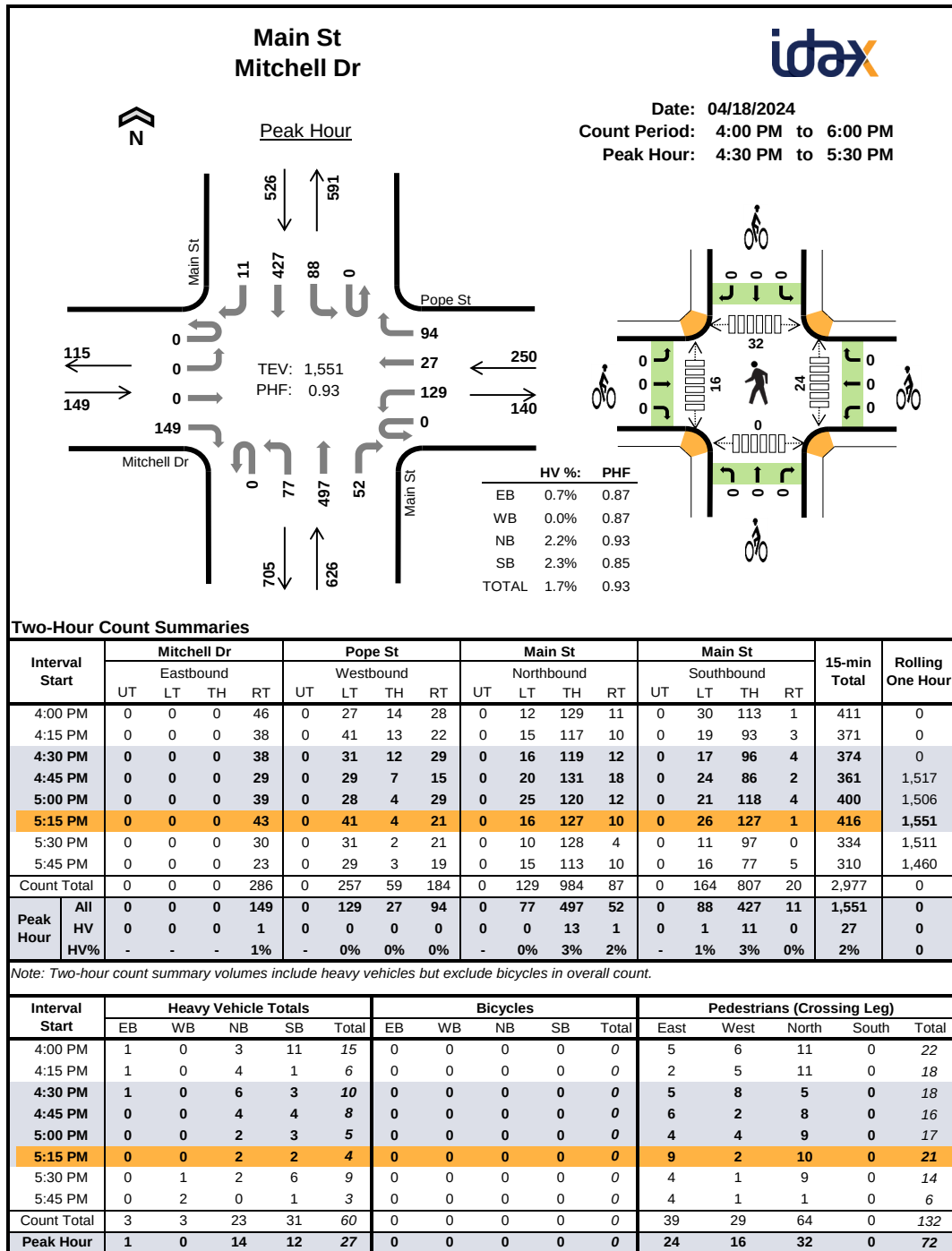
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Mitchell Dr				Mitchell Dr				Driveway				Oak Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	4
8:15 AM	0	0	0	0	0	0	0	2	0	0	0	1	0	1	1	0	5	8
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
8:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	8
Count Total	0	0	0	0	0	0	1	5	0	0	0	2	0	3	1	0	12	0
Peak Hour	0	0	0	0	0	0	1	4	0	0	0	1	0	1	1	0	8	0

Two-Hour Count Summaries - Bikes														
Interval Start	Mitchell Dr			Mitchell Dr			Driveway			Oak Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

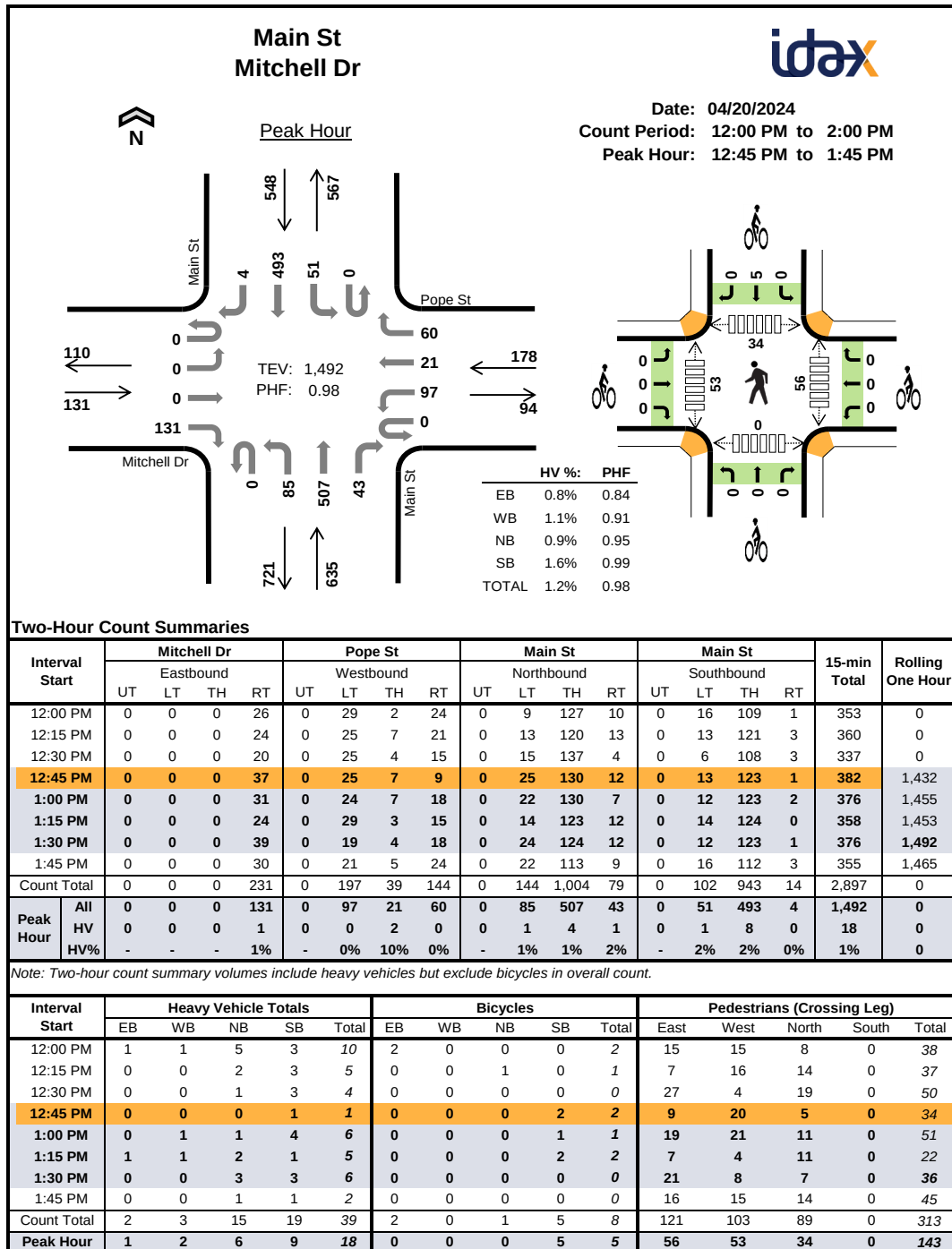
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Mitchell Dr				Pope St				Main St				Main St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	1	0	0	0	0	0	0	2	1	0	1	10	0	15	0
4:15 PM	0	0	0	1	0	0	0	0	0	0	4	0	0	0	1	0	6	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	5	1	0	0	3	0	10	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	8	39
5:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	5	29
5:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0	4	27
5:30 PM	0	0	0	0	0	0	0	1	0	0	2	0	0	0	6	0	9	26
5:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	3	21
Count Total	0	0	0	3	0	2	0	1	0	0	21	2	0	2	28	1	60	0
Peak Hour	0	0	0	1	0	0	0	0	0	0	13	1	0	1	11	0	27	0

Two-Hour Count Summaries - Bikes															
Interval Start	Mitchell Dr			Pope St			Main St			Main St			15-min Total	Rolling One Hour	
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Mitchell Dr				Pope St				Main St			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
12:00 PM	0	0	0	1	0	0	1	0	0	0	4	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	2	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	1	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	1	0	0	0	1	0
1:15 PM	0	0	0	1	0	0	1	0	0	0	2	0
1:30 PM	0	0	0	0	0	0	0	0	0	1	1	1
1:45 PM	0	0	0	0	0	0	0	0	0	0	1	0
Count Total	0	0	0	2	0	0	3	0	0	1	12	2
Peak Hour	0	0	0	1	0	0	2	0	0	1	4	1
Two-Hour Count Summaries - Bikes												
Interval Start	Mitchell Dr			Pope St			Main St			Main St		
	Eastbound			Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
12:00 PM	0	0	2	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	1	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	2	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	1	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	2	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	2	0	0	0	0	0	1	0	5	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	5	0
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

Prepared by National Data & Surveying Services

Grayson Ave & St Helena Hwy/SR 128/Main St/SR 29

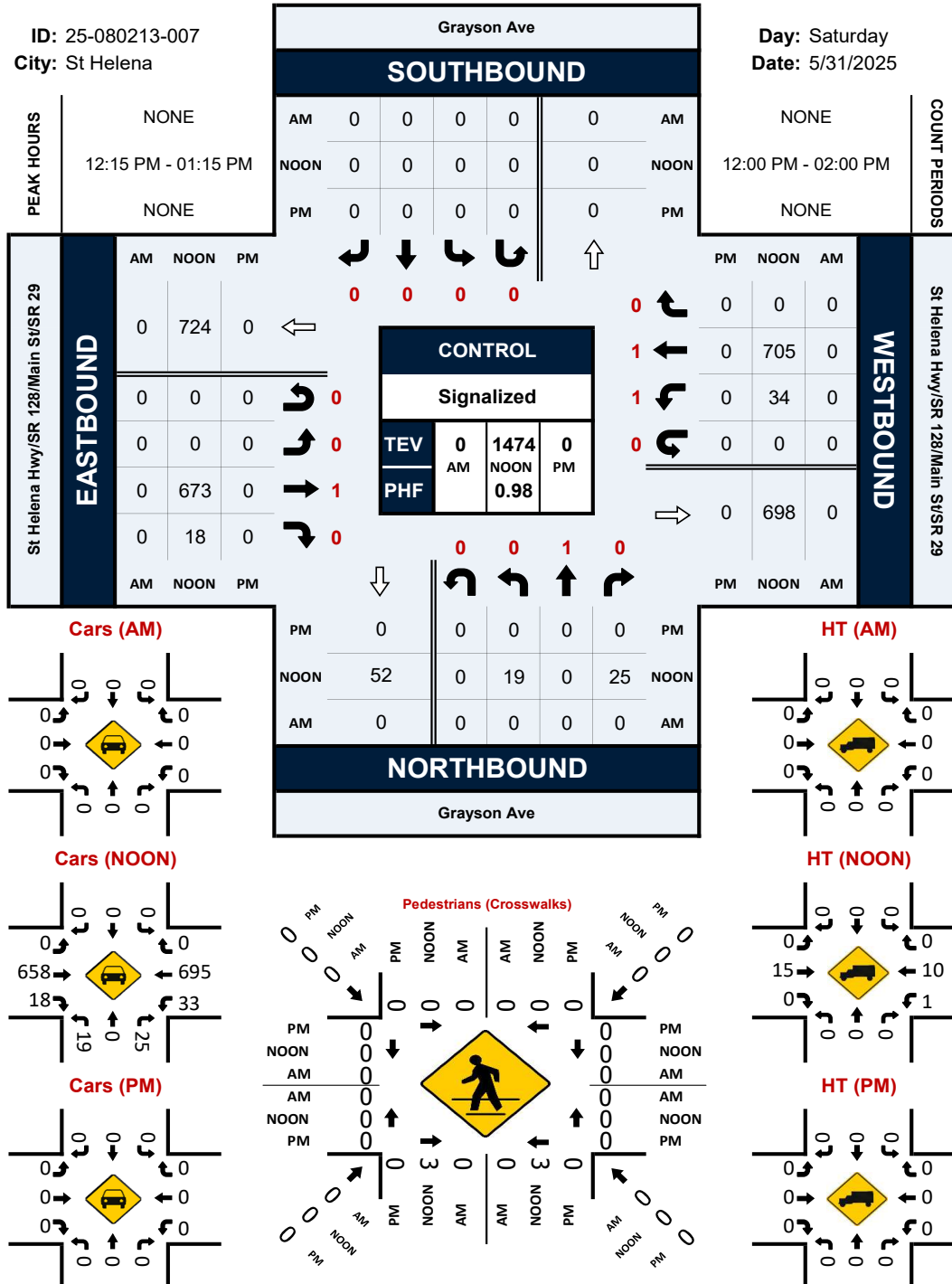
Peak Hour Turning Movement Count

ID: 25-080213-007

City: St Helena

Day: Saturday

Date: 5/31/2025



Prepared by National Data & Surveying Services

Sulphur Springs Ave & St Helena Hwy/SR 128/Main St/SR 29

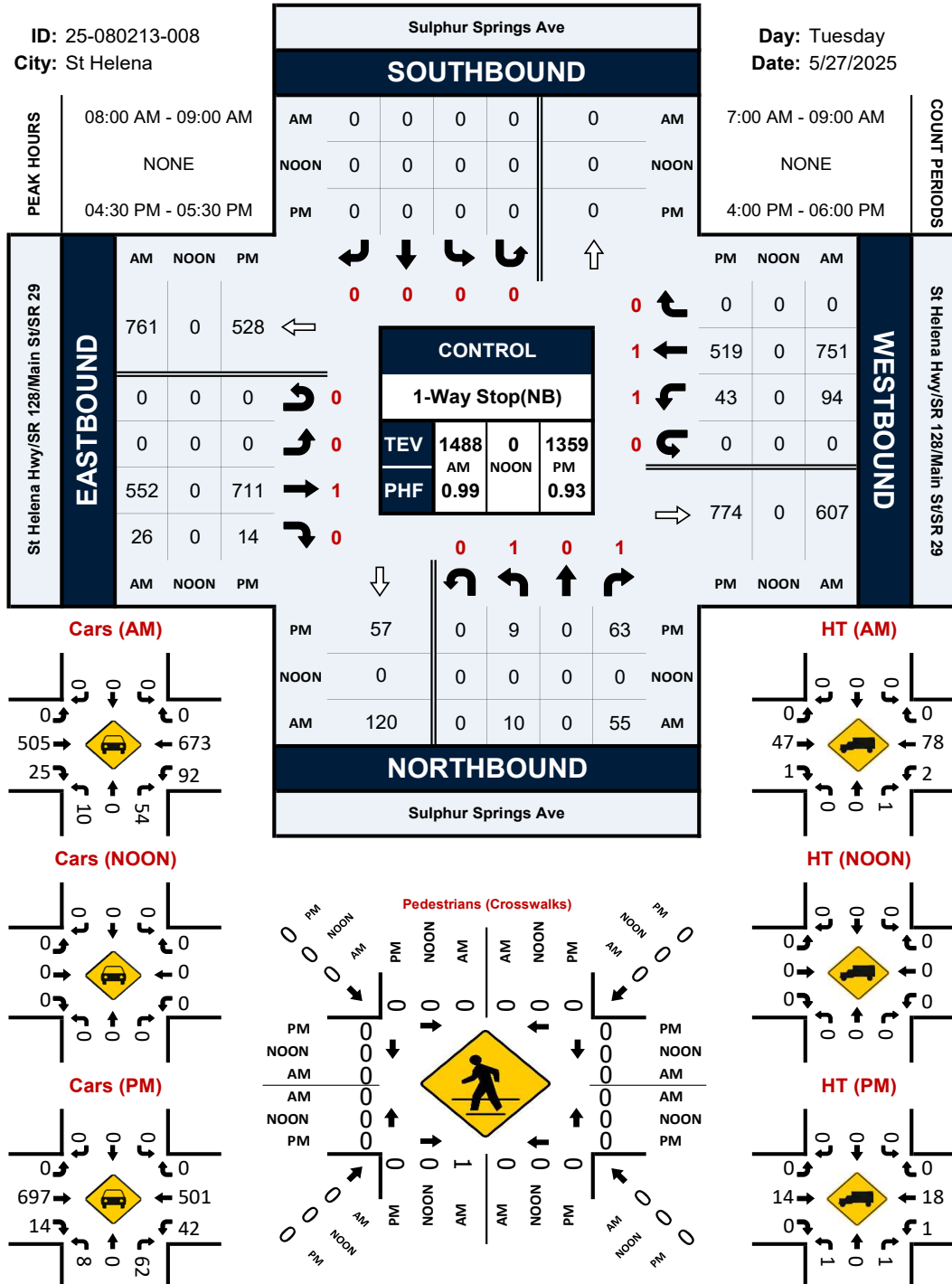
Peak Hour Turning Movement Count

ID: 25-080213-008

City: St Helena

Day: Tuesday

Date: 5/27/2025



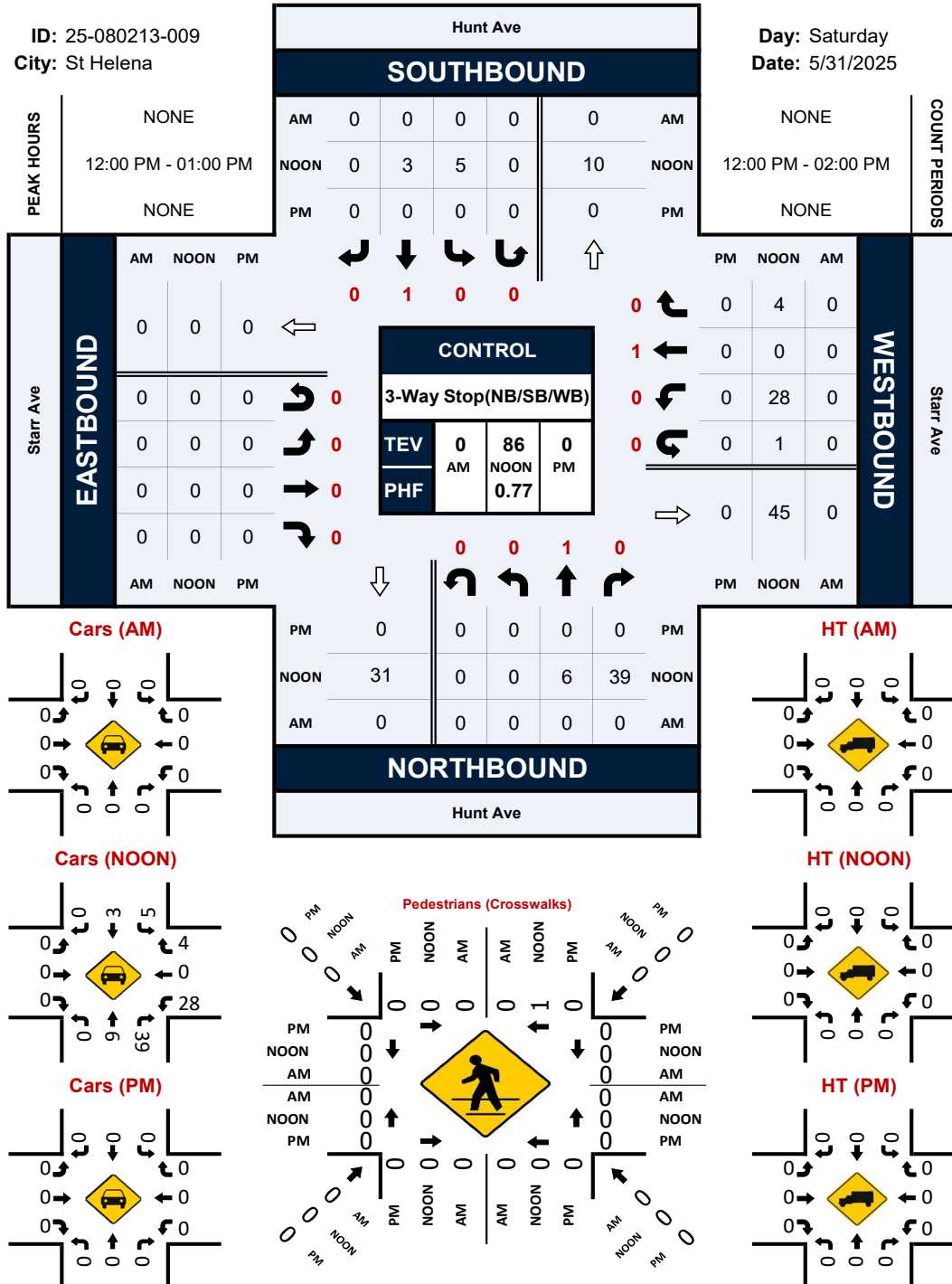
Prepared by National Data & Surveying Services

Hunt Ave & Starr Ave

Peak Hour Turning Movement Count

ID: 25-080213-009
City: St Helena

Day: Saturday
Date: 5/31/2025



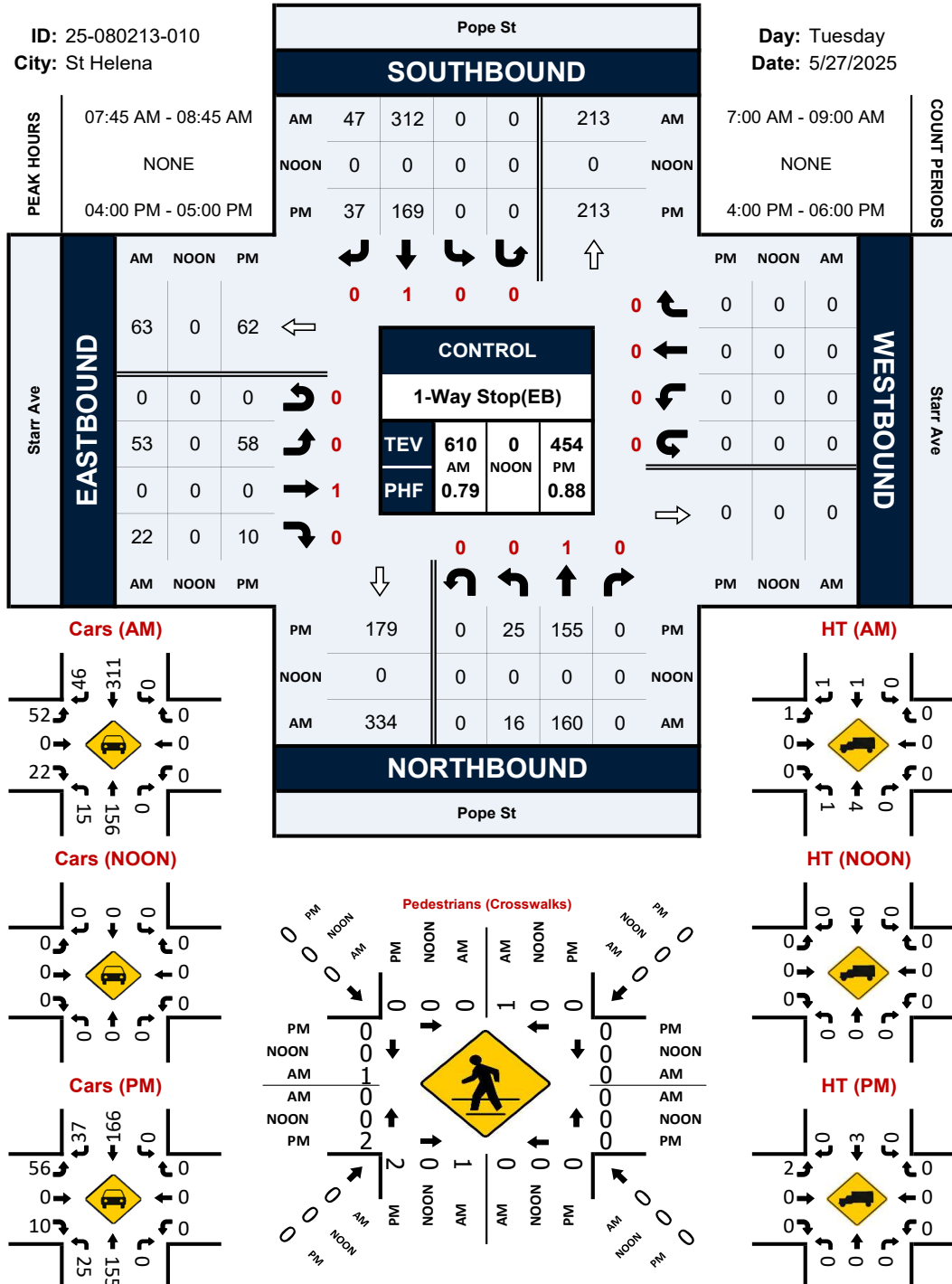
Prepared by National Data & Surveying Services

Pope St & Starr Ave

Peak Hour Turning Movement Count

ID: 25-080213-010
City: St Helena

Day: Tuesday
Date: 5/27/2025



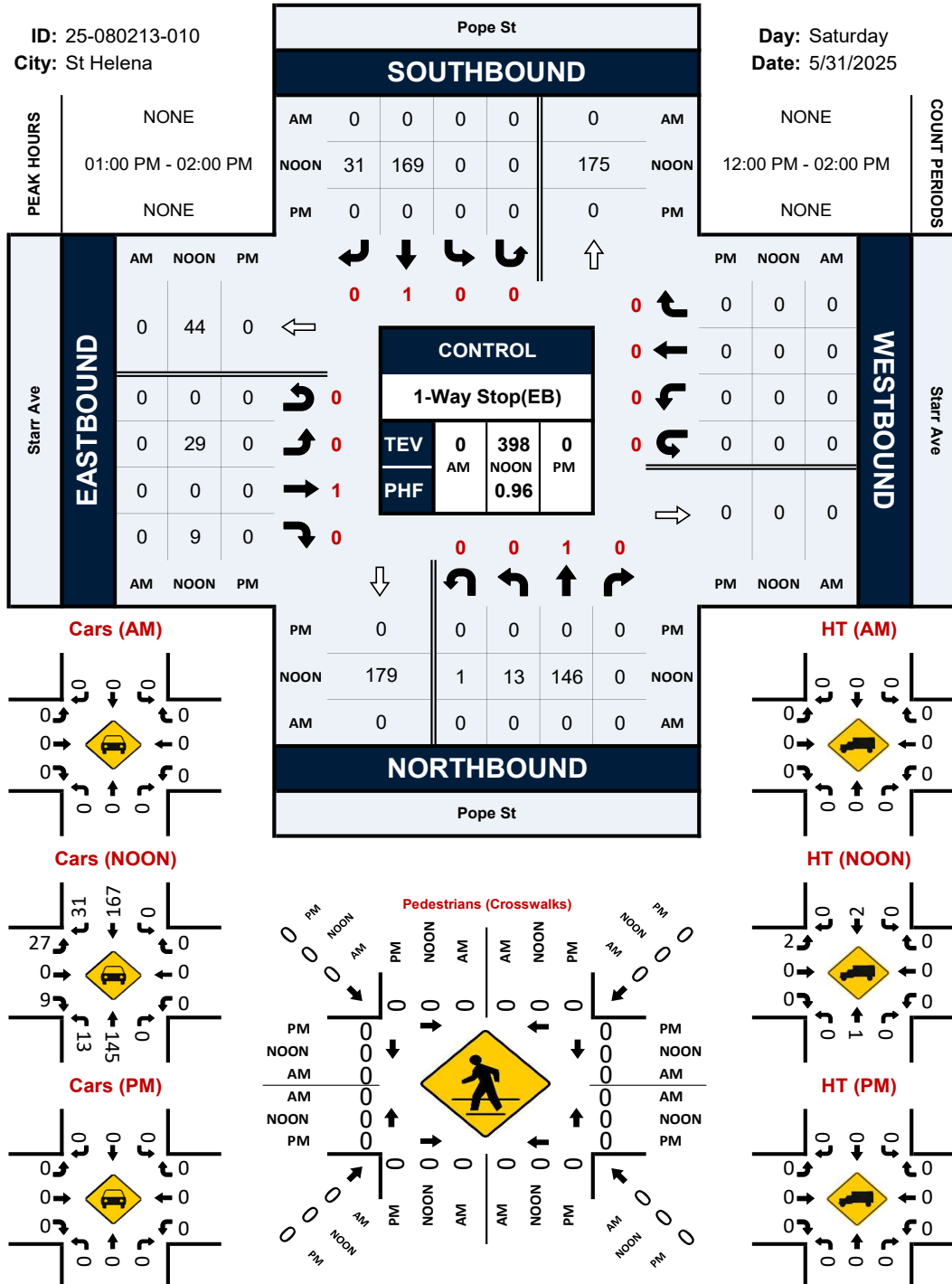
Prepared by National Data & Surveying Services

Pope St & Starr Ave

Peak Hour Turning Movement Count

ID: 25-080213-010
City: St Helena

Day: Saturday
Date: 5/31/2025



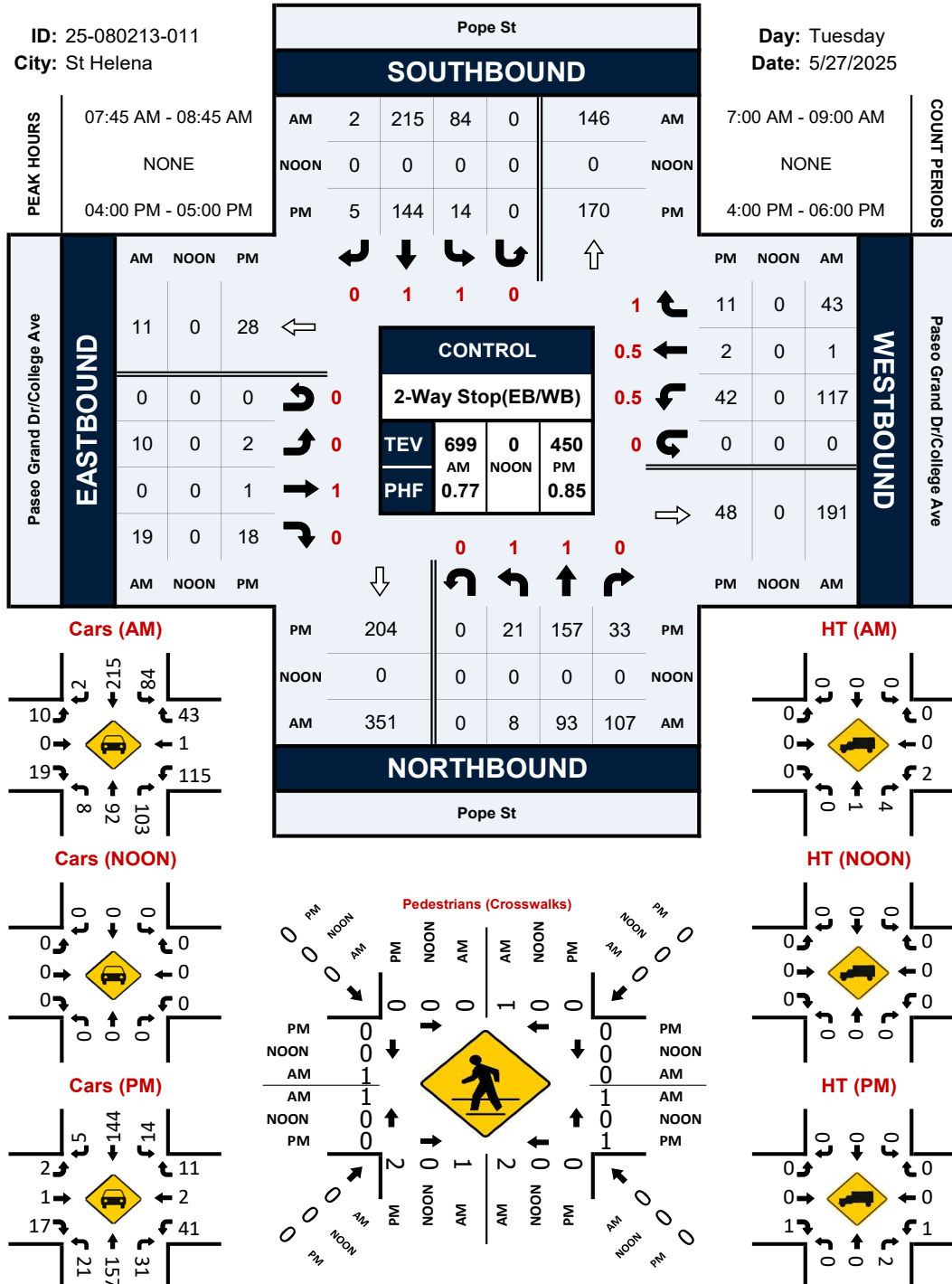
Prepared by National Data & Surveying Services

Pope St & Paseo Grand Dr/College Ave

Peak Hour Turning Movement Count

ID: 25-080213-011
City: St Helena

Day: Tuesday
Date: 5/27/2025



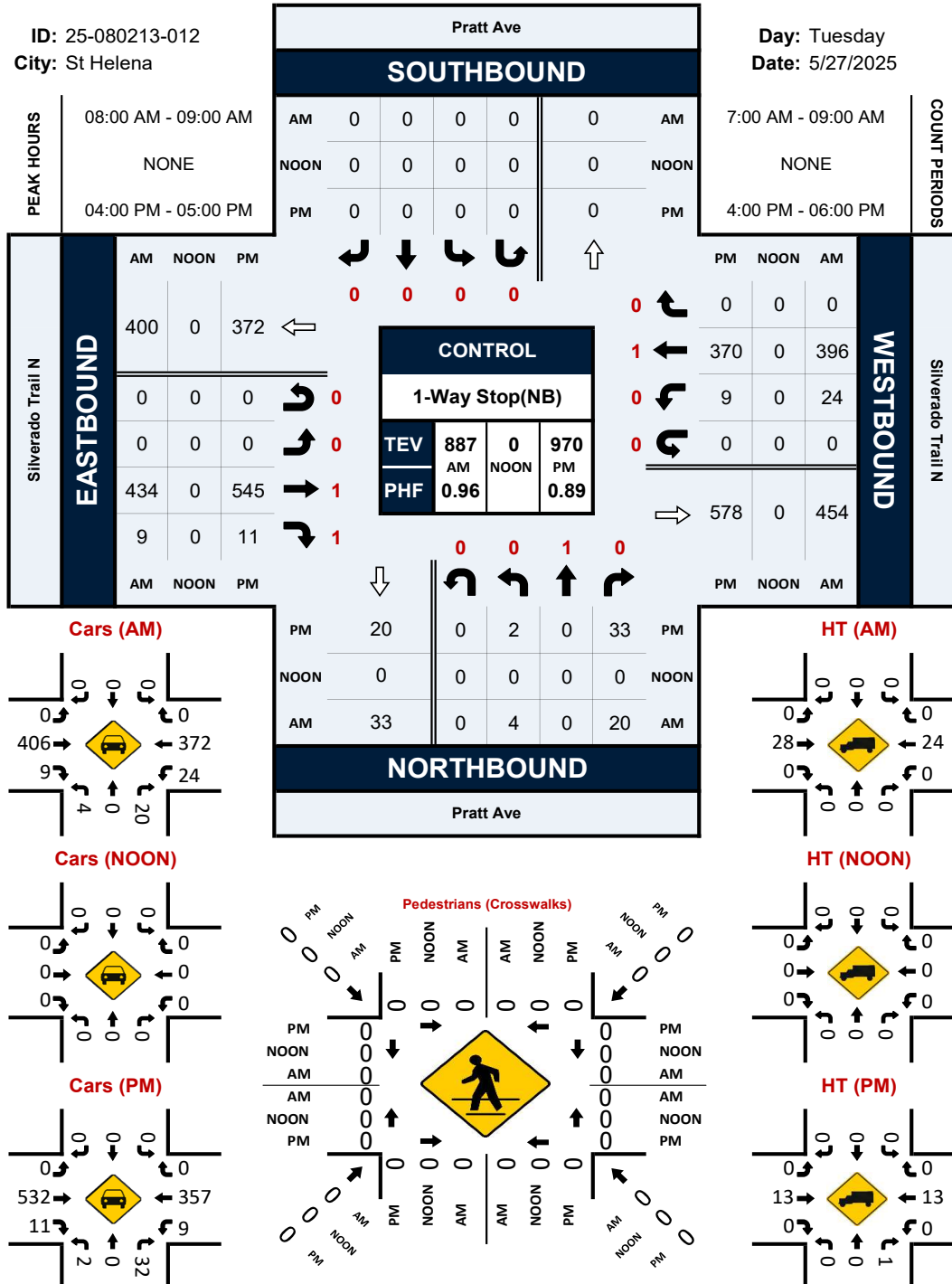
Prepared by National Data & Surveying Services

Pratt Ave & Silverado Trail N

Peak Hour Turning Movement Count

ID: 25-080213-012
City: St Helena

Day: Tuesday
Date: 5/27/2025



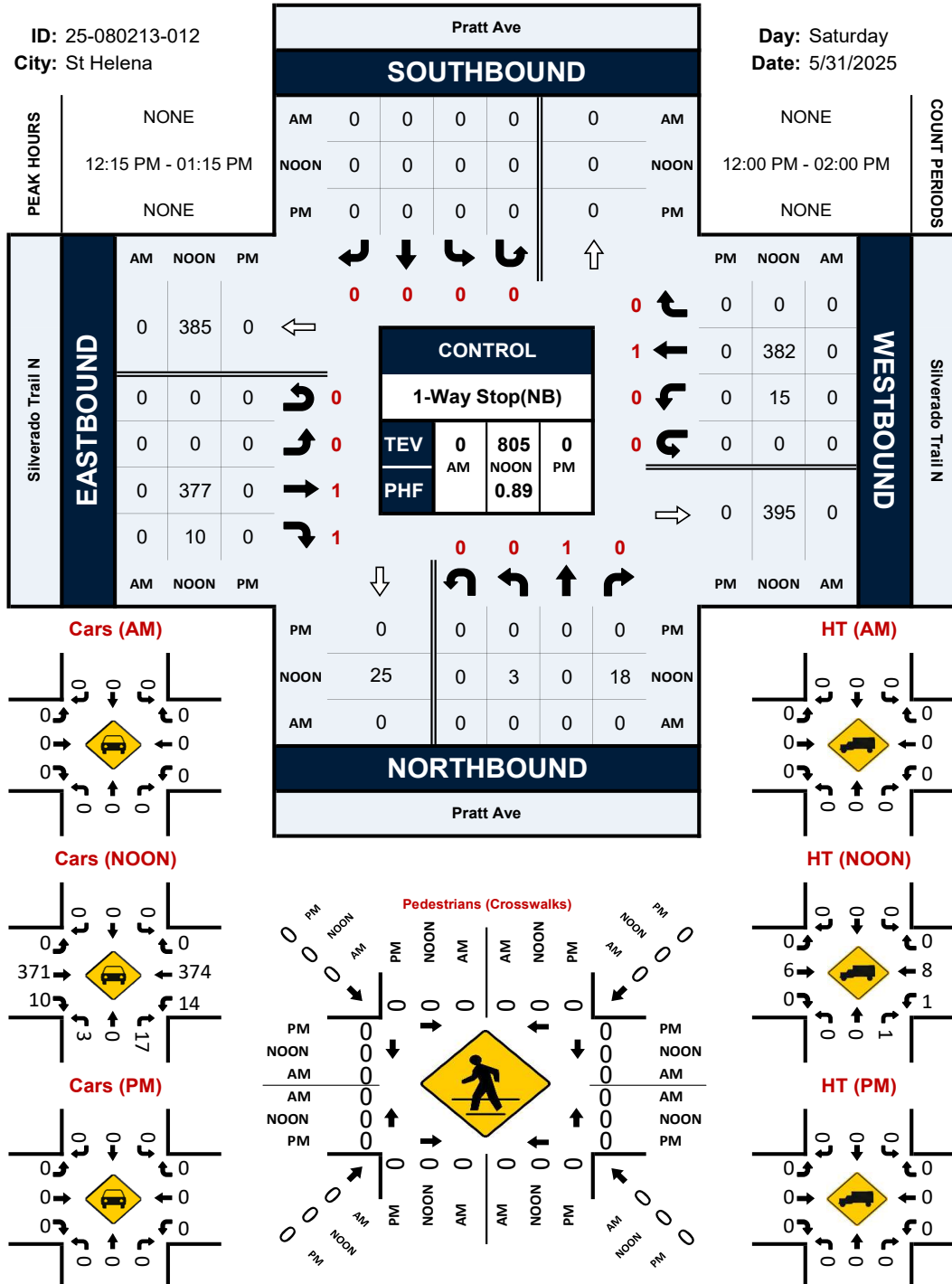
Prepared by National Data & Surveying Services

Pratt Ave & Silverado Trail N

Peak Hour Turning Movement Count

ID: 25-080213-012
City: St Helena

Day: Saturday
Date: 5/31/2025



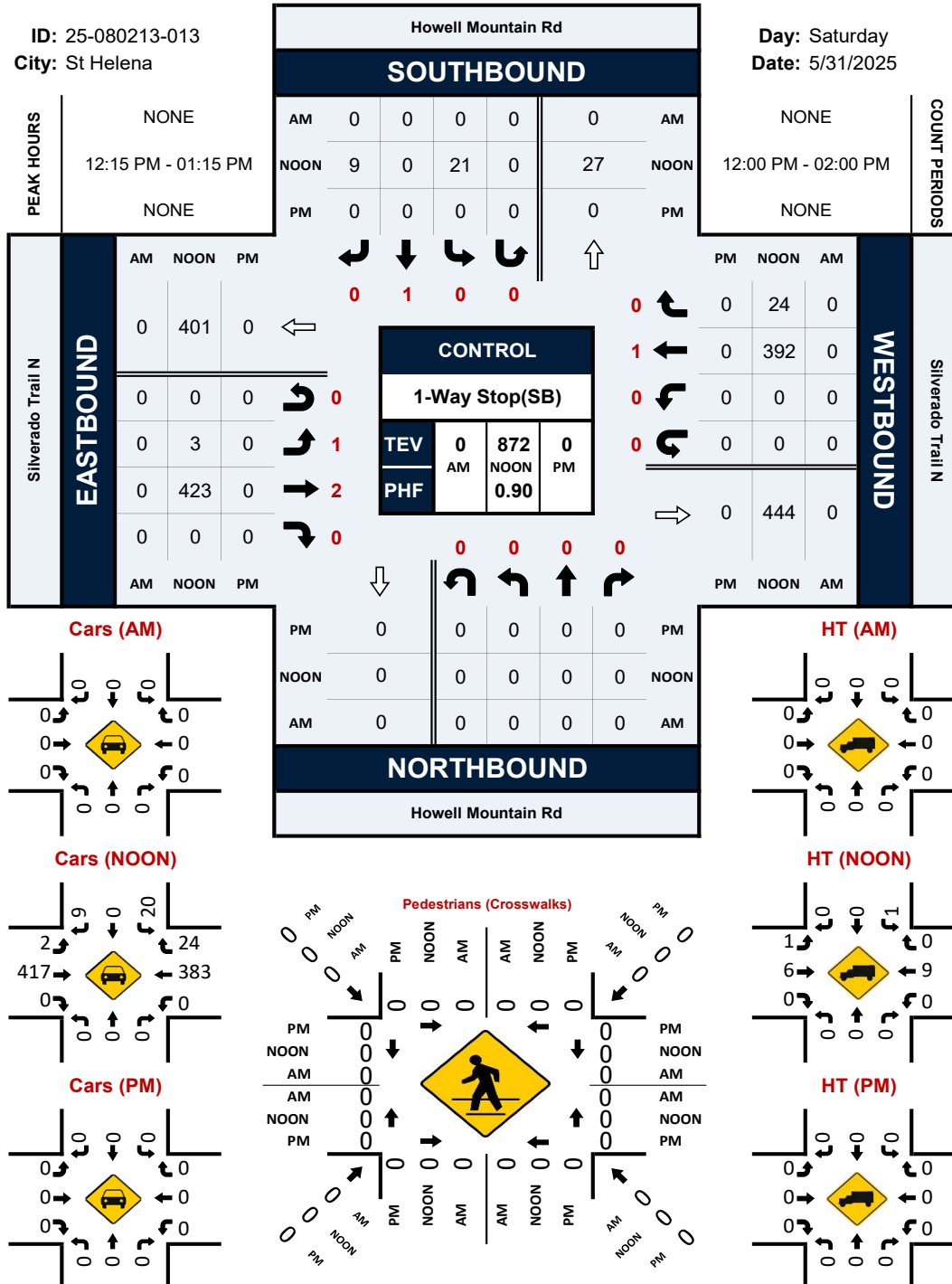
Prepared by National Data & Surveying Services

Howell Mountain Rd & Silverado Trail N

Peak Hour Turning Movement Count

ID: 25-080213-013
City: St Helena

Day: Saturday
Date: 5/31/2025



Prepared by National Data & Surveying Services

Pope St & Silverado Trail S

Peak Hour Turning Movement Count

ID: 25-080213-014

City: St Helena

Day: Tuesday

Date: 5/27/2025

PEAK HOURS

08:00 AM - 09:00 AM
NONE
04:00 PM - 05:00 PM

COUNT PERIODS

7:00 AM - 09:00 AM
NONE
4:00 PM - 06:00 PM

Silverado Trail S

EASTBOUND

	AM	NOON	PM
501	0	381	
0	0	0	
0	0	0	
307	0	515	
146	0	104	

CONTROL

1-Way Stop(NB)

TEV	1160 AM	0 NOON	1171 PM
PHF	0.94		0.89

WESTBOUND

	PM	NOON	AM
318	0	405	
62	0	141	
0	0	0	
624	0	372	

Pope St

NORTHBOUND

	PM	NOON	AM
166	0	63	109
0	0	0	0
287	0	96	65

Cars (AM)

283 → 0, 146 ↘ 0, 56 ↘ 0, 378 ← 0, 141 ← 0, 65 ↗ 0, 0 ↗ 0

Cars (NOON)

0 ↘ 0, 0 ↘ 0, 0 ↘ 0, 0 ↗ 0, 0 ↗ 0, 0 ↗ 0, 0 ↗ 0

Cars (PM)

500 → 0, 104 ↘ 0, 63 ↘ 0, 306 ← 0, 62 ← 0, 106 ↗ 0, 0 ↗ 0

Pedestrians (Crosswalks)

AM, NOON, PM

HT (AM)

24 → 0, 1 ↘ 0, 27 ← 0, 1 ↗ 0, 0 ↗ 0, 0 ↗ 0

HT (NOON)

0 ↘ 0, 0 ↘ 0, 0 ↘ 0, 0 ↗ 0, 0 ↗ 0, 0 ↗ 0, 0 ↗ 0

HT (PM)

15 → 0, 0 ↘ 0, 12 ← 0, 0 ↗ 0, 0 ↗ 0, 0 ↗ 0

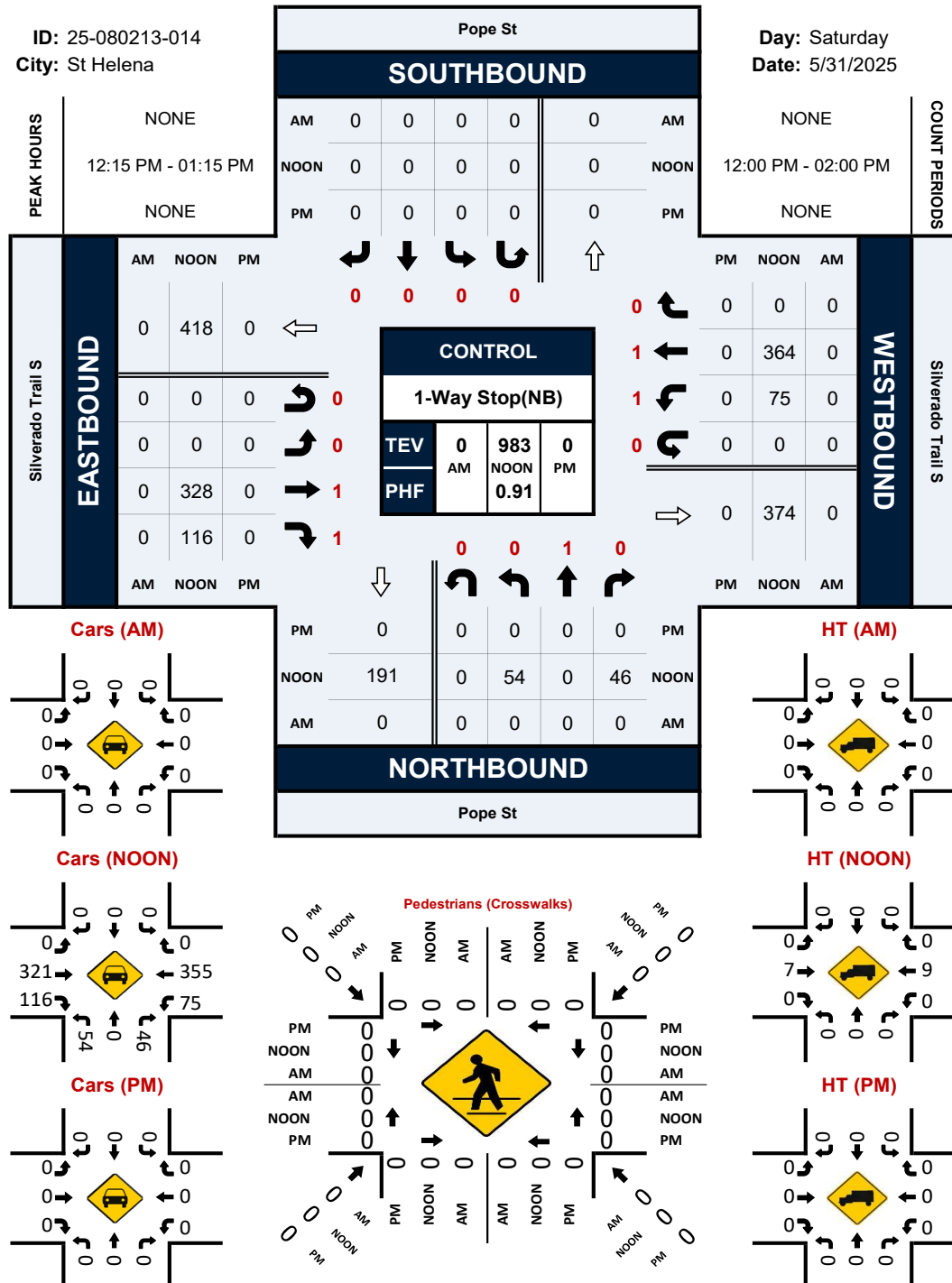
Prepared by National Data & Surveying Services

Pope St & Silverado Trail S

Peak Hour Turning Movement Count

ID: 25-080213-014
City: St Helena

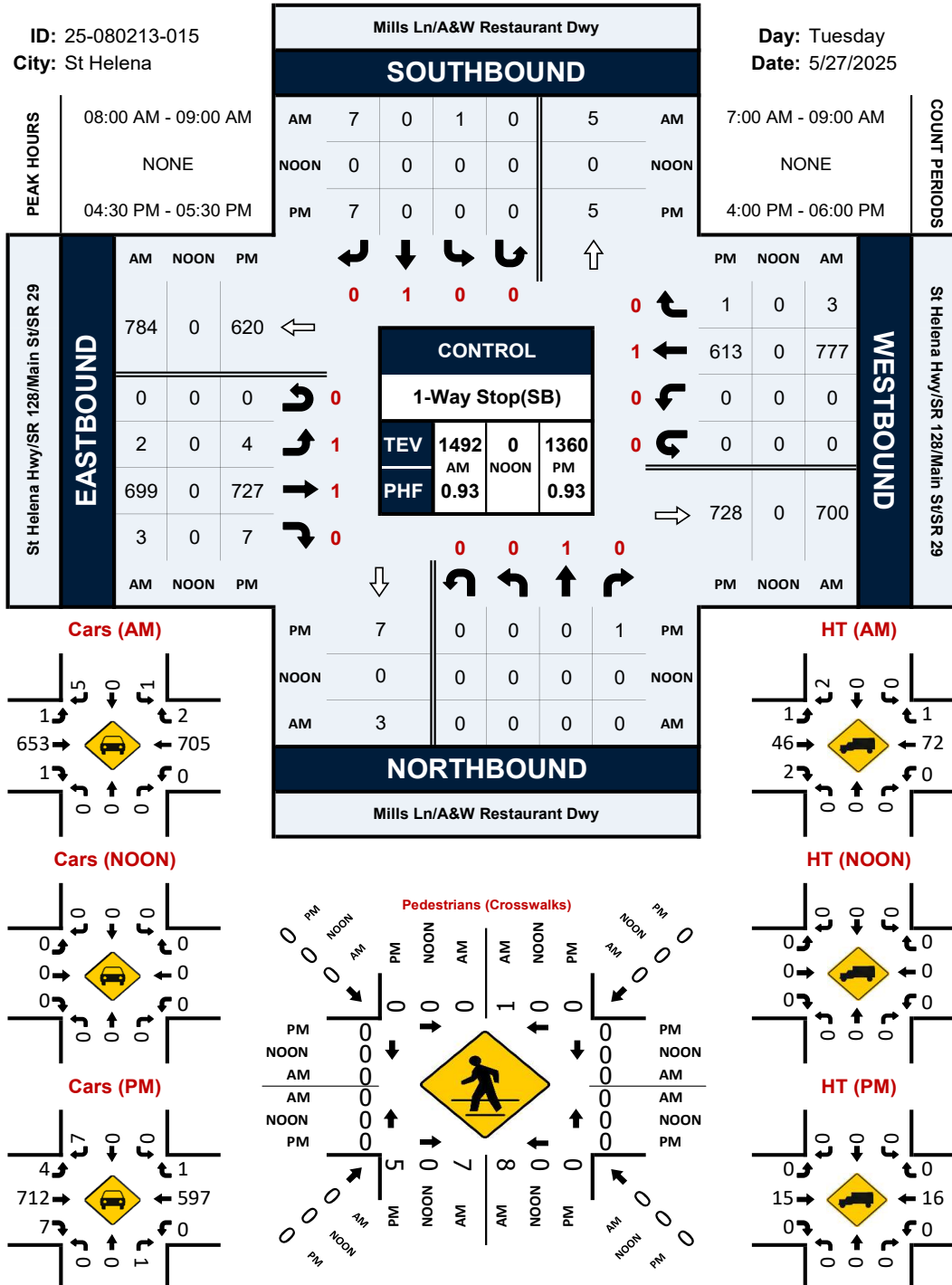
Day: Saturday
Date: 5/31/2025



Prepared by National Data & Surveying Services

Mills Ln/A&W Restaurant Dwy & St Helena Hwy/SR 128/Main St/SR 29

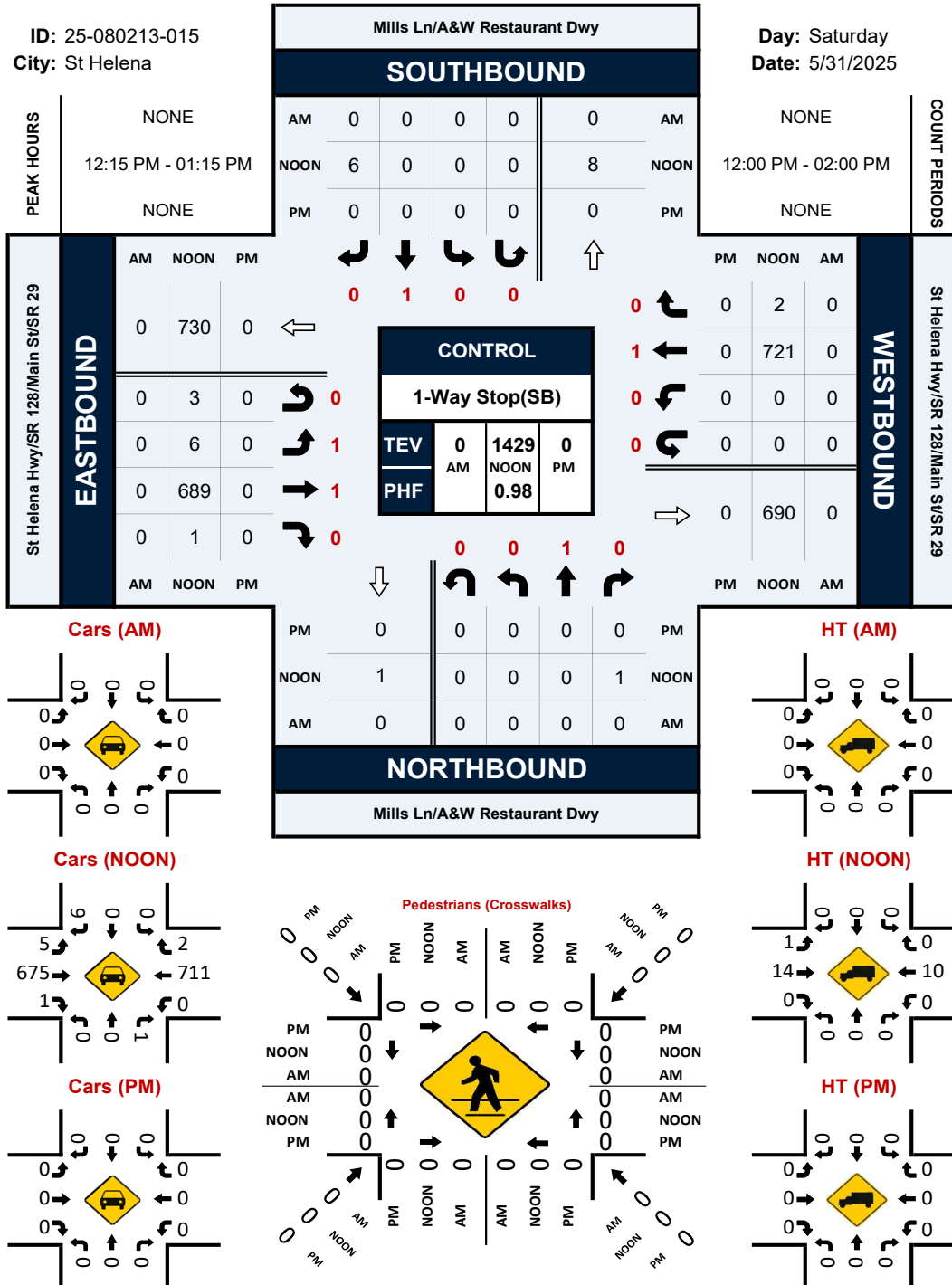
Peak Hour Turning Movement Count



Prepared by National Data & Surveying Services

Mills Ln/A&W Restaurant Dwy & St Helena Hwy/SR 128/Main St/SR 29

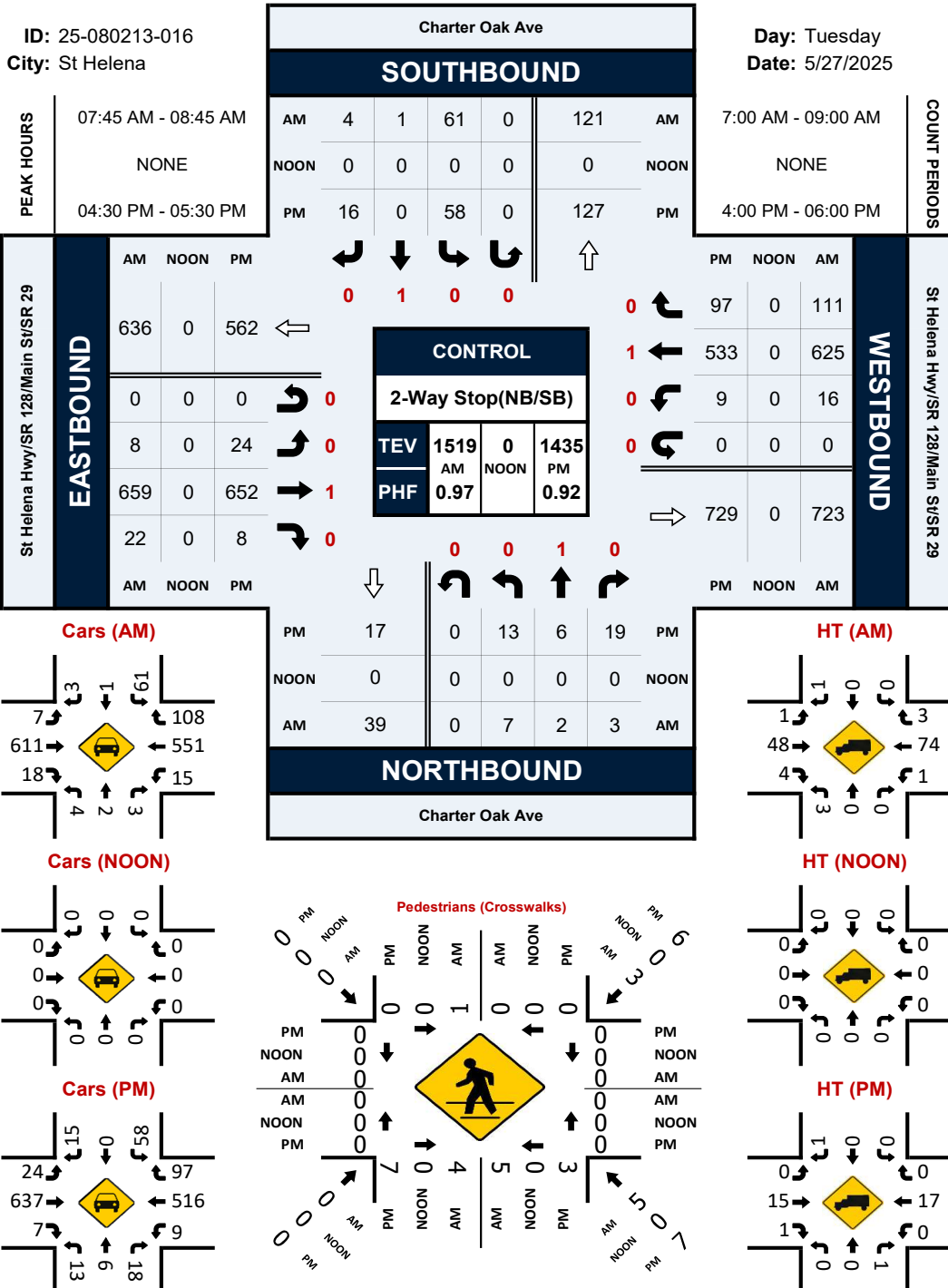
Peak Hour Turning Movement Count



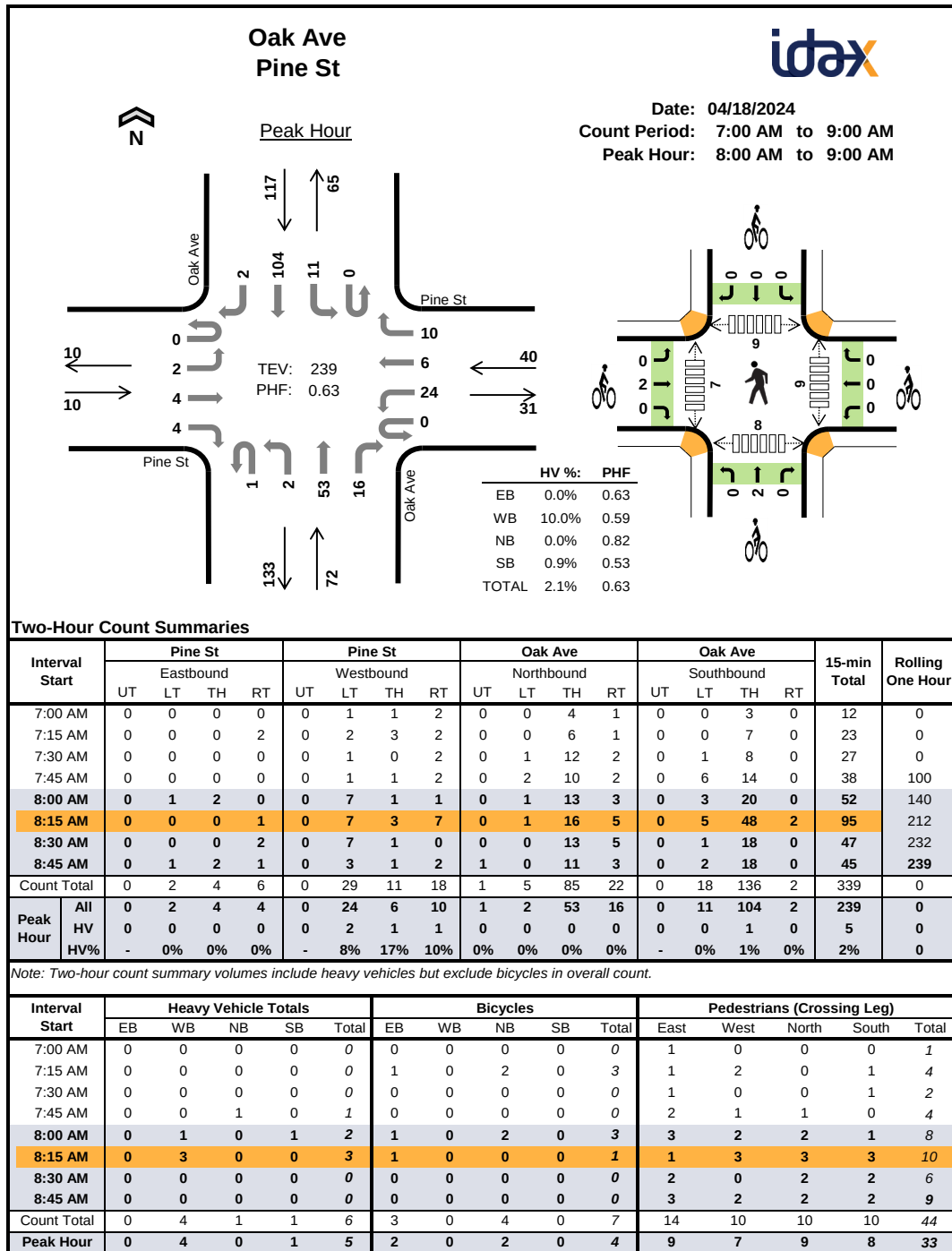
Prepared by National Data & Surveying Services

Charter Oak Ave & St Helena Hwy/SR 128/Main St/SR 29

Peak Hour Turning Movement Count



www.idaxdata.com



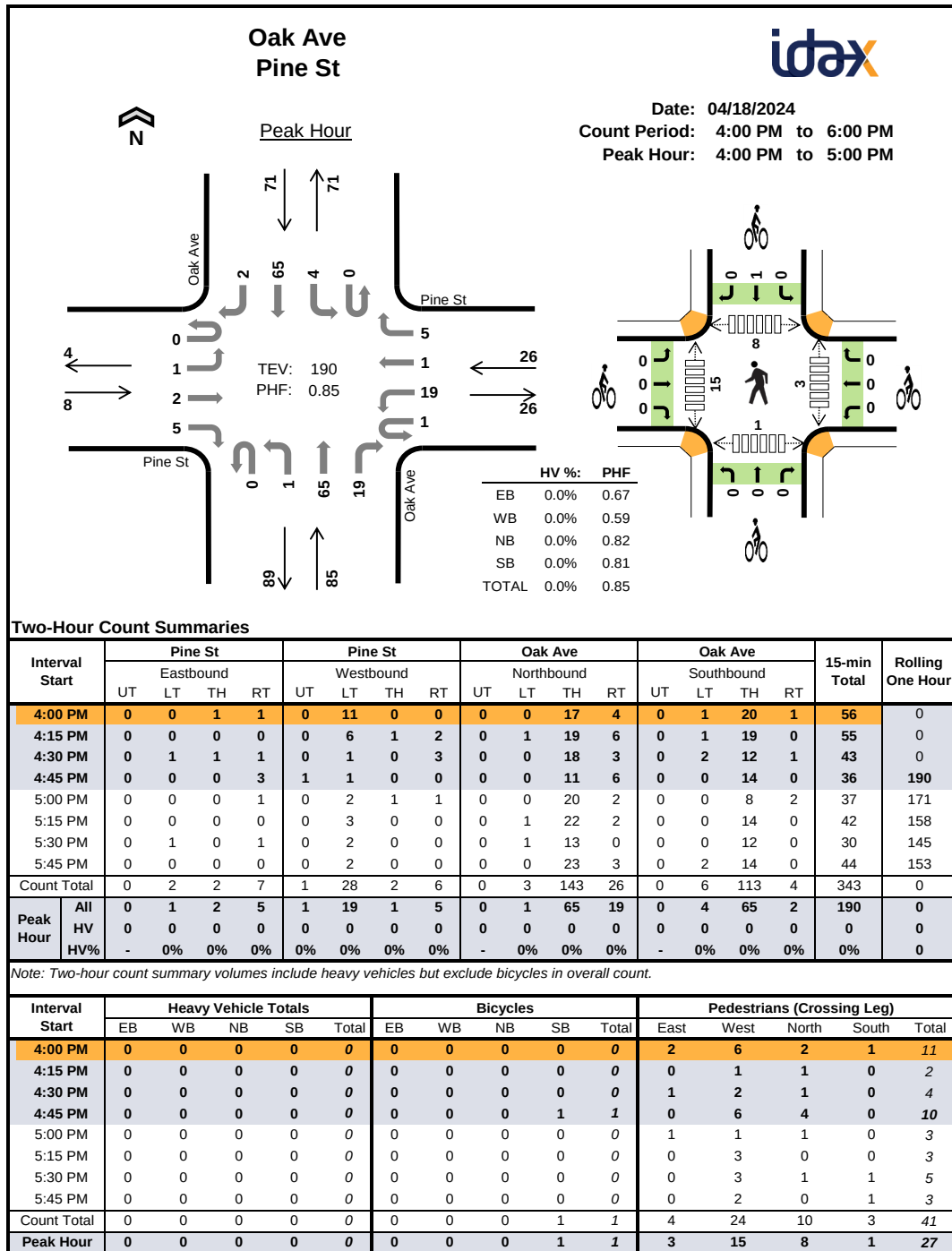
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Pine St				Pine St				Oak Ave			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	1	1	1	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	2	1	1	0	0	1	0
Peak Hour	0	0	0	0	0	2	1	1	0	0	0	0
Two-Hour Count Summaries - Bikes												
Interval Start	Pine St			Pine St			Oak Ave			Oak Ave		
	Eastbound			Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	2	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	0	0	0	0	0	2	0	0	0	0
8:15 AM	0	1	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	2	1	0	0	0	0	4	0	0	0	0
Peak Hour	0	2	0	0	0	0	0	2	0	0	0	0
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



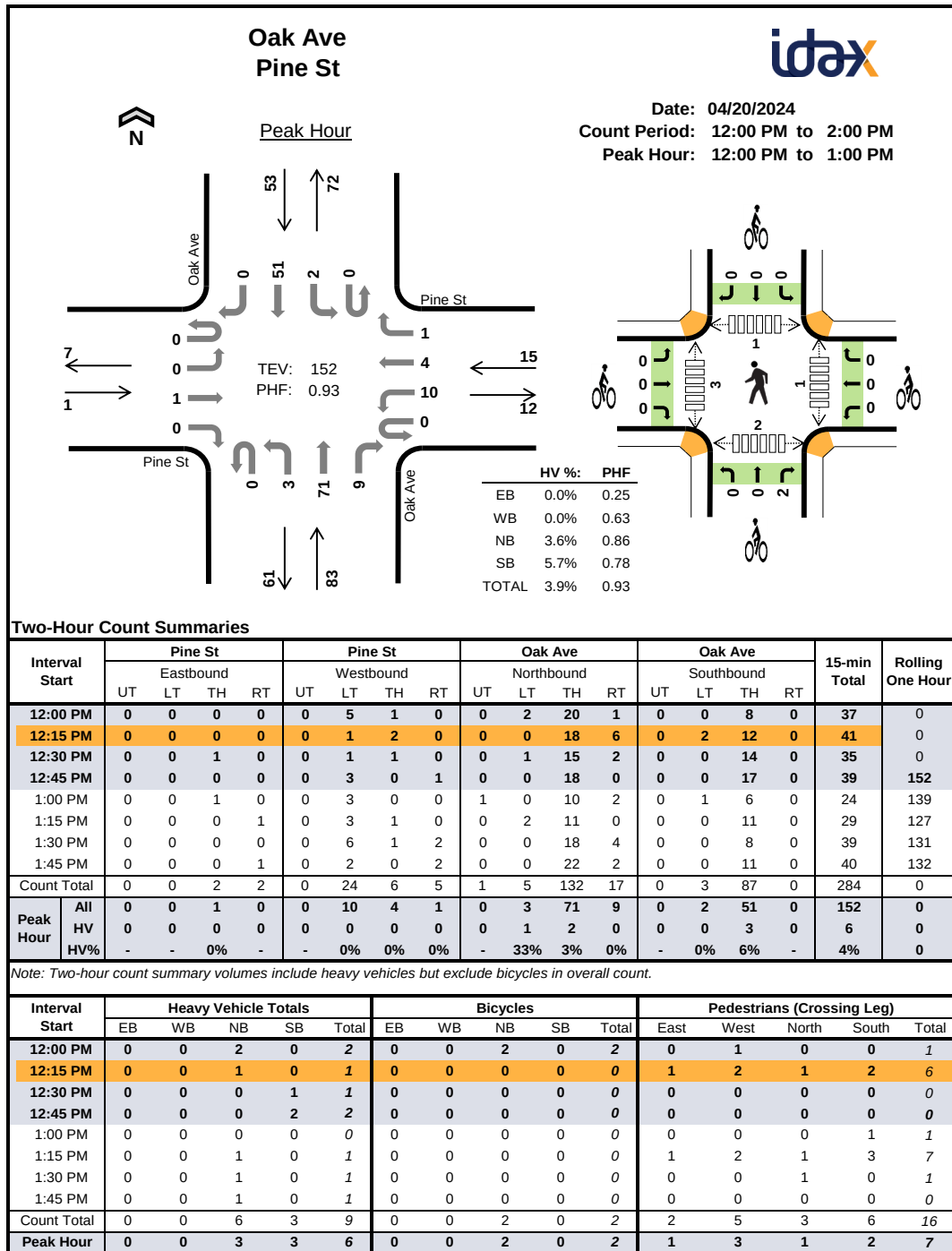
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Pine St				Pine St				Oak Ave			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0
Two-Hour Count Summaries - Bikes												
Interval Start	Pine St				Pine St				Oak Ave			
	Eastbound				Westbound				Northbound			
	LT	TH	RT		LT	TH	RT		LT	TH	RT	
4:00 PM	0	0	0		0	0	0		0	0	0	
4:15 PM	0	0	0		0	0	0		0	0	0	
4:30 PM	0	0	0		0	0	0		0	0	0	
4:45 PM	0	0	0		0	0	0		0	0	0	
5:00 PM	0	0	0		0	0	0		0	0	0	
5:15 PM	0	0	0		0	0	0		0	0	0	
5:30 PM	0	0	0		0	0	0		0	0	0	
5:45 PM	0	0	0		0	0	0		0	0	0	
Count Total	0	0	0		0	0	0		0	1	0	
Peak Hour	0	0	0		0	0	0		0	1	0	
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



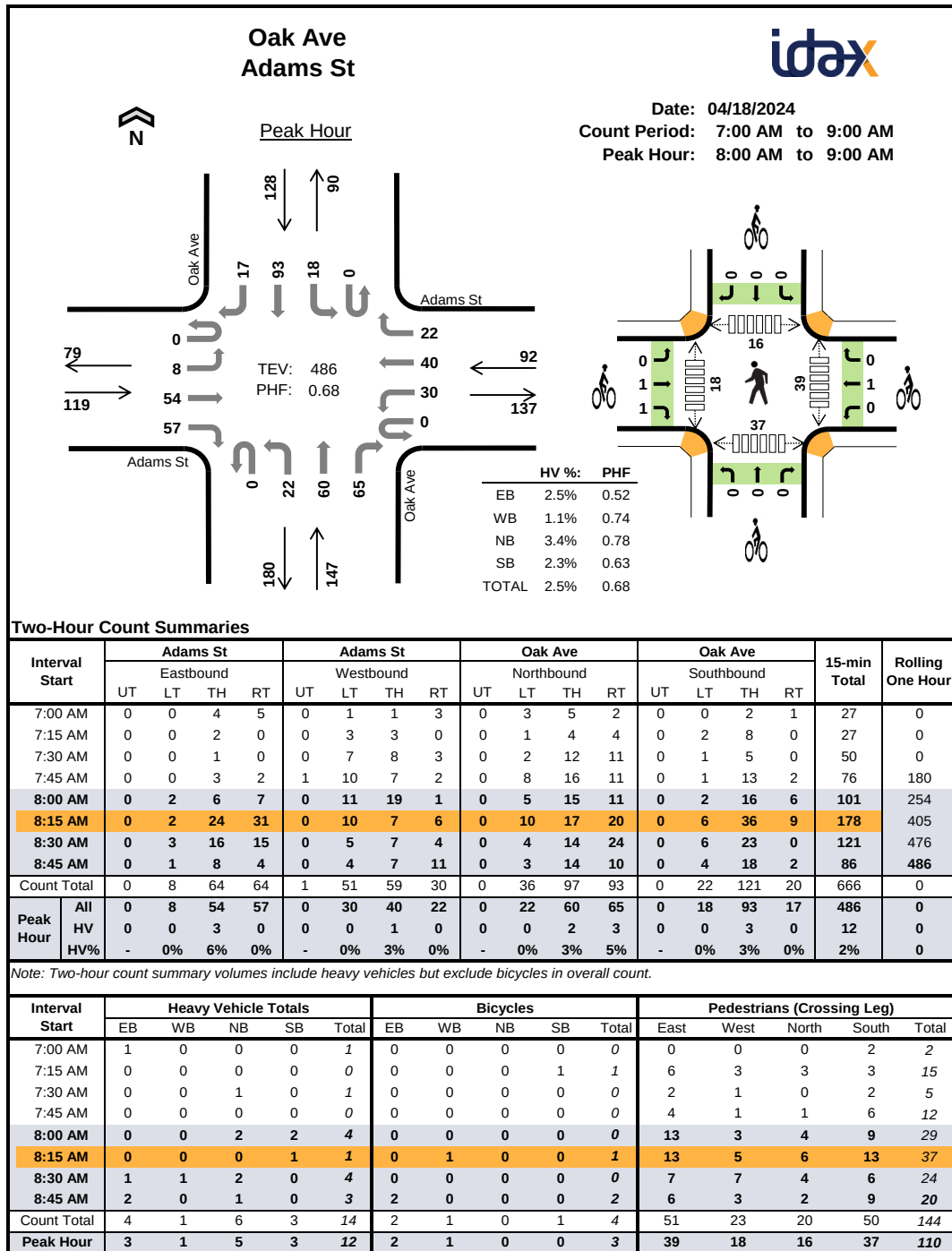
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Pine St				Pine St				Oak Ave			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
12:00 PM	0	0	0	0	0	0	0	0	0	1	1	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	1	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	1	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	2	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	1	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	1	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	1	0
Count Total	0	0	0	0	0	0	0	0	0	2	4	0
Peak Hour	0	0	0	0	0	0	0	0	0	1	2	0
Two-Hour Count Summaries - Bikes												
Interval Start	Pine St			Pine St			Oak Ave			Oak Ave		
	Eastbound			Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
12:00 PM	0	0	0	0	0	0	0	0	2	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	2	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	2	0	0	0
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

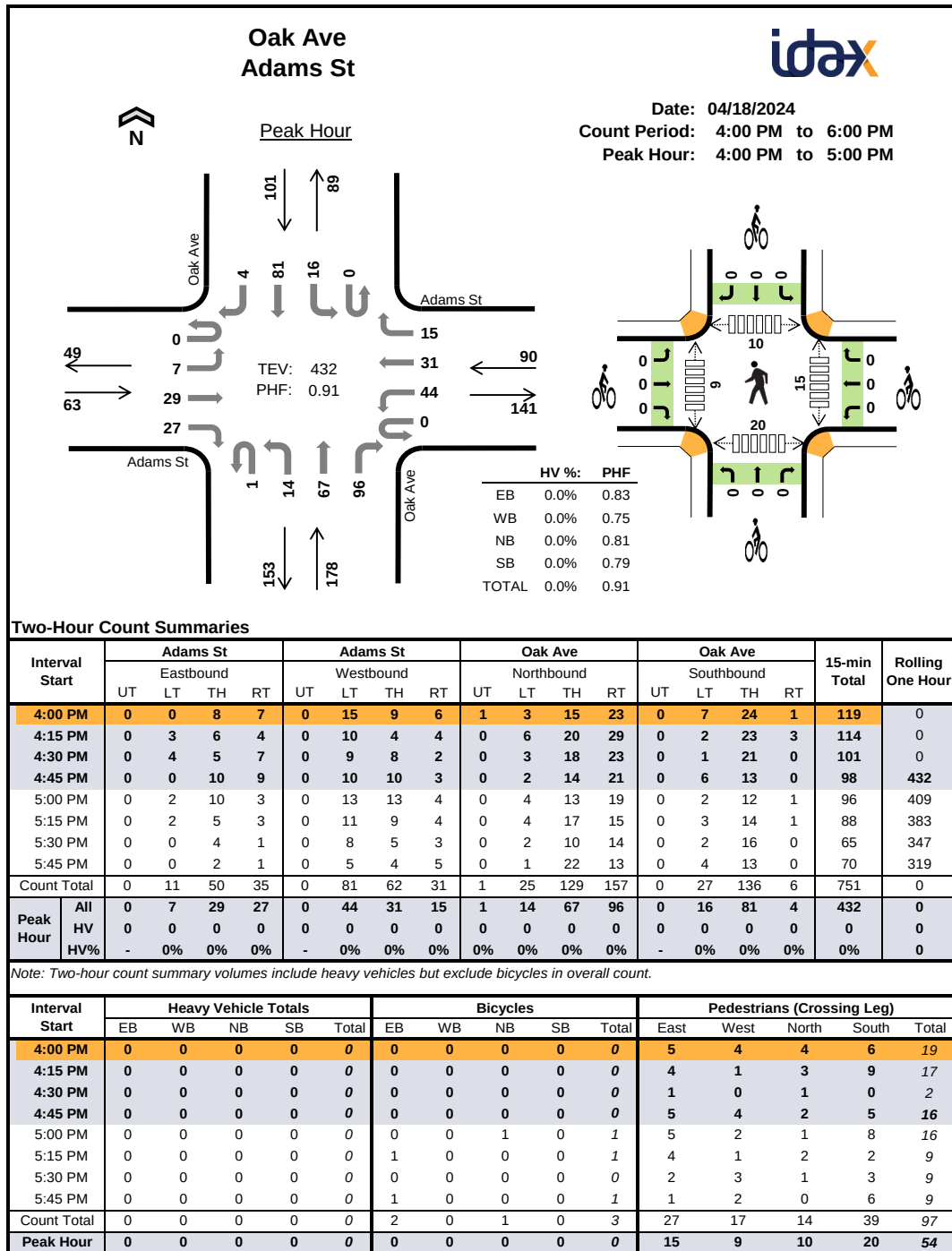
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Adams St				Adams St				Oak Ave				Oak Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	4	5
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6
8:30 AM	0	0	1	0	0	0	1	0	0	0	1	1	0	0	0	0	4	9
8:45 AM	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	3	12
Count Total	0	0	3	1	0	0	1	0	0	0	2	4	0	0	3	0	14	0
Peak Hour	0	0	3	0	0	0	1	0	0	0	2	3	0	0	3	0	12	0

Two-Hour Count Summaries - Bikes														
Interval Start	Adams St			Adams St			Oak Ave			Oak Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	1	1	0	0	0	0	0	0	0	0	0	2	3
Count Total	0	1	1	0	1	0	0	0	0	1	0	0	4	0
Peak Hour	0	1	1	0	1	0	0	0	0	0	0	0	3	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



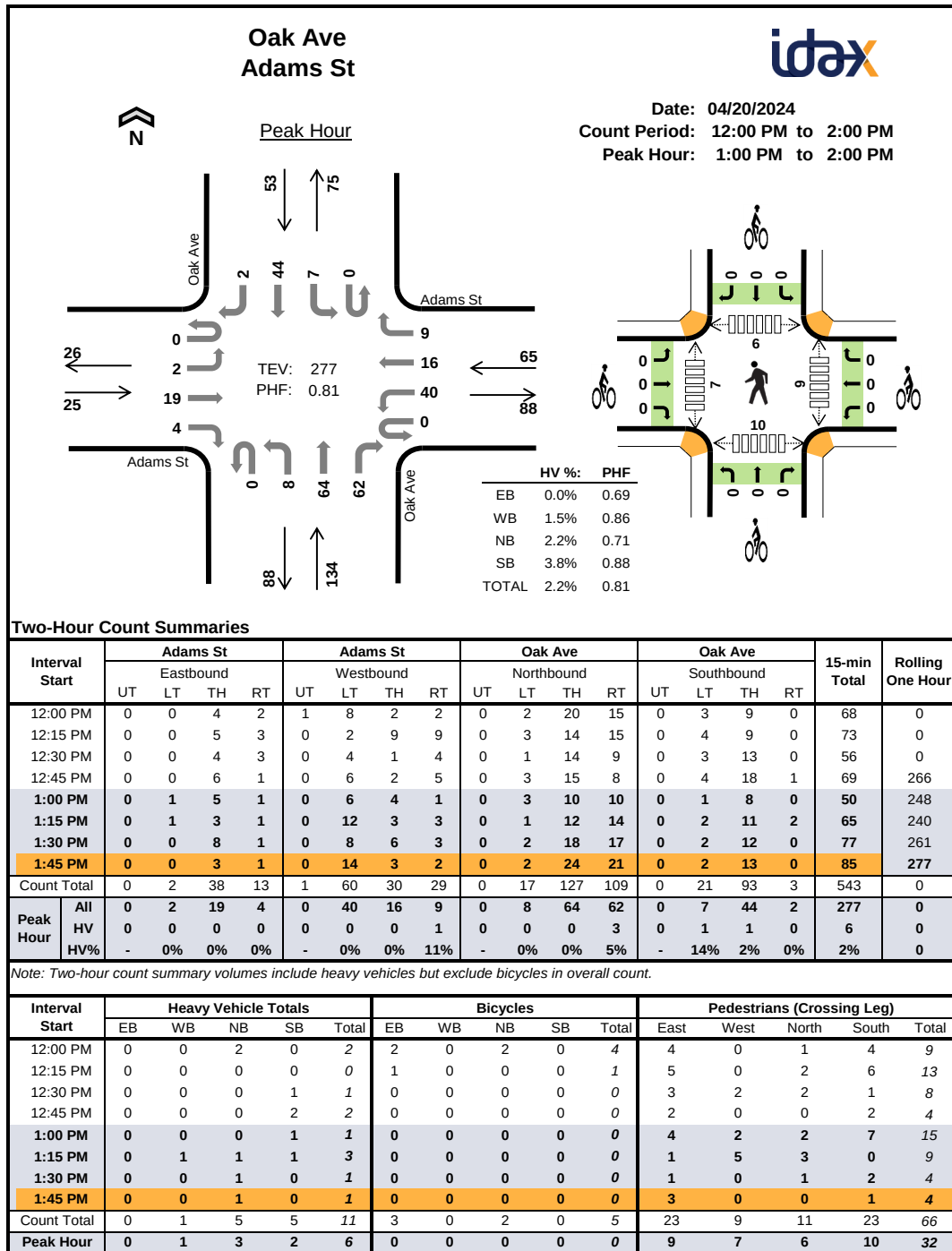
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Adams St				Adams St				Oak Ave			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0
Two-Hour Count Summaries - Bikes												
Interval Start	Adams St				Adams St				Oak Ave			
	Eastbound				Westbound				Northbound			
	LT	TH	RT		LT	TH	RT		LT	TH	RT	
4:00 PM	0	0	0		0	0	0		0	0	0	
4:15 PM	0	0	0		0	0	0		0	0	0	
4:30 PM	0	0	0		0	0	0		0	0	0	
4:45 PM	0	0	0		0	0	0		0	0	0	
5:00 PM	0	0	0		0	0	0		0	0	1	
5:15 PM	0	1	0		0	0	0		0	0	0	
5:30 PM	0	0	0		0	0	0		0	0	0	
5:45 PM	0	1	0		0	0	0		0	0	0	
Count Total	0	2	0		0	0	0		0	0	1	
Peak Hour	0	0	0		0	0	0		0	0	0	
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



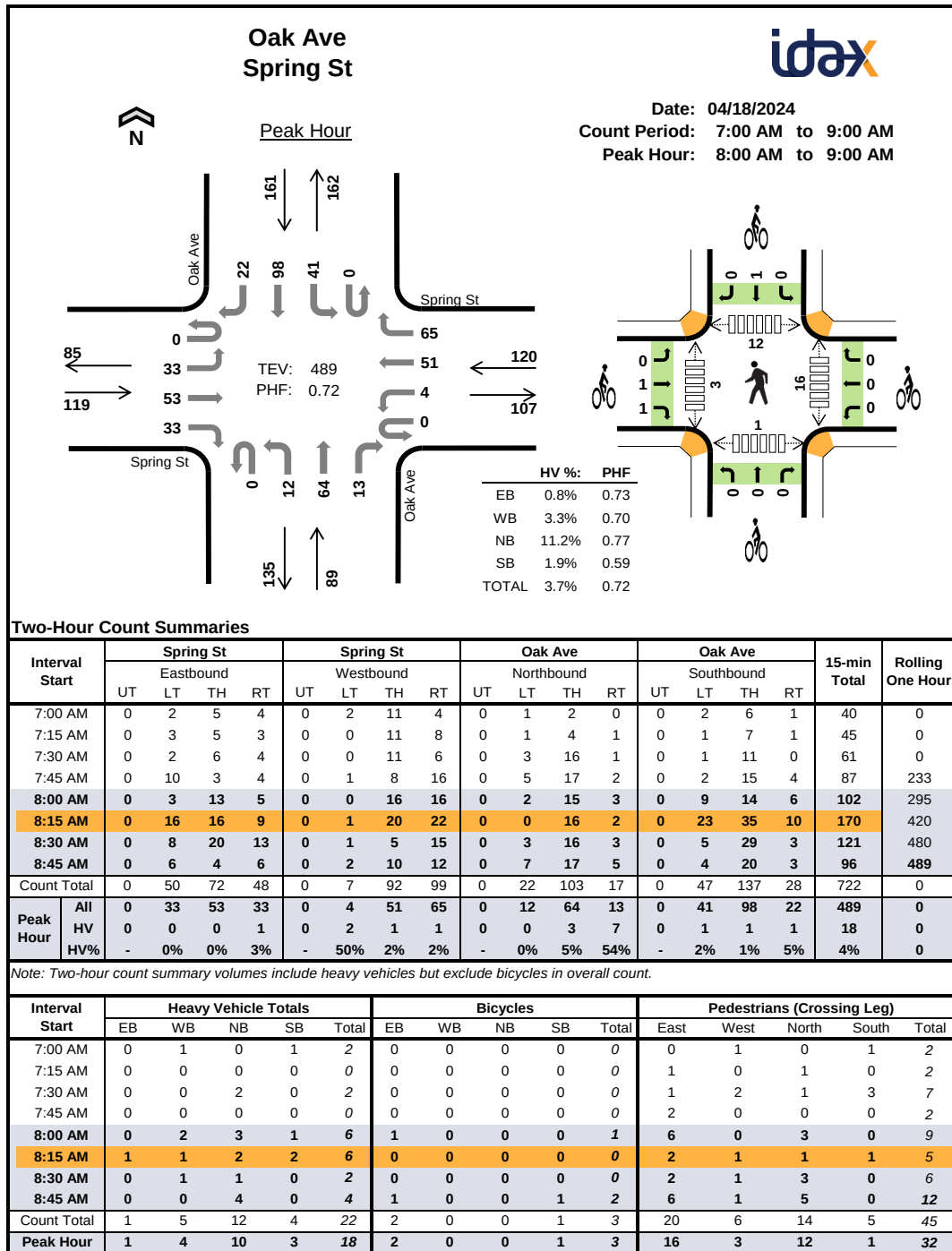
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Adams St				Adams St				Oak Ave			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
12:00 PM	0	0	0	0	0	0	0	0	0	0	1	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	1	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	2	0
1:00 PM	0	0	0	0	0	0	0	0	0	1	0	0
1:15 PM	0	0	0	0	0	0	0	1	0	0	1	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	1	0	1	4	0
Peak Hour	0	0	0	0	0	0	0	1	0	1	1	0
Two-Hour Count Summaries - Bikes												
Interval Start	Adams St			Adams St			Oak Ave			Oak Ave		
	Eastbound			Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
12:00 PM	0	0	2	0	0	0	2	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	3	0	0	0	2	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

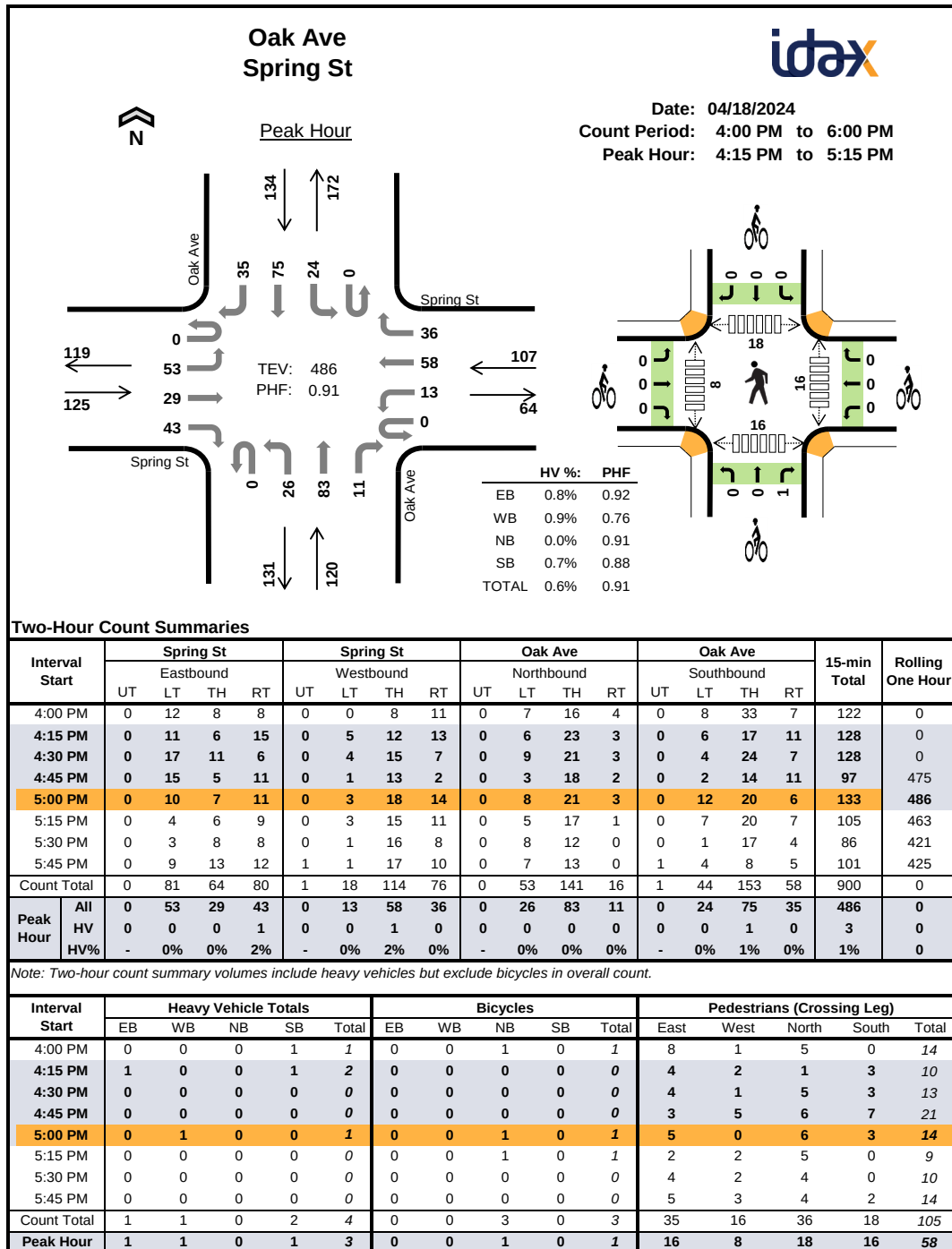
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Spring St				Spring St				Oak Ave				Oak Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8:00 AM	0	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	6	8
8:15 AM	0	0	0	1	0	1	0	0	0	0	0	2	0	1	1	0	6	14
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	2	14
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	4	18
Count Total	0	0	0	1	0	2	2	1	0	0	4	8	0	1	2	1	22	0
Peak Hour	0	0	0	1	0	2	1	1	0	0	3	7	0	1	1	1	18	0

Two-Hour Count Summaries - Bikes																	
Interval Start	Spring St			Spring St			Oak Ave			Oak Ave			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	1			
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
8:45 AM	0	0	1	0	0	0	0	0	0	0	1	0	2	3			
Count Total	0	1	1	0	0	0	0	0	0	0	1	0	3	0			
Peak Hour	0	1	1	0	0	0	0	0	0	0	1	0	3	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

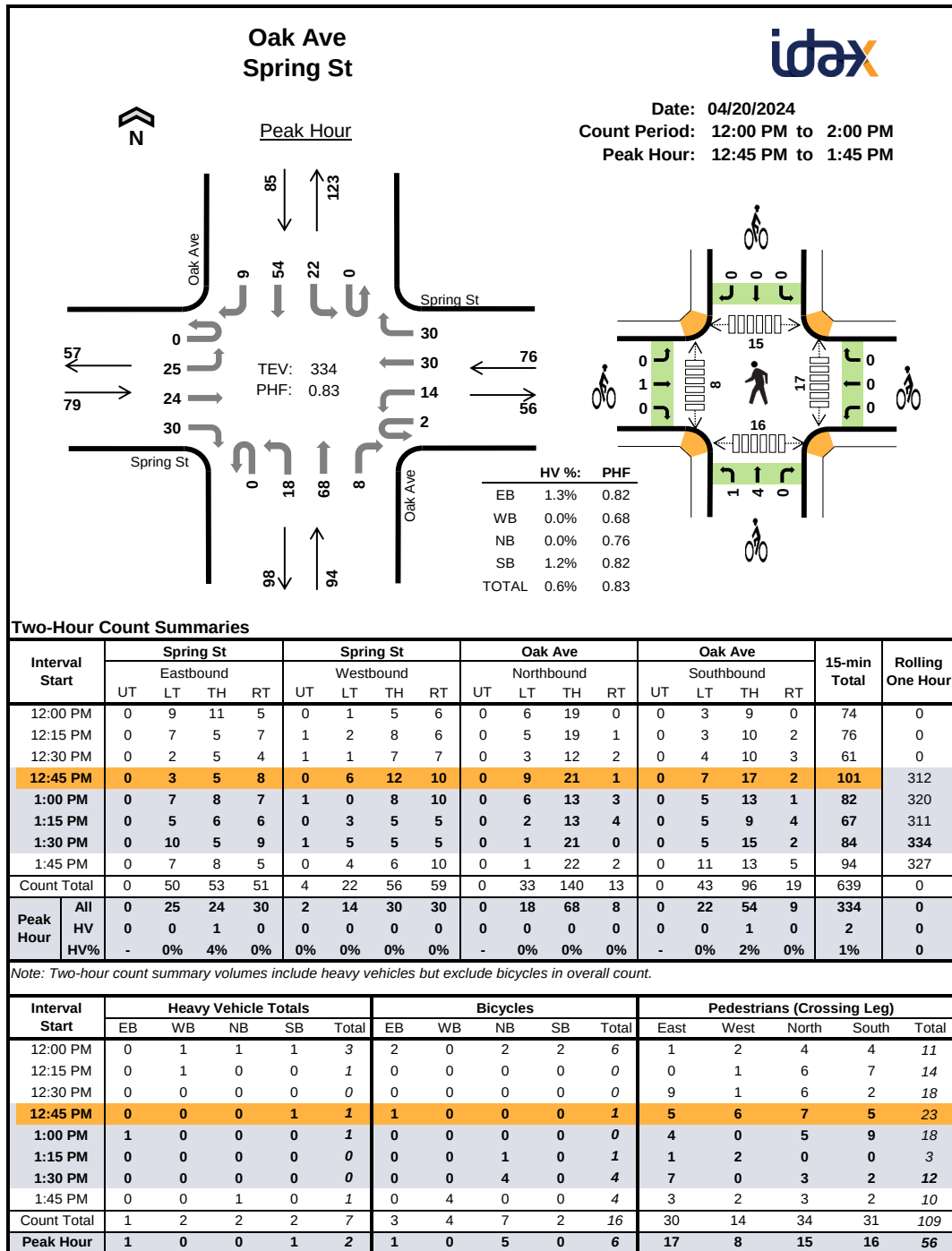
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Spring St				Spring St				Oak Ave				Oak Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
4:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	4	0
Peak Hour	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	3	0

Two-Hour Count Summaries - Bikes														
Interval Start	Spring St			Spring St			Oak Ave			Oak Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	1	1
5:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	0	0	1	1	1	0	0	0	3	0
Peak Hour	0	0	0	0	0	0	0	0	1	0	0	0	1	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

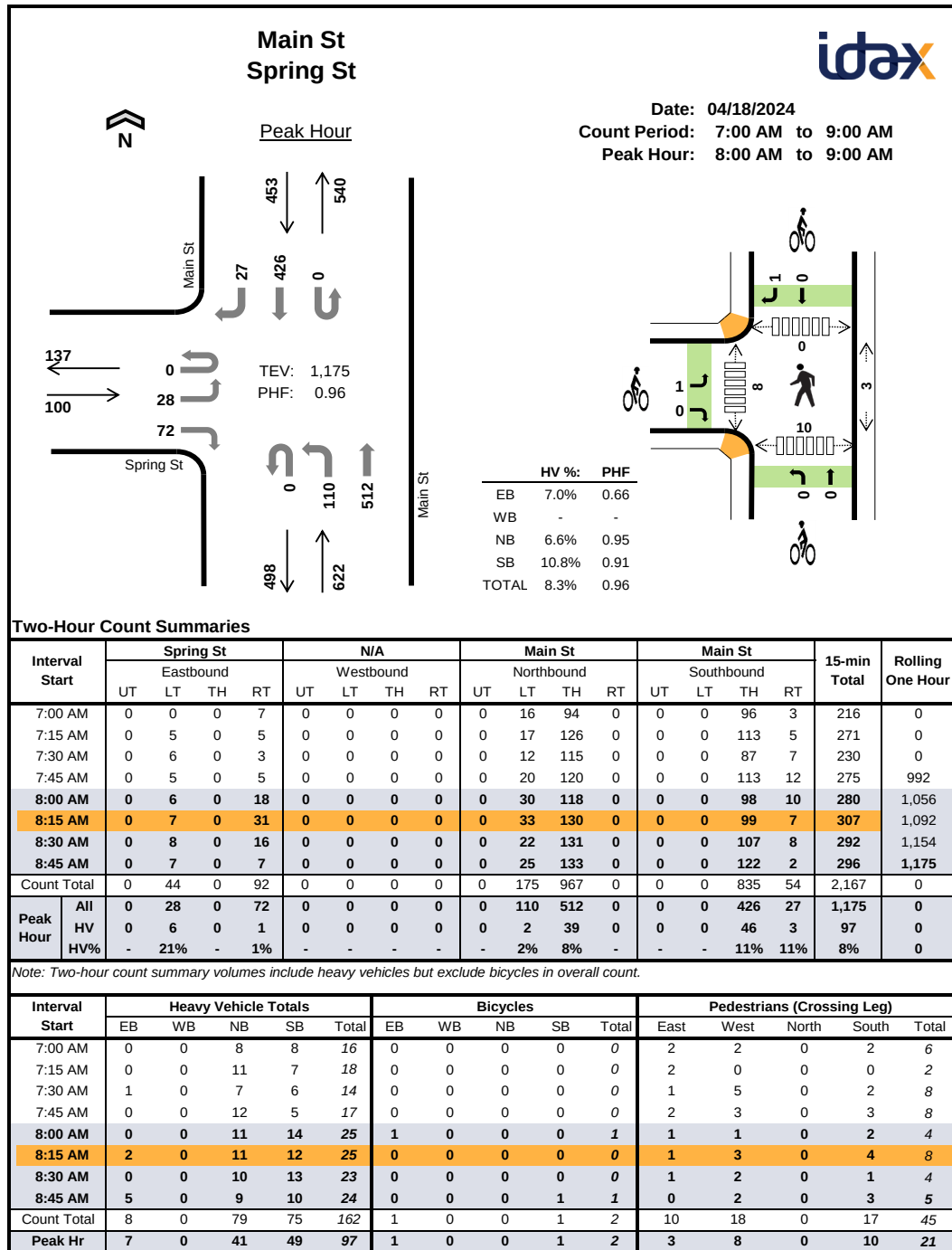
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Spring St				Spring St				Oak Ave				Oak Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:00 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	3	0
12:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5
1:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2
Count Total	0	0	1	0	0	2	0	0	0	0	2	0	0	0	2	0	7	0
Peak Hour	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0

Two-Hour Count Summaries - Bikes														
Interval Start	Spring St			Spring St			Oak Ave			Oak Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
12:00 PM	2	0	0	0	0	0	0	2	0	0	2	0	6	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	7
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	1	2
1:30 PM	0	0	0	0	0	0	0	4	0	0	0	0	4	6
1:45 PM	0	0	0	0	4	0	0	0	0	0	0	0	4	9
Count Total	2	1	0	0	4	0	1	6	0	0	2	0	16	0
Peak Hour	0	1	0	0	0	0	1	4	0	0	0	0	6	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



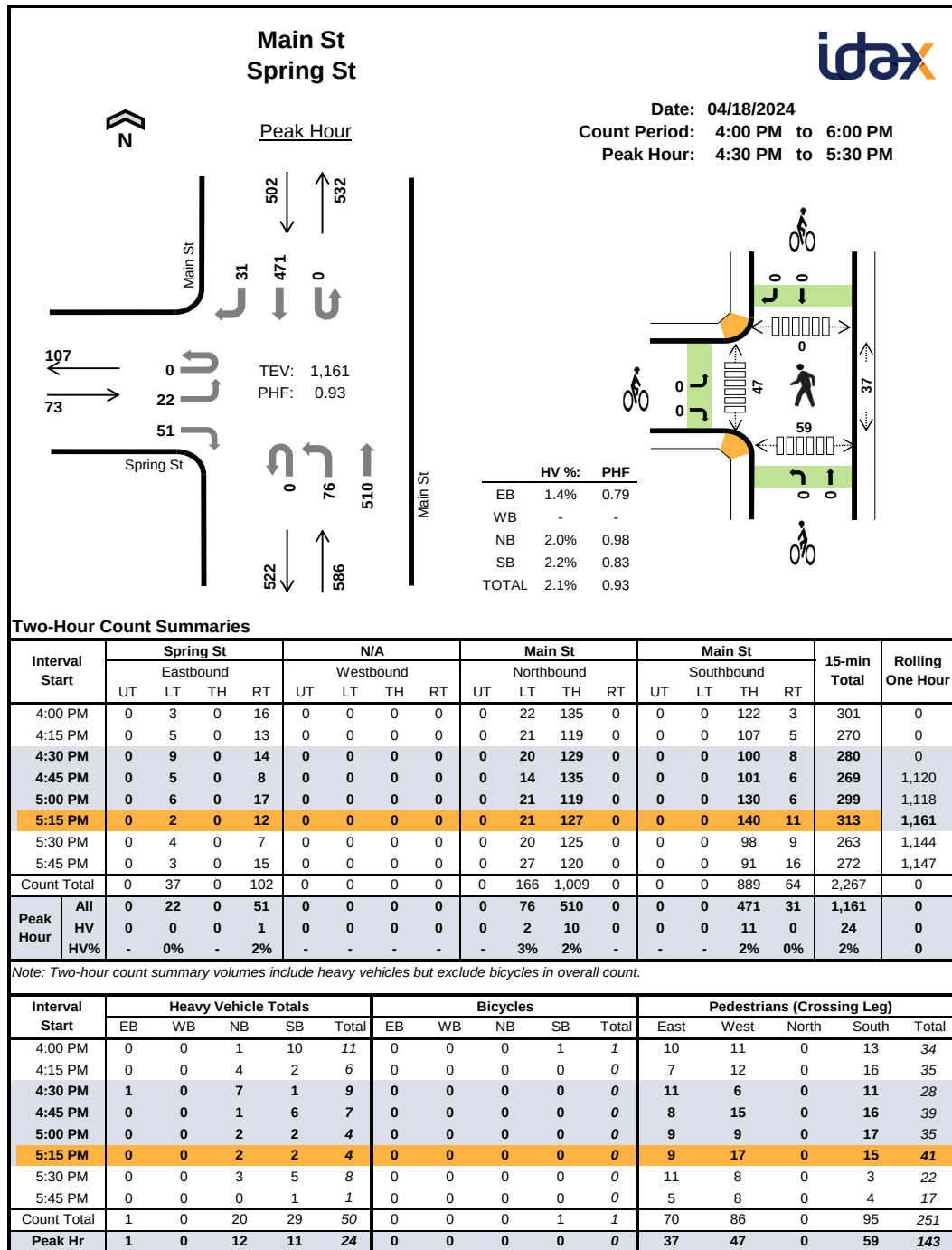
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Spring St				N/A				Main St			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
7:00 AM	0	0	0	0	0	0	0	0	0	0	8	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	11	0
7:30 AM	0	1	0	0	0	0	0	0	0	0	7	0
7:45 AM	0	0	0	0	0	0	0	0	0	1	11	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	11	0
8:15 AM	0	2	0	0	0	0	0	0	0	0	11	0
8:30 AM	0	0	0	0	0	0	0	0	0	1	9	0
8:45 AM	0	4	0	1	0	0	0	0	0	1	8	0
Count Total	0	7	0	1	0	0	0	0	0	3	76	0
Peak Hour	0	6	0	1	0	0	0	0	0	2	39	0
Two-Hour Count Summaries - Bikes												
Interval Start	Spring St				N/A				Main St			
	Eastbound				Westbound				Northbound			
	LT	TH	RT		LT	TH	RT		LT	TH	RT	
7:00 AM	0	0	0		0	0	0		0	0	0	
7:15 AM	0	0	0		0	0	0		0	0	0	
7:30 AM	0	0	0		0	0	0		0	0	0	
7:45 AM	0	0	0		0	0	0		0	0	0	
8:00 AM	1	0	0		0	0	0		0	0	0	
8:15 AM	0	0	0		0	0	0		0	0	0	
8:30 AM	0	0	0		0	0	0		0	0	0	
8:45 AM	0	0	0		0	0	0		0	0	1	
Count Total	1	0	0		0	0	0		0	0	1	
Peak Hour	1	0	0		0	0	0		0	0	1	
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



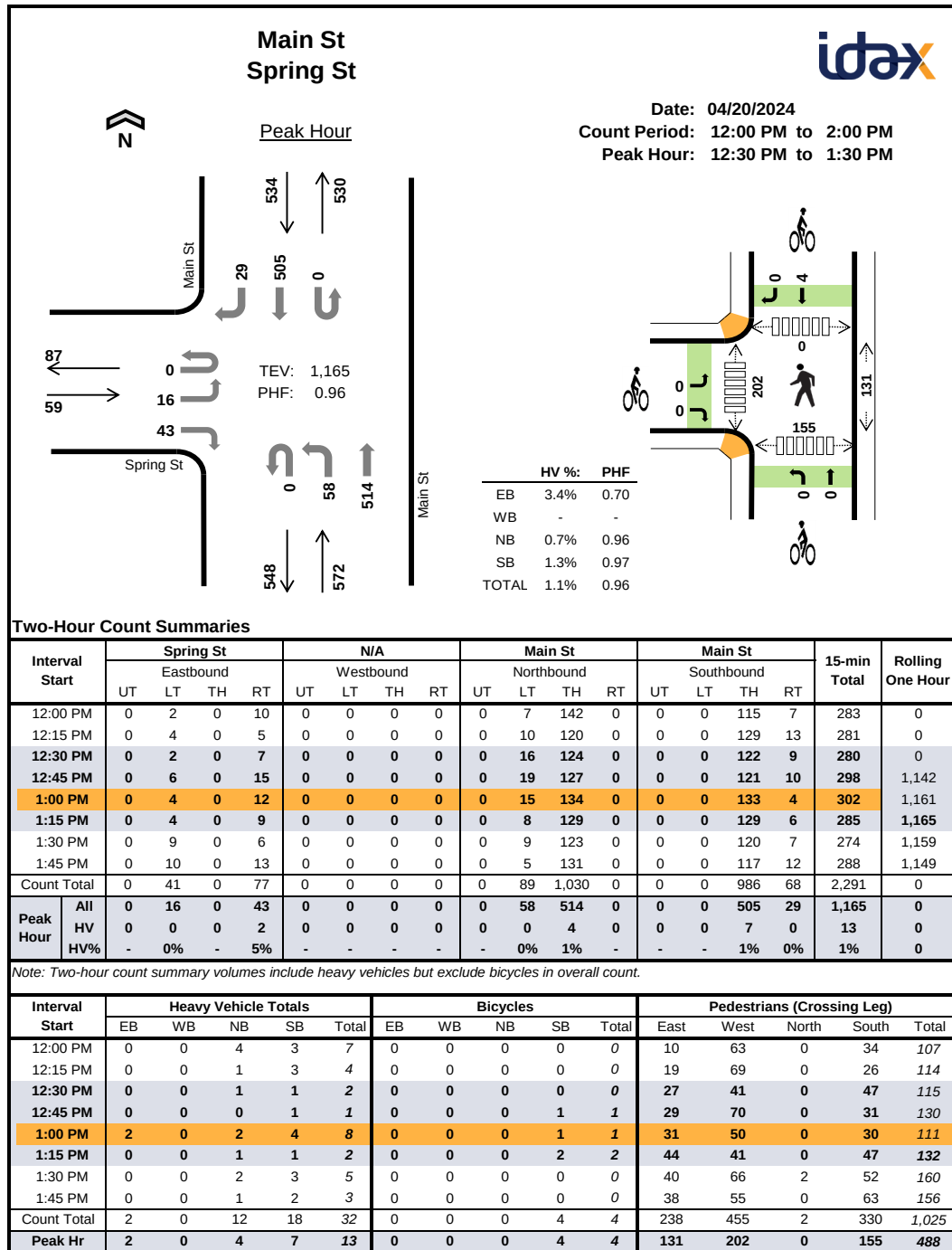
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Spring St				N/A				Main St			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	4	0
4:30 PM	0	0	0	1	0	0	0	0	0	1	6	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0
5:00 PM	0	0	0	0	0	0	0	0	0	1	1	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	2	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	3	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	1	0	0	0	0	0	2	18	0
Peak Hour	0	0	0	1	0	0	0	0	0	2	10	0
Two-Hour Count Summaries - Bikes												
Interval Start	Spring St				N/A				Main St			
	Eastbound				Westbound				Northbound			
	LT	TH	RT		LT	TH	RT		LT	TH	RT	
4:00 PM	0	0	0		0	0	0		0	0	0	
4:15 PM	0	0	0		0	0	0		0	0	0	
4:30 PM	0	0	0		0	0	0		0	0	0	
4:45 PM	0	0	0		0	0	0		0	0	0	
5:00 PM	0	0	0		0	0	0		0	0	0	
5:15 PM	0	0	0		0	0	0		0	0	0	
5:30 PM	0	0	0		0	0	0		0	0	0	
5:45 PM	0	0	0		0	0	0		0	0	0	
Count Total	0	0	0		0	0	0		0	0	0	
Peak Hour	0	0	0		0	0	0		0	0	0	
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



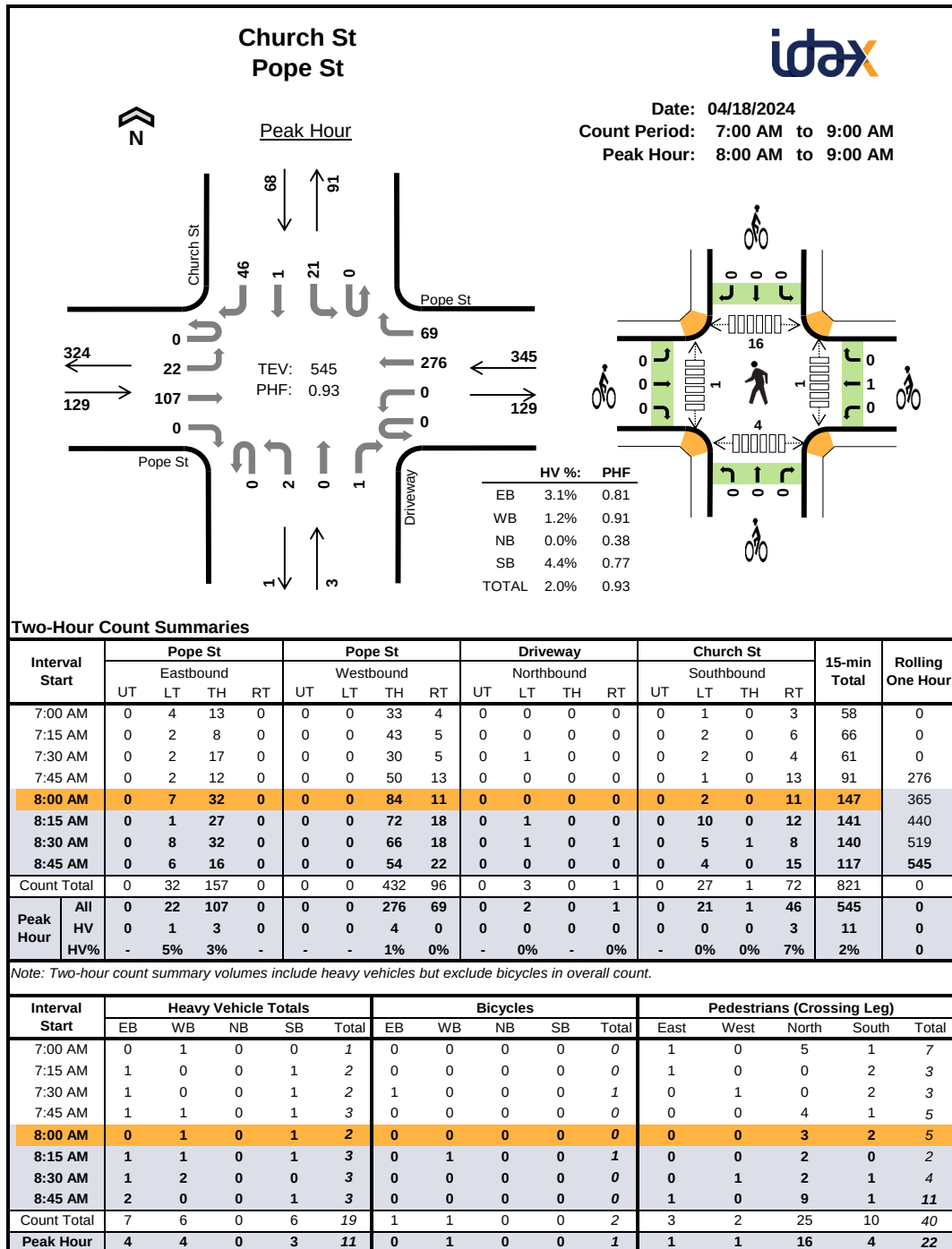
Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles												
Interval Start	Spring St				N/A				Main St			
	Eastbound				Westbound				Northbound			
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT
12:00 PM	0	0	0	0	0	0	0	0	0	0	4	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	1	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	1	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	2	0	0	0	0	0	0	2	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	1	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	2	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	1	0
Count Total	0	0	0	2	0	0	0	0	0	0	12	0
Peak Hour	0	0	0	2	0	0	0	0	0	0	4	0
Two-Hour Count Summaries - Bikes												
Interval Start	Spring St				N/A				Main St			
	Eastbound				Westbound				Northbound			
	LT	TH	RT		LT	TH	RT		LT	TH	RT	
12:00 PM	0	0	0		0	0	0		0	0	0	
12:15 PM	0	0	0		0	0	0		0	0	0	
12:30 PM	0	0	0		0	0	0		0	0	0	
12:45 PM	0	0	0		0	0	0		0	0	0	
1:00 PM	0	0	0		0	0	0		0	0	0	
1:15 PM	0	0	0		0	0	0		0	0	0	
1:30 PM	0	0	0		0	0	0		0	0	0	
1:45 PM	0	0	0		0	0	0		0	0	0	
Count Total	0	0	0		0	0	0		0	0	0	
Peak Hour	0	0	0		0	0	0		0	0	0	
Note: U-Turn volumes for bikes are included in Left-Turn, if any.												

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

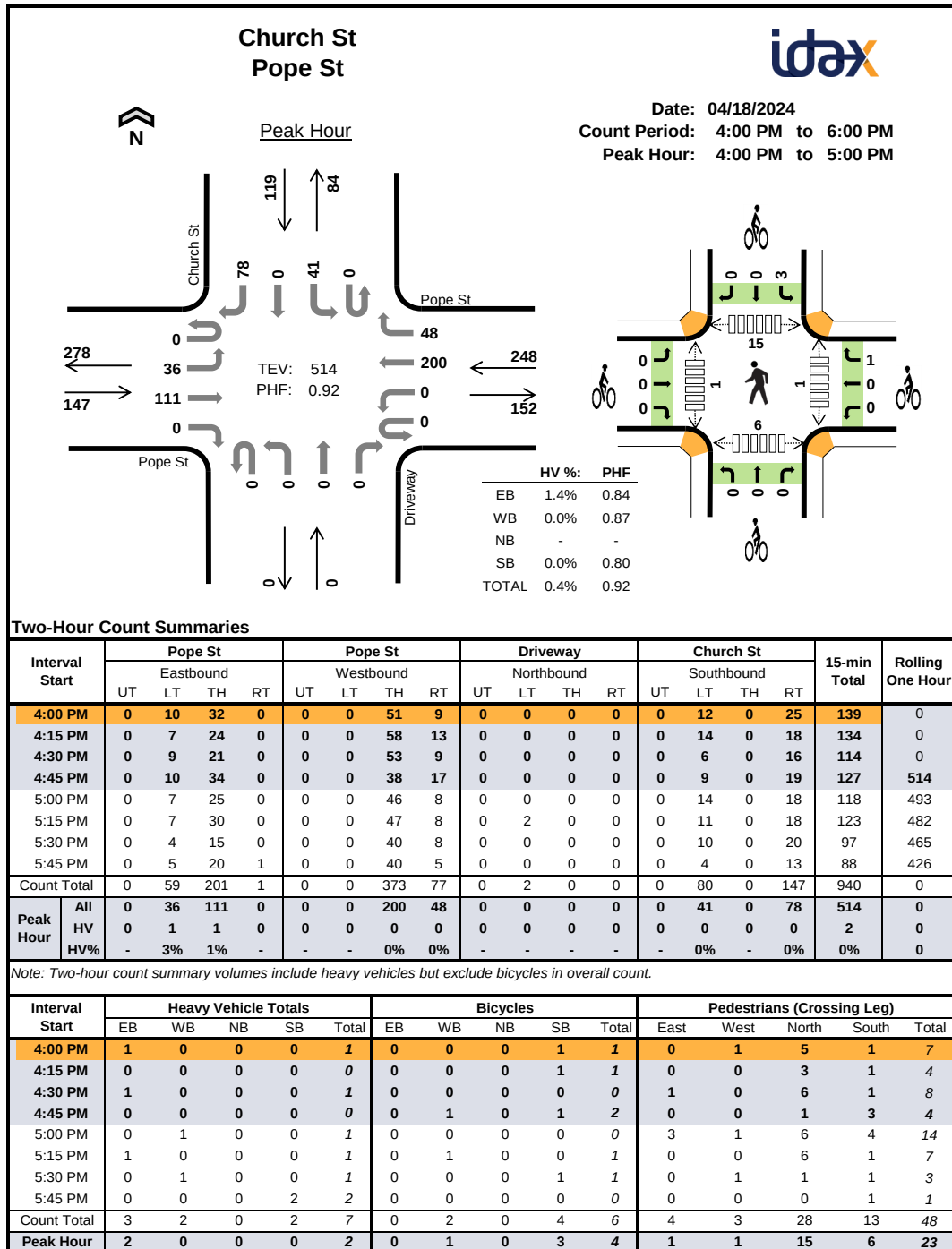
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Pope St				Pope St				Driveway				Church St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0
7:45 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	3	8
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	2	9
8:15 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	3	10
8:30 AM	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3	11
8:45 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	3	11
Count Total	0	1	6	0	0	0	5	1	0	0	0	0	0	1	0	5	19	0
Peak Hour	0	1	3	0	0	0	4	0	0	0	0	0	0	0	0	3	11	0

Two-Hour Count Summaries - Bikes														
Interval Start	Pope St			Pope St			Driveway			Church St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	1	0	0	0	1	0	0	0	0	0	0	0	2	0
Peak Hour	0	0	0	0	1	0	0	0	0	0	0	0	1	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

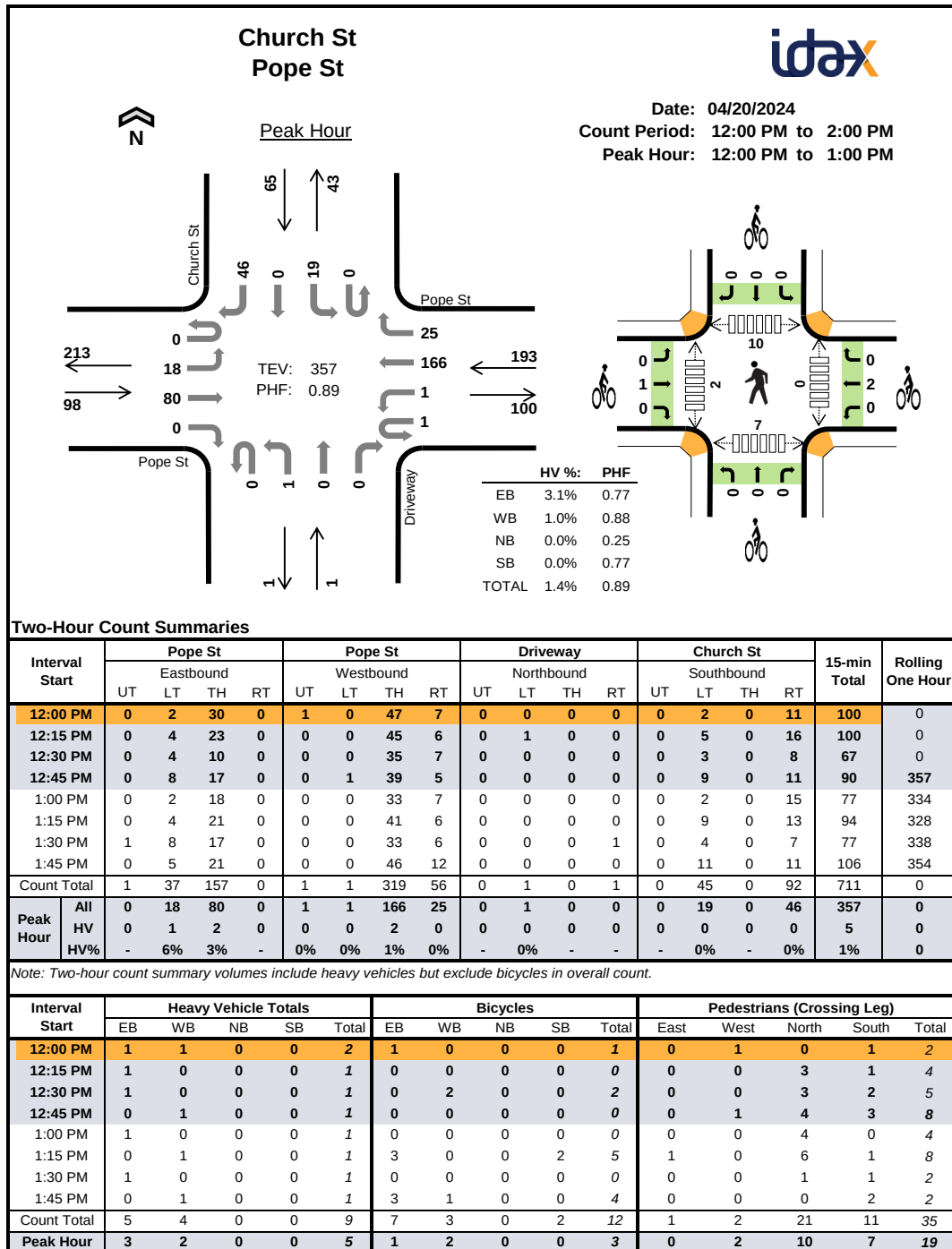
www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Pope St				Pope St				Driveway				Church St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	5
Count Total	0	1	2	0	0	0	2	0	0	0	0	0	0	0	0	2	7	0
Peak Hour	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0

Two-Hour Count Summaries - Bikes														
Interval Start	Pope St			Pope St			Driveway			Church St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	1	0	0	0	1	0	0	2	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	3
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	4
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	0	2	0	0	0	4	0	0	6	0
Peak Hour	0	0	0	0	0	1	0	0	0	3	0	0	4	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

www.idaxdata.com



Project Manager: (415) 310-6469

project.manager.ca@idaxdata.com

www.idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Pope St				Pope St				Driveway				Church St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
12:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0
12:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
12:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
12:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	5
1:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
1:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
1:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
1:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
Count Total	0	2	3	0	0	0	4	0	0	0	0	0	0	0	0	0	9	0
Peak Hour	0	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0	5	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Pope St				Pope St				Driveway				Church St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	LT	TH	RT		LT	TH	RT		LT	TH	RT		LT	TH	RT			
12:00 PM	0	1	0		0	0	0		0	0	0		0	0	0		1	0
12:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
12:30 PM	0	0	0		0	2	0		0	0	0		0	0	0		2	0
12:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	3
1:00 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	2
1:15 PM	0	3	0		0	0	0		0	0	0		2	0	0		5	7
1:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	5
1:45 PM	0	3	0		0	1	0		0	0	0		0	0	0		4	9
Count Total	0	7	0		0	3	0		0	0	0		2	0	0		12	0
Peak Hour	0	1	0		0	2	0		0	0	0		0	0	0		3	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Appendix C. Operations and Warrants Worksheets

HCM 7th TWSC
4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	4.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	24	3	44	30	6	18
Future Vol, veh/h	24	3	44	30	6	18
Conflicting Peds, #/hr	0	9	9	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	32	4	58	39	8	24
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	45	0	199	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	156	-
Critical Hdwy	-	-	4.16	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.254	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	1538	-	781	1017
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	862	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1525	-	743	1008
Mov Cap-2 Maneuver	-	-	-	-	743	-
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	828	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		4.43		9.03	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	926	-	-	1070	-	
HCM Lane V/C Ratio	0.034	-	-	0.038	-	
HCM Ctrl Dly (s/v)	9	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	

HCM 7th TWSC
5: Valley View St & Spring St

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	8.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻		↻
Traffic Vol, veh/h	38	19	165	41	24	207
Future Vol, veh/h	38	19	165	41	24	207
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	55	28	239	59	35	300
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	86	0	610	72
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	538	-
Critical Hdwy	-	-	4.14	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1498	-	455	985
Stage 1	-	-	-	-	946	-
Stage 2	-	-	-	-	582	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1494	-	378	982
Mov Cap-2 Maneuver	-	-	-	-	378	-
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	485	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		6.3		12.06	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	842	-	-	1442	-	
HCM Lane V/C Ratio	0.397	-	-	0.16	-	
HCM Ctrl Dly (s/v)	12.1	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.9	-	-	0.6	-	

HCM 7th AWSC
6: Crane Ave/Valley View St & Grayson Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	133	103	34	162	64
Future Vol, veh/h	20	133	103	34	162	64
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	28	185	143	47	225	89
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	9.4	9.3	11.3
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	13%	72%
Vol Thru, %	75%	0%	28%
Vol Right, %	25%	87%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	137	153	226
LT Vol	0	20	162
Through Vol	103	0	64
RT Vol	34	133	0
Lane Flow Rate	190	213	314
Geometry Grp	1	1	1
Degree of Util (X)	0.247	0.273	0.42
Departure Headway (Hd)	4.681	4.631	4.817
Convergence, Y/N	Yes	Yes	Yes
Cap	763	771	744
Service Time	2.738	2.683	2.869
HCM Lane V/C Ratio	0.249	0.276	0.422
HCM Control Delay, s/veh	9.3	9.4	11.3
HCM Lane LOS	A	A	B
HCM 95th-tile Q	1	1.1	2.1

HCM 7th TWSC
7: Sulphur Spring Ave & Crane Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	3	14	119	63	3
Future Vol, veh/h	5	3	14	119	63	3
Conflicting Peds, #/hr	2	0	0	2	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	7	4	19	165	88	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	187	0	-	0	123	104
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	19	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1382	-	-	-	870	948
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	1001	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1379	-	-	-	862	946
Mov Cap-2 Maneuver	-	-	-	-	862	-
Stage 1	-	-	-	-	911	-
Stage 2	-	-	-	-	999	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	4.76	0		9.65		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1125	-	-	-	865	
HCM Lane V/C Ratio	0.005	-	-	-	0.106	
HCM Ctrl Dly (s/v)	7.6	0	-	-	9.7	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	0	0	2	30	0	19	6	650	27	19	636	1
Future Vol, veh/h	0	0	2	30	0	19	6	650	27	19	636	1
Conflicting Peds, #/hr	0	0	5	5	0	0	13	0	2	2	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	0	0	2	32	0	20	6	684	28	20	669	1
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1420	1450	688	1428	1437	700	684	0	0	715	0	0
Stage 1	723	723	-	713	713	-	-	-	-	-	-	-
Stage 2	697	727	-	714	724	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.18	6.58	6.28	4.18	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.572	4.072	3.372	2.272	-	-	2.272	-	-
Pot Cap-1 Maneuver	111	127	436	109	129	429	882	-	-	859	-	-
Stage 1	408	422	-	413	427	-	-	-	-	-	-	-
Stage 2	422	420	-	413	422	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	101	121	429	105	124	428	871	-	-	857	-	-
Mov Cap-2 Maneuver	101	121	-	105	124	-	-	-	-	-	-	-
Stage 1	394	407	-	410	423	-	-	-	-	-	-	-
Stage 2	399	416	-	399	407	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Ctrl Dly, s/v	13.44		41.74		0.08		0.27					
HCM LOS	B		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	871	-	-	429	148	857	-	-				
HCM Lane V/C Ratio	0.007	-	-	0.005	0.348	0.023	-	-				
HCM Ctrl Dly (s/v)	9.2	-	-	13.4	41.7	9.3	-	-				
HCM Lane LOS	A	-	-	B	E	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0	1.4	0.1	-	-				

HCM 7th TWSC
9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	33	43	54	650	589	79
Future Vol, veh/h	33	43	54	650	589	79
Conflicting Peds, #/hr	0	4	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	34	45	56	677	614	82
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1452	667	704	0	-	0
Stage 1	663	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	139	449	867	-	-	-
Stage 1	502	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	123	444	860	-	-	-
Mov Cap-2 Maneuver	123	-	-	-	-	-
Stage 1	446	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	32.59	0.73		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	138	-	208	-	-	
HCM Lane V/C Ratio	0.065	-	0.381	-	-	
HCM Ctrl Dly (s/v)	9.5	0	32.6	-	-	
HCM Lane LOS	A	A	D	-	-	
HCM 95th %tile Q(veh)	0.2	-	1.7	-	-	

HCM 7th Signalized Intersection Summary
10: Main St & Madrona Ave/Fulton Ln

Saint Helena Streets Master Plan
Existing Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	34	31	11	47	62	34	556	9	70	459	103
Future Volume (veh/h)	86	34	31	11	47	62	34	556	9	70	459	103
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1287	1287	1811	1287	1287
Adj Flow Rate, veh/h	102	40	27	13	56	34	40	662	11	83	546	118
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	204	58	33	75	141	77	207	754	13	221	609	132
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.60	0.60	0.60	0.60	0.60	0.60
Sat Flow, veh/h	866	424	245	111	1031	563	747	1261	21	741	1020	220
Grp Volume(v), veh/h	169	0	0	103	0	0	40	0	673	83	0	664
Grp Sat Flow(s),veh/h/ln	1535	0	0	1706	0	0	747	0	1282	741	0	1240
Q Serve(g_s), s	3.2	0.0	0.0	0.0	0.0	0.0	3.3	0.0	29.9	7.2	0.0	31.2
Cycle Q Clear(g_c), s	7.0	0.0	0.0	3.8	0.0	0.0	34.5	0.0	29.9	37.1	0.0	31.2
Prop In Lane	0.60		0.16	0.13		0.33	1.00		0.02	1.00		0.18
Lane Grp Cap(c), veh/h	295	0	0	293	0	0	207	0	766	221	0	741
V/C Ratio(X)	0.57	0.00	0.00	0.35	0.00	0.00	0.19	0.00	0.88	0.38	0.00	0.90
Avail Cap(c_a), veh/h	931	0	0	1034	0	0	460	0	1200	471	0	1161
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.9	0.0	0.0	26.7	0.0	0.0	26.7	0.0	11.5	27.2	0.0	11.7
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.3	0.0	0.0	0.2	0.0	3.1	0.4	0.0	4.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.0	1.5	0.0	0.0	0.6	0.0	7.5	1.3	0.0	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.6	0.0	0.0	27.0	0.0	0.0	26.8	0.0	14.5	27.6	0.0	15.8
LnGrp LOS	C			C			C		B	C		B
Approach Vol, veh/h	169			103			713			747		
Approach Delay, s/veh	28.6			27.0			15.2			17.1		
Approach LOS	C			C			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	48.9			18.4			48.9			18.4		
Change Period (Y+Rc), s	8.7			9.2			8.7			9.2		
Max Green Setting (Gmax), s	63.0			40.0			63.0			40.0		
Max Q Clear Time (g_c+I1), s	36.5			9.0			39.1			5.8		
Green Ext Time (p_c), s	1.0			0.2			1.1			0.1		
Intersection Summary												
HCM 7th Control Delay, s/veh	18.0											
HCM 7th LOS	B											

HCM 7th TWSC
11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	95	6	17	99	11
Future Vol, veh/h	20	95	6	17	99	11
Conflicting Peds, #/hr	0	1	1	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	30	142	9	25	148	16
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	173	0	148	102
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	46	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1398	-	842	951
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	974	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1397	-	833	950
Mov Cap-2 Maneuver	-	-	-	-	833	-
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	965	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		1.98		10.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	843	-	-	470	-	
HCM Lane V/C Ratio	0.195	-	-	0.006	-	
HCM Ctrl Dly (s/v)	10.3	-	-	7.6	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.7	-	-	0	-	

HCM 7th Signalized Intersection Summary 12: Main St & Adams St

Saint Helena Streets Master Plan Existing Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	80	21	26	39	29	37	523	39	31	446	24
Future Volume (veh/h)	47	80	21	26	39	29	37	523	39	31	446	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.95		0.94	0.96		0.92	1.00		0.99	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1796	1276	1276	1796	1276	1796
Adj Flow Rate, veh/h	49	83	19	27	41	21	39	545	40	32	465	25
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	123	159	31	112	144	59	115	569	42	100	570	31
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.07	0.48	0.48	0.06	0.48	0.48
Sat Flow, veh/h	373	1012	199	308	914	377	1711	1174	86	1711	1197	64
Grp Volume(v), veh/h	151	0	0	89	0	0	39	0	585	32	0	490
Grp Sat Flow(s),veh/h/ln	1585	0	0	1600	0	0	1711	0	1260	1711	0	1262
Q Serve(g_s), s	2.8	0.0	0.0	0.0	0.0	0.0	1.6	0.0	32.9	1.3	0.0	24.5
Cycle Q Clear(g_c), s	6.3	0.0	0.0	3.5	0.0	0.0	1.6	0.0	32.9	1.3	0.0	24.5
Prop In Lane	0.32		0.13	0.30		0.24	1.00		0.07	1.00		0.05
Lane Grp Cap(c), veh/h	314	0	0	315	0	0	115	0	611	100	0	600
V/C Ratio(X)	0.48	0.00	0.00	0.28	0.00	0.00	0.34	0.00	0.96	0.32	0.00	0.82
Avail Cap(c_a), veh/h	1208	0	0	1182	0	0	1369	0	1299	1369	0	1301
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.7	0.0	0.0	27.6	0.0	0.0	32.8	0.0	18.3	33.3	0.0	16.5
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.2	0.0	0.0	0.6	0.0	4.4	0.7	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	1.4	0.0	0.0	0.7	0.0	9.4	0.6	0.0	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.2	0.0	0.0	27.8	0.0	0.0	33.5	0.0	22.7	33.9	0.0	17.6
LnGrp LOS	C			C			C		C	C		B
Approach Vol, veh/h	151			89			624			522		
Approach Delay, s/veh	29.2			27.8			23.3			18.6		
Approach LOS	C			C			C			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	43.8		20.3	9.0	44.4		20.3				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	59.0	76.0		55.0	59.0	76.0		55.0				
Max Q Clear Time (g_c+I1), s	3.6	26.5		5.5	3.3	34.9		8.3				
Green Ext Time (p_c), s	0.0	0.6		0.1	0.0	0.8		0.2				
Intersection Summary												
HCM 7th Control Delay, s/veh	22.5											
HCM 7th LOS	C											

HCM 7th AWSC
13: Railroad Ave & Adams St

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection												
Intersection Delay, s/veh	9.2											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	18	57	58	6	32	26	65	99	28	46	57	15
Future Vol, veh/h	18	57	58	6	32	26	65	99	28	46	57	15
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	70	71	7	39	32	79	121	34	56	70	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9	8.5	9.8	9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	34%	14%	9%	39%
Vol Thru, %	52%	43%	50%	48%
Vol Right, %	15%	44%	41%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	192	133	64	118
LT Vol	65	18	6	46
Through Vol	99	57	32	57
RT Vol	28	58	26	15
Lane Flow Rate	234	162	78	144
Geometry Grp	1	1	1	1
Degree of Util (X)	0.304	0.212	0.105	0.192
Departure Headway (Hd)	4.679	4.71	4.83	4.806
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	766	757	738	743
Service Time	2.728	2.763	2.89	2.861
HCM Lane V/C Ratio	0.305	0.214	0.106	0.194
HCM Control Delay, s/veh	9.8	9	8.5	9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.3	0.8	0.4	0.7

HCM 7th TWSC
14: Library Ln & Adams St

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	45	26	0	19	1	6	0	2	0	1	3
Future Vol, veh/h	18	45	26	0	19	1	6	0	2	0	1	3
Conflicting Peds, #/hr	6	0	4	4	0	6	2	0	4	4	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	24	59	34	0	25	1	8	0	3	0	1	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	32	0	0	97	0	0	155	160	84	142	176	34
Stage 1	-	-	-	-	-	-	128	128	-	32	32	-
Stage 2	-	-	-	-	-	-	28	32	-	111	145	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1573	-	-	1490	-	-	809	730	972	825	715	1037
Stage 1	-	-	-	-	-	-	874	788	-	982	867	-
Stage 2	-	-	-	-	-	-	987	866	-	892	775	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1564	-	-	1484	-	-	787	712	965	802	697	1029
Mov Cap-2 Maneuver	-	-	-	-	-	-	787	712	-	802	697	-
Stage 1	-	-	-	-	-	-	856	773	-	977	862	-
Stage 2	-	-	-	-	-	-	980	861	-	872	760	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.48	0	9.42	8.94
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	825	339	-	-	1484	-	-	919
HCM Lane V/C Ratio	0.013	0.015	-	-	-	-	-	0.006
HCM Ctrl Dly (s/v)	9.4	7.3	0	-	0	-	-	8.9
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		T	T
Traffic Vol, veh/h	21	16	583	66	26	467
Future Vol, veh/h	21	16	583	66	26	467
Conflicting Peds, #/hr	22	0	0	17	17	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	22	17	614	69	27	492
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1234	665	0	0	700	0
Stage 1	665	-	-	-	-	-
Stage 2	568	-	-	-	-	-
Critical Hdwy	6.49	6.29	-	-	4.19	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	-	-	2.281	-
Pot Cap-1 Maneuver	189	448	-	-	865	-
Stage 1	498	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	176	440	-	-	851	-
Mov Cap-2 Maneuver	311	-	-	-	-	-
Stage 1	490	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Approach	WB	NB	SB			
HCM Ctrl Dly, s/v	16.33	0	0.49			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	357	851		
HCM Lane V/C Ratio	-	-	0.109	0.032		
HCM Ctrl Dly (s/v)	-	-	16.3	9.4		
HCM Lane LOS	-	-	C	A		
HCM 95th %tile Q(veh)	-	-	0.4	0.1		

HCM 7th TWSC
16: Church St/Railroad Ave & Hunt Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection												
Int Delay, s/veh	8.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	37	47	8	33	20	101	7	64	24	72	33	15
Future Vol, veh/h	37	47	8	33	20	101	7	64	24	72	33	15
Conflicting Peds, #/hr	4	0	30	4	0	30	3	0	4	4	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	46	59	10	41	25	126	9	80	30	90	41	19
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	181	0	0	99	0	0	317	450	98	396	392	121
Stage 1	-	-	-	-	-	-	186	186	-	201	201	-
Stage 2	-	-	-	-	-	-	131	264	-	195	191	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1388	-	-	1488	-	-	633	503	956	562	542	927
Stage 1	-	-	-	-	-	-	813	744	-	799	733	-
Stage 2	-	-	-	-	-	-	870	688	-	804	740	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1348	-	-	1445	-	-	515	443	925	408	478	898
Mov Cap-2 Maneuver	-	-	-	-	-	-	515	443	-	408	478	-
Stage 1	-	-	-	-	-	-	762	697	-	752	690	-
Stage 2	-	-	-	-	-	-	773	648	-	662	693	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.12			1.62			14.04			16.66		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	517	703	-	-	331	-	-	457				
HCM Lane V/C Ratio	0.23	0.034	-	-	0.029	-	-	0.328				
HCM Ctrl Dly (s/v)	14	7.8	0	-	7.6	0	-	16.7				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	1.4				

HCM 7th TWSC
17: Mitchell Dr & Oak Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	
Traffic Vol, veh/h	23	17	27	44	106	7
Future Vol, veh/h	23	17	27	44	106	7
Conflicting Peds, #/hr	3	0	0	3	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	26	20	31	51	122	8
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	85	0	-	0	106	35
Stage 1	-	-	-	-	34	-
Stage 2	-	-	-	-	72	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1506	-	-	-	889	1035
Stage 1	-	-	-	-	986	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1501	-	-	-	868	1031
Mov Cap-2 Maneuver	-	-	-	-	868	-
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	945	-
Approach	EB		WB		SB	
HCM Ctrl Dly, s/v	4.28		0		9.82	
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1035	-	-	-	877	
HCM Lane V/C Ratio	0.018	-	-	-	0.148	
HCM Ctrl Dly (s/v)	7.4	0	-	-	9.8	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	

HCM 7th Signalized Intersection Summary 18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan Existing Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	140	159	33	147	67	584	39	87	443	3
Future Volume (veh/h)	0	0	140	159	33	147	67	584	39	87	443	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	50	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1287	1287	1811	1287	1287
Adj Flow Rate, veh/h	0	0	143	162	34	69	68	596	40	89	452	3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	0	28	122	188	39	194	110	731	16	116	749	5
Arrive On Green	0.00	0.00	0.02	0.14	0.14	0.14	0.07	0.51	0.51	0.08	0.52	0.52
Sat Flow, veh/h	0	1811	1535	1438	302	1484	1725	1190	80	1725	1277	8
Grp Volume(v), veh/h	0	0	143	196	0	69	68	0	636	89	0	455
Grp Sat Flow(s),veh/h/ln	0	1811	1535	1739	0	1484	1725	0	1270	1725	0	1285
Q Serve(g_s), s	0.0	0.0	2.0	11.5	0.0	4.4	4.0	0.0	50.9	5.2	0.0	27.5
Cycle Q Clear(g_c), s	0.0	0.0	2.0	11.5	0.0	4.4	4.0	0.0	50.9	5.2	0.0	27.5
Prop In Lane	0.00		1.00	0.83		1.00	1.00		0.06	1.00		0.01
Lane Grp Cap(c), veh/h	0	28	122	227	0	194	110	0	747	116	0	754
V/C Ratio(X)	0.00	0.00	1.17	0.86	0.00	0.36	0.62	0.00	0.85	0.77	0.00	0.60
Avail Cap(c_a), veh/h	0	35	143	982	0	838	974	0	911	974	0	922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	59.2	54.7	0.0	50.9	58.6	0.0	26.8	59.0	0.0	17.0
Incr Delay (d2), s/veh	0.0	0.0	135.5	3.7	0.0	0.4	2.1	0.0	5.6	4.0	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	173.7	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	8.6	6.5	0.0	2.1	2.2	0.0	59.2	3.0	0.0	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	194.6	58.4	0.0	51.3	60.7	0.0	206.1	63.0	0.0	17.3
LnGrp LOS			F	E		D	E		F	E		B
Approach Vol, veh/h	143			265			704			544		
Approach Delay, s/veh	194.6			56.6			192.1			24.8		
Approach LOS	F			E			F			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.5	62.0		24.0	13.0	61.5		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	59.0	75.0		59.0	59.0	* 75		2.0				
Max Q Clear Time (g_c+I1), s	6.0	29.5		13.5	7.2	52.9		4.0				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	0.9		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh 115.6

HCM 7th LOS F

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.

Fehr & Peers

Synchro 12 Report

HCM 7th Signalized Intersection Summary 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
Existing Weekday AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	92	56	51	710	679	93
Future Volume (veh/h)	92	56	51	710	679	93
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1266	1266	1266
Adj Flow Rate, veh/h	100	47	55	772	738	100
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	8	8	8	8	8
Cap, veh/h	117	55	113	973	718	97
Arrive On Green	0.11	0.11	0.07	0.77	0.66	0.66
Sat Flow, veh/h	1102	518	1697	1266	1088	147
Grp Volume(v), veh/h	148	0	55	772	0	838
Grp Sat Flow(s), veh/h/ln	1630	0	1697	1266	0	1235
Q Serve(g_s), s	9.9	0.0	3.5	40.0	0.0	73.0
Cycle Q Clear(g_c), s	9.9	0.0	3.5	40.0	0.0	73.0
Prop In Lane	0.68	0.32	1.00			0.12
Lane Grp Cap(c), veh/h	174	0	113	973	0	815
V/C Ratio(X)	0.85	0.00	0.49	0.79	0.00	1.03
Avail Cap(c_a), veh/h	752	0	752	973	0	815
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.6	0.0	49.8	7.6	0.0	18.8
Incr Delay (d2), s/veh	4.5	0.0	1.2	4.2	0.0	38.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	1.5	9.1	0.0	26.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	53.1	0.0	51.0	11.8	0.0	57.7
LnGrp LOS	D		D	B		F
Approach Vol, veh/h	148			827	838	
Approach Delay, s/veh	53.1			14.4	57.7	
Approach LOS	D			B	E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	2.0	82.1			94.1	16.5
Change Period (Y+Rc), s	4.7	9.1			* 9.1	4.7
Max Green Setting (Gmax), s	49.6	73.0			* 77	51.0
Max Q Clear Time (g_c+I), s	15.5	75.0			42.0	11.9
Green Ext Time (p_c), s	0.0	0.0			0.8	0.0
Intersection Summary						
HCM 7th Control Delay, s/veh			37.6			
HCM 7th LOS			D			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC
20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	55	94	751	709	26
Future Vol, veh/h	10	55	94	751	709	26
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	10	56	95	759	716	26
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1679	730	743	0	-	0
Stage 1	730	-	-	-	-	-
Stage 2	948	-	-	-	-	-
Critical Hdwy	6.49	6.29	4.19	-	-	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	2.281	-	-	-
Pot Cap-1 Maneuver	100	411	833	-	-	-
Stage 1	464	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	89	410	832	-	-	-
Mov Cap-2 Maneuver	217	-	-	-	-	-
Stage 1	411	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	16.26	1.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	832	-	217	410	-	-
HCM Lane V/C Ratio	0.114	-	0.047	0.135	-	-
HCM Ctrl Dly (s/v)	9.9	-	22.4	15.1	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0.4	-	0.1	0.5	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	7	58	9	25	56	9
Future Vol, veh/h	7	58	9	25	56	9
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	8	69	11	30	67	11
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	6.9	7.5	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	86%	0%	26%
Vol Thru, %	0%	11%	74%
Vol Right, %	14%	89%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	65	65	34
LT Vol	56	0	9
Through Vol	0	7	25
RT Vol	9	58	0
Lane Flow Rate	77	77	40
Geometry Grp	1	1	1
Degree of Util (X)	0.091	0.077	0.047
Departure Headway (Hd)	4.244	3.582	4.2
Convergence, Y/N	Yes	Yes	Yes
Cap	842	991	848
Service Time	2.28	1.635	2.251
HCM Lane V/C Ratio	0.091	0.078	0.047
HCM Control Delay, s/veh	7.7	6.9	7.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.3	0.2	0.1

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	160	312	47	53	22
Future Vol, veh/h	16	160	312	47	53	22
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	20	203	395	59	67	28
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	455	0	-	0	670	427
Stage 1	-	-	-	-	426	-
Stage 2	-	-	-	-	244	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1100	-	-	-	421	626
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	794	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1099	-	-	-	411	625
Mov Cap-2 Maneuver	-	-	-	-	411	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	793	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.76	0		14.93		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	164	-	-	-	457	
HCM Lane V/C Ratio	0.018	-	-	-	0.208	
HCM Ctrl Dly (s/v)	8.3	0	-	-	14.9	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	

HCM 7th TWSC
23: College Ave/Paseo Grand Dr & Pope Street

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection												
Int Delay, s/veh	7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	93	107	84	215	2	117	1	43	10	0	19
Future Vol, veh/h	8	93	107	84	215	2	117	1	43	10	0	19
Conflicting Peds, #/hr	2	0	1	1	0	2	3	0	1	1	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	10	121	139	109	279	3	152	1	56	13	0	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	284	0	0	261	0	0	712	714	192	644	782	286
Stage 1	-	-	-	-	-	-	212	212	-	501	501	-
Stage 2	-	-	-	-	-	-	500	502	-	143	282	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1273	-	-	1298	-	-	346	355	847	384	325	751
Stage 1	-	-	-	-	-	-	788	725	-	551	541	-
Stage 2	-	-	-	-	-	-	551	540	-	857	676	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1270	-	-	1297	-	-	303	322	845	324	294	748
Mov Cap-2 Maneuver	-	-	-	-	-	-	303	322	-	324	294	-
Stage 1	-	-	-	-	-	-	781	718	-	503	495	-
Stage 2	-	-	-	-	-	-	486	494	-	792	670	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.3	2.24	23.42	12.54
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	303	845	1270	-	-	1297	-	-	515
HCM Lane V/C Ratio	0.506	0.066	0.008	-	-	0.084	-	-	0.073
HCM Ctrl Dly (s/v)	28.5	9.6	7.9	-	-	8	-	-	12.5
HCM Lane LOS	D	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	2.7	0.2	0	-	-	0.3	-	-	0.2

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	20	24	433	436	9
Future Vol, veh/h	4	20	24	433	436	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	4	21	25	451	454	9
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	960	459	464	0	-	0
Stage 1	459	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.46	6.26	4.16	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	2.254	-	-	-
Pot Cap-1 Maneuver	280	594	1077	-	-	-
Stage 1	628	-	-	-	-	-
Stage 2	601	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	271	594	1077	-	-	-
Mov Cap-2 Maneuver	271	-	-	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	601	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	12.65	0.44		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	95	-	496	-	-	
HCM Lane V/C Ratio	0.023	-	0.05	-	-	
HCM Ctrl Dly (s/v)	8.4	0	12.6	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-	

HCM 7th TWSC
25: Silverado Trail & Howell Mountain Rd

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↗		↘	↗
Traffic Vol, veh/h	17	4	453	48	20	436
Future Vol, veh/h	17	4	453	48	20	436
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	17	4	462	49	20	445
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	973	487	0	0	511	0
Stage 1	487	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.16	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.254	-
Pot Cap-1 Maneuver	275	573	-	-	1034	-
Stage 1	610	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	269	573	-	-	1034	-
Mov Cap-2 Maneuver	398	-	-	-	-	-
Stage 1	610	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	13.97	0		0.38		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	423	1034	-	
HCM Lane V/C Ratio	-	-	0.051	0.02	-	
HCM Ctrl Dly (s/v)	-	-	14	8.6	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	

HCM 7th TWSC
26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	96	65	141	405	307	146
Future Vol, veh/h	96	65	141	405	307	146
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	102	69	150	431	327	155
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1057	327	482	0	-	0
Stage 1	327	-	-	-	-	-
Stage 2	731	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	247	710	1070	-	-	-
Stage 1	727	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	212	710	1070	-	-	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	625	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	18.8	2.3		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1070	-	430	-	-	
HCM Lane V/C Ratio	0.14	-	0.398	-	-	
HCM Ctrl Dly (s/v)	8.9	-	18.8	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.5	-	1.9	-	-	

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↗	↖	
Traffic Vol, veh/h	0	0	0	1	0	7	0	799	3	2	771	3
Future Vol, veh/h	0	0	0	1	0	7	0	799	3	2	771	3
Conflicting Peds, #/hr	0	0	0	0	0	0	15	0	1	1	0	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	0	0	0	1	0	8	0	859	3	2	829	3
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1709	1713	846	1695	1713	862	847	0	0	863	0	0
Stage 1	850	850	-	862	862	-	-	-	-	-	-	-
Stage 2	859	863	-	833	852	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.18	6.58	6.28	4.18	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.572	4.072	3.372	2.272	-	-	2.272	-	-
Pot Cap-1 Maneuver	69	87	354	71	87	346	765	-	-	754	-	-
Stage 1	347	369	-	342	364	-	-	-	-	-	-	-
Stage 2	343	363	-	354	368	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	67	86	349	71	86	346	754	-	-	753	-	-
Mov Cap-2 Maneuver	67	86	-	71	86	-	-	-	-	-	-	-
Stage 1	341	362	-	341	364	-	-	-	-	-	-	-
Stage 2	335	363	-	353	362	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	0		21.08		0		0.03					
HCM LOS	A		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	754	-	-	-	232	753	-	-				
HCM Lane V/C Ratio	-	-	-	-	0.037	0.003	-	-				
HCM Ctrl Dly (s/v)	0	-	-	0	21.1	9.8	-	-				
HCM Lane LOS	A	-	-	A	C	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-				

HCM 7th TWSC
28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	7	2	3	61	1	4	16	679	111	8	712	22
Future Vol, veh/h	7	2	3	61	1	4	16	679	111	8	712	22
Conflicting Peds, #/hr	0	0	0	0	0	0	9	0	1	1	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	9	9	9	9	9	9	9	9	9	9	9	9
Mvmt Flow	7	2	3	63	1	4	16	700	114	8	734	23

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1504	1619	754	1543	1573	758	766	0	0	815	0	0
Stage 1	771	771	-	791	791	-	-	-	-	-	-	-
Stage 2	734	848	-	752	782	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.59	6.29	7.19	6.59	6.29	4.19	-	-	4.19	-	-
Critical Hdwy Stg 1	6.19	5.59	-	6.19	5.59	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.59	-	6.19	5.59	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.081	3.381	3.581	4.081	3.381	2.281	-	-	2.281	-	-
Pot Cap-1 Maneuver	96	99	398	90	106	396	817	-	-	782	-	-
Stage 1	382	400	-	373	391	-	-	-	-	-	-	-
Stage 2	401	368	-	392	395	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	90	95	394	85	102	395	810	-	-	782	-	-
Mov Cap-2 Maneuver	90	95	-	85	102	-	-	-	-	-	-	-
Stage 1	375	392	-	365	383	-	-	-	-	-	-	-
Stage 2	388	360	-	383	387	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	40.64		120.68		0.19		0.1	
HCM LOS	E		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	810	-	-	113	89	782	-
HCM Lane V/C Ratio	0.02	-	-	0.109	0.761	0.011	-
HCM Ctrl Dly (s/v)	9.5	-	-	40.6	120.7	9.7	-
HCM Lane LOS	A	-	-	E	F	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	3.9	0	-

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	2	4	4	24	6	10	3	53	16	11	104	2
Future Vol, veh/h	2	4	4	24	6	10	3	53	16	11	104	2
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	6	6	38	10	16	5	84	25	17	165	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.6	8	7.9	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	20%	60%	9%
Vol Thru, %	74%	40%	15%	89%
Vol Right, %	22%	40%	25%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	10	40	117
LT Vol	3	2	24	11
Through Vol	53	4	6	104
RT Vol	16	4	10	2
Lane Flow Rate	114	16	63	186
Geometry Grp	1	1	1	1
Degree of Util (X)	0.134	0.02	0.081	0.216
Departure Headway (Hd)	4.212	4.488	4.599	4.184
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	856	801	782	845
Service Time	2.212	2.498	2.607	2.274
HCM Lane V/C Ratio	0.133	0.02	0.081	0.22
HCM Control Delay, s/veh	7.9	7.6	8	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.1	0.3	0.8

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection												
Intersection Delay, s/veh	9.6											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	8	54	57	30	40	22	22	60	65	18	93	17
Future Vol, veh/h	8	54	57	30	40	22	22	60	65	18	93	17
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	12	79	84	44	59	32	32	88	96	26	137	25
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9.4	9.4	9.7	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	7%	33%	14%
Vol Thru, %	41%	45%	43%	73%
Vol Right, %	44%	48%	24%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	147	119	92	128
LT Vol	22	8	30	18
Through Vol	60	54	40	93
RT Vol	65	57	22	17
Lane Flow Rate	216	175	135	188
Geometry Grp	1	1	1	1
Degree of Util (X)	0.283	0.234	0.19	0.257
Departure Headway (Hd)	4.713	4.82	5.063	4.923
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	754	737	701	723
Service Time	2.787	2.899	3.147	3
HCM Lane V/C Ratio	0.286	0.237	0.193	0.26
HCM Control Delay, s/veh	9.7	9.4	9.4	9.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.2	0.9	0.7	1

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection												
Intersection Delay, s/veh	9.5											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	33	53	33	4	51	65	12	64	13	41	98	22
Future Vol, veh/h	33	53	33	4	51	65	12	64	13	41	98	22
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	46	74	46	6	71	90	17	89	18	57	136	31
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9.4	9.1	9.1	10.1
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	28%	3%	25%
Vol Thru, %	72%	45%	43%	61%
Vol Right, %	15%	28%	54%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	89	119	120	161
LT Vol	12	33	4	41
Through Vol	64	53	51	98
RT Vol	13	33	65	22
Lane Flow Rate	124	165	167	224
Geometry Grp	1	1	1	1
Degree of Util (X)	0.171	0.225	0.217	0.302
Departure Headway (Hd)	4.969	4.896	4.696	4.867
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	716	727	758	733
Service Time	3.047	2.967	2.766	2.936
HCM Lane V/C Ratio	0.173	0.227	0.22	0.306
HCM Control Delay, s/veh	9.1	9.4	9.1	10.1
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	0.6	0.9	0.8	1.3

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	28	72	110	621	461	27
Future Vol, veh/h	28	72	110	621	461	27
Conflicting Peds, #/hr	0	10	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	29	75	115	647	480	28
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1378	512	516	0	-	0
Stage 1	502	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	155	550	1019	-	-	-
Stage 1	596	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	125	541	1012	-	-	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	487	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	16.68	1.36		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	271	-	412	-	-	
HCM Lane V/C Ratio	0.113	-	0.253	-	-	
HCM Ctrl Dly (s/v)	9	0	16.7	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.4	-	1	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Existing Weekday AM

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	107	0	0	276	69	2	0	1	21	1	46
Future Vol, veh/h	22	107	0	0	276	69	2	0	1	21	1	46
Conflicting Peds, #/hr	16	0	4	4	0	16	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	24	115	0	0	297	74	2	0	1	23	1	49
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	387	0	0	119	0	0	465	553	120	513	516	351
Stage 1	-	-	-	-	-	-	166	166	-	350	350	-
Stage 2	-	-	-	-	-	-	298	387	-	163	166	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1166	-	-	1463	-	-	506	439	929	470	461	690
Stage 1	-	-	-	-	-	-	833	759	-	664	631	-
Stage 2	-	-	-	-	-	-	708	608	-	836	759	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1148	-	-	1457	-	-	456	422	924	452	443	679
Mov Cap-2 Maneuver	-	-	-	-	-	-	456	422	-	452	443	-
Stage 1	-	-	-	-	-	-	812	739	-	654	622	-
Stage 2	-	-	-	-	-	-	655	599	-	816	739	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.4			0			11.6			12.05		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	548	307	-	-	1457	-	-	584				
HCM Lane V/C Ratio	0.006	0.021	-	-	-	-	-	0.125				
HCM Ctrl Dly (s/v)	11.6	8.2	0	-	0	-	-	12				
HCM Lane LOS	B	A	A	-	A	-	-	B				
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.4				

HCM 7th TWSC
4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Vol, veh/h	33	9	12	18	4	13
Future Vol, veh/h	33	9	12	18	4	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	40	11	15	22	5	16
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	51	0	97	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	51	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1549	-	900	1021
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	969	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1549	-	891	1021
Mov Cap-2 Maneuver	-	-	-	-	891	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	959	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		2.94		8.73	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	987	-	-	720	-	
HCM Lane V/C Ratio	0.021	-	-	0.009	-	
HCM Ctrl Dly (s/v)	8.7	-	-	7.3	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

HCM 7th TWSC
5: Valley View St & Spring St

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	5.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	22	59	27	17	62
Future Vol, veh/h	41	22	59	27	17	62
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	48	26	69	31	20	72
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	75	0	231	62
Stage 1	-	-	-	-	62	-
Stage 2	-	-	-	-	169	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1518	-	755	999
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	859	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1515	-	719	998
Mov Cap-2 Maneuver	-	-	-	-	719	-
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	819	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.14		9.34	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	921	-	-	1235	-	
HCM Lane V/C Ratio	0.1	-	-	0.045	-	
HCM Ctrl Dly (s/v)	9.3	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-	

HCM 7th AWSC
6: Crane Ave/Valley View St & Grayson Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	33	51	10	20	91
Future Vol, veh/h	43	33	51	10	20	91
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	50	38	59	12	23	106
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	7.7	7.6	8
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	57%	18%
Vol Thru, %	84%	0%	82%
Vol Right, %	16%	43%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	61	76	111
LT Vol	0	43	20
Through Vol	51	0	91
RT Vol	10	33	0
Lane Flow Rate	71	88	129
Geometry Grp	1	1	1
Degree of Util (X)	0.081	0.104	0.151
Departure Headway (Hd)	4.108	4.248	4.198
Convergence, Y/N	Yes	Yes	Yes
Cap	860	848	847
Service Time	2.19	2.248	2.263
HCM Lane V/C Ratio	0.083	0.104	0.152
HCM Control Delay, s/veh	7.6	7.7	8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.3	0.3	0.5

HCM 7th TWSC
7: Sulphur Spring Ave & Crane Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	3	3	48	57	2
Future Vol, veh/h	2	3	3	48	57	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	3	4	4	62	73	3
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	65	0	-	0	44	35
Stage 1	-	-	-	-	35	-
Stage 2	-	-	-	-	9	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1530	-	-	-	965	1036
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	1011	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1530	-	-	-	963	1036
Mov Cap-2 Maneuver	-	-	-	-	963	-
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	1011	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	2.94	0		9.05		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	720	-	-	-	965	
HCM Lane V/C Ratio	0.002	-	-	-	0.078	
HCM Ctrl Dly (s/v)	7.4	0	-	-	9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.3	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	1	1	12	20	1	20	5	737	17	22	539	2
Future Vol, veh/h	1	1	12	20	1	20	5	737	17	22	539	2
Conflicting Peds, #/hr	0	0	0	0	0	0	12	0	1	1	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	1	14	23	1	23	6	847	20	25	620	2

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1542	1562	633	1540	1554	858	634	0	0	868	0	0
Stage 1	683	683	-	869	869	-	-	-	-	-	-	-
Stage 2	859	879	-	671	684	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	93	111	478	94	113	355	944	-	-	772	-	-
Stage 1	437	448	-	345	368	-	-	-	-	-	-	-
Stage 2	350	364	-	444	447	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	82	106	473	86	107	355	934	-	-	771	-	-
Mov Cap-2 Maneuver	82	106	-	86	107	-	-	-	-	-	-	-
Stage 1	418	428	-	343	365	-	-	-	-	-	-	-
Stage 2	324	361	-	416	428	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	17.79		44.08		0.06		0.38	
HCM LOS	C		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	934	-	-	298	138	771	-
HCM Lane V/C Ratio	0.006	-	-	0.054	0.342	0.033	-
HCM Ctrl Dly (s/v)	8.9	-	-	17.8	44.1	9.8	-
HCM Lane LOS	A	-	-	C	E	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	1.4	0.1	-

HCM 7th TWSC
9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	28	22	27	731	555	16
Future Vol, veh/h	28	22	27	731	555	16
Conflicting Peds, #/hr	0	1	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	32	25	31	831	631	18
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1539	648	656	0	-	0
Stage 1	647	-	-	-	-	-
Stage 2	892	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	127	469	927	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	117	465	921	-	-	-
Mov Cap-2 Maneuver	117	-	-	-	-	-
Stage 1	484	-	-	-	-	-
Stage 2	396	-	-	-	-	-
Approach	EB		NB		SB	
HCM Ctrl Dly, s/v	35.25		0.32		0	
HCM LOS	E					
Minor Lane/Major Mvmt	NBL		NBT	EBLn1	SBT	SBR
Capacity (veh/h)	64		-	175	-	-
HCM Lane V/C Ratio	0.033		-	0.325	-	-
HCM Ctrl Dly (s/v)	9		0	35.3	-	-
HCM Lane LOS	A		A	E	-	-
HCM 95th %tile Q(veh)	0.1		-	1.3	-	-

HCM 7th Signalized Intersection Summary
10: Main St & Madrona Ave/Fulton Ln

Saint Helena Streets Master Plan
Existing Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	34	24	7	27	165	16	510	5	40	500	37
Future Volume (veh/h)	83	34	24	7	27	165	16	510	5	40	500	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.96	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	88	36	19	7	29	36	17	543	5	43	532	37
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	244	75	30	93	112	122	213	625	6	242	584	41
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	827	505	204	72	751	823	836	1304	12	852	1218	85
Grp Volume(v), veh/h	143	0	0	72	0	0	17	0	548	43	0	569
Grp Sat Flow(s),veh/h/ln	1536	0	0	1645	0	0	836	0	1316	852	0	1302
Q Serve(g_s), s	2.2	0.0	0.0	0.0	0.0	0.0	0.9	0.0	17.9	2.3	0.0	19.4
Cycle Q Clear(g_c), s	4.0	0.0	0.0	1.8	0.0	0.0	20.4	0.0	17.9	20.2	0.0	19.4
Prop In Lane	0.62		0.13	0.10		0.50	1.00		0.01	1.00		0.07
Lane Grp Cap(c), veh/h	349	0	0	327	0	0	213	0	631	242	0	625
V/C Ratio(X)	0.41	0.00	0.00	0.22	0.00	0.00	0.08	0.00	0.87	0.18	0.00	0.91
Avail Cap(c_a), veh/h	1335	0	0	1426	0	0	906	0	1722	948	0	1704
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.0	0.0	0.0	18.2	0.0	0.0	21.0	0.0	11.2	20.2	0.0	11.6
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.0	0.1	0.0	1.5	0.1	0.0	2.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	0.7	0.0	0.0	0.2	0.0	4.3	0.4	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.3	0.0	0.0	18.4	0.0	0.0	21.1	0.0	12.6	20.3	0.0	13.8
LnGrp LOS	B			B			C		B	C		B
Approach Vol, veh/h		143			72			565			612	
Approach Delay, s/veh		19.3			18.4			12.9			14.3	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.8		16.4		31.8		16.4				
Change Period (Y+Rc), s		8.7		9.2		8.7		9.2				
Max Green Setting (Gmax), s		63.0		40.0		63.0		40.0				
Max Q Clear Time (g_c+I1), s		22.2		3.8		22.4		6.0				
Green Ext Time (p_c), s		0.8		0.1		0.7		0.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			14.4									
HCM 7th LOS			B									

HCM 7th TWSC
11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	6.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	14	63	11	24	174	10
Future Vol, veh/h	14	63	11	24	174	10
Conflicting Peds, #/hr	0	5	5	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	16	71	12	27	196	11
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	92	0	110	56
Stage 1	-	-	-	-	56	-
Stage 2	-	-	-	-	54	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1497	-	885	1008
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	966	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1490	-	872	1003
Mov Cap-2 Maneuver	-	-	-	-	872	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	956	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		2.34		10.36	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	878	-	-	566	-	
HCM Lane V/C Ratio	0.236	-	-	0.008	-	
HCM Ctrl Dly (s/v)	10.4	-	-	7.4	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.9	-	-	0	-	

HCM 7th Signalized Intersection Summary 12: Main St & Adams St

Saint Helena Streets Master Plan Existing Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	62	18	55	53	38	23	425	34	56	444	31
Future Volume (veh/h)	68	62	18	55	53	38	23	425	34	56	444	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.89		0.85	0.89		0.85	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1856
Adj Flow Rate, veh/h	72	66	16	59	56	33	24	452	35	60	472	32
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	194	161	33	167	146	70	84	480	37	155	533	36
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.05	0.40	0.40	0.09	0.44	0.44
Sat Flow, veh/h	586	784	159	471	714	340	1767	1205	93	1767	1217	82
Grp Volume(v), veh/h	154	0	0	148	0	0	24	0	487	60	0	504
Grp Sat Flow(s),veh/h/ln	1530	0	0	1525	0	0	1767	0	1298	1767	0	1299
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	0.9	0.0	25.8	2.3	0.0	25.4
Cycle Q Clear(g_c), s	5.5	0.0	0.0	5.3	0.0	0.0	0.9	0.0	25.8	2.3	0.0	25.4
Prop In Lane	0.47		0.10	0.40		0.22	1.00		0.07	1.00		0.06
Lane Grp Cap(c), veh/h	387	0	0	383	0	0	84	0	517	155	0	569
V/C Ratio(X)	0.40	0.00	0.00	0.39	0.00	0.00	0.28	0.00	0.94	0.39	0.00	0.89
Avail Cap(c_a), veh/h	1182	0	0	1177	0	0	1460	0	1381	1460	0	1382
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	0.0	24.7	0.0	0.0	32.8	0.0	20.7	30.8	0.0	18.4
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	0.0	0.0	0.7	0.0	4.0	0.6	0.0	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	2.1	0.0	0.0	0.4	0.0	7.8	1.0	0.0	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.0	0.0	0.0	25.0	0.0	0.0	33.5	0.0	24.7	31.3	0.0	20.3
LnGrp LOS	C			C			C		C	C		C
Approach Vol, veh/h	154			148			511			564		
Approach Delay, s/veh	25.0			25.0			25.1			21.5		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.1	40.0		23.3	11.0	37.1		23.3				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	59.0	76.0		55.0	59.0	76.0		55.0				
Max Q Clear Time (g_c+I1), s	2.9	27.4		7.3	4.3	27.8		7.5				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	0.6		0.2				
Intersection Summary												
HCM 7th Control Delay, s/veh	23.6											
HCM 7th LOS	C											

HCM 7th AWSC
13: Railroad Ave & Adams St

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection												
Intersection Delay, s/veh	9.4											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	19	93	53	32	91	85	30	67	26	38	55	19
Future Vol, veh/h	19	93	53	32	91	85	30	67	26	38	55	19
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	21	103	59	36	101	94	33	74	29	42	61	21
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9.3	9.6	9.3	9.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	12%	15%	34%
Vol Thru, %	54%	56%	44%	49%
Vol Right, %	21%	32%	41%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	123	165	208	112
LT Vol	30	19	32	38
Through Vol	67	93	91	55
RT Vol	26	53	85	19
Lane Flow Rate	137	183	231	124
Geometry Grp	1	1	1	1
Degree of Util (X)	0.19	0.24	0.296	0.175
Departure Headway (Hd)	4.998	4.711	4.613	5.058
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	712	757	774	703
Service Time	3.073	2.776	2.673	3.134
HCM Lane V/C Ratio	0.192	0.242	0.298	0.176
HCM Control Delay, s/veh	9.3	9.3	9.6	9.2
HCM Lane LOS	A	A	A	A
HCM 95th-tilt Q	0.7	0.9	1.2	0.6

HCM 7th TWSC
14: Library Ln & Adams St

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	23	15	0	46	1	23	0	0	0	1	24
Future Vol, veh/h	27	23	15	0	46	1	23	0	0	0	1	24
Conflicting Peds, #/hr	4	0	5	5	0	4	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	28	24	16	0	48	1	24	0	0	0	1	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	53	0	0	45	0	0	143	147	41	138	155	53
Stage 1	-	-	-	-	-	-	94	94	-	53	53	-
Stage 2	-	-	-	-	-	-	49	53	-	85	102	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1546	-	-	1557	-	-	824	742	1027	830	735	1012
Stage 1	-	-	-	-	-	-	910	815	-	957	849	-
Stage 2	-	-	-	-	-	-	962	848	-	920	809	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1540	-	-	1549	-	-	783	722	1018	808	715	1008
Mov Cap-2 Maneuver	-	-	-	-	-	-	783	722	-	808	715	-
Stage 1	-	-	-	-	-	-	889	796	-	953	846	-
Stage 2	-	-	-	-	-	-	936	845	-	900	790	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	3.07	0	9.74	8.73
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	783	693	-	-	1549	-	-	992
HCM Lane V/C Ratio	0.031	0.018	-	-	-	-	-	0.027
HCM Ctrl Dly (s/v)	9.7	7.4	0	-	0	-	-	8.7
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	24	458	79	26	491
Future Vol, veh/h	26	24	458	79	26	491
Conflicting Peds, #/hr	53	0	0	72	72	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	29	26	503	87	29	540
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1268	619	0	0	662	0
Stage 1	619	-	-	-	-	-
Stage 2	650	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	185	487	-	-	922	-
Stage 1	535	-	-	-	-	-
Stage 2	518	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	158	454	-	-	859	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	499	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	17.03	0		0.47		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	354	859	-	
HCM Lane V/C Ratio	-	-	0.155	0.033	-	
HCM Ctrl Dly (s/v)	-	-	17	9.3	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-	

HCM 7th TWSC
16: Church St/Railroad Ave & Hunt Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection												
Int Delay, s/veh	8.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	59	12	55	20	53	8	50	40	70	59	19
Future Vol, veh/h	27	59	12	55	20	53	8	50	40	70	59	19
Conflicting Peds, #/hr	20	0	22	20	0	22	12	0	20	0	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	30	66	13	61	22	59	9	56	44	78	66	21
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	103	0	0	101	0	0	343	380	114	369	357	86
Stage 1	-	-	-	-	-	-	154	154	-	196	196	-
Stage 2	-	-	-	-	-	-	189	225	-	173	161	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1482	-	-	1485	-	-	609	551	936	585	568	970
Stage 1	-	-	-	-	-	-	846	768	-	804	737	-
Stage 2	-	-	-	-	-	-	810	715	-	826	763	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1451	-	-	1454	-	-	473	494	899	447	509	939
Mov Cap-2 Maneuver	-	-	-	-	-	-	473	494	-	447	509	-
Stage 1	-	-	-	-	-	-	810	736	-	752	689	-
Stage 2	-	-	-	-	-	-	677	669	-	697	731	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	2.08			3.26			12.29			15.52		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	603	480	-	-	675	-	-	505				
HCM Lane V/C Ratio	0.181	0.021	-	-	0.042	-	-	0.325				
HCM Ctrl Dly (s/v)	12.3	7.5	0	-	7.6	0	-	15.5				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.1	-	-	1.4				

HCM 7th TWSC
17: Mitchell Dr & Oak Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	
Traffic Vol, veh/h	11	14	38	65	104	15
Future Vol, veh/h	11	14	38	65	104	15
Conflicting Peds, #/hr	8	0	0	8	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	12	15	42	71	114	16
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	121	0	-	0	89	56
Stage 1	-	-	-	-	50	-
Stage 2	-	-	-	-	40	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1460	-	-	-	909	1008
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	980	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1449	-	-	-	887	995
Mov Cap-2 Maneuver	-	-	-	-	887	-
Stage 1	-	-	-	-	955	-
Stage 2	-	-	-	-	973	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.3	0		9.68		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	792	-	-	-	900	
HCM Lane V/C Ratio	0.008	-	-	-	0.145	
HCM Ctrl Dly (s/v)	7.5	0	-	-	9.7	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.5	

HCM 7th Signalized Intersection Summary 18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan Existing Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	149	129	27	94	77	497	52	88	438	11
Future Volume (veh/h)	0	0	149	129	27	94	77	497	52	88	438	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	50	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.89	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	0	0	160	139	29	36	83	534	56	95	471	12
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	29	129	186	39	173	118	745	23	120	752	19
Arrive On Green	0.00	0.00	0.02	0.14	0.14	0.14	0.08	0.47	0.47	0.09	0.48	0.48
Sat Flow, veh/h	0	1856	1572	1474	308	1399	1767	1170	123	1767	1279	33
Grp Volume(v), veh/h	0	0	160	168	0	36	83	0	590	95	0	483
Grp Sat Flow(s), veh/h/ln	0	1856	1572	1782	0	1399	1767	0	1293	1767	0	1312
Q Serve(g_s), s	0.0	0.0	2.0	8.5	0.0	2.1	4.3	0.0	42.1	4.9	0.0	29.1
Cycle Q Clear(g_c), s	0.0	0.0	2.0	8.5	0.0	2.1	4.3	0.0	42.1	4.9	0.0	29.1
Prop In Lane	0.00		1.00	0.83		1.00	1.00		0.09	1.00		0.02
Lane Grp Cap(c), veh/h	0	29	129	224	0	173	118	0	768	120	0	771
V/C Ratio(X)	0.00	0.00	1.24	0.75	0.00	0.21	0.70	0.00	0.77	0.79	0.00	0.63
Avail Cap(c_a), veh/h	0	39	165	1106	0	869	1097	0	1020	1097	0	1035
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	58.7	53.9	0.0	50.2	58.5	0.0	26.4	58.7	0.0	17.2
Incr Delay (d2), s/veh	0.0	0.0	153.6	1.9	0.0	0.2	2.9	0.0	1.7	4.3	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	129.8	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	9.7	5.4	0.0	1.1	2.7	0.0	50.4	3.2	0.0	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	212.3	55.8	0.0	50.4	61.3	0.0	158.0	63.0	0.0	17.5
LnGrp LOS			F	E		D	E		F	E		B
Approach Vol, veh/h	160			204			673			578		
Approach Delay, s/veh	212.3			54.9			146.0			25.0		
Approach LOS	F			D			F			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.7	52.9		23.5	13.0	52.6		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	59.0	75.0		59.0	59.0	* 75		2.0				
Max Q Clear Time (g_c+I1), s	6.3	31.1		10.5	6.9	44.1		4.0				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	0.8		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh	97.8
HCM 7th LOS	F

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 7th Signalized Intersection Summary 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
Existing Weekday PM

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	29	26	667	696	55
Future Volume (veh/h)	30	29	26	667	696	55
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1318	1318	1318
Adj Flow Rate, veh/h	32	8	28	717	748	58
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	111	28	92	982	764	59
Arrive On Green	0.08	0.08	0.05	0.74	0.63	0.63
Sat Flow, veh/h	1348	337	1767	1318	1206	93
Grp Volume(v), veh/h	41	0	28	717	0	806
Grp Sat Flow(s), veh/h/ln	1727	0	1767	1318	0	1299
Q Serve(g_s), s	1.8	0.0	1.2	24.3	0.0	47.8
Cycle Q Clear(g_c), s	1.8	0.0	1.2	24.3	0.0	47.8
Prop In Lane	0.78	0.20	1.00			0.07
Lane Grp Cap(c), veh/h	142	0	92	982	0	824
V/C Ratio(X)	0.29	0.00	0.30	0.73	0.00	0.98
Avail Cap(c_a), veh/h	1103	0	1084	1271	0	1187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.5	0.0	36.5	5.7	0.0	14.1
Incr Delay (d2), s/veh	0.4	0.0	0.7	1.0	0.0	15.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.5	4.3	0.0	14.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	34.9	0.0	37.1	6.7	0.0	29.7
LnGrp LOS	C		D	A		C
Approach Vol, veh/h	41			745	806	
Approach Delay, s/veh	34.9			7.8	29.7	
Approach LOS	C			A	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	8.9	59.8			68.6	11.3
Change Period (Y+Rc), s	4.7	9.1			* 9.1	4.7
Max Green Setting (G_max), s	49.6	73.0			* 77	51.0
Max Q Clear Time (g_c+I), s	13.2	49.8			26.3	3.8
Green Ext Time (p_c), s	0.0	0.9			0.7	0.0
Intersection Summary						
HCM 7th Control Delay, s/veh			19.6			
HCM 7th LOS			B			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC
20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	63	43	684	711	14
Future Vol, veh/h	9	63	43	684	711	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	10	68	46	735	765	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1600	772	780	0	-	0
Stage 1	772	-	-	-	-	-
Stage 2	828	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	116	398	833	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	110	398	833	-	-	-
Mov Cap-2 Maneuver	245	-	-	-	-	-
Stage 1	429	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	16.44	0.57		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	833	-	245	398	-	-
HCM Lane V/C Ratio	0.055	-	0.039	0.17	-	-
HCM Ctrl Dly (s/v)	9.6	-	20.3	15.9	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	0.6	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	16	57	5	6	34	15
Future Vol, veh/h	16	57	5	6	34	15
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	17	61	5	6	37	16
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	6.9	7.3	7.3
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	69%	0%	45%
Vol Thru, %	0%	22%	55%
Vol Right, %	31%	78%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	49	73	11
LT Vol	34	0	5
Through Vol	0	16	6
RT Vol	15	57	0
Lane Flow Rate	53	78	12
Geometry Grp	1	1	1
Degree of Util (X)	0.059	0.078	0.014
Departure Headway (Hd)	4.064	3.584	4.194
Convergence, Y/N	Yes	Yes	Yes
Cap	882	998	852
Service Time	2.085	1.61	2.225
HCM Lane V/C Ratio	0.06	0.078	0.014
HCM Control Delay, s/veh	7.3	6.9	7.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	155	169	37	58	10
Future Vol, veh/h	25	155	169	37	58	10
Conflicting Peds, #/hr	2	0	0	2	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	28	176	192	42	66	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	236	0	-	0	448	217
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	233	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1325	-	-	-	567	820
Stage 1	-	-	-	-	818	-
Stage 2	-	-	-	-	803	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1323	-	-	-	551	817
Mov Cap-2 Maneuver	-	-	-	-	551	-
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	802	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	1.08	0		12.18		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	250	-	-	-	579	
HCM Lane V/C Ratio	0.021	-	-	-	0.134	
HCM Ctrl Dly (s/v)	7.8	0	-	-	12.2	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	

HCM 7th TWSC
23: College Ave/Paseo Grand Dr & Pope Street

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	157	33	14	144	5	42	2	11	2	1	18
Future Vol, veh/h	21	157	33	14	144	5	42	2	11	2	1	18
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	25	185	39	16	169	6	49	2	13	2	1	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	175	0	0	225	0	0	459	463	205	441	479	174
Stage 1	-	-	-	-	-	-	255	255	-	205	205	-
Stage 2	-	-	-	-	-	-	205	208	-	235	274	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1395	-	-	1338	-	-	510	495	833	525	484	866
Stage 1	-	-	-	-	-	-	748	695	-	794	730	-
Stage 2	-	-	-	-	-	-	795	728	-	766	681	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1395	-	-	1337	-	-	480	479	832	499	469	865
Mov Cap-2 Maneuver	-	-	-	-	-	-	480	479	-	499	469	-
Stage 1	-	-	-	-	-	-	734	682	-	785	721	-
Stage 2	-	-	-	-	-	-	763	719	-	738	669	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.76	0.66	12.6	9.77
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	480	832	1395	-	-	1337	-	-	779
HCM Lane V/C Ratio	0.108	0.016	0.018	-	-	0.012	-	-	0.032
HCM Ctrl Dly (s/v)	13.4	9.4	7.6	-	-	7.7	-	-	9.8
HCM Lane LOS	B	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.4	0	0.1	-	-	0	-	-	0.1

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	33	9	382	573	11
Future Vol, veh/h	2	33	9	382	573	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	2	37	10	429	644	12
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1099	650	656	0	-	0
Stage 1	650	-	-	-	-	-
Stage 2	449	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	234	467	926	-	-	-
Stage 1	518	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	231	467	926	-	-	-
Mov Cap-2 Maneuver	231	-	-	-	-	-
Stage 1	510	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	13.95	0.21		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	41	-	441	-	-	
HCM Lane V/C Ratio	0.011	-	0.089	-	-	
HCM Ctrl Dly (s/v)	8.9	0	14	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.3	-	-	

HCM 7th TWSC
25: Silverado Trail & Howell Mountain Rd

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Y		Y	Y
Traffic Vol, veh/h	18	19	372	10	5	601
Future Vol, veh/h	18	19	372	10	5	601
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	21	22	428	11	6	691
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1136	433	0	0	439	0
Stage 1	433	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	223	620	-	-	1115	-
Stage 1	652	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	221	620	-	-	1115	-
Mov Cap-2 Maneuver	352	-	-	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	13.78	0		0.07		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	452	1115	-	
HCM Lane V/C Ratio	-	-	0.094	0.005	-	
HCM Ctrl Dly (s/v)	-	-	13.8	8.2	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.3	0	-	

HCM 7th TWSC
26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	63	109	62	319	515	104
Future Vol, veh/h	63	109	62	319	515	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	71	122	70	358	579	117
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1076	579	696	0	-	0
Stage 1	579	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	242	513	896	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	223	513	896	-	-	-
Mov Cap-2 Maneuver	355	-	-	-	-	-
Stage 1	515	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	19.36	1.52		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	896	-	441	-	-	
HCM Lane V/C Ratio	0.078	-	0.438	-	-	
HCM Ctrl Dly (s/v)	9.4	-	19.4	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.3	-	2.2	-	-	

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	
Traffic Vol, veh/h	0	0	1	0	0	7	0	696	1	4	750	7
Future Vol, veh/h	0	0	1	0	0	7	0	696	1	4	750	7
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	1	0	0	8	0	748	1	4	806	8

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	1572	1573	815	1564	1577	749	819	0
Stage 1	824	824	-	749	749	-	-	-
Stage 2	748	749	-	815	828	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-
Pot Cap-1 Maneuver	89	110	376	90	109	410	805	-
Stage 1	366	386	-	402	418	-	-	-
Stage 2	403	418	-	370	384	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	86	108	374	89	108	410	801	-
Mov Cap-2 Maneuver	86	108	-	89	108	-	-	-
Stage 1	362	382	-	402	418	-	-	-
Stage 2	395	418	-	367	381	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	14.65	13.94	0	0.05
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	801	-	-	374	410	855	-
HCM Lane V/C Ratio	-	-	-	0.003	0.018	0.005	-
HCM Ctrl Dly (s/v)	0	-	-	14.7	13.9	9.2	-
HCM Lane LOS	A	-	-	B	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-

HCM 7th TWSC
28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection												
Int Delay, s/veh	6.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↵	↵		↵	↵	
Traffic Vol, veh/h	13	6	19	58	0	16	9	597	97	24	684	8
Future Vol, veh/h	13	6	19	58	0	16	9	597	97	24	684	8
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	14	7	21	63	0	17	10	649	105	26	743	9
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1478	1584	758	1520	1536	702	762	0	0	754	0	0
Stage 1	810	810	-	721	721	-	-	-	-	-	-	-
Stage 2	668	774	-	799	814	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	103	108	405	97	115	437	846	-	-	851	-	-
Stage 1	372	392	-	417	430	-	-	-	-	-	-	-
Stage 2	446	407	-	378	390	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	94	102	402	82	110	437	838	-	-	851	-	-
Mov Cap-2 Maneuver	94	102	-	82	110	-	-	-	-	-	-	-
Stage 1	357	376	-	412	425	-	-	-	-	-	-	-
Stage 2	423	402	-	341	374	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	36.25		119.25			0.12			0.31			
HCM LOS	E		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	838	-	-	156	100	851	-	-				
HCM Lane V/C Ratio	0.012	-	-	0.265	0.804	0.031	-	-				
HCM Ctrl Dly (s/v)	9.3	-	-	36.3	119.2	9.4	-	-				
HCM Lane LOS	A	-	-	E	F	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	1	4.4	0.1	-	-				

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	5	20	1	5	1	65	19	4	65	2
Future Vol, veh/h	1	2	5	20	1	5	1	65	19	4	65	2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	2	6	24	1	6	1	76	22	5	76	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.1	7.6	7.5	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	13%	77%	6%
Vol Thru, %	76%	25%	4%	92%
Vol Right, %	22%	63%	19%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	85	8	26	71
LT Vol	1	1	20	4
Through Vol	65	2	1	65
RT Vol	19	5	5	2
Lane Flow Rate	100	9	31	84
Geometry Grp	1	1	1	1
Degree of Util (X)	0.11	0.01	0.037	0.095
Departure Headway (Hd)	3.95	3.94	4.312	4.089
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	903	894	820	873
Service Time	1.992	2.029	2.394	2.131
HCM Lane V/C Ratio	0.111	0.01	0.038	0.096
HCM Control Delay, s/veh	7.5	7.1	7.6	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0	0.1	0.3

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection												
Intersection Delay, s/veh	8.3											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	29	27	44	31	15	15	67	96	16	81	4
Future Vol, veh/h	7	29	27	44	31	15	15	67	96	16	81	4
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	32	30	48	34	16	16	74	105	18	89	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8	8.4	8.4	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	11%	49%	16%
Vol Thru, %	38%	46%	34%	80%
Vol Right, %	54%	43%	17%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	63	90	101
LT Vol	15	7	44	16
Through Vol	67	29	31	81
RT Vol	96	27	15	4
Lane Flow Rate	196	69	99	111
Geometry Grp	1	1	1	1
Degree of Util (X)	0.227	0.087	0.129	0.141
Departure Headway (Hd)	4.17	4.517	4.709	4.564
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	863	793	762	786
Service Time	2.191	2.546	2.737	2.588
HCM Lane V/C Ratio	0.227	0.087	0.13	0.141
HCM Control Delay, s/veh	8.4	8	8.4	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0.3	0.4	0.5

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection												
Intersection Delay, s/veh	8.7											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	53	29	43	13	58	36	26	83	11	24	75	35
Future Vol, veh/h	53	29	43	13	58	36	26	83	11	24	75	35
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	58	32	47	14	64	40	29	91	12	26	82	38
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.7	8.5	8.7	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	42%	12%	18%
Vol Thru, %	69%	23%	54%	56%
Vol Right, %	9%	34%	34%	26%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	125	107	134
LT Vol	26	53	13	24
Through Vol	83	29	58	75
RT Vol	11	43	36	35
Lane Flow Rate	132	137	118	147
Geometry Grp	1	1	1	1
Degree of Util (X)	0.173	0.177	0.15	0.188
Departure Headway (Hd)	4.71	4.627	4.596	4.586
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	760	773	778	780
Service Time	2.75	2.667	2.638	2.625
HCM Lane V/C Ratio	0.174	0.177	0.152	0.188
HCM Control Delay, s/veh	8.7	8.7	8.5	8.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.6	0.5	0.7

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	51	76	515	486	31
Future Vol, veh/h	22	51	76	515	486	31
Conflicting Peds, #/hr	0	59	47	0	0	47
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	24	55	82	554	523	33
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1303	645	603	0	-	0
Stage 1	586	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	176	470	970	-	-	-
Stage 1	554	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	140	424	926	-	-	-
Mov Cap-2 Maneuver	274	-	-	-	-	-
Stage 1	462	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	17.58	1.19		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	231	-	364	-	-	
HCM Lane V/C Ratio	0.088	-	0.216	-	-	
HCM Ctrl Dly (s/v)	9.3	0	17.6	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.8	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Existing Weekday PM

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	36	111	0	0	200	48	0	0	0	41	0	78
Future Vol, veh/h	36	111	0	0	200	48	0	0	0	41	0	78
Conflicting Peds, #/hr	15	0	6	6	0	15	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	39	121	0	0	217	52	0	0	0	45	0	85
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	285	0	0	127	0	0	423	489	128	458	463	259
Stage 1	-	-	-	-	-	-	205	205	-	258	258	-
Stage 2	-	-	-	-	-	-	218	285	-	200	205	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1272	-	-	1453	-	-	539	478	920	511	494	777
Stage 1	-	-	-	-	-	-	795	730	-	744	692	-
Stage 2	-	-	-	-	-	-	782	674	-	800	730	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1254	-	-	1445	-	-	460	453	914	486	468	765
Mov Cap-2 Maneuver	-	-	-	-	-	-	460	453	-	486	468	-
Stage 1	-	-	-	-	-	-	764	702	-	733	682	-
Stage 2	-	-	-	-	-	-	694	665	-	772	702	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.95			0			0			12.06		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	441	-	-	1445	-	-	639				
HCM Lane V/C Ratio	-	0.031	-	-	-	-	-	0.202				
HCM Ctrl Dly (s/v)	0	8	0	-	0	-	-	12.1				
HCM Lane LOS	A	A	A	-	A	-	-	B				
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	0.8				

HCM 7th TWSC
4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	18	3	12	12	3	7
Future Vol, veh/h	18	3	12	12	3	7
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	22	4	15	15	4	9
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	29	0	72	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1578	-	930	1045
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	975	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1573	-	919	1043
Mov Cap-2 Maneuver	-	-	-	-	919	-
Stage 1	-	-	-	-	990	-
Stage 2	-	-	-	-	966	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.65		8.64	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1002	-	-	900	-	
HCM Lane V/C Ratio	0.012	-	-	0.009	-	
HCM Ctrl Dly (s/v)	8.6	-	-	7.3	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Synchro 12 Report

HCM 7th TWSC
5: Valley View St & Spring St

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection						
Int Delay, s/veh	5.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻↻↻↻↻↻					
Traffic Vol, veh/h	28	29	25	24	23	64
Future Vol, veh/h	28	29	25	24	23	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	39	41	35	34	32	90
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	80	0	164	60
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	104	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1511	-	824	1003
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	918	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1511	-	805	1003
Mov Cap-2 Maneuver	-	-	-	-	805	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	896	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.8		9.39	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	942	-	-	918	-	
HCM Lane V/C Ratio	0.13	-	-	0.023	-	
HCM Ctrl Dly (s/v)	9.4	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-	

Synchro 12 Report

HCM 7th AWSC
6: Crane Ave/Valley View St & Grayson Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	23	66	19	8	52
Future Vol, veh/h	13	23	66	19	8	52
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	19	34	97	28	12	76
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	7.4	7.7	7.7
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	36%	13%
Vol Thru, %	78%	0%	87%
Vol Right, %	22%	64%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	85	36	60
LT Vol	0	13	8
Through Vol	66	0	52
RT Vol	19	23	0
Lane Flow Rate	125	53	88
Geometry Grp	1	1	1
Degree of Util (X)	0.138	0.059	0.102
Departure Headway (Hd)	3.976	4.002	4.165
Convergence, Y/N	Yes	Yes	Yes
Cap	897	879	856
Service Time	2.021	2.098	2.213
HCM Lane V/C Ratio	0.139	0.06	0.103
HCM Control Delay, s/veh	7.7	7.4	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.2	0.3

Synchro 12 Report

HCM 7th TWSC
7: Sulphur Spring Ave & Crane Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	4	5	38	49	1
Future Vol, veh/h	5	4	5	38	49	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	7	6	7	56	72	1
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	63	0	-	0	56	35
Stage 1	-	-	-	-	35	-
Stage 2	-	-	-	-	21	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1533	-	-	-	949	1035
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	1000	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1533	-	-	-	945	1035
Mov Cap-2 Maneuver	-	-	-	-	945	-
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	1000	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	4.09	0		9.12		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1000	-	-	-	946	
HCM Lane V/C Ratio	0.005	-	-	-	0.078	
HCM Ctrl Dly (s/v)	7.4	0	-	-	9.1	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.3	

Synchro 12 Report

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	5	1	8	20	0	12	14	625	22	11	584	5
Future Vol, veh/h	5	1	8	20	0	12	14	625	22	11	584	5
Conflicting Peds, #/hr	1	0	2	2	0	1	6	0	1	1	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	1	8	21	0	13	15	651	23	11	608	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1321	1344	619	1326	1335	665	620	0	0	675	0	0
Stage 1	640	640	-	693	693	-	-	-	-	-	-	-
Stage 2	681	704	-	634	642	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	133	151	487	132	153	459	956	-	-	912	-	-
Stage 1	462	468	-	432	443	-	-	-	-	-	-	-
Stage 2	439	438	-	466	467	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	125	146	483	125	148	458	951	-	-	911	-	-
Mov Cap-2 Maneuver	125	146	-	125	148	-	-	-	-	-	-	-
Stage 1	454	460	-	425	436	-	-	-	-	-	-	-
Stage 2	420	431	-	450	459	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	22.47			30.98			0.19			0.17		
HCM LOS	C			D								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	951	-	-	221	172	911	-	-
HCM Lane V/C Ratio	0.015	-	-	0.066	0.194	0.013	-	-
HCM Ctrl Dly (s/v)	8.8	-	-	22.5	31	9	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.7	0	-	-

Synchro 12 Report

HCM 7th TWSC
9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection								
Int Delay, s/veh	1.2							
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Vol, veh/h	31	25	20	630	589	23		
Future Vol, veh/h	31	25	20	630	589	23		
Conflicting Peds, #/hr	0	1	9	0	0	9		
Sign Control	Stop	Stop	Free	Free	Free	Free		
RT Channelized	-	None	-	None	-	None		
Storage Length	0	-	-	-	-	-		
Veh in Median Storage, #	0	-	-	0	0	-		
Grade, %	0	-	-	0	0	-		
Peak Hour Factor	99	99	99	99	99	99		
Heavy Vehicles, %	3	3	3	3	3	3		
Mvmt Flow	31	25	20	636	595	23		
Major/Minor	Minor2		Major1		Major2			
Conflicting Flow All	1292	617	627	0	-	0		
Stage 1	616	-	-	-	-	-		
Stage 2	677	-	-	-	-	-		
Critical Hdwy	6.43	6.23	4.13	-	-	-		
Critical Hdwy Stg 1	5.43	-	-	-	-	-		
Critical Hdwy Stg 2	5.43	-	-	-	-	-		
Follow-up Hdwy	3.527	3.327	2.227	-	-	-		
Pot Cap-1 Maneuver	179	488	950	-	-	-		
Stage 1	537	-	-	-	-	-		
Stage 2	503	-	-	-	-	-		
Platoon blocked, %				-	-	-		
Mov Cap-1 Maneuver	170	484	942	-	-	-		
Mov Cap-2 Maneuver	170	-	-	-	-	-		
Stage 1	515	-	-	-	-	-		
Stage 2	499	-	-	-	-	-		
Approach	EB		NB		SB			
HCM Ctrl Dly, s/v	24.63		0.27		0			
HCM LOS	C							
Minor Lane/Major Mvmt	NBL		NBT		EBLn1		SBT	SBR
Capacity (veh/h)	55		-		239		-	-
HCM Lane V/C Ratio	0.021		-		0.236		-	-
HCM Ctrl Dly (s/v)	8.9		0		24.6		-	-
HCM Lane LOS	A		A		C		-	-
HCM 95th %tile Q(veh)	0.1		-		0.9		-	-

Synchro 12 Report

HCM 7th Signalized Intersection Summary
10: Main St & Madrona Ave/Fulton Ln

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	15	31	4	17	74	13	503	5	41	525	48
Future Volume (veh/h)	73	15	31	4	17	74	13	503	5	41	525	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	25	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	78	16	20	4	18	13	14	541	5	44	565	49
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	214	36	31	79	117	75	163	747	7	355	703	44
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.51	0.51	0.51	0.51	0.51	0.51
Sat Flow, veh/h	909	327	263	84	989	634	802	1304	12	854	1195	104
Grp Volume(v), veh/h	114	0	0	35	0	0	14	0	546	44	0	614
Grp Sat Flow(s),veh/h/ln	1498	0	0	1708	0	0	802	0	1316	854	0	1299
Q Serve(g_s), s	2.6	0.0	0.0	0.0	0.0	0.0	0.8	0.0	17.2	2.3	0.0	21.8
Cycle Q Clear(g_c), s	3.5	0.0	0.0	0.9	0.0	0.0	22.6	0.0	17.2	19.5	0.0	21.8
Prop In Lane	0.68		0.18	0.11		0.37	1.00		0.01	1.00		0.08
Lane Grp Cap(c), veh/h	281	0	0	271	0	0	163	0	754	355	0	747
V/C Ratio(X)	0.41	0.00	0.00	0.13	0.00	0.00	0.09	0.00	0.72	0.12	0.00	0.82
Avail Cap(c_a), veh/h	1297	0	0	1432	0	0	810	0	1670	932	0	1648
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.4	0.0	0.0	25.0	0.0	0.0	29.1	0.0	9.0	16.2	0.0	11.9
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.5	0.1	0.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.2
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	0.5	0.0	0.0	0.2	0.0	4.1	0.4	0.0	17.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.8	0.0	0.0	25.1	0.0	0.0	29.1	0.0	9.5	16.3	0.0	57.9
LnGrp LOS	C			C			C		A	B		E
Approach Vol, veh/h		114			35			560			658	
Approach Delay, s/veh		26.8			25.1			10.0			55.2	
Approach LOS		C			C			B			E	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.0		15.6		34.0		15.6				
Change Period (Y+Rc), s		8.7		9.2		8.7		9.2				
Max Green Setting (Gmax), s		63.0		40.0		63.0		40.0				
Max Q Clear Time (g_c+I1), s		24.6		5.5		23.8		2.9				
Green Ext Time (p_c), s		0.7		0.1		0.9		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh				33.5								
HCM 7th LOS				C								

Synchro 12 Report

HCM 7th TWSC
11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection						
Int Delay, s/veh	5.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Vol, veh/h	7	48	6	8	91	4
Future Vol, veh/h	7	48	6	8	91	4
Conflicting Peds, #/hr	0	3	3	0	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	9	61	8	10	115	5
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	73	0	72	42
Stage 1	-	-	-	-	42	-
Stage 2	-	-	-	-	29	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1521	-	930	1026
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	991	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1517	-	919	1023
Mov Cap-2 Maneuver	-	-	-	-	919	-
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	982	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.17		9.48	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	923	-	-	771	-	
HCM Lane V/C Ratio	0.13	-	-	0.005	-	
HCM Ctrl Dly (s/v)	9.5	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.4	-	-	0	-	

Synchro 12 Report

HCM 7th Signalized Intersection Summary 12: Main St & Adams St

Saint Helena Streets Master Plan Existing Conditions Weekend MD

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	33	26	29	32	32	17	451	24	34	500	26
Future Volume (veh/h)	38	33	26	29	32	32	17	451	24	34	500	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	20	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.74		0.69	0.74		0.69	1.00		0.93	1.00		0.87
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1856
Adj Flow Rate, veh/h	39	34	20	30	33	23	18	465	25	35	515	27
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	148	117	56	127	124	70	65	581	31	105	618	24
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.04	0.41	0.41	0.06	0.44	0.44
Sat Flow, veh/h	434	588	280	339	624	352	1767	1234	66	1767	1231	65
Grp Volume(v), veh/h	93	0	0	86	0	0	18	0	490	35	0	542
Grp Sat Flow(s),veh/h/ln	1302	0	0	1315	0	0	1767	0	1300	1767	0	1295
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	0.7	0.0	26.2	1.4	0.0	29.8
Cycle Q Clear(g_c), s	3.6	0.0	0.0	3.3	0.0	0.0	0.7	0.0	26.2	1.4	0.0	29.8
Prop In Lane	0.42		0.22	0.35		0.27	1.00		0.05	1.00		0.05
Lane Grp Cap(c), veh/h	321	0	0	321	0	0	65	0	612	105	0	642
V/C Ratio(X)	0.29	0.00	0.00	0.27	0.00	0.00	0.28	0.00	0.80	0.33	0.00	0.84
Avail Cap(c_a), veh/h	997	0	0	1008	0	0	1410	0	1337	1410	0	1331
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.9	0.0	0.0	29.8	0.0	0.0	40.4	0.0	18.5	39.0	0.0	20.4
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	0.0	0.0	0.9	0.0	0.9	0.7	0.0	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.8
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	1.5	0.0	0.0	0.4	0.0	7.6	0.7	0.0	20.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.1	0.0	0.0	30.0	0.0	0.0	41.3	0.0	19.5	39.6	0.0	66.4
LnGrp LOS	C			C			D		B	D		E
Approach Vol, veh/h	93			86			508			577		
Approach Delay, s/veh	30.1			30.0			20.2			64.7		
Approach LOS	C			C			C			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	41.2		25.2	9.3	39.4		25.2				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	59.0	76.0		55.0	59.0	76.0		55.0				
Max Q Clear Time (g_c+I1), s	2.7	31.8		5.6	3.4	28.2		5.3				
Green Ext Time (p_c), s	0.0	0.7		0.2	0.0	0.6		0.2				
Intersection Summary												
HCM 7th Control Delay, s/veh	41.9											
HCM 7th LOS	D											

Synchro 12 Report

HCM 7th AWSC
13: Railroad Ave & Adams St

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection												
Intersection Delay, s/veh	7.9											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	33	53	8	33	47	38	46	9	32	34	6
Future Vol, veh/h	7	33	53	8	33	47	38	46	9	32	34	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	36	58	9	36	51	41	50	10	35	37	7
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.7	7.7	8.2	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	41%	8%	9%	44%
Vol Thru, %	49%	35%	38%	47%
Vol Right, %	10%	57%	53%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	93	93	88	72
LT Vol	38	7	8	32
Through Vol	46	33	33	34
RT Vol	9	53	47	6
Lane Flow Rate	101	101	96	78
Geometry Grp	1	1	1	1
Degree of Util (X)	0.126	0.116	0.111	0.098
Departure Headway (Hd)	4.488	4.144	4.175	4.529
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	801	867	861	794
Service Time	2.504	2.158	2.187	2.545
HCM Lane V/C Ratio	0.126	0.116	0.111	0.098
HCM Control Delay, s/veh	8.2	7.7	7.7	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.4	0.4	0.3

HCM 7th TWSC
14: Library Ln & Adams St

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	19	7	1	0	8	0	3	0	0	0	0	11
Future Vol, veh/h	19	7	1	0	8	0	3	0	0	0	0	11
Conflicting Peds, #/hr	1	0	6	6	0	1	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	26	10	1	0	11	0	4	0	0	0	0	15
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	12	0	0	17	0	0	80	81	20	79	82	12
Stage 1	-	-	-	-	-	-	69	69	-	12	12	-
Stage 2	-	-	-	-	-	-	11	12	-	67	70	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.16	6.56	6.26	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.254	-	-	3.554	4.054	3.354	3.554	4.054	3.354
Pot Cap-1 Maneuver	1581	-	-	1574	-	-	898	801	1046	900	801	1057
Stage 1	-	-	-	-	-	-	931	830	-	998	878	-
Stage 2	-	-	-	-	-	-	999	878	-	934	829	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1579	-	-	1565	-	-	865	783	1036	881	782	1056
Mov Cap-2 Maneuver	-	-	-	-	-	-	865	783	-	881	782	-
Stage 1	-	-	-	-	-	-	910	811	-	997	877	-
Stage 2	-	-	-	-	-	-	985	877	-	915	810	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	5.15			0			9.18			8.46		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	865	1236	-	-	1565	-	-	1056				
HCM Lane V/C Ratio	0.005	0.017	-	-	-	-	-	0.014				
HCM Ctrl Dly (s/v)	9.2	7.3	0	-	0	-	-	8.5				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0				

Synchro 12 Report

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	19	473	58	21	534
Future Vol, veh/h	15	19	473	58	21	534
Conflicting Peds, #/hr	172	3	0	301	301	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	19	478	59	21	539
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1562	811	0	0	837	0
Stage 1	808	-	-	-	-	-
Stage 2	754	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	122	378	-	-	793	-
Stage 1	437	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	70	269	-	-	565	-
Mov Cap-2 Maneuver	187	-	-	-	-	-
Stage 1	312	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Approach	WB		NB		SB	
HCM Ctrl Dly, s/v	23.85		0		0.44	
HCM LOS	C					
Minor Lane/Major Mvmt			NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)			-	-	225	565
HCM Lane V/C Ratio			-	-	0.153	0.038
HCM Ctrl Dly (s/v)			-	-	23.9	11.6
HCM Lane LOS			-	-	C	B
HCM 95th %tile Q(veh)			-	-	0.5	0.1

Synchro 12 Report

HCM 7th TWSC
16: Church St/Railroad Ave & Hunt Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	29	32	15	26	17	48	4	19	31	44	29	11
Future Vol, veh/h	29	32	15	26	17	48	4	19	31	44	29	11
Conflicting Peds, #/hr	17	0	49	17	0	49	5	0	17	3	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	31	34	16	28	18	51	4	20	33	47	31	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	118	0	0	99	0	0	247	326	108	271	309	98
Stage 1	-	-	-	-	-	-	153	153	-	148	148	-
Stage 2	-	-	-	-	-	-	94	173	-	123	161	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1464	-	-	1488	-	-	705	590	943	680	604	956
Stage 1	-	-	-	-	-	-	847	769	-	852	773	-
Stage 2	-	-	-	-	-	-	911	753	-	879	763	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1396	-	-	1418	-	-	596	514	885	565	525	907
Mov Cap-2 Maneuver	-	-	-	-	-	-	596	514	-	565	525	-
Stage 1	-	-	-	-	-	-	789	717	-	796	722	-
Stage 2	-	-	-	-	-	-	839	704	-	790	711	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	2.91	2.17	10.73	12.35
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	686	646	-	-	448	-	-	579
HCM Lane V/C Ratio	0.084	0.022	-	-	0.02	-	-	0.154
HCM Ctrl Dly (s/v)	10.7	7.6	0	-	7.6	0	-	12.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	0.5

Synchro 12 Report

HCM 7th TWSC
17: Mitchell Dr & Oak Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection						
Int Delay, s/veh	5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	
Traffic Vol, veh/h	10	0	24	60	83	8
Future Vol, veh/h	10	0	24	60	83	8
Conflicting Peds, #/hr	3	0	0	3	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	12	0	30	74	102	10
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	107	0	-	0	57	34
Stage 1	-	-	-	-	33	-
Stage 2	-	-	-	-	25	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1478	-	-	-	947	1037
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	995	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1474	-	-	-	934	1033
Mov Cap-2 Maneuver	-	-	-	-	934	-
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	992	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	7.46	0		9.34		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1474	-	-	-	942	
HCM Lane V/C Ratio	0.008	-	-	-	0.119	
HCM Ctrl Dly (s/v)	7.5	0	-	-	9.3	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

Synchro 12 Report

HCM 7th Signalized Intersection Summary 18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan Existing Conditions Weekend MD

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	131	97	21	60	85	513	43	51	508	4
Future Volume (veh/h)	0	0	131	97	21	60	85	513	43	51	508	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	50	0	0	25	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.89	1.00		0.94	1.00		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	0	0	134	99	21	8	87	523	44	52	518	4
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	32	132	183	39	169	129	716	22	111	732	3
Arrive On Green	0.00	0.00	0.02	0.15	0.15	0.15	0.09	0.46	0.46	0.07	0.44	0.44
Sat Flow, veh/h	0	1856	1572	1470	312	1397	1767	1192	100	1767	1305	10
Grp Volume(v), veh/h	0	0	134	120	0	8	87	0	567	52	0	522
Grp Sat Flow(s),veh/h/ln	0	1856	1572	1782	0	1397	1767	0	1293	1767	0	1316
Q Serve(g_s), s	0.0	0.0	2.0	5.4	0.0	0.4	4.2	0.0	37.5	2.5	0.0	32.6
Cycle Q Clear(g_c), s	0.0	0.0	2.0	5.4	0.0	0.4	4.2	0.0	37.5	2.5	0.0	32.6
Prop In Lane	0.00		1.00	0.82		1.00	1.00		0.08	1.00		0.01
Lane Grp Cap(c), veh/h	0	32	132	221	0	169	129	0	769	111	0	657
V/C Ratio(X)	0.00	0.00	1.02	0.54	0.00	0.05	0.67	0.00	0.74	0.47	0.00	0.79
Avail Cap(c_a), veh/h	0	42	177	1190	0	933	1180	0	1097	1194	0	1117
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	57.8	48.4	0.0	45.4	53.1	0.0	24.9	53.1	0.0	24.0
Incr Delay (d2), s/veh	0.0	0.0	62.9	0.8	0.0	0.0	2.3	0.0	0.7	1.1	0.0	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	115.7	0.0	0.0	50.8
%ile BackOfQ(50%),veh/ln	0.0	0.0	6.5	3.4	0.0	0.2	2.6	0.0	46.1	1.5	0.0	23.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	120.8	49.2	0.0	45.5	55.4	0.0	141.3	54.2	0.0	75.7
LnGrp LOS			F	D		D	E		F	D		E
Approach Vol, veh/h	134			128			654			574		
Approach Delay, s/veh	120.8			49.0			129.9			73.7		
Approach LOS	F			D			F			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.6	46.6		23.2	11.2	48.0		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	59.0	75.0		59.0	59.7	* 75		2.0				
Max Q Clear Time (g_c+I1), s	6.2	34.6		7.4	4.5	39.5		4.0				
Green Ext Time (p_c), s	0.0	0.7		0.1	0.0	0.8		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh 100.5

HCM 7th LOS F

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Synchro 12 Report

HCM 7th Signalized Intersection Summary 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	25	34	721	739	18
Future Volume (veh/h)	19	25	34	721	739	18
Initial Q (Qb), veh	0	0	0	30	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1318	1318	1318
Adj Flow Rate, veh/h	19	2	35	736	754	18
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	81	9	109	1007	820	20
Arrive On Green	0.06	0.06	0.06	0.74	0.61	0.61
Sat Flow, veh/h	1512	159	1767	1318	1281	31
Grp Volume(v), veh/h	22	0	35	736	0	772
Grp Sat Flow(s), veh/h/ln	1751	0	1767	1318	0	1312
Q Serve(g_s), s	0.8	0.0	1.3	22.1	0.0	37.9
Cycle Q Clear(g_c), s	0.8	0.0	1.3	22.1	0.0	37.9
Prop In Lane	0.86	0.09	1.00			0.02
Lane Grp Cap(c), veh/h	94	0	109	1007	0	840
V/C Ratio(X)	0.23	0.00	0.32	0.73	0.00	0.92
Avail Cap(c_a), veh/h	1328	0	1288	1510	0	1424
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	35.0	6.7	0.0	11.9
Incr Delay (d2), s/veh	0.5	0.0	0.6	0.4	0.0	3.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	23.8	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.6	12.8	0.0	9.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	35.8	0.0	35.6	30.8	0.0	15.4
LnGrp LOS	D		D	C		B
Approach Vol, veh/h	22			771	772	
Approach Delay, s/veh	35.8			31.1	15.4	
Approach LOS	D			C	B	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.0	49.8			58.8	8.4
Change Period (Y+Rc), s	4.7	9.1			* 9.1	4.7
Max Green Setting (Gmax), s	49.8	73.0			* 77	51.0
Max Q Clear Time (g_c+I), s	13.3	39.9			24.1	2.8
Green Ext Time (p_c), s	0.0	0.8			0.7	0.0
Intersection Summary						
HCM 7th Control Delay, s/veh			23.4			
HCM 7th LOS			C			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

Synchro 12 Report

HCM 7th TWSC
20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection								
Int Delay, s/veh	0.7							
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Vol, veh/h	7	45	32	748	752	12		
Future Vol, veh/h	7	45	32	748	752	12		
Conflicting Peds, #/hr	0	0	4	0	0	4		
Sign Control	Stop	Stop	Free	Free	Free	Free		
RT Channelized	-	None	-	None	-	None		
Storage Length	150	0	80	-	-	-		
Veh in Median Storage, #	0	-	-	0	0	-		
Grade, %	0	-	-	0	0	-		
Peak Hour Factor	98	98	98	98	98	98		
Heavy Vehicles, %	3	3	3	3	3	3		
Mvmt Flow	7	46	33	763	767	12		
Major/Minor	Minor2		Major1		Major2			
Conflicting Flow All	1606	777	784	0	-	0		
Stage 1	777	-	-	-	-	-		
Stage 2	829	-	-	-	-	-		
Critical Hdwy	6.43	6.23	4.13	-	-	-		
Critical Hdwy Stg 1	5.43	-	-	-	-	-		
Critical Hdwy Stg 2	5.43	-	-	-	-	-		
Follow-up Hdwy	3.527	3.327	2.227	-	-	-		
Pot Cap-1 Maneuver	115	395	830	-	-	-		
Stage 1	451	-	-	-	-	-		
Stage 2	427	-	-	-	-	-		
Platoon blocked, %				-	-	-		
Mov Cap-1 Maneuver	110	394	827	-	-	-		
Mov Cap-2 Maneuver	246	-	-	-	-	-		
Stage 1	432	-	-	-	-	-		
Stage 2	425	-	-	-	-	-		
Approach	EB		NB		SB			
HCM Ctrl Dly, s/v	15.99		0.39		0			
HCM LOS	C							
Minor Lane/Major Mvmt	NBL		NBT		EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	827		-		246	394	-	-
HCM Lane V/C Ratio	0.039		-		0.029	0.117	-	-
HCM Ctrl Dly (s/v)	9.5		-		20.1	15.4	-	-
HCM Lane LOS	A		-		C	C	-	-
HCM 95th %tile Q(veh)	0.1		-		0.1	0.4	-	-

Synchro 12 Report

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	6	39	5	3	29	4
Future Vol, veh/h	6	39	5	3	29	4
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	8	51	6	4	38	5
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	6.8	7.3	7.4
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	88%	0%	63%
Vol Thru, %	0%	13%	38%
Vol Right, %	12%	87%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	33	45	8
LT Vol	29	0	5
Through Vol	0	6	3
RT Vol	4	39	0
Lane Flow Rate	43	58	10
Geometry Grp	1	1	1
Degree of Util (X)	0.05	0.057	0.012
Departure Headway (Hd)	4.173	3.513	4.195
Convergence, Y/N	Yes	Yes	Yes
Cap	860	1018	852
Service Time	2.188	1.539	2.224
HCM Lane V/C Ratio	0.05	0.057	0.012
HCM Control Delay, s/veh	7.4	6.8	7.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.2	0

Synchro 12 Report

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	146	169	31	29	9
Future Vol, veh/h	14	146	169	31	29	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	152	176	32	30	9
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	208	0	-	0	373	192
Stage 1	-	-	-	-	192	-
Stage 2	-	-	-	-	181	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1357	-	-	-	626	847
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	848	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1357	-	-	-	618	847
Mov Cap-2 Maneuver	-	-	-	-	618	-
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	848	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.67	0		10.8		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	157	-	-	-	660	
HCM Lane V/C Ratio	0.011	-	-	-	0.06	
HCM Ctrl Dly (s/v)	7.7	0	-	-	10.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	

Synchro 12 Report

HCM 7th TWSC
23: College Ave/Paseo Grand Dr & Pope Street

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	107	22	13	171	8	21	2	7	3	2	15
Future Vol, veh/h	21	107	22	13	171	8	21	2	7	3	2	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	24	120	25	15	192	9	24	2	8	3	2	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	201	0	0	145	0	0	402	410	133	394	418	197
Stage 1	-	-	-	-	-	-	180	180	-	226	226	-
Stage 2	-	-	-	-	-	-	222	230	-	169	192	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1365	-	-	1431	-	-	557	530	914	563	524	842
Stage 1	-	-	-	-	-	-	820	749	-	775	715	-
Stage 2	-	-	-	-	-	-	778	712	-	831	740	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1365	-	-	1431	-	-	528	515	914	541	510	842
Mov Cap-2 Maneuver	-	-	-	-	-	-	528	515	-	541	510	-
Stage 1	-	-	-	-	-	-	805	736	-	767	708	-
Stage 2	-	-	-	-	-	-	752	705	-	807	727	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.08	0.51	11.43	10.07
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	527	914	1365	-	-	1431	-	-	733
HCM Lane V/C Ratio	0.049	0.009	0.017	-	-	0.01	-	-	0.031
HCM Ctrl Dly (s/v)	12.2	9	7.7	-	-	7.5	-	-	10.1
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	0.1	-	-	0	-	-	0.1

Synchro 12 Report

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	18	15	388	408	10
Future Vol, veh/h	3	18	15	388	408	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	3	20	17	436	458	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	934	464	470	0	-	0
Stage 1	464	-	-	-	-	-
Stage 2	470	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	294	596	1087	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	288	596	1087	-	-	-
Mov Cap-2 Maneuver	288	-	-	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	12.3	0.31		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	67	-	517	-	-	
HCM Lane V/C Ratio	0.016	-	0.046	-	-	
HCM Ctrl Dly (s/v)	8.4	0	12.3	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Synchro 12 Report

HCM 7th TWSC
25: Silverado Trail & Howell Mountain Rd

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↖		↘	↖
Traffic Vol, veh/h	21	9	394	24	3	423
Future Vol, veh/h	21	9	394	24	3	423
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	23	10	438	27	3	470
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	928	451	0	0	464	0
Stage 1	451	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	296	606	-	-	1092	-
Stage 1	639	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	295	606	-	-	1092	-
Mov Cap-2 Maneuver	422	-	-	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	13.35	0		0.06		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	465	1092	-	
HCM Lane V/C Ratio	-	-	0.072	0.003	-	
HCM Ctrl Dly (s/v)	-	-	13.3	8.3	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	

Synchro 12 Report

HCM 7th TWSC
26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰		↰	↱	↱	↰
Traffic Vol, veh/h	54	46	75	364	328	116
Future Vol, veh/h	54	46	75	364	328	116
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	59	51	82	400	360	127
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	925	360	488	0	-	0
Stage 1	360	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	297	682	1070	-	-	-
Stage 1	703	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	274	682	1070	-	-	-
Mov Cap-2 Maneuver	400	-	-	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Approach	EB		NB		SB	
HCM Ctrl Dly, s/v	14.35		1.48		0	
HCM LOS	B					
Minor Lane/Major Mvmt	NBL		NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1070		-	494	-	-
HCM Lane V/C Ratio	0.077		-	0.222	-	-
HCM Ctrl Dly (s/v)	8.6		-	14.4	-	-
HCM Lane LOS	A		-	B	-	-
HCM 95th %tile Q(veh)	0.2		-	0.8	-	-

Synchro 12 Report

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↔	↔	
Traffic Vol, veh/h	0	0	1	0	0	6	0	738	2	9	756	1
Future Vol, veh/h	0	0	1	0	0	6	0	738	2	9	756	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	1	0	0	6	0	753	2	9	771	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1543	1545	772	1544	1545	754	772	0	0	755	0	0
Stage 1	790	790	-	754	754	-	-	-	-	-	-	-
Stage 2	753	755	-	790	791	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	93	114	398	93	114	407	838	-	-	851	-	-
Stage 1	382	400	-	400	416	-	-	-	-	-	-	-
Stage 2	400	415	-	382	400	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	91	113	398	92	113	407	838	-	-	851	-	-
Mov Cap-2 Maneuver	91	113	-	92	113	-	-	-	-	-	-	-
Stage 1	378	396	-	400	416	-	-	-	-	-	-	-
Stage 2	394	415	-	377	395	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	14.07		13.97		0		0.11	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	838	-	-	398	407	851	-	-
HCM Lane V/C Ratio	-	-	-	0.003	0.015	0.011	-	-
HCM Ctrl Dly (s/v)	0	-	-	14.1	14	9.3	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Synchro 12 Report

HCM 7th TWSC
28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↘		↙	↘	
Traffic Vol, veh/h	12	8	28	44	2	24	14	605	125	34	694	8
Future Vol, veh/h	12	8	28	44	2	24	14	605	125	34	694	8
Conflicting Peds, #/hr	0	0	0	0	0	0	15	0	3	3	0	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	13	8	29	46	2	25	15	630	130	35	723	8
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1473	1606	742	1525	1545	698	746	0	0	763	0	0
Stage 1	813	813	-	727	727	-	-	-	-	-	-	-
Stage 2	660	793	-	798	817	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	104	105	414	96	114	439	857	-	-	845	-	-
Stage 1	371	390	-	414	427	-	-	-	-	-	-	-
Stage 2	450	399	-	378	389	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	89	97	408	77	106	437	845	-	-	842	-	-
Mov Cap-2 Maneuver	89	97	-	77	106	-	-	-	-	-	-	-
Stage 1	350	369	-	405	419	-	-	-	-	-	-	-
Stage 2	415	391	-	329	367	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	35.2		89.33			0.18			0.44			
HCM LOS	E		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	845	-	-	168	108	842	-	-				
HCM Lane V/C Ratio	0.017	-	-	0.297	0.674	0.042	-	-				
HCM Ctrl Dly (s/v)	9.3	-	-	35.2	89.3	9.5	-	-				
HCM Lane LOS	A	-	-	E	F	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	1.2	3.5	0.1	-	-				

Synchro 12 Report

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	1	0	10	4	1	3	71	9	2	51	0
Future Vol, veh/h	0	1	0	10	4	1	3	71	9	2	51	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	1	0	11	4	1	3	76	10	2	55	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.3	7.4	7.4	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	0%	67%	4%
Vol Thru, %	86%	100%	27%	96%
Vol Right, %	11%	0%	7%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	83	1	15	53
LT Vol	3	0	10	2
Through Vol	71	1	4	51
RT Vol	9	0	1	0
Lane Flow Rate	89	1	16	57
Geometry Grp	1	1	1	1
Degree of Util (X)	0.098	0.001	0.019	0.064
Departure Headway (Hd)	3.965	4.216	4.298	4.054
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	904	841	826	883
Service Time	1.986	2.282	2.359	2.08
HCM Lane V/C Ratio	0.098	0.001	0.019	0.065
HCM Control Delay, s/veh	7.4	7.3	7.4	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0	0.1	0.2

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection												
Intersection Delay, s/veh	7.9											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	19	4	40	16	9	8	64	62	7	44	2
Future Vol, veh/h	2	19	4	40	16	9	8	64	62	7	44	2
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	23	5	49	20	11	10	79	77	9	54	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.6	8	7.9	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	8%	62%	13%
Vol Thru, %	48%	76%	25%	83%
Vol Right, %	46%	16%	14%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	134	25	65	53
LT Vol	8	2	40	7
Through Vol	64	19	16	44
RT Vol	62	4	9	2
Lane Flow Rate	165	31	80	65
Geometry Grp	1	1	1	1
Degree of Util (X)	0.18	0.038	0.101	0.08
Departure Headway (Hd)	3.926	4.461	4.523	4.378
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	897	806	796	822
Service Time	2.026	2.467	2.528	2.386
HCM Lane V/C Ratio	0.184	0.038	0.101	0.079
HCM Control Delay, s/veh	7.9	7.6	8	7.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	0.1	0.3	0.3

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection												
Intersection Delay, s/veh	8.1											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	24	30	16	30	30	18	68	8	22	54	9
Future Vol, veh/h	25	24	30	16	30	30	18	68	8	22	54	9
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	30	29	36	19	36	36	22	82	10	27	65	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8	7.9	8.2	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	32%	21%	26%
Vol Thru, %	72%	30%	39%	64%
Vol Right, %	9%	38%	39%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	94	79	76	85
LT Vol	18	25	16	22
Through Vol	68	24	30	54
RT Vol	8	30	30	9
Lane Flow Rate	113	95	92	102
Geometry Grp	1	1	1	1
Degree of Util (X)	0.141	0.116	0.111	0.128
Departure Headway (Hd)	4.476	4.389	4.363	4.489
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	803	819	823	800
Service Time	2.495	2.408	2.382	2.509
HCM Lane V/C Ratio	0.141	0.116	0.112	0.128
HCM Control Delay, s/veh	8.2	8	7.9	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.4	0.4	0.4

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	43	58	515	520	29
Future Vol, veh/h	16	43	58	515	520	29
Conflicting Peds, #/hr	0	155	202	0	0	202
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	17	45	60	536	542	30
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1416	914	774	0	-	0
Stage 1	759	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	150	330	837	-	-	-
Stage 1	461	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	86	227	676	-	-	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	415	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	27.53	1.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	182	-	220	-	-	
HCM Lane V/C Ratio	0.089	-	0.279	-	-	
HCM Ctrl Dly (s/v)	10.8	0	27.5	-	-	
HCM Lane LOS	B	A	D	-	-	
HCM 95th %tile Q(veh)	0.3	-	1.1	-	-	

Synchro 12 Report

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Existing Conditions Weekend MD

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	80	0	2	166	25	1	0	0	19	0	46
Future Vol, veh/h	18	80	0	2	166	25	1	0	0	19	0	46
Conflicting Peds, #/hr	10	0	7	7	0	10	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	20	90	0	2	187	28	1	0	0	21	0	52
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	225	0	0	97	0	0	330	366	97	345	352	213
Stage 1	-	-	-	-	-	-	137	137	-	215	215	-
Stage 2	-	-	-	-	-	-	193	229	-	130	137	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1338	-	-	1490	-	-	621	561	957	607	571	825
Stage 1	-	-	-	-	-	-	863	781	-	785	723	-
Stage 2	-	-	-	-	-	-	806	713	-	871	781	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1325	-	-	1480	-	-	566	542	950	591	552	816
Mov Cap-2 Maneuver	-	-	-	-	-	-	566	542	-	591	552	-
Stage 1	-	-	-	-	-	-	844	763	-	776	715	-
Stage 2	-	-	-	-	-	-	753	705	-	857	763	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.42			0.08			11.37			10.45		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	566	331	-	-	18	-	-	734				
HCM Lane V/C Ratio	0.002	0.015	-	-	0.002	-	-	0.1				
HCM Ctrl Dly (s/v)	11.4	7.8	0	-	7.4	0	-	10.4				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3				

Synchro 12 Report

HCM 7th TWSC
4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	5.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	100	40	10	50
Future Vol, veh/h	30	10	100	40	10	50
Conflicting Peds, #/hr	0	9	9	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	39	13	132	53	13	66
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	62	0	372	55
Stage 1	-	-	-	-	55	-
Stage 2	-	-	-	-	317	-
Critical Hdwy	-	-	4.16	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.254	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	1516	-	621	1001
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	730	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1503	-	560	992
Mov Cap-2 Maneuver	-	-	-	-	560	-
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	663	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.45		9.5	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	879	-	-	1286	-	
HCM Lane V/C Ratio	0.09	-	-	0.088	-	
HCM Ctrl Dly (s/v)	9.5	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.3	-	-	0.3	-	

HCM 7th TWSC
5: Valley View St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	10.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	50	250	30	40	230
Future Vol, veh/h	40	50	250	30	40	230
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	58	72	362	43	58	333
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	133	0	865	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	768	-
Critical Hdwy	-	-	4.14	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1439	-	321	953
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	454	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1435	-	238	951
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	337	-
Approach	EB	WB		NB		
HCM Ctrl Dly, s/v	0	7.46		18.17		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	658	-	-	1400	-	
HCM Lane V/C Ratio	0.595	-	-	0.253	-	
HCM Ctrl Dly (s/v)	18.2	-	-	8.4	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	3.9	-	-	1	-	

HCM 7th AWSC

Saint Helena Streets Master Plan

6: Crane Ave/Valley View St & Grayson Ave

Cumulative Conditions No Project Weekday AM

Intersection						
Intersection Delay, s/veh	15.1					
Intersection LOS	C					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	180	110	60	210	130
Future Vol, veh/h	30	180	110	60	210	130
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	42	250	153	83	292	181
Number of Lanes	1	0	1	0	0	1
Approach	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		1	
Conflicting Approach Left	NB				WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right	SB		WB			
Conflicting Lanes Right	1		1		0	
HCM Control Delay, s/veh	12.2		11		19	
HCM LOS	B		B		C	
Lane	NBLn1		WBLn1		SBLn1	
Vol Left, %	0%		14%		62%	
Vol Thru, %	65%		0%		38%	
Vol Right, %	35%		86%		0%	
Sign Control	Stop		Stop		Stop	
Traffic Vol by Lane	170		210		340	
LT Vol	0		30		210	
Through Vol	110		0		130	
RT Vol	60		180		0	
Lane Flow Rate	236		292		472	
Geometry Grp	1		1		1	
Degree of Util (X)	0.343		0.427		0.687	
Departure Headway (Hd)	5.237		5.268		5.236	
Convergence, Y/N	Yes		Yes		Yes	
Cap	685		682		689	
Service Time	3.276		3.309		3.267	
HCM Lane V/C Ratio	0.345		0.428		0.685	
HCM Control Delay, s/veh	11		12.2		19	
HCM Lane LOS	B		B		C	
HCM 95th-tile Q	1.5		2.1		5.5	

HCM 7th TWSC
7: Sulphur Spring Ave & Crane Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	20	140	130	10
Future Vol, veh/h	10	10	20	140	130	10
Conflicting Peds, #/hr	2	0	0	2	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	14	14	28	194	181	14
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	224	0	-	0	170	127
Stage 1	-	-	-	-	127	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1339	-	-	-	818	921
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1336	-	-	-	807	919
Mov Cap-2 Maneuver	-	-	-	-	807	-
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	975	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.86	0		10.81		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	814	
HCM Lane V/C Ratio	0.01	-	-	-	0.239	
HCM Ctrl Dly (s/v)	7.7	0	-	-	10.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.9	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↵	↵		↵	↵	
Traffic Vol, veh/h	10	0	10	30	0	30	10	720	40	30	900	10
Future Vol, veh/h	10	0	10	30	0	30	10	720	40	30	900	10
Conflicting Peds, #/hr	0	0	5	5	0	0	13	0	2	2	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	11	0	11	32	0	32	11	758	42	32	947	11
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1808	1852	971	1818	1836	781	971	0	0	802	0	0
Stage 1	1029	1029	-	802	802	-	-	-	-	-	-	-
Stage 2	779	823	-	1016	1034	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.18	6.58	6.28	4.18	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.572	4.072	3.372	2.272	-	-	2.272	-	-
Pot Cap-1 Maneuver	59	72	299	58	73	385	686	-	-	796	-	-
Stage 1	275	304	-	369	388	-	-	-	-	-	-	-
Stage 2	380	379	-	280	302	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	51	67	294	53	68	385	678	-	-	794	-	-
Mov Cap-2 Maneuver	51	67	-	53	68	-	-	-	-	-	-	-
Stage 1	261	288	-	362	381	-	-	-	-	-	-	-
Stage 2	343	373	-	258	286	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	59.77			103.35			0.13			0.31		
HCM LOS	F			F								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	678	-	-	86	92	794	-	-				
HCM Lane V/C Ratio	0.016	-	-	0.244	0.684	0.04	-	-				
HCM Ctrl Dly (s/v)	10.4	-	-	59.8	103.3	9.7	-	-				
HCM Lane LOS	B	-	-	F	F	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.9	3.4	0.1	-	-				

HCM 7th TWSC
9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	50	740	810	130
Future Vol, veh/h	30	30	50	740	810	130
Conflicting Peds, #/hr	0	4	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	31	31	52	771	844	135
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1794	923	987	0	-	0
Stage 1	919	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	85	319	677	-	-	-
Stage 1	379	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	73	315	672	-	-	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	65.5	0.68		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	114	-	118	-	-	
HCM Lane V/C Ratio	0.078	-	0.529	-	-	
HCM Ctrl Dly (s/v)	10.8	0	65.5	-	-	
HCM Lane LOS	B	A	F	-	-	
HCM 95th %tile Q(veh)	0.3	-	2.5	-	-	

HCM 7th Signalized Intersection Summary 10: Main St & Madrona Ave/Fulton Ln

Saint Helena Streets Master Plan Cumulative Conditions No Project Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	50	50	20	60	80	40	610	20	120	610	110
Future Volume (veh/h)	100	50	50	20	60	80	40	610	20	120	610	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1287	1287	1811	1287	1287
Adj Flow Rate, veh/h	119	60	50	24	71	55	48	726	24	143	726	126
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	164	71	54	63	167	114	55	831	27	197	714	124
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.67	0.67	0.67	0.67	0.67	0.67
Sat Flow, veh/h	638	370	282	160	875	599	627	1237	41	690	1063	185
Grp Volume(v), veh/h	229	0	0	150	0	0	48	0	750	143	0	852
Grp Sat Flow(s),veh/h/ln	1289	0	0	1635	0	0	627	0	1278	690	0	1248
Q Serve(g_s), s	12.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.6	26.7	0.0	87.3
Cycle Q Clear(g_c), s	22.9	0.0	0.0	10.3	0.0	0.0	87.3	0.0	60.6	87.3	0.0	87.3
Prop In Lane	0.52		0.22	0.16		0.37	1.00		0.03	1.00		0.15
Lane Grp Cap(c), veh/h	288	0	0	344	0	0	55	0	858	197	0	838
V/C Ratio(X)	0.79	0.00	0.00	0.44	0.00	0.00	0.87	0.00	0.87	0.73	0.00	1.02
Avail Cap(c_a), veh/h	288	0	0	344	0	0	55	0	858	197	0	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.3	0.0	0.0	46.7	0.0	0.0	65.0	0.0	17.0	51.8	0.0	21.4
Incr Delay (d2), s/veh	13.2	0.0	0.0	0.3	0.0	0.0	72.3	0.0	9.5	11.1	0.0	35.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	0.0	0.0	4.4	0.0	0.0	2.7	0.0	19.0	5.3	0.0	31.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.5	0.0	0.0	47.0	0.0	0.0	137.3	0.0	26.5	62.9	0.0	56.7
LnGrp LOS	E			D			F		C	E		F
Approach Vol, veh/h	229			150			798			995		
Approach Delay, s/veh	65.5			47.0			33.2			57.6		
Approach LOS	E			D			C			E		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	96.0			34.0			96.0			34.0		
Change Period (Y+Rc), s	8.7			9.2			8.7			9.2		
Max Green Setting (Gmax), s	87.3			24.8			87.3			24.8		
Max Q Clear Time (g_c+I1), s	89.3			24.9			89.3			12.3		
Green Ext Time (p_c), s	0.0			0.0			0.0			0.1		
Intersection Summary												
HCM 7th Control Delay, s/veh	48.7											
HCM 7th LOS	D											

HCM 7th TWSC
11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	150	10	20	120	20
Future Vol, veh/h	30	150	10	20	120	20
Conflicting Peds, #/hr	0	1	1	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	45	224	15	30	179	30
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	270	0	220	158
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	63	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1288	-	766	885
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1287	-	754	884
Mov Cap-2 Maneuver	-	-	-	-	754	-
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	943	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		2.61		11.41	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	770	-	-	600	-	
HCM Lane V/C Ratio	0.271	-	-	0.012	-	
HCM Ctrl Dly (s/v)	11.4	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.1	-	-	0	-	

HCM 7th Signalized Intersection Summary 12: Main St & Adams St

Saint Helena Streets Master Plan Cumulative Conditions No Project Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	90	40	30	70	40	50	570	50	70	540	70
Future Volume (veh/h)	60	90	40	30	70	40	50	570	50	70	540	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.96		0.94	0.97		0.92	1.00		1.00	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1796	1276	1276	1796	1276	1796
Adj Flow Rate, veh/h	63	94	39	31	73	33	52	594	51	73	562	73
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	115	133	49	84	154	61	121	611	52	139	592	77
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.07	0.53	0.53	0.08	0.54	0.54
Sat Flow, veh/h	409	847	312	235	981	386	1711	1158	99	1711	1101	143
Grp Volume(v), veh/h	196	0	0	137	0	0	52	0	645	73	0	635
Grp Sat Flow(s),veh/h/ln	1569	0	0	1603	0	0	1711	0	1258	1711	0	1244
Q Serve(g_s), s	3.9	0.0	0.0	0.0	0.0	0.0	2.8	0.0	46.9	3.9	0.0	45.5
Cycle Q Clear(g_c), s	11.1	0.0	0.0	7.2	0.0	0.0	2.8	0.0	46.9	3.9	0.0	45.5
Prop In Lane	0.32		0.20	0.23		0.24	1.00		0.08	1.00		0.11
Lane Grp Cap(c), veh/h	297	0	0	298	0	0	121	0	664	139	0	669
V/C Ratio(X)	0.66	0.00	0.00	0.46	0.00	0.00	0.43	0.00	0.97	0.53	0.00	0.95
Avail Cap(c_a), veh/h	925	0	0	940	0	0	1069	0	1012	1069	0	1001
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.1	0.0	0.0	36.5	0.0	0.0	42.0	0.0	21.6	41.6	0.0	20.6
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.4	0.0	0.0	0.9	0.0	14.5	1.1	0.0	11.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.0	2.9	0.0	0.0	1.2	0.0	15.6	1.7	0.0	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.0	0.0	0.0	37.0	0.0	0.0	42.9	0.0	36.1	42.8	0.0	31.6
LnGrp LOS	D			D			D		D	D		C
Approach Vol, veh/h	196			137			697			708		
Approach Delay, s/veh	39.0			37.0			36.6			32.8		
Approach LOS	D			D			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.4	59.5		23.5	12.4	58.5		23.5				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	59.0	76.0		55.0	59.0	76.0		55.0				
Max Q Clear Time (g_c+I1), s	4.8	47.5		9.2	5.9	48.9		13.1				
Green Ext Time (p_c), s	0.0	0.9		0.2	0.0	0.9		0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh	35.3											
HCM 7th LOS	D											

HCM 7th AWSC

13: Railroad Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection												
Intersection Delay, s/veh 11.4												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	100	80	20	50	40	80	110	60	60	70	20
Future Vol, veh/h	30	100	80	20	50	40	80	110	60	60	70	20
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	37	122	98	24	61	49	98	134	73	73	85	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	11.5	10	12.4	10.7
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	32%	14%	18%	40%
Vol Thru, %	44%	48%	45%	47%
Vol Right, %	24%	38%	36%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	250	210	110	150
LT Vol	80	30	20	60
Through Vol	110	100	50	70
RT Vol	60	80	40	20
Lane Flow Rate	305	256	134	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.444	0.377	0.206	0.28
Departure Headway (Hd)	5.244	5.3	5.527	5.511
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	686	679	648	651
Service Time	3.285	3.343	3.578	3.557
HCM Lane V/C Ratio	0.445	0.377	0.207	0.281
HCM Control Delay, s/veh	12.4	11.5	10	10.7
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	2.3	1.8	0.8	1.1

HCM 7th TWSC
14: Library Ln & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	90	30	0	30	10	10	0	0	0	0	10
Future Vol, veh/h	40	90	30	0	30	10	10	0	0	0	0	10
Conflicting Peds, #/hr	6	0	4	4	0	6	2	0	4	4	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	53	118	39	0	39	13	13	0	0	0	0	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	162	0	0	289	306	146	280	319	54
Stage 1	-	-	-	-	-	-	247	247	-	52	52	-
Stage 2	-	-	-	-	-	-	41	59	-	228	267	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1539	-	-	1411	-	-	661	606	898	671	596	1010
Stage 1	-	-	-	-	-	-	754	700	-	958	850	-
Stage 2	-	-	-	-	-	-	971	844	-	773	686	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1530	-	-	1405	-	-	624	577	891	639	568	1003
Mov Cap-2 Maneuver	-	-	-	-	-	-	624	577	-	639	568	-
Stage 1	-	-	-	-	-	-	723	671	-	953	845	-
Stage 2	-	-	-	-	-	-	956	839	-	741	658	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.86			0			10.89			8.64		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	624	429	-	-	1405	-	-	1003				
HCM Lane V/C Ratio	0.021	0.034	-	-	-	-	-	0.013				
HCM Ctrl Dly (s/v)	10.9	7.4	0	-	0	-	-	8.6				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0				

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	20	650	110	20	590
Future Vol, veh/h	40	20	650	110	20	590
Conflicting Peds, #/hr	22	0	0	17	17	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	42	21	684	116	21	621
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1444	759	0	0	817	0
Stage 1	759	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Critical Hdwy	6.49	6.29	-	-	4.19	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	-	-	2.281	-
Pot Cap-1 Maneuver	140	395	-	-	781	-
Stage 1	450	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	131	389	-	-	769	-
Mov Cap-2 Maneuver	267	-	-	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	20.3	0		0.32		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	298	769	-	
HCM Lane V/C Ratio	-	-	0.212	0.027	-	
HCM Ctrl Dly (s/v)	-	-	20.3	9.8	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-	

HCM 7th TWSC

16: Church St/Railroad Ave & Hunt Ave

Saint Helena Streets Master Plan

Cumulative Conditions No Project Weekday AM

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	50	60	20	10	40	190	10	10	10	140	10	10
Future Vol, veh/h	50	60	20	10	40	190	10	10	10	140	10	10
Conflicting Peds, #/hr	4	0	30	4	0	30	3	0	4	4	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	63	75	25	13	50	238	13	13	13	175	13	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	318	0	0	130	0	0	327	585	122	434	479	202
Stage 1	-	-	-	-	-	-	243	243	-	224	224	-
Stage 2	-	-	-	-	-	-	84	343	-	210	255	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1237	-	-	1449	-	-	624	422	927	530	484	837
Stage 1	-	-	-	-	-	-	759	703	-	777	717	-
Stage 2	-	-	-	-	-	-	921	636	-	790	695	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1202	-	-	1408	-	-	541	372	897	458	427	810
Mov Cap-2 Maneuver	-	-	-	-	-	-	541	372	-	458	427	-
Stage 1	-	-	-	-	-	-	696	645	-	746	689	-
Stage 2	-	-	-	-	-	-	878	611	-	719	637	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.14			0.32			12.3			18.27		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	531	659	-	-	64	-	-	469				
HCM Lane V/C Ratio	0.071	0.052	-	-	0.009	-	-	0.427				
HCM Ctrl Dly (s/v)	12.3	8.2	0	-	7.6	0	-	18.3				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	-	2.1				

HCM 7th TWSC
17: Mitchell Dr & Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	5.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	↕
Traffic Vol, veh/h	30	30	40	60	120	20
Future Vol, veh/h	30	30	40	60	120	20
Conflicting Peds, #/hr	3	0	0	3	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	34	46	69	138	23
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	118	0	-	0	152	50
Stage 1	-	-	-	-	49	-
Stage 2	-	-	-	-	103	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1464	-	-	-	837	1015
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	918	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1460	-	-	-	812	1012
Mov Cap-2 Maneuver	-	-	-	-	812	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	916	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.76	0		10.33		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	836	
HCM Lane V/C Ratio	0.024	-	-	-	0.193	
HCM Ctrl Dly (s/v)	7.5	0	-	-	10.3	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7	

HCM 7th Signalized Intersection Summary 18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan Cumulative Conditions No Project Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	170	200	40	150	80	710	80	100	570	10
Future Volume (veh/h)	0	0	170	200	40	150	80	710	80	100	570	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	50	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1287	1287	1811	1287	1287
Adj Flow Rate, veh/h	0	0	173	204	41	72	82	724	82	102	582	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	0	25	111	222	45	229	102	714	33	122	753	13
Arrive On Green	0.00	0.00	0.01	0.15	0.15	0.15	0.06	0.59	0.59	0.07	0.60	0.60
Sat Flow, veh/h	0	1811	1535	1448	291	1490	1725	1132	128	1725	1261	22
Grp Volume(v), veh/h	0	0	173	245	0	72	82	0	806	102	0	592
Grp Sat Flow(s),veh/h/ln	0	1811	1535	1739	0	1490	1725	0	1260	1725	0	1283
Q Serve(g_s), s	0.0	0.0	2.0	20.5	0.0	6.3	6.9	0.0	86.3	8.6	0.0	50.9
Cycle Q Clear(g_c), s	0.0	0.0	2.0	20.5	0.0	6.3	6.9	0.0	86.3	8.6	0.0	50.9
Prop In Lane	0.00		1.00	0.83		1.00	1.00		0.10	1.00		0.02
Lane Grp Cap(c), veh/h	0	25	111	267	0	229	102	0	746	122	0	766
V/C Ratio(X)	0.00	0.00	1.56	0.92	0.00	0.31	0.81	0.00	1.08	0.83	0.00	0.77
Avail Cap(c_a), veh/h	0	25	111	322	0	276	225	0	737	132	0	766
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	68.4	61.5	0.0	55.5	68.6	0.0	30.6	67.7	0.0	22.2
Incr Delay (d2), s/veh	0.0	0.0	289.2	25.2	0.0	0.3	5.6	0.0	56.7	30.5	0.0	4.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	241.2	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	13.2	11.0	0.0	2.4	3.2	0.0	87.5	4.9	0.0	16.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	357.6	86.7	0.0	55.8	74.2	0.0	328.6	98.2	0.0	26.7
LnGrp LOS			F	F		E	E		F	F		C
Approach Vol, veh/h	173			317			888			694		
Approach Delay, s/veh	357.6			79.7			305.1			37.2		
Approach LOS	F			E			F			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.4	95.8		32.3	15.2	94.0		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	19.2	75.4		27.3	11.3	* 86		2.0				
Max Q Clear Time (g_c+I1), s	8.9	52.9		22.5	10.6	88.3		4.0				
Green Ext Time (p_c), s	0.0	0.8		0.2	0.0	0.0		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh 185.3

HCM 7th LOS F

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.

HCM 7th Signalized Intersection Summary 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	80	70	50	920	840	120
Future Volume (veh/h)	80	70	50	920	840	120
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	0.99	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1266	1266	1266
Adj Flow Rate, veh/h	87	62	54	1000	913	129
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	8	8	8	8	8
Cap, veh/h	71	50	91	1053	807	114
Arrive On Green	0.08	0.08	0.05	0.83	0.75	0.75
Sat Flow, veh/h	934	665	1697	1266	1081	153
Grp Volume(v), veh/h	150	0	54	1000	0	1042
Grp Sat Flow(s), veh/h/ln	1610	0	1697	1266	0	1234
Q Serve(g_s), s	11.3	0.0	4.6	94.4	0.0	111.2
Cycle Q Clear(g_c), s	11.3	0.0	4.6	94.4	0.0	111.2
Prop In Lane	0.58	0.41	1.00			0.12
Lane Grp Cap(c), veh/h	122	0	91	1053	0	921
V/C Ratio(X)	1.23	0.00	0.59	0.95	0.00	1.13
Avail Cap(c_a), veh/h	122	0	102	1095	0	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	68.9	0.0	68.9	10.1	0.0	18.9
Incr Delay (d2), s/veh	155.5	0.0	3.6	16.0	0.0	72.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	2.1	23.1	0.0	45.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	224.4	0.0	72.5	26.0	0.0	91.8
LnGrp LOS	F		E	C		F
Approach Vol, veh/h	150			1054	1042	
Approach Delay, s/veh	224.4			28.4	91.8	
Approach LOS	F			C	F	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	2.7	120.3		133.0	16.0	
Change Period (Y+Rc), s	4.7	9.1		* 9.1	4.7	
Max Green Setting (Gmax), s	9.1	111.2		* 1.3E+02	11.3	
Max Q Clear Time (g_c+I), s	10.6	113.2		96.4	13.3	
Green Ext Time (p_c), s	0.0	0.0		1.2	0.0	
Intersection Summary						
HCM 7th Control Delay, s/veh			70.9			
HCM 7th LOS			E			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC
20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	120	100	950	870	40
Future Vol, veh/h	20	120	100	950	870	40
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	20	121	101	960	879	40
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2062	900	920	0	-	0
Stage 1	900	-	-	-	-	-
Stage 2	1162	-	-	-	-	-
Critical Hdwy	6.49	6.29	4.19	-	-	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	2.281	-	-	-
Pot Cap-1 Maneuver	58	327	714	-	-	-
Stage 1	386	-	-	-	-	-
Stage 2	288	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	49	327	713	-	-	-
Mov Cap-2 Maneuver	163	-	-	-	-	-
Stage 1	331	-	-	-	-	-
Stage 2	288	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	23.47	1.04		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	713	-	163	327	-	-
HCM Lane V/C Ratio	0.142	-	0.124	0.371	-	-
HCM Ctrl Dly (s/v)	10.9	-	30.2	22.3	-	-
HCM Lane LOS	B	-	D	C	-	-
HCM 95th %tile Q(veh)	0.5	-	0.4	1.7	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	80	20	30	110	10
Future Vol, veh/h	20	80	20	30	110	10
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	24	95	24	36	131	12
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7.4	7.8	8.4
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	92%	0%	40%
Vol Thru, %	0%	20%	60%
Vol Right, %	8%	80%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	120	100	50
LT Vol	110	0	20
Through Vol	0	20	30
RT Vol	10	80	0
Lane Flow Rate	143	119	60
Geometry Grp	1	1	1
Degree of Util (X)	0.174	0.128	0.074
Departure Headway (Hd)	4.392	3.878	4.488
Convergence, Y/N	Yes	Yes	Yes
Cap	807	930	802
Service Time	2.473	1.88	2.491
HCM Lane V/C Ratio	0.177	0.128	0.075
HCM Control Delay, s/veh	8.4	7.4	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.4	0.2

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	210	390	90	100	30
Future Vol, veh/h	10	210	390	90	100	30
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	266	494	114	127	38
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	609	0	-	0	844	553
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	292	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	965	-	-	-	332	531
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	755	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	964	-	-	-	327	530
Mov Cap-2 Maneuver	-	-	-	-	327	-
Stage 1	-	-	-	-	566	-
Stage 2	-	-	-	-	755	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.4	0		23.3		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	82	-	-	-	358	
HCM Lane V/C Ratio	0.013	-	-	-	0.459	
HCM Ctrl Dly (s/v)	8.8	0	-	-	23.3	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	2.3	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Pope Street Cumulative Conditions No Project Weekday AM

Intersection												
Int Delay, s/veh	15.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	180	120	90	320	10	120	0	50	10	10	20
Future Vol, veh/h	20	180	120	90	320	10	120	0	50	10	10	20
Conflicting Peds, #/hr	2	0	1	1	0	2	3	0	1	1	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	26	234	156	117	416	13	156	0	65	13	13	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	431	0	0	391	0	0	1023	1029	314	945	1100	427
Stage 1	-	-	-	-	-	-	365	365	-	658	658	-
Stage 2	-	-	-	-	-	-	659	664	-	287	443	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1124	-	-	1162	-	-	213	233	724	241	211	625
Stage 1	-	-	-	-	-	-	652	622	-	452	460	-
Stage 2	-	-	-	-	-	-	451	457	-	719	574	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1121	-	-	1161	-	-	167	204	723	192	185	622
Mov Cap-2 Maneuver	-	-	-	-	-	-	167	204	-	192	185	-
Stage 1	-	-	-	-	-	-	637	607	-	405	413	-
Stage 2	-	-	-	-	-	-	376	410	-	638	560	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.52	1.81	78.63	20.14
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	167	723	1121	-	-	1161	-	-	289
HCM Lane V/C Ratio	0.931	0.09	0.023	-	-	0.101	-	-	0.18
HCM Ctrl Dly (s/v)	107	10.5	8.3	-	-	8.4	-	-	20.1
HCM Lane LOS	F	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	7	0.3	0.1	-	-	0.3	-	-	0.6

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	20	30	560	630	30
Future Vol, veh/h	20	20	30	560	630	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	21	21	31	583	656	31
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1318	672	688	0	-	0
Stage 1	672	-	-	-	-	-
Stage 2	646	-	-	-	-	-
Critical Hdwy	6.46	6.26	4.16	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	2.254	-	-	-
Pot Cap-1 Maneuver	170	449	888	-	-	-
Stage 1	500	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	161	449	888	-	-	-
Mov Cap-2 Maneuver	161	-	-	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	23.37	0.47		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	92	-	237	-	-	
HCM Lane V/C Ratio	0.035	-	0.176	-	-	
HCM Ctrl Dly (s/v)	9.2	0	23.4	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-	

HCM 7th TWSC

25: Silverado Trail & Howell Mountain Rd

Saint Helena Streets Master Plan

Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	10	580	40	10	640
Future Vol, veh/h	30	10	580	40	10	640
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	31	10	592	41	10	653
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1287	612	0	0	633	0
Stage 1	612	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.16	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.254	-
Pot Cap-1 Maneuver	178	486	-	-	931	-
Stage 1	533	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	176	486	-	-	931	-
Mov Cap-2 Maneuver	314	-	-	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	16.86	0		0.14		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	344	931	-	
HCM Lane V/C Ratio	-	-	0.119	0.011	-	
HCM Ctrl Dly (s/v)	-	-	16.9	8.9	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.4	0	-	

HCM 7th TWSC
26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	9.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	140	100	220	480	450	220
Future Vol, veh/h	140	100	220	480	450	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	149	106	234	511	479	234
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1457	479	713	0	-	0
Stage 1	479	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	~ 141	583	878	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 104	583	878	-	-	-
Mov Cap-2 Maneuver	230	-	-	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	54.83	3.33		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	878	-	308	-	-	
HCM Lane V/C Ratio	0.267	-	0.83	-	-	
HCM Ctrl Dly (s/v)	10.6	-	54.8	-	-	
HCM Lane LOS	B	-	F	-	-	
HCM 95th %tile Q(veh)	1.1	-	7	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↗	↖	
Traffic Vol, veh/h	0	0	0	0	0	10	0	990	10	10	960	10
Future Vol, veh/h	0	0	0	0	0	10	0	990	10	10	960	10
Conflicting Peds, #/hr	0	0	0	0	0	0	15	0	1	1	0	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	0	0	0	0	0	11	0	1065	11	11	1032	11
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2139	2150	1053	2125	2150	1071	1058	0	0	1076	0	0
Stage 1	1074	1074	-	1071	1071	-	-	-	-	-	-	-
Stage 2	1065	1076	-	1054	1080	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.18	6.58	6.28	4.18	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.572	4.072	3.372	2.272	-	-	2.272	-	-
Pot Cap-1 Maneuver	34	46	268	35	46	261	636	-	-	626	-	-
Stage 1	259	289	-	260	290	-	-	-	-	-	-	-
Stage 2	262	288	-	266	287	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	32	45	264	34	45	261	627	-	-	625	-	-
Mov Cap-2 Maneuver	32	45	-	34	45	-	-	-	-	-	-	-
Stage 1	251	280	-	260	290	-	-	-	-	-	-	-
Stage 2	252	288	-	262	278	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0			19.39			0			0.11		
HCM LOS	A			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	627	-	-	-	261	625	-	-				
HCM Lane V/C Ratio	-	-	-	-	0.041	0.017	-	-				
HCM Ctrl Dly (s/v)	0	-	-	0	19.4	10.9	-	-				
HCM Lane LOS	A	-	-	A	C	B	-	-				
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.1	-	-				

HCM 7th TWSC
28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection												
Int Delay, s/veh	36.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	10	10	10	70	10	10	20	850	130	10	900	30
Future Vol, veh/h	10	10	10	70	10	10	20	850	130	10	900	30
Conflicting Peds, #/hr	0	0	0	0	0	0	9	0	1	1	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	9	9	9	9	9	9	9	9	9	9	9	9
Mvmt Flow	10	10	10	72	10	10	21	876	134	10	928	31
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1896	2025	952	1939	1974	944	968	0	0	1011	0	0
Stage 1	973	973	-	986	986	-	-	-	-	-	-	-
Stage 2	923	1053	-	954	988	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.59	6.29	7.19	6.59	6.29	4.19	-	-	4.19	-	-
Critical Hdwy Stg 1	6.19	5.59	-	6.19	5.59	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.59	-	6.19	5.59	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.081	3.381	3.581	4.081	3.381	2.281	-	-	2.281	-	-
Pot Cap-1 Maneuver	51	55	305	~ 47	60	308	684	-	-	659	-	-
Stage 1	295	321	-	290	317	-	-	-	-	-	-	-
Stage 2	314	295	-	302	316	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	38	52	303	~ 35	56	308	679	-	-	658	-	-
Mov Cap-2 Maneuver	38	52	-	~ 35	56	-	-	-	-	-	-	-
Stage 1	287	314	-	281	307	-	-	-	-	-	-	-
Stage 2	285	285	-	278	308	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	111.63		\$ 791.41			0.21			0.11			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	679	-	-	62	41	658	-	-				
HCM Lane V/C Ratio	0.03	-	-	0.501	2.267	0.016	-	-				
HCM Ctrl Dly (s/v)	10.5	-	-	111.63	\$ 791.4	10.6	-	-				
HCM Lane LOS	B	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	2	10	0	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	10	30	10	20	10	70	20	20	130	10
Future Vol, veh/h	10	10	10	30	10	20	10	70	20	20	130	10
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	16	16	48	16	32	16	111	32	32	206	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.3	8.6	8.6	9.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	33%	50%	13%
Vol Thru, %	70%	33%	17%	81%
Vol Right, %	20%	33%	33%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	30	60	160
LT Vol	10	10	30	20
Through Vol	70	10	10	130
RT Vol	20	10	20	10
Lane Flow Rate	159	48	95	254
Geometry Grp	1	1	1	1
Degree of Util (X)	0.198	0.065	0.128	0.315
Departure Headway (Hd)	4.482	4.879	4.846	4.465
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	800	732	738	805
Service Time	2.514	2.922	2.886	2.494
HCM Lane V/C Ratio	0.199	0.066	0.129	0.316
HCM Control Delay, s/veh	8.6	8.3	8.6	9.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	0.2	0.4	1.4

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection												
Intersection Delay, s/veh 11.7												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	70	70	40	50	30	30	80	80	30	120	30
Future Vol, veh/h	10	70	70	40	50	30	30	80	80	30	120	30
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	15	103	103	59	74	44	44	118	118	44	176	44
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	11.3	11	12	12.2
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	7%	33%	17%
Vol Thru, %	42%	47%	42%	67%
Vol Right, %	42%	47%	25%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	150	120	180
LT Vol	30	10	40	30
Through Vol	80	70	50	120
RT Vol	80	70	30	30
Lane Flow Rate	279	221	176	265
Geometry Grp	1	1	1	1
Degree of Util (X)	0.411	0.336	0.281	0.402
Departure Headway (Hd)	5.295	5.477	5.733	5.462
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	676	653	623	656
Service Time	3.351	3.538	3.799	3.518
HCM Lane V/C Ratio	0.413	0.338	0.283	0.404
HCM Control Delay, s/veh	12	11.3	11	12.2
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2	1.5	1.1	1.9

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection												
Intersection Delay, s/veh 11.2												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	70	40	10	70	80	20	80	20	50	120	30
Future Vol, veh/h	40	70	40	10	70	80	20	80	20	50	120	30
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	56	97	56	14	97	111	28	111	28	69	167	42
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	11	10.8	10.5	12.1
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	27%	6%	25%
Vol Thru, %	67%	47%	44%	60%
Vol Right, %	17%	27%	50%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	150	160	200
LT Vol	20	40	10	50
Through Vol	80	70	70	120
RT Vol	20	40	80	30
Lane Flow Rate	167	208	222	278
Geometry Grp	1	1	1	1
Degree of Util (X)	0.255	0.314	0.323	0.413
Departure Headway (Hd)	5.517	5.432	5.238	5.358
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	650	660	684	672
Service Time	3.561	3.476	3.281	3.398
HCM Lane V/C Ratio	0.257	0.315	0.325	0.414
HCM Control Delay, s/veh	10.5	11	10.8	12.1
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1	1.3	1.4	2

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	90	140	720	590	40
Future Vol, veh/h	40	90	140	720	590	40
Conflicting Peds, #/hr	0	10	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	42	94	146	750	615	42
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1685	653	664	0	-	0
Stage 1	643	-	-	-	-	-
Stage 2	1042	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	100	457	897	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	71	449	890	-	-	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	365	-	-	-	-	-
Stage 2	329	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	24.63	1.6		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	293	-	316	-	-	
HCM Lane V/C Ratio	0.164	-	0.428	-	-	
HCM Ctrl Dly (s/v)	9.8	0	24.6	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.6	-	2.1	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday AM

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	150	0	0	370	100	10	0	10	30	10	70
Future Vol, veh/h	30	150	0	0	370	100	10	0	10	30	10	70
Conflicting Peds, #/hr	16	0	4	4	0	16	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	32	161	0	0	398	108	11	0	11	32	11	75
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	521	0	0	165	0	0	634	751	166	694	697	469
Stage 1	-	-	-	-	-	-	230	230	-	468	468	-
Stage 2	-	-	-	-	-	-	404	521	-	227	230	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1040	-	-	1407	-	-	390	338	875	356	363	593
Stage 1	-	-	-	-	-	-	771	712	-	574	560	-
Stage 2	-	-	-	-	-	-	621	530	-	774	712	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1024	-	-	1401	-	-	317	320	871	334	344	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	317	320	-	334	344	-
Stage 1	-	-	-	-	-	-	741	685	-	565	551	-
Stage 2	-	-	-	-	-	-	530	522	-	737	685	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.44			0			13.12			15.51		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	465	300	-	-	1401	-	-	460				
HCM Lane V/C Ratio	0.046	0.032	-	-	-	-	-	0.257				
HCM Ctrl Dly (s/v)	13.1	8.6	0	-	0	-	-	15.5				
HCM Lane LOS	B	A	A	-	A	-	-	C				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	1				

HCM 7th TWSC
4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	5.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	70	20	10	60
Future Vol, veh/h	30	10	70	20	10	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	37	12	85	24	12	73
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	49	0	238	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	195	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1552	-	748	1025
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	835	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1552	-	707	1025
Mov Cap-2 Maneuver	-	-	-	-	707	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	789	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.8		9.1	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	963	-	-	1400	-	
HCM Lane V/C Ratio	0.089	-	-	0.055	-	
HCM Ctrl Dly (s/v)	9.1	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-	

HCM 7th TWSC
5: Valley View St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	7.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	60	40	160	50	40	220
Future Vol, veh/h	60	40	160	50	40	220
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	70	47	186	58	47	256
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	118	0	525	95
Stage 1	-	-	-	-	95	-
Stage 2	-	-	-	-	430	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1464	-	511	959
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	654	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1461	-	443	957
Mov Cap-2 Maneuver	-	-	-	-	443	-
Stage 1	-	-	-	-	924	-
Stage 2	-	-	-	-	568	-
Approach	EB	WB		NB		
HCM Ctrl Dly, s/v	0	5.96		12.04		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	812	-	-	1371	-	
HCM Lane V/C Ratio	0.372	-	-	0.127	-	
HCM Ctrl Dly (s/v)	12	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.7	-	-	0.4	-	

HCM 7th AWSC

Saint Helena Streets Master Plan

6: Crane Ave/Valley View St & Grayson Ave

Cumulative Conditions No Project Weekday PM

Intersection						
Intersection Delay, s/veh	9.4					
Intersection LOS	A					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	90	180	30	70	160
Future Vol, veh/h	10	90	180	30	70	160
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	12	105	209	35	81	186
Number of Lanes	1	0	1	0	0	1
Approach	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		1	
Conflicting Approach Left	NB				WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right	SB		WB			
Conflicting Lanes Right	1		1		0	
HCM Control Delay, s/veh	8.4		9.4		9.9	
HCM LOS	A		A		A	
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	10%	30%			
Vol Thru, %	86%	0%	70%			
Vol Right, %	14%	90%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	210	100	230			
LT Vol	0	10	70			
Through Vol	180	0	160			
RT Vol	30	90	0			
Lane Flow Rate	244	116	267			
Geometry Grp	1	1	1			
Degree of Util (X)	0.3	0.148	0.337			
Departure Headway (Hd)	4.429	4.567	4.543			
Convergence, Y/N	Yes	Yes	Yes			
Cap	811	784	792			
Service Time	2.459	2.601	2.573			
HCM Lane V/C Ratio	0.301	0.148	0.337			
HCM Control Delay, s/veh	9.4	8.4	9.9			
HCM Lane LOS	A	A	A			
HCM 95th-tile Q	1.3	0.5	1.5			

HCM 7th TWSC
7: Sulphur Spring Ave & Crane Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	40	30	160	140	20
Future Vol, veh/h	30	40	30	160	140	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	38	51	38	205	179	26
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	244	0	-	0	269	141
Stage 1	-	-	-	-	141	-
Stage 2	-	-	-	-	128	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1317	-	-	-	718	904
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1317	-	-	-	696	904
Mov Cap-2 Maneuver	-	-	-	-	696	-
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	895	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.35	0		12.02		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	771	-	-	-	717	
HCM Lane V/C Ratio	0.029	-	-	-	0.286	
HCM Ctrl Dly (s/v)	7.8	0	-	-	12	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection												
Int Delay, s/veh	50.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↵	↵		↵	↵	
Traffic Vol, veh/h	10	10	10	50	10	60	10	940	40	30	690	10
Future Vol, veh/h	10	10	10	50	10	60	10	940	40	30	690	10
Conflicting Peds, #/hr	0	0	0	0	0	0	12	0	1	1	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	11	11	57	11	69	11	1080	46	34	793	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1989	2030	811	1995	2013	1104	817	0	0	1127	0	0
Stage 1	880	880	-	1127	1127	-	-	-	-	-	-	-
Stage 2	1109	1150	-	868	886	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	45	57	378	~ 45	58	255	807	-	-	616	-	-
Stage 1	340	364	-	247	278	-	-	-	-	-	-	-
Stage 2	253	271	-	346	361	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	24	52	374	~ 32	54	255	798	-	-	615	-	-
Mov Cap-2 Maneuver	24	52	-	~ 32	54	-	-	-	-	-	-	-
Stage 1	318	339	-	243	274	-	-	-	-	-	-	-
Stage 2	174	267	-	306	337	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	188.2		\$ 735.1			0.1			0.46			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	798	-	-	47	60	615	-	-				
HCM Lane V/C Ratio	0.014	-	-	0.726	2.286	0.056	-	-				
HCM Ctrl Dly (s/v)	9.6	-	-	188.2	\$ 735.1	11.2	-	-				
HCM Lane LOS	A	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	0	-	-	2.9	13.5	0.2	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th TWSC
9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	19.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	40	30	920	710	40
Future Vol, veh/h	70	40	30	920	710	40
Conflicting Peds, #/hr	0	1	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	80	45	34	1045	807	45
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1950	838	859	0	-	0
Stage 1	837	-	-	-	-	-
Stage 2	1114	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	~ 70	365	778	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 62	362	772	-	-	-
Mov Cap-2 Maneuver	~ 62	-	-	-	-	-
Stage 1	376	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	\$ 321.82	0.31		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	57	-	89	-	-	
HCM Lane V/C Ratio	0.044	-	1.407	-	-	
HCM Ctrl Dly (s/v)	9.9	0\$ 321.8		-	-	
HCM Lane LOS	A	A	F	-	-	
HCM 95th %tile Q(veh)	0.1	-	9.5	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

HCM 7th Signalized Intersection Summary 10: Main St & Madrona Ave/Fulton Ln

Saint Helena Streets Master Plan Cumulative Conditions No Project Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	50	20	20	50	180	30	650	20	80	610	60
Future Volume (veh/h)	120	50	20	20	50	180	30	650	20	80	610	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.96	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	128	53	14	21	53	51	32	691	21	85	649	62
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	223	69	17	80	134	110	197	779	24	204	725	69
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	928	439	106	167	852	702	733	1273	39	732	1184	113
Grp Volume(v), veh/h	195	0	0	125	0	0	32	0	712	85	0	711
Grp Sat Flow(s),veh/h/ln	1473	0	0	1721	0	0	733	0	1311	732	0	1297
Q Serve(g_s), s	4.7	0.0	0.0	0.0	0.0	0.0	3.0	0.0	35.8	8.7	0.0	36.5
Cycle Q Clear(g_c), s	9.9	0.0	0.0	5.2	0.0	0.0	39.6	0.0	35.8	44.5	0.0	36.5
Prop In Lane	0.66		0.07	0.17		0.41	1.00		0.03	1.00		0.09
Lane Grp Cap(c), veh/h	308	0	0	325	0	0	197	0	803	204	0	794
V/C Ratio(X)	0.63	0.00	0.00	0.38	0.00	0.00	0.16	0.00	0.89	0.42	0.00	0.89
Avail Cap(c_a), veh/h	811	0	0	895	0	0	342	0	1063	349	0	1051
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.6	0.0	0.0	29.8	0.0	0.0	29.9	0.0	12.8	31.6	0.0	12.9
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.3	0.0	0.0	0.1	0.0	6.1	0.5	0.0	6.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0	2.1	0.0	0.0	0.5	0.0	10.3	1.5	0.0	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.4	0.0	0.0	30.1	0.0	0.0	30.0	0.0	18.9	32.1	0.0	19.7
LnGrp LOS	C			C			C		B	C		B
Approach Vol, veh/h		195			125			744			796	
Approach Delay, s/veh		32.4			30.1			19.4			21.1	
Approach LOS		C			C			B			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		56.3		21.4		56.3		21.4				
Change Period (Y+Rc), s		8.7		9.2		8.7		9.2				
Max Green Setting (Gmax), s		63.0		40.0		63.0		40.0				
Max Q Clear Time (g_c+l1), s		46.5		7.2		41.6		11.9				
Green Ext Time (p_c), s		1.1		0.2		1.0		0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh				22.2								
HCM 7th LOS				C								

HCM 7th TWSC
11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	6.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	110	10	30	210	10
Future Vol, veh/h	30	110	10	30	210	10
Conflicting Peds, #/hr	0	5	5	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	124	11	34	236	11
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	162	0	159	101
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1410	-	830	952
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	962	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1404	-	818	948
Mov Cap-2 Maneuver	-	-	-	-	818	-
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	952	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		1.9		11.24	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	823	-	-	450	-	
HCM Lane V/C Ratio	0.3	-	-	0.008	-	
HCM Ctrl Dly (s/v)	11.2	-	-	7.6	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.3	-	-	0	-	

HCM 7th Signalized Intersection Summary 12: Main St & Adams St

Saint Helena Streets Master Plan Cumulative Conditions No Project Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	100	30	70	80	70	40	550	40	80	530	40
Future Volume (veh/h)	80	100	30	70	80	70	40	550	40	80	530	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.96		0.84	0.97		0.84	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1856
Adj Flow Rate, veh/h	85	106	29	74	85	67	43	585	42	85	564	42
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	132	137	33	120	116	78	113	603	43	148	625	47
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.06	0.50	0.50	0.08	0.52	0.52
Sat Flow, veh/h	421	719	173	370	609	412	1767	1213	87	1767	1208	90
Grp Volume(v), veh/h	220	0	0	226	0	0	43	0	627	85	0	606
Grp Sat Flow(s),veh/h/ln	1313	0	0	1391	0	0	1767	0	1300	1767	0	1298
Q Serve(g_s), s	0.8	0.0	0.0	0.0	0.0	0.0	2.3	0.0	45.2	4.5	0.0	40.8
Cycle Q Clear(g_c), s	16.0	0.0	0.0	15.2	0.0	0.0	2.3	0.0	45.2	4.5	0.0	40.8
Prop In Lane	0.39		0.13	0.33		0.30	1.00		0.07	1.00		0.07
Lane Grp Cap(c), veh/h	301	0	0	314	0	0	113	0	647	148	0	672
V/C Ratio(X)	0.73	0.00	0.00	0.72	0.00	0.00	0.38	0.00	0.97	0.58	0.00	0.90
Avail Cap(c_a), veh/h	852	0	0	857	0	0	1079	0	1022	1079	0	1021
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.8	0.0	0.0	37.6	0.0	0.0	43.4	0.0	23.6	42.6	0.0	21.1
Incr Delay (d2), s/veh	1.3	0.0	0.0	1.2	0.0	0.0	0.8	0.0	13.1	1.3	0.0	5.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.0	0.0	5.2	0.0	0.0	1.0	0.0	15.5	2.0	0.0	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.1	0.0	0.0	38.7	0.0	0.0	44.2	0.0	36.6	43.9	0.0	26.6
LnGrp LOS	D			D			D		D	D		C
Approach Vol, veh/h	220			226			670			691		
Approach Delay, s/veh	39.1			38.7			37.1			28.8		
Approach LOS	D			D			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	58.7		27.1	12.8	56.8		27.1				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	59.0	76.0		55.0	59.0	76.0		55.0				
Max Q Clear Time (g_c+I1), s	4.3	42.8		17.2	6.5	47.2		18.0				
Green Ext Time (p_c), s	0.0	0.8		0.4	0.0	0.8		0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh	34.4											
HCM 7th LOS	C											

HCM 7th AWSC
13: Railroad Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection												
Intersection Delay, s/veh 12.8												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	130	90	60	150	100	60	90	30	60	80	30
Future Vol, veh/h	20	130	90	60	150	100	60	90	30	60	80	30
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	144	100	67	167	111	67	100	33	67	89	33
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	2.3	14.2	12	11.8
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	8%	19%	35%
Vol Thru, %	50%	54%	48%	47%
Vol Right, %	17%	38%	32%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	180	240	310	170
LT Vol	60	20	60	60
Through Vol	90	130	150	80
RT Vol	30	90	100	30
Lane Flow Rate	200	267	344	189
Geometry Grp	1	1	1	1
Degree of Util (X)	0.331	0.406	0.518	0.314
Departure Headway (Hd)	5.957	5.487	5.412	5.977
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	600	651	661	597
Service Time	4.035	3.561	3.48	4.058
HCM Lane V/C Ratio	0.333	0.41	0.52	0.317
HCM Control Delay, s/veh	12	12.3	14.2	11.8
HCM Lane LOS	B	B	B	B
HCM 95th-ile Q	1.4	2	3	1.3

HCM 7th TWSC
14: Library Ln & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	70	50	10	0	90	0	40	0	10	10	10	50
Future Vol, veh/h	70	50	10	0	90	0	40	0	10	10	10	50
Conflicting Peds, #/hr	4	0	5	5	0	4	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	74	53	11	0	95	0	42	0	11	11	11	53
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	99	0	0	68	0	0	310	309	67	303	314	99
Stage 1	-	-	-	-	-	-	210	210	-	99	99	-
Stage 2	-	-	-	-	-	-	100	99	-	204	216	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1488	-	-	1527	-	-	640	604	994	648	600	954
Stage 1	-	-	-	-	-	-	790	726	-	905	811	-
Stage 2	-	-	-	-	-	-	904	811	-	796	723	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1482	-	-	1519	-	-	561	568	985	603	564	951
Mov Cap-2 Maneuver	-	-	-	-	-	-	561	568	-	603	564	-
Stage 1	-	-	-	-	-	-	745	686	-	902	808	-
Stage 2	-	-	-	-	-	-	843	808	-	744	682	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	4.07			0			11.42			9.92		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	614	938	-	-	1519	-	-	805				
HCM Lane V/C Ratio	0.086	0.05	-	-	-	-	-	0.091				
HCM Ctrl Dly (s/v)	11.4	7.6	0	-	0	-	-	9.9				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0	-	-	0.3				

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	30	600	80	30	600
Future Vol, veh/h	60	30	600	80	30	600
Conflicting Peds, #/hr	53	0	0	72	72	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	66	33	659	88	33	659
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1554	775	0	0	819	0
Stage 1	775	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	124	396	-	-	805	-
Stage 1	452	-	-	-	-	-
Stage 2	451	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	105	369	-	-	750	-
Mov Cap-2 Maneuver	237	-	-	-	-	-
Stage 1	421	-	-	-	-	-
Stage 2	409	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	25.91	0		0.48		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	269	750	-	
HCM Lane V/C Ratio	-	-	0.367	0.044	-	
HCM Ctrl Dly (s/v)	-	-	25.9	10	-	
HCM Lane LOS	-	-	D	B	-	
HCM 95th %tile Q(veh)	-	-	1.6	0.1	-	

HCM 7th TWSC

16: Church St/Railroad Ave & Hunt Ave

Saint Helena Streets Master Plan

Cumulative Conditions No Project Weekday PM

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	80	10	10	50	140	10	10	10	190	10	20
Future Vol, veh/h	30	80	10	10	50	140	10	10	10	190	10	20
Conflicting Peds, #/hr	20	0	22	20	0	22	12	0	20	0	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	33	89	11	11	56	156	11	11	11	211	11	22
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	233	0	0	122	0	0	278	438	136	359	366	167
Stage 1	-	-	-	-	-	-	183	183	-	178	178	-
Stage 2	-	-	-	-	-	-	95	255	-	181	189	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1329	-	-	1459	-	-	672	511	909	595	561	874
Stage 1	-	-	-	-	-	-	816	746	-	822	750	-
Stage 2	-	-	-	-	-	-	909	694	-	818	742	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1301	-	-	1429	-	-	598	472	873	531	518	846
Mov Cap-2 Maneuver	-	-	-	-	-	-	598	472	-	531	518	-
Stage 1	-	-	-	-	-	-	777	711	-	797	728	-
Stage 2	-	-	-	-	-	-	854	674	-	759	707	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.96			0.38			11.27			16.7		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	608	440	-	-	78	-	-	549				
HCM Lane V/C Ratio	0.055	0.026	-	-	0.008	-	-	0.445				
HCM Ctrl Dly (s/v)	11.3	7.8	0	-	7.5	0	-	16.7				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	2.3				

HCM 7th TWSC
17: Mitchell Dr & Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	30	50	70	150	20
Future Vol, veh/h	20	30	50	70	150	20
Conflicting Peds, #/hr	8	0	0	8	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	22	33	55	77	165	22
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	140	0	-	0	140	69
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	77	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1437	-	-	-	851	991
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	944	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1426	-	-	-	825	978
Mov Cap-2 Maneuver	-	-	-	-	825	-
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	936	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.03	0		10.51		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	720	-	-	-	840	
HCM Lane V/C Ratio	0.015	-	-	-	0.222	
HCM Ctrl Dly (s/v)	7.6	0	-	-	10.5	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.8	

HCM 7th Signalized Intersection Summary 18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan Cumulative Conditions No Project Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	210	160	30	120	100	630	70	110	570	10
Future Volume (veh/h)	0	0	210	160	30	120	100	630	70	110	570	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	50	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.88	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	0	0	226	172	32	64	108	677	75	118	613	11
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	26	137	194	36	178	130	750	31	140	779	14
Arrive On Green	0.00	0.00	0.01	0.13	0.13	0.13	0.07	0.59	0.59	0.08	0.60	0.60
Sat Flow, veh/h	0	1856	1572	1501	279	1381	1767	1163	129	1767	1291	23
Grp Volume(v), veh/h	0	0	226	204	0	64	108	0	752	118	0	624
Grp Sat Flow(s),veh/h/ln	0	1856	1572	1780	0	1381	1767	0	1292	1767	0	1314
Q Serve(g_s), s	0.0	0.0	2.0	15.8	0.0	5.9	8.5	0.0	80.4	9.3	0.0	51.5
Cycle Q Clear(g_c), s	0.0	0.0	2.0	15.8	0.0	5.9	8.5	0.0	80.4	9.3	0.0	51.5
Prop In Lane	0.00		1.00	0.84		1.00	1.00		0.10	1.00		0.02
Lane Grp Cap(c), veh/h	0	26	137	230	0	178	130	0	782	140	0	793
V/C Ratio(X)	0.00	0.00	1.65	0.89	0.00	0.36	0.83	0.00	0.96	0.84	0.00	0.79
Avail Cap(c_a), veh/h	0	26	138	304	0	235	300	0	795	180	0	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	66.1	62.0	0.0	57.6	66.3	0.0	29.1	65.8	0.0	21.7
Incr Delay (d2), s/veh	0.0	0.0	322.8	17.9	0.0	0.5	5.2	0.0	22.6	20.1	0.0	5.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	213.2	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	17.4	8.6	0.0	2.2	4.2	0.0	77.5	5.1	0.0	16.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	388.9	79.9	0.0	58.1	71.5	0.0	264.9	85.9	0.0	26.7
LnGrp LOS			F	E		E	E		F	F		C
Approach Vol, veh/h	226			268			860			742		
Approach Delay, s/veh	388.9			74.7			240.6			36.1		
Approach LOS	F			E			F			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.1	91.5		28.2	15.9	90.7		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	23.9	74.0		24.0	14.3	* 87		2.0				
Max Q Clear Time (g_c+I1), s	10.5	53.5		17.8	11.3	82.4		4.0				
Green Ext Time (p_c), s	0.0	0.8		0.2	0.0	0.6		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh 163.0

HCM 7th LOS F

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 7th Signalized Intersection Summary 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	70	70	820	920	60
Future Volume (veh/h)	70	70	70	820	920	60
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1318	1318	1318
Adj Flow Rate, veh/h	75	52	75	882	989	64
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	74	51	102	1098	909	59
Arrive On Green	0.08	0.08	0.06	0.83	0.74	0.74
Sat Flow, veh/h	986	684	1767	1318	1223	79
Grp Volume(v), veh/h	128	0	75	882	0	1053
Grp Sat Flow(s), veh/h/ln	1683	0	1767	1318	0	1302
Q Serve(g_s), s	11.2	0.0	6.2	50.5	0.0	111.0
Cycle Q Clear(g_c), s	11.2	0.0	6.2	50.5	0.0	111.0
Prop In Lane	0.59	0.41	1.00			0.06
Lane Grp Cap(c), veh/h	126	0	102	1098	0	968
V/C Ratio(X)	1.01	0.00	0.74	0.80	0.00	1.09
Avail Cap(c_a), veh/h	126	0	110	1139	0	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	69.0	0.0	69.2	6.3	0.0	19.1
Incr Delay (d2), s/veh	83.8	0.0	17.8	3.8	0.0	55.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	0.0	3.3	11.3	0.0	43.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	152.8	0.0	87.0	10.1	0.0	75.0
LnGrp LOS	F		F	B		F
Approach Vol, veh/h	128			957	1053	
Approach Delay, s/veh	152.8			16.1	75.0	
Approach LOS	F			B	E	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	33.3	120.1		133.4	15.9	
Change Period (Y+Rc), s	4.7	9.1		* 9.1	4.7	
Max Green Setting (Gmax), s	111.0			* 1.3E+02	11.2	
Max Q Clear Time (g_c+I), s	113.0			52.5	13.2	
Green Ext Time (p_c), s	0.0	0.0		0.9	0.0	
Intersection Summary						
HCM 7th Control Delay, s/veh			53.3			
HCM 7th LOS			D			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC
20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	140	140	860	940	50
Future Vol, veh/h	30	140	140	860	940	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	32	151	151	925	1011	54
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2263	1038	1065	0	-	0
Stage 1	1038	-	-	-	-	-
Stage 2	1226	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	45	279	651	-	-	-
Stage 1	340	-	-	-	-	-
Stage 2	276	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	34	279	651	-	-	-
Mov Cap-2 Maneuver	138	-	-	-	-	-
Stage 1	261	-	-	-	-	-
Stage 2	276	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	33.2	1.71		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	651	-	138	279	-	-
HCM Lane V/C Ratio	0.231	-	0.234	0.539	-	-
HCM Ctrl Dly (s/v)	12.2	-	38.8	32	-	-
HCM Lane LOS	B	-	E	D	-	-
HCM 95th %tile Q(veh)	0.9	-	0.9	3	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	100	10	20	90	10
Future Vol, veh/h	20	100	10	20	90	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	22	108	11	22	97	11
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7.3	7.6	8.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	90%	0%	33%
Vol Thru, %	0%	17%	67%
Vol Right, %	10%	83%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	100	120	30
LT Vol	90	0	10
Through Vol	0	20	20
RT Vol	10	100	0
Lane Flow Rate	108	129	32
Geometry Grp	1	1	1
Degree of Util (X)	0.13	0.131	0.039
Departure Headway (Hd)	4.35	3.665	4.308
Convergence, Y/N	Yes	Yes	Yes
Cap	819	964	820
Service Time	2.4	1.741	2.391
HCM Lane V/C Ratio	0.132	0.134	0.039
HCM Control Delay, s/veh	8.1	7.3	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.5	0.1

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	260	300	80	110	20
Future Vol, veh/h	30	260	300	80	110	20
Conflicting Peds, #/hr	2	0	0	2	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	295	341	91	125	23
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	434	0	-	0	752	390
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	364	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1121	-	-	-	377	656
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	701	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1118	-	-	-	361	653
Mov Cap-2 Maneuver	-	-	-	-	361	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	700	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.86	0		19.87		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	186	-	-	-	388	
HCM Lane V/C Ratio	0.03	-	-	-	0.381	
HCM Ctrl Dly (s/v)	8.3	0	-	-	19.9	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	1.7	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Pope Street Cumulative Conditions No Project Weekday PM

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	300	40	20	300	10	40	0	30	10	0	20
Future Vol, veh/h	40	300	40	20	300	10	40	0	30	10	0	20
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	47	353	47	24	353	12	47	0	35	12	0	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	365	0	0	401	0	0	874	883	377	853	901	361
Stage 1	-	-	-	-	-	-	472	472	-	406	406	-
Stage 2	-	-	-	-	-	-	402	412	-	447	495	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1188	-	-	1152	-	-	269	283	667	278	277	681
Stage 1	-	-	-	-	-	-	571	557	-	620	596	-
Stage 2	-	-	-	-	-	-	623	593	-	589	544	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1188	-	-	1151	-	-	244	266	666	248	260	680
Mov Cap-2 Maneuver	-	-	-	-	-	-	244	266	-	248	260	-
Stage 1	-	-	-	-	-	-	548	535	-	607	584	-
Stage 2	-	-	-	-	-	-	588	581	-	535	522	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.86			0.5			17.88			14.12		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	244	666	1188	-	-	1151	-	-	430
HCM Lane V/C Ratio	0.193	0.053	0.04	-	-	0.02	-	-	0.082
HCM Ctrl Dly (s/v)	23.3	10.7	8.2	-	-	8.2	-	-	14.1
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0.2	0.1	-	-	0.1	-	-	0.3

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	30	620	780	30
Future Vol, veh/h	30	30	30	620	780	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	34	34	697	876	34
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1657	893	910	0	-	0
Stage 1	893	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	107	339	744	-	-	-
Stage 1	398	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	99	339	744	-	-	-
Mov Cap-2 Maneuver	99	-	-	-	-	-
Stage 1	369	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	45.74	0.46		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	83	-	153	-	-	
HCM Lane V/C Ratio	0.045	-	0.44	-	-	
HCM Ctrl Dly (s/v)	10.1	0	45.7	-	-	
HCM Lane LOS	B	A	E	-	-	
HCM 95th %tile Q(veh)	0.1	-	2	-	-	

HCM 7th TWSC

25: Silverado Trail & Howell Mountain Rd

Saint Helena Streets Master Plan

Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		W		W	W
Traffic Vol, veh/h	50	10	640	20	10	800
Future Vol, veh/h	50	10	640	20	10	800
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	57	11	736	23	11	920
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1690	747	0	0	759	0
Stage 1	747	-	-	-	-	-
Stage 2	943	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	102	411	-	-	848	-
Stage 1	466	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	101	411	-	-	848	-
Mov Cap-2 Maneuver	234	-	-	-	-	-
Stage 1	466	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	24.55	0		0.11		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	252	848		
HCM Lane V/C Ratio	-	-	0.273	0.014		
HCM Ctrl Dly (s/v)	-	-	24.6	9.3		
HCM Lane LOS	-	-	C	A		
HCM 95th %tile Q(veh)	-	-	1.1	0		

HCM 7th TWSC
26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	25.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	130	200	130	530	620	230
Future Vol, veh/h	130	200	130	530	620	230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	146	225	146	596	697	258
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1584	697	955	0	-	0
Stage 1	697	-	-	-	-	-
Stage 2	888	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	~ 119	440	716	-	-	-
Stage 1	492	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 94	440	716	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	138.36	2.23		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	716	-	319	-	-	
HCM Lane V/C Ratio	0.204	-	1.164	-	-	
HCM Ctrl Dly (s/v)	11.3	-	138.4	-	-	
HCM Lane LOS	B	-	F	-	-	
HCM 95th %tile Q(veh)	0.8	-	15.5	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↗	↖	
Traffic Vol, veh/h	0	0	0	10	10	20	10	880	0	10	970	20
Future Vol, veh/h	0	0	0	10	10	20	10	880	0	10	970	20
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	0	11	11	22	11	946	0	11	1043	22
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2053	2048	1059	2032	2059	946	1070	0	0	946	0	0
Stage 1	1080	1080	-	968	968	-	-	-	-	-	-	-
Stage 2	973	968	-	1065	1091	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	41	56	272	42	55	316	648	-	-	721	-	-
Stage 1	263	293	-	304	331	-	-	-	-	-	-	-
Stage 2	302	331	-	268	290	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	29	53	270	40	52	316	645	-	-	721	-	-
Mov Cap-2 Maneuver	29	53	-	40	52	-	-	-	-	-	-	-
Stage 1	258	287	-	293	319	-	-	-	-	-	-	-
Stage 2	262	319	-	264	284	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0			95.51			0.12			0.1		
HCM LOS	A			F								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	20	-	-	-	79	721	-	-				
HCM Lane V/C Ratio	0.017	-	-	-	0.545	0.015	-	-				
HCM Ctrl Dly (s/v)	10.7	0	-	0	95.5	10.1	-	-				
HCM Lane LOS	B	A	-	A	F	B	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	-	2.4	0	-	-				

HCM 7th TWSC
28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection												
Int Delay, s/veh	48.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↖		↗	↖	
Traffic Vol, veh/h	20	10	30	70	0	20	20	760	120	30	900	10
Future Vol, veh/h	20	10	30	70	0	20	20	760	120	30	900	10
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	11	33	76	0	22	22	826	130	33	978	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1928	2059	994	1984	1999	891	999	0	0	957	0	0
Stage 1	1059	1059	-	935	935	-	-	-	-	-	-	-
Stage 2	870	1000	-	1049	1064	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	50	55	296	~ 46	60	340	689	-	-	715	-	-
Stage 1	270	300	-	317	343	-	-	-	-	-	-	-
Stage 2	345	320	-	274	298	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	43	50	293	~ 30	55	340	682	-	-	715	-	-
Mov Cap-2 Maneuver	43	50	-	~ 30	55	-	-	-	-	-	-	-
Stage 1	255	284	-	307	332	-	-	-	-	-	-	-
Stage 2	313	309	-	223	282	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	151.7		\$ 962.87			0.23			0.33			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	682	-	-	78	37	715	-	-				
HCM Lane V/C Ratio	0.032	-	-	0.838	2.621	0.046	-	-				
HCM Ctrl Dly (s/v)	10.5	-	-	151.7	\$ 962.9	10.3	-	-				
HCM Lane LOS	B	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	4.2	10.9	0.1	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	10	30	10	10	10	90	30	10	90	10
Future Vol, veh/h	10	10	10	30	10	10	10	90	30	10	90	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	12	12	12	35	12	12	12	106	35	12	106	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.7	8	8.1	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	33%	60%	9%
Vol Thru, %	69%	33%	20%	82%
Vol Right, %	23%	33%	20%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	30	50	110
LT Vol	10	10	30	10
Through Vol	90	10	10	90
RT Vol	30	10	10	10
Lane Flow Rate	153	35	59	129
Geometry Grp	1	1	1	1
Degree of Util (X)	0.178	0.044	0.075	0.155
Departure Headway (Hd)	4.193	4.509	4.613	4.3
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	860	796	779	839
Service Time	2.196	2.526	2.629	2.304
HCM Lane V/C Ratio	0.178	0.044	0.076	0.154
HCM Control Delay, s/veh	8.1	7.7	8	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.1	0.2	0.5

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection												
Intersection Delay, s/veh	9.3											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	40	40	60	40	20	20	90	130	30	110	10
Future Vol, veh/h	10	40	40	60	40	20	20	90	130	30	110	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	44	44	66	44	22	22	99	143	33	121	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.7	9.3	9.6	9.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	11%	50%	20%
Vol Thru, %	38%	44%	33%	73%
Vol Right, %	54%	44%	17%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	240	90	120	150
LT Vol	20	10	60	30
Through Vol	90	40	40	110
RT Vol	130	40	20	10
Lane Flow Rate	264	99	132	165
Geometry Grp	1	1	1	1
Degree of Util (X)	0.324	0.134	0.185	0.221
Departure Headway (Hd)	4.419	4.865	5.057	4.826
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	810	731	704	740
Service Time	2.469	2.934	3.123	2.882
HCM Lane V/C Ratio	0.326	0.135	0.188	0.223
HCM Control Delay, s/veh	9.6	8.7	9.3	9.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.4	0.5	0.7	0.8

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection												
Intersection Delay, s/veh	9.9											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	70	40	60	20	80	50	40	110	20	40	100	50
Future Vol, veh/h	70	40	60	20	80	50	40	110	20	40	100	50
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	77	44	66	22	88	55	44	121	22	44	110	55
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9.9	9.6	10	10.1
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	41%	13%	21%
Vol Thru, %	65%	24%	53%	53%
Vol Right, %	12%	35%	33%	26%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	170	170	150	190
LT Vol	40	70	20	40
Through Vol	110	40	80	100
RT Vol	20	60	50	50
Lane Flow Rate	187	187	165	209
Geometry Grp	1	1	1	1
Degree of Util (X)	0.263	0.26	0.229	0.287
Departure Headway (Hd)	5.067	5.013	5.002	4.949
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	701	708	709	716
Service Time	3.162	3.109	3.1	3.042
HCM Lane V/C Ratio	0.267	0.264	0.233	0.292
HCM Control Delay, s/veh	10	9.9	9.6	10.1
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	1.1	1	0.9	1.2

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	70	100	650	620	40
Future Vol, veh/h	30	70	100	650	620	40
Conflicting Peds, #/hr	0	59	47	0	0	47
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	32	75	108	699	667	43
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1649	794	757	0	-	0
Stage 1	735	-	-	-	-	-
Stage 2	914	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	108	386	850	-	-	-
Stage 1	472	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	77	348	812	-	-	-
Mov Cap-2 Maneuver	201	-	-	-	-	-
Stage 1	354	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	25.04	1.35		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	240	-	285	-	-	
HCM Lane V/C Ratio	0.132	-	0.377	-	-	
HCM Ctrl Dly (s/v)	10.1	0	25	-	-	
HCM Lane LOS	B	A	D	-	-	
HCM 95th %tile Q(veh)	0.5	-	1.7	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekday PM

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	50	150	0	0	270	70	0	0	0	60	0	110
Future Vol, veh/h	50	150	0	0	270	70	0	0	0	60	0	110
Conflicting Peds, #/hr	15	0	6	6	0	15	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	54	163	0	0	293	76	0	0	0	65	0	120
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	385	0	0	169	0	0	572	662	170	619	624	348
Stage 1	-	-	-	-	-	-	278	278	-	347	347	-
Stage 2	-	-	-	-	-	-	294	385	-	273	278	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1168	-	-	1402	-	-	429	381	871	399	400	693
Stage 1	-	-	-	-	-	-	727	679	-	667	633	-
Stage 2	-	-	-	-	-	-	712	609	-	731	679	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1152	-	-	1394	-	-	334	354	865	373	372	683
Mov Cap-2 Maneuver	-	-	-	-	-	-	334	354	-	373	372	-
Stage 1	-	-	-	-	-	-	685	640	-	658	624	-
Stage 2	-	-	-	-	-	-	586	601	-	692	640	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	2.07			0			0			15.45		
HCM LOS							A			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	450	-	-	1394	-	-	528				
HCM Lane V/C Ratio	-	0.047	-	-	-	-	-	0.35				
HCM Ctrl Dly (s/v)	0	8.3	0	-	0	-	-	15.4				
HCM Lane LOS	A	A	A	-	A	-	-	C				
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	1.6				

HCM 7th TWSC
4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	20	20	10	10
Future Vol, veh/h	30	10	20	20	10	10
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	37	12	25	25	12	12
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	52	0	120	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	74	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1547	-	873	1020
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	946	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1543	-	856	1017
Mov Cap-2 Maneuver	-	-	-	-	856	-
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	931	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.69		8.98	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	930	-	-	900	-	
HCM Lane V/C Ratio	0.027	-	-	0.016	-	
HCM Ctrl Dly (s/v)	9	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Synchro 12 Report

HCM 7th TWSC

5: Valley View St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	5.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Vol, veh/h	40	40	40	40	30	90
Future Vol, veh/h	40	40	40	40	30	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	56	56	56	56	42	127
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	113	0	254	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	169	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1471	-	733	972
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	858	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1471	-	704	972
Mov Cap-2 Maneuver	-	-	-	-	704	-
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	824	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.77		10.01	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	887	-	-	900	-	
HCM Lane V/C Ratio	0.19	-	-	0.038	-	
HCM Ctrl Dly (s/v)	10	-	-	7.5	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-	

Synchro 12 Report

HCM 7th AWSC

Saint Helena Streets Master Plan

6: Crane Ave/Valley View St & Grayson Ave

Cumulative Conditions No Project Weekend MD

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	30	90	30	20	70
Future Vol, veh/h	20	30	90	30	20	70
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	29	44	132	44	29	103
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	7.8	8.1	8.2
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	40%	22%
Vol Thru, %	75%	0%	78%
Vol Right, %	25%	60%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	120	50	90
LT Vol	0	20	20
Through Vol	90	0	70
RT Vol	30	30	0
Lane Flow Rate	176	74	132
Geometry Grp	1	1	1
Degree of Util (X)	0.198	0.089	0.157
Departure Headway (Hd)	4.03	4.342	4.259
Convergence, Y/N	Yes	Yes	Yes
Cap	877	830	831
Service Time	2.113	2.342	2.344
HCM Lane V/C Ratio	0.201	0.089	0.159
HCM Control Delay, s/veh	8.1	7.8	8.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0.3	0.6

Synchro 12 Report

HCM 7th TWSC
7: Sulphur Spring Ave & Crane Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	10	50	70	10
Future Vol, veh/h	10	10	10	50	70	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	15	15	74	103	15
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	88	0	-	0	96	51
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1501	-	-	-	901	1014
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	976	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1501	-	-	-	893	1014
Mov Cap-2 Maneuver	-	-	-	-	893	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	976	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.71	0		9.57		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	906	
HCM Lane V/C Ratio	0.01	-	-	-	0.13	
HCM Ctrl Dly (s/v)	7.4	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

Synchro 12 Report

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↘		↙	↘	
Traffic Vol, veh/h	10	10	10	30	0	20	20	640	30	20	620	10
Future Vol, veh/h	10	10	10	30	0	20	20	640	30	20	620	10
Conflicting Peds, #/hr	1	0	2	2	0	1	6	0	1	1	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	10	10	10	31	0	21	21	667	31	21	646	10
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1408	1439	659	1420	1429	684	662	0	0	699	0	0
Stage 1	699	699	-	725	725	-	-	-	-	-	-	-
Stage 2	709	741	-	695	704	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	116	132	462	114	134	447	922	-	-	893	-	-
Stage 1	429	440	-	415	428	-	-	-	-	-	-	-
Stage 2	423	422	-	431	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	105	125	458	97	127	446	916	-	-	892	-	-
Mov Cap-2 Maneuver	105	125	-	97	127	-	-	-	-	-	-	-
Stage 1	417	428	-	405	418	-	-	-	-	-	-	-
Stage 2	394	412	-	401	425	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Ctrl Dly, s/v	34.68		44.56		0.26			0.28				
HCM LOS	D		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	916	-	-	152	141	892	-	-				
HCM Lane V/C Ratio	0.023	-	-	0.205	0.368	0.023	-	-				
HCM Ctrl Dly (s/v)	9	-	-	34.7	44.6	9.1	-	-				
HCM Lane LOS	A	-	-	D	E	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.7	1.5	0.1	-	-				

Synchro 12 Report

HCM 7th TWSC
9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	30	30	650	630	30
Future Vol, veh/h	40	30	30	650	630	30
Conflicting Peds, #/hr	0	1	9	0	0	9
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	40	30	30	657	636	30
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1378	662	676	0	-	0
Stage 1	661	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	159	460	911	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	148	456	903	-	-	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	30.95	0.4		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	79	-	208	-	-	
HCM Lane V/C Ratio	0.034	-	0.34	-	-	
HCM Ctrl Dly (s/v)	9.1	0	30.9	-	-	
HCM Lane LOS	A	A	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	1.4	-	-	

Synchro 12 Report

HCM 7th Signalized Intersection Summary 10: Main St & Madrona Ave/Fulton Ln

Saint Helena Streets Master Plan Cumulative Conditions No Project Weekend MD

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	20	40	10	20	80	20	520	10	50	560	50
Future Volume (veh/h)	80	20	40	10	20	80	20	520	10	50	560	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	25	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	86	22	30	11	22	19	22	559	11	54	602	51
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	198	39	40	91	110	76	149	774	15	358	740	43
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	862	332	332	187	899	625	773	1288	25	835	1198	101
Grp Volume(v), veh/h	138	0	0	52	0	0	22	0	570	54	0	653
Grp Sat Flow(s),veh/h/ln	1526	0	0	1712	0	0	773	0	1313	835	0	1299
Q Serve(g_s), s	3.1	0.0	0.0	0.0	0.0	0.0	1.5	0.0	19.2	3.1	0.0	25.2
Cycle Q Clear(g_c), s	4.6	0.0	0.0	1.5	0.0	0.0	26.7	0.0	19.2	22.2	0.0	25.2
Prop In Lane	0.62		0.22	0.21		0.37	1.00		0.02	1.00		0.08
Lane Grp Cap(c), veh/h	277	0	0	277	0	0	149	0	789	358	0	784
V/C Ratio(X)	0.50	0.00	0.00	0.19	0.00	0.00	0.15	0.00	0.72	0.15	0.00	0.83
Avail Cap(c_a), veh/h	1187	0	0	1279	0	0	668	0	1519	804	0	1503
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.0	0.0	0.0	27.4	0.0	0.0	32.2	0.0	9.1	17.2	0.0	12.4
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.5	0.1	0.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.9
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	0.8	0.0	0.0	0.4	0.0	4.7	0.6	0.0	19.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.6	0.0	0.0	27.5	0.0	0.0	32.3	0.0	9.6	17.3	0.0	57.2
LnGrp LOS	C			C			C		A	B		E
Approach Vol, veh/h	138			52			592			707		
Approach Delay, s/veh	29.6			27.5			10.4			54.1		
Approach LOS	C			C			B			D		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	38.2			16.3			38.2			16.3		
Change Period (Y+Rc), s	8.7			9.2			8.7			9.2		
Max Green Setting (Gmax), s	63.0			40.0			63.0			40.0		
Max Q Clear Time (g_c+I1), s	28.7			6.6			27.2			3.5		
Green Ext Time (p_c), s	0.8			0.2			1.0			0.1		
Intersection Summary												
HCM 7th Control Delay, s/veh	33.6											
HCM 7th LOS	C											

Synchro 12 Report

HCM 7th TWSC
11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	5.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↶	↶	
Traffic Vol, veh/h	10	60	10	10	100	10
Future Vol, veh/h	10	60	10	10	100	10
Conflicting Peds, #/hr	0	3	3	0	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	76	13	13	127	13
Major/Minor						
	Major1		Major2		Minor1	
Conflicting Flow All	0	0	92	0	96	54
Stage 1	-	-	-	-	54	-
Stage 2	-	-	-	-	42	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1497	-	901	1011
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	978	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1493	-	888	1008
Mov Cap-2 Maneuver	-	-	-	-	888	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	966	-
Approach						
	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.72		9.75	
HCM LOS					A	
Minor Lane/Major Mvmt						
	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	897	-	-	900	-	
HCM Lane V/C Ratio	0.155	-	-	0.008	-	
HCM Ctrl Dly (s/v)	9.7	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.5	-	-	0	-	

Synchro 12 Report

HCM 7th Signalized Intersection Summary 12: Main St & Adams St

Saint Helena Streets Master Plan Cumulative Conditions No Project Weekend MD

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	40	30	40	40	40	20	470	30	40	530	40
Future Volume (veh/h)	40	40	30	40	40	40	20	470	30	40	530	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	20	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.75		0.67	0.74		0.67	1.00		0.93	1.00		0.88
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1856
Adj Flow Rate, veh/h	41	41	24	41	41	31	21	485	31	41	546	41
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	139	125	60	129	116	71	73	576	37	117	635	14
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.04	0.45	0.45	0.07	0.47	0.47
Sat Flow, veh/h	402	631	303	358	587	357	1767	1220	78	1767	1197	90
Grp Volume(v), veh/h	106	0	0	113	0	0	21	0	516	41	0	587
Grp Sat Flow(s),veh/h/ln	1336	0	0	1303	0	0	1767	0	1298	1767	0	1287
Q Serve(g_s), s	0.0	0.0	0.0	0.6	0.0	0.0	0.9	0.0	29.1	1.8	0.0	35.3
Cycle Q Clear(g_c), s	4.5	0.0	0.0	5.1	0.0	0.0	0.9	0.0	29.1	1.8	0.0	35.3
Prop In Lane	0.39		0.23	0.36		0.27	1.00		0.06	1.00		0.07
Lane Grp Cap(c), veh/h	324	0	0	316	0	0	73	0	613	117	0	650
V/C Ratio(X)	0.33	0.00	0.00	0.36	0.00	0.00	0.29	0.00	0.84	0.35	0.00	0.90
Avail Cap(c_a), veh/h	348	0	0	340	0	0	201	0	678	201	0	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.9	0.0	0.0	29.1	0.0	0.0	39.0	0.0	19.4	37.5	0.0	21.1
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.3	0.0	0.0	0.8	0.0	7.9	0.7	0.0	14.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	67.4
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	2.0	0.0	0.0	0.4	0.0	9.6	0.8	0.0	26.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.1	0.0	0.0	29.4	0.0	0.0	39.8	0.0	27.3	38.2	0.0	103.4
LnGrp LOS	C			C			D		C	D		F
Approach Vol, veh/h	106			113			537			628		
Approach Delay, s/veh	29.1			29.4			27.8			99.1		
Approach LOS	C			C			C			F		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.1	46.5		25.3	10.1	44.4		25.3				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	9.1	41.7		17.1	9.1	41.7		17.1				
Max Q Clear Time (g_c+I1), s	2.9	37.3		6.5	3.8	31.1		7.1				
Green Ext Time (p_c), s	0.0	0.5		0.1	0.0	0.6		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh	60.4											
HCM 7th LOS	E											

Synchro 12 Report

HCM 7th AWSC

13: Railroad Ave & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions No Project Weekend MD

Intersection												
Intersection Delay, s/veh	8.1											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	40	60	10	40	50	40	50	10	40	40	10
Future Vol, veh/h	10	40	60	10	40	50	40	50	10	40	40	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	43	65	11	43	54	43	54	11	43	43	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8	7.9	8.3	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	9%	10%	44%
Vol Thru, %	50%	36%	40%	44%
Vol Right, %	10%	55%	50%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	110	100	90
LT Vol	40	10	10	40
Through Vol	50	40	40	40
RT Vol	10	60	50	10
Lane Flow Rate	109	120	109	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.138	0.141	0.129	0.125
Departure Headway (Hd)	4.586	4.248	4.289	4.601
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	783	845	837	780
Service Time	2.609	2.268	2.309	2.624
HCM Lane V/C Ratio	0.139	0.142	0.13	0.126
HCM Control Delay, s/veh	8.3	8	7.9	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.5	0.4	0.4

HCM 7th TWSC
14: Library Ln & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	10	10	0	10	0	10	0	0	0	0	20
Future Vol, veh/h	20	10	10	0	10	0	10	0	0	0	0	20
Conflicting Peds, #/hr	1	0	6	6	0	1	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	28	14	14	0	14	0	14	0	0	0	0	28
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	15	0	0	34	0	0	96	97	31	88	104	15
Stage 1	-	-	-	-	-	-	82	82	-	15	15	-
Stage 2	-	-	-	-	-	-	14	15	-	73	89	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.16	6.56	6.26	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.254	-	-	3.554	4.054	3.354	3.554	4.054	3.354
Pot Cap-1 Maneuver	1577	-	-	1552	-	-	877	785	1032	887	778	1053
Stage 1	-	-	-	-	-	-	916	819	-	995	875	-
Stage 2	-	-	-	-	-	-	996	875	-	926	813	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1576	-	-	1543	-	-	834	766	1022	867	759	1052
Mov Cap-2 Maneuver	-	-	-	-	-	-	834	766	-	867	759	-
Stage 1	-	-	-	-	-	-	894	799	-	994	874	-
Stage 2	-	-	-	-	-	-	970	874	-	906	794	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.66			0			9.39			8.51		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	834	818	-	-	1543	-	-	1052				
HCM Lane V/C Ratio	0.017	0.018	-	-	-	-	-	0.026				
HCM Ctrl Dly (s/v)	9.4	7.3	0	-	0	-	-	8.5				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1				

Synchro 12 Report

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	20	500	70	30	570
Future Vol, veh/h	20	20	500	70	30	570
Conflicting Peds, #/hr	172	3	0	301	301	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	20	20	505	71	30	576
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1650	844	0	0	877	0
Stage 1	841	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	108	362	-	-	766	-
Stage 1	421	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	61	257	-	-	546	-
Mov Cap-2 Maneuver	174	-	-	-	-	-
Stage 1	300	-	-	-	-	-
Stage 2	345	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	26.47	0		0.6		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	208	546	-	
HCM Lane V/C Ratio	-	-	0.195	0.055	-	
HCM Ctrl Dly (s/v)	-	-	26.5	12	-	
HCM Lane LOS	-	-	D	B	-	
HCM 95th %tile Q(veh)	-	-	0.7	0.2	-	

Synchro 12 Report

HCM 7th TWSC

16: Church St/Railroad Ave & Hunt Ave

Saint Helena Streets Master Plan

Cumulative Conditions No Project Weekend MD

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	40	20	30	20	60	10	20	40	50	40	20
Future Vol, veh/h	40	40	20	30	20	60	10	20	40	50	40	20
Conflicting Peds, #/hr	17	0	49	17	0	49	5	0	17	3	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	43	43	21	32	21	64	11	21	43	53	43	21
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	134	0	0	113	0	0	299	385	119	321	364	107
Stage 1	-	-	-	-	-	-	187	187	-	166	166	-
Stage 2	-	-	-	-	-	-	111	198	-	155	198	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1444	-	-	1470	-	-	652	547	930	630	562	944
Stage 1	-	-	-	-	-	-	812	743	-	834	759	-
Stage 2	-	-	-	-	-	-	891	735	-	845	735	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1377	-	-	1402	-	-	522	470	872	508	483	896
Mov Cap-2 Maneuver	-	-	-	-	-	-	522	470	-	508	483	-
Stage 1	-	-	-	-	-	-	749	686	-	776	706	-
Stage 2	-	-	-	-	-	-	794	684	-	741	678	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.08			2.08			11.25			13.5		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	651	675	-	-	427	-	-	540				
HCM Lane V/C Ratio	0.114	0.031	-	-	0.023	-	-	0.217				
HCM Ctrl Dly (s/v)	11.2	7.7	0	-	7.6	0	-	13.5				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.1	-	-	0.8				

Synchro 12 Report

HCM 7th TWSC
17: Mitchell Dr & Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	
Traffic Vol, veh/h	20	0	30	70	90	10
Future Vol, veh/h	20	0	30	70	90	10
Conflicting Peds, #/hr	3	0	0	3	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	25	0	37	86	111	12
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	126	0	-	0	89	41
Stage 1	-	-	-	-	40	-
Stage 2	-	-	-	-	49	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1454	-	-	-	909	1027
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	971	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1449	-	-	-	888	1023
Mov Cap-2 Maneuver	-	-	-	-	888	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	968	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	7.53	0		9.63		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1449	-	-	-	900	
HCM Lane V/C Ratio	0.017	-	-	-	0.137	
HCM Ctrl Dly (s/v)	7.5	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	

Synchro 12 Report

HCM 7th Signalized Intersection Summary 18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan Cumulative Conditions No Project Weekend MD

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	140	110	30	70	90	550	50	60	540	10
Future Volume (veh/h)	0	0	140	110	30	70	90	550	50	60	540	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	50	0	0	25	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.88	1.00		0.94	1.00		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	0	0	143	112	31	18	92	561	51	61	551	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	31	132	173	48	168	126	727	22	115	746	8
Arrive On Green	0.00	0.00	0.02	0.14	0.14	0.14	0.09	0.49	0.49	0.08	0.48	0.48
Sat Flow, veh/h	0	1856	1572	1399	387	1387	1767	1184	108	1767	1288	23
Grp Volume(v), veh/h	0	0	143	143	0	18	92	0	612	61	0	561
Grp Sat Flow(s),veh/h/ln	0	1856	1572	1786	0	1387	1767	0	1291	1767	0	1312
Q Serve(g_s), s	0.0	0.0	2.0	7.2	0.0	1.1	4.8	0.0	44.3	3.2	0.0	37.5
Cycle Q Clear(g_c), s	0.0	0.0	2.0	7.2	0.0	1.1	4.8	0.0	44.3	3.2	0.0	37.5
Prop In Lane	0.00		1.00	0.78		1.00	1.00		0.08	1.00		0.02
Lane Grp Cap(c), veh/h	0	31	132	221	0	168	126	0	781	115	0	697
V/C Ratio(X)	0.00	0.00	1.08	0.65	0.00	0.11	0.73	0.00	0.78	0.53	0.00	0.80
Avail Cap(c_a), veh/h	0	39	167	1093	0	849	1082	0	1005	1095	0	1021
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	58.1	50.8	0.0	47.3	55.3	0.0	25.6	55.0	0.0	24.3
Incr Delay (d2), s/veh	0.0	0.0	91.2	1.2	0.0	0.1	3.0	0.0	2.3	1.4	0.0	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	132.7	0.0	0.0	47.3
%ile BackOfQ(50%),veh/ln	0.0	0.0	7.6	4.3	0.0	0.5	2.9	0.0	51.7	1.9	0.0	25.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	149.3	52.0	0.0	47.4	58.3	0.0	160.6	56.4	0.0	73.4
LnGrp LOS	F			D	D			E	F			E
Approach Vol, veh/h	143			161			704			622		
Approach Delay, s/veh	149.3			51.5			147.2			71.7		
Approach LOS	F			D			F			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.9	53.9		23.6	11.9	54.9		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	59.0	75.0		59.0	59.7	* 75		2.0				
Max Q Clear Time (g_c+I1), s	6.8	39.5		9.2	5.2	46.3		4.0				
Green Ext Time (p_c), s	0.0	0.7		0.2	0.0	0.8		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh 109.1

HCM 7th LOS F

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Synchro 12 Report

HCM 7th Signalized Intersection Summary 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	30	40	770	810	20
Future Volume (veh/h)	20	30	40	770	810	20
Initial Q (Qb), veh	0	0	0	30	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1318	1318	1318
Adj Flow Rate, veh/h	20	7	41	786	827	20
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	74	26	111	1046	872	21
Arrive On Green	0.06	0.06	0.07	0.78	0.66	0.66
Sat Flow, veh/h	1226	429	1767	1318	1281	31
Grp Volume(v), veh/h	28	0	41	786	0	847
Grp Sat Flow(s), veh/h/ln	1717	0	1767	1318	0	1312
Q Serve(g_s), s	1.3	0.0	1.9	28.3	0.0	53.7
Cycle Q Clear(g_c), s	1.3	0.0	1.9	28.3	0.0	53.7
Prop In Lane	0.71	0.25	1.00			0.02
Lane Grp Cap(c), veh/h	104	0	111	1046	0	893
V/C Ratio(X)	0.27	0.00	0.37	0.75	0.00	0.95
Avail Cap(c_a), veh/h	219	0	185	1366	0	1089
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.0	0.0	43.1	7.3	0.0	13.6
Incr Delay (d2), s/veh	0.5	0.0	0.8	1.1	0.0	13.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	23.8	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.9	15.8	0.0	16.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	43.5	0.0	43.9	32.2	0.0	27.2
LnGrp LOS	D		D	C		C
Approach Vol, veh/h	28			827	847	
Approach Delay, s/veh	43.5			32.8	27.2	
Approach LOS	D			C	C	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	60.3	65.7		76.0	10.1	
Change Period (Y+Rc), s	4.7	9.1		* 9.1	4.7	
Max Green Setting (Gmax), s	9.6	71.5		* 89	11.0	
Max Q Clear Time (g_c+I), s	13.9	55.7		30.3	3.3	
Green Ext Time (p_c), s	0.0	0.9		0.8	0.0	
Intersection Summary						
HCM 7th Control Delay, s/veh			30.2			
HCM 7th LOS			C			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

Synchro 12 Report

HCM 7th TWSC
20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	50	40	800	820	20
Future Vol, veh/h	10	50	40	800	820	20
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	10	51	41	816	837	20
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1749	851	861	0	-	0
Stage 1	851	-	-	-	-	-
Stage 2	898	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	94	358	776	-	-	-
Stage 1	417	-	-	-	-	-
Stage 2	396	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	88	357	773	-	-	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	393	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Approach	EB		NB		SB	
HCM Ctrl Dly, s/v	17.66		0.47		0	
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	773	-	220	357	-	-
HCM Lane V/C Ratio	0.053	-	0.046	0.143	-	-
HCM Ctrl Dly (s/v)	9.9	-	22.2	16.8	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	0.5	-	-

Synchro 12 Report

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	60	10	10	40	10
Future Vol, veh/h	10	60	10	10	40	10
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	78	13	13	52	13
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7	7.4	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	80%	0%	50%
Vol Thru, %	0%	14%	50%
Vol Right, %	20%	86%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	50	70	20
LT Vol	40	0	10
Through Vol	0	10	10
RT Vol	10	60	0
Lane Flow Rate	65	91	26
Geometry Grp	1	1	1
Degree of Util (X)	0.076	0.09	0.031
Departure Headway (Hd)	4.193	3.57	4.235
Convergence, Y/N	Yes	Yes	Yes
Cap	853	998	842
Service Time	2.226	1.613	2.279
HCM Lane V/C Ratio	0.076	0.091	0.031
HCM Control Delay, s/veh	7.6	7	7.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.1

Synchro 12 Report

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	190	220	50	40	20
Future Vol, veh/h	20	190	220	50	40	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	21	198	229	52	42	21
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	281	0	-	0	495	255
Stage 1	-	-	-	-	255	-
Stage 2	-	-	-	-	240	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1276	-	-	-	532	781
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	798	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1276	-	-	-	522	781
Mov Cap-2 Maneuver	-	-	-	-	522	-
Stage 1	-	-	-	-	771	-
Stage 2	-	-	-	-	798	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.75	0		11.86		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	171	-	-	-	587	
HCM Lane V/C Ratio	0.016	-	-	-	0.106	
HCM Ctrl Dly (s/v)	7.9	0	-	-	11.9	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

Synchro 12 Report

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Pope Street Cumulative Conditions No Project Weekend MD

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	140	30	20	230	20	30	10	10	10	10	20
Future Vol, veh/h	30	140	30	20	230	20	30	10	10	10	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	34	157	34	22	258	22	34	11	11	11	11	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	281	0	0	191	0	0	551	567	174	545	573	270
Stage 1	-	-	-	-	-	-	242	242	-	315	315	-
Stage 2	-	-	-	-	-	-	309	326	-	230	258	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1276	-	-	1377	-	-	444	431	867	448	428	767
Stage 1	-	-	-	-	-	-	760	704	-	694	654	-
Stage 2	-	-	-	-	-	-	699	647	-	770	692	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1276	-	-	1377	-	-	402	413	867	412	410	767
Mov Cap-2 Maneuver	-	-	-	-	-	-	402	413	-	412	410	-
Stage 1	-	-	-	-	-	-	740	685	-	683	643	-
Stage 2	-	-	-	-	-	-	656	636	-	728	674	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.18	0.57	13.85	12.34
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	405	867	1276	-	-	1377	-	-	535
HCM Lane V/C Ratio	0.111	0.013	0.026	-	-	0.016	-	-	0.084
HCM Ctrl Dly (s/v)	15	9.2	7.9	-	-	7.7	-	-	12.3
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	0.1	-	-	0	-	-	0.3

Synchro 12 Report

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	30	20	520	540	20
Future Vol, veh/h	10	30	20	520	540	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	34	22	584	607	22
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1247	618	629	0	-	0
Stage 1	618	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	191	487	948	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	184	487	948	-	-	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Approach	EB		NB		SB	
HCM Ctrl Dly, s/v	16.99		0.33		0	
HCM LOS	C					
Minor Lane/Major Mvmt	NBL		NBT	EBLn1	SBT	SBR
Capacity (veh/h)	67		-	345	-	-
HCM Lane V/C Ratio	0.024		-	0.13	-	-
HCM Ctrl Dly (s/v)	8.9		0	17	-	-
HCM Lane LOS	A		A	C	-	-
HCM 95th %tile Q(veh)	0.1		-	0.4	-	-

Synchro 12 Report

HCM 7th TWSC

25: Silverado Trail & Howell Mountain Rd

Saint Helena Streets Master Plan

Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	20	520	40	10	560
Future Vol, veh/h	30	20	520	40	10	560
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	33	22	578	44	11	622
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1244	600	0	0	622	0
Stage 1	600	-	-	-	-	-
Stage 2	644	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	191	499	-	-	954	-
Stage 1	546	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	189	499	-	-	954	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	16.08	0		0.15		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	380	954	-	
HCM Lane V/C Ratio	-	-	0.146	0.012	-	
HCM Ctrl Dly (s/v)	-	-	16.1	8.8	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.5	0	-	

Synchro 12 Report

HCM 7th TWSC
26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	RT		RT	RT	RT	RT
Traffic Vol, veh/h	80	60	100	480	430	160
Future Vol, veh/h	80	60	100	480	430	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	88	66	110	527	473	176
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1220	473	648	0	-	0
Stage 1	473	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	198	590	933	-	-	-
Stage 1	625	-	-	-	-	-
Stage 2	466	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	175	590	933	-	-	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	466	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	20.2	1.62		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	933	-	389	-	-	
HCM Lane V/C Ratio	0.118	-	0.396	-	-	
HCM Ctrl Dly (s/v)	9.4	-	20.2	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.4	-	1.8	-	-	

Synchro 12 Report

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↗	↖	
Traffic Vol, veh/h	0	0	10	0	0	10	0	780	10	10	820	10
Future Vol, veh/h	0	0	10	0	0	10	0	780	10	10	820	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	10	0	0	10	0	796	10	10	837	10
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1658	1668	842	1658	1668	801	847	0	0	806	0	0
Stage 1	862	862	-	801	801	-	-	-	-	-	-	-
Stage 2	796	806	-	857	867	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	77	96	363	77	96	383	786	-	-	814	-	-
Stage 1	348	371	-	377	395	-	-	-	-	-	-	-
Stage 2	379	393	-	351	369	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	74	95	363	74	95	383	786	-	-	814	-	-
Mov Cap-2 Maneuver	74	95	-	74	95	-	-	-	-	-	-	-
Stage 1	344	366	-	377	395	-	-	-	-	-	-	-
Stage 2	369	393	-	336	364	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	15.21		14.66		0		0.11					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	786	-	-	363	383	814	-	-				
HCM Lane V/C Ratio	-	-	-	0.028	0.027	0.013	-	-				
HCM Ctrl Dly (s/v)	0	-	-	15.2	14.7	9.5	-	-				
HCM Lane LOS	A	-	-	C	B	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

Synchro 12 Report

HCM 7th TWSC
28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection												
Int Delay, s/veh	19											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	20	10	40	60	10	30	20	640	130	40	740	10
Future Vol, veh/h	20	10	40	60	10	30	20	640	130	40	740	10
Conflicting Peds, #/hr	0	0	0	0	0	0	15	0	3	3	0	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	21	10	42	63	10	31	21	667	135	42	771	10
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1588	1721	791	1638	1659	737	796	0	0	805	0	0
Stage 1	874	874	-	779	779	-	-	-	-	-	-	-
Stage 2	714	847	-	859	880	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	87	89	388	80	97	417	821	-	-	815	-	-
Stage 1	343	366	-	387	405	-	-	-	-	-	-	-
Stage 2	421	377	-	350	364	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	65	81	382	~ 58	88	415	809	-	-	813	-	-
Mov Cap-2 Maneuver	65	81	-	~ 58	88	-	-	-	-	-	-	-
Stage 1	321	342	-	376	393	-	-	-	-	-	-	-
Stage 2	369	366	-	286	340	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Ctrl Dly, s/v	62.87		282.21		0.24			0.49				
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	809	-	-	131	82	813	-	-				
HCM Lane V/C Ratio	0.026	-	-	0.559	1.276	0.051	-	-				
HCM Ctrl Dly (s/v)	9.6	-	-	62.9	282.2	9.7	-	-				
HCM Lane LOS	A	-	-	F	F	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	2.7	7.8	0.2	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

Synchro 12 Report

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	10	0	20	10	10	10	90	20	10	70	0
Future Vol, veh/h	0	10	0	20	10	10	10	90	20	10	70	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	11	0	22	11	11	11	97	22	11	75	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.5	7.6	7.8	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	0%	50%	13%
Vol Thru, %	75%	100%	25%	88%
Vol Right, %	17%	0%	25%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	10	40	80
LT Vol	10	0	20	10
Through Vol	90	10	10	70
RT Vol	20	0	10	0
Lane Flow Rate	129	11	43	86
Geometry Grp	1	1	1	1
Degree of Util (X)	0.144	0.013	0.052	0.1
Departure Headway (Hd)	4.026	4.468	4.382	4.168
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	884	806	822	853
Service Time	2.081	2.469	2.382	2.227
HCM Lane V/C Ratio	0.146	0.014	0.052	0.101
HCM Control Delay, s/veh	7.8	7.5	7.6	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0	0.2	0.3

Synchro 12 Report

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection												
Intersection Delay, s/veh	8.8											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	10	30	10	60	30	20	20	90	80	10	60	10
Future Vol, veh/h	10	30	10	60	30	20	20	90	80	10	60	10
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	12	37	12	74	37	25	25	111	99	12	74	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.3	8.9	9	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	20%	55%	13%
Vol Thru, %	47%	60%	27%	75%
Vol Right, %	42%	20%	18%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	50	110	80
LT Vol	20	10	60	10
Through Vol	90	30	30	60
RT Vol	80	10	20	10
Lane Flow Rate	235	62	136	99
Geometry Grp	1	1	1	1
Degree of Util (X)	0.281	0.082	0.18	0.127
Departure Headway (Hd)	4.318	4.795	4.778	4.641
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	833	746	750	771
Service Time	2.344	2.834	2.812	2.674
HCM Lane V/C Ratio	0.282	0.083	0.181	0.128
HCM Control Delay, s/veh	9	8.3	8.9	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.2	0.3	0.7	0.4

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection												
Intersection Delay, s/veh	9											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	40	40	40	30	40	40	30	90	20	30	70	20
Future Vol, veh/h	40	40	40	30	40	40	30	90	20	30	70	20
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	48	48	48	36	48	48	36	108	24	36	84	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.9	8.8	9.2	9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	33%	27%	25%
Vol Thru, %	64%	33%	36%	58%
Vol Right, %	14%	33%	36%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	120	110	120
LT Vol	30	40	30	30
Through Vol	90	40	40	70
RT Vol	20	40	40	20
Lane Flow Rate	169	145	133	145
Geometry Grp	1	1	1	1
Degree of Util (X)	0.222	0.19	0.174	0.191
Departure Headway (Hd)	4.743	4.73	4.715	4.766
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	754	755	757	749
Service Time	2.794	2.78	2.767	2.819
HCM Lane V/C Ratio	0.224	0.192	0.176	0.194
HCM Control Delay, s/veh	9.2	8.9	8.8	9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.7	0.6	0.7

Synchro 12 Report

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	60	80	540	550	40
Future Vol, veh/h	30	60	80	540	550	40
Conflicting Peds, #/hr	0	155	202	0	0	202
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	31	63	83	563	573	42
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1525	951	817	0	-	0
Stage 1	796	-	-	-	-	-
Stage 2	729	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	129	314	807	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	476	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	69	216	652	-	-	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	291	-	-	-	-	-
Stage 2	384	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	37.05	1.46		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	232	-	203	-	-	
HCM Lane V/C Ratio	0.128	-	0.461	-	-	
HCM Ctrl Dly (s/v)	11.3	0	37.1	-	-	
HCM Lane LOS	B	A	E	-	-	
HCM 95th %tile Q(veh)	0.4	-	2.2	-	-	

Synchro 12 Report

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative Conditions No Project Weekend MD

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	110	0	10	230	40	10	0	0	30	0	70
Future Vol, veh/h	30	110	0	10	230	40	10	0	0	30	0	70
Conflicting Peds, #/hr	10	0	7	7	0	10	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	34	124	0	11	258	45	11	0	0	34	0	79
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	313	0	0	131	0	0	481	534	131	504	511	293
Stage 1	-	-	-	-	-	-	198	198	-	313	313	-
Stage 2	-	-	-	-	-	-	283	336	-	191	198	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1241	-	-	1449	-	-	494	451	916	476	464	744
Stage 1	-	-	-	-	-	-	802	735	-	695	655	-
Stage 2	-	-	-	-	-	-	722	640	-	808	735	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1229	-	-	1439	-	-	420	426	910	454	439	736
Mov Cap-2 Maneuver	-	-	-	-	-	-	420	426	-	454	439	-
Stage 1	-	-	-	-	-	-	773	709	-	682	643	-
Stage 2	-	-	-	-	-	-	637	628	-	785	709	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.72			0.27			13.8			12.09		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	420	386	-	-	62	-	-	620				
HCM Lane V/C Ratio	0.027	0.027	-	-	0.008	-	-	0.181				
HCM Ctrl Dly (s/v)	13.8	8	0	-	7.5	0	-	12.1				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.7				

Synchro 12 Report

HCM 7th TWSC
4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	5.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	100	40	10	50
Future Vol, veh/h	30	10	100	40	10	50
Conflicting Peds, #/hr	0	9	9	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	39	13	132	53	13	66
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	62	0	372	55
Stage 1	-	-	-	-	55	-
Stage 2	-	-	-	-	317	-
Critical Hdwy	-	-	4.16	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.254	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	1516	-	621	1001
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	730	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1503	-	560	992
Mov Cap-2 Maneuver	-	-	-	-	560	-
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	663	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.45		9.5	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	879	-	-	1286	-	
HCM Lane V/C Ratio	0.09	-	-	0.088	-	
HCM Ctrl Dly (s/v)	9.5	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.3	-	-	0.3	-	

HCM 7th TWSC
5: Valley View St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	10.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↱	
Traffic Vol, veh/h	40	50	250	30	40	230
Future Vol, veh/h	40	50	250	30	40	230
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	58	72	362	43	58	333
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	133	0	865	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	768	-
Critical Hdwy	-	-	4.14	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1439	-	321	953
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	454	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1435	-	238	951
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	337	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		7.46		18.17	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1		EBT	EBR	WBL	WBT
Capacity (veh/h)	658		-	-	1400	-
HCM Lane V/C Ratio	0.595		-	-	0.253	-
HCM Ctrl Dly (s/v)	18.2		-	-	8.4	0
HCM Lane LOS	C		-	-	A	A
HCM 95th %tile Q(veh)	3.9		-	-	1	-

HCM 7th AWSC
6: Crane Ave/Valley View St & Grayson Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection	
Intersection Delay, s/veh	15.1
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	180	110	60	210	130
Future Vol, veh/h	30	180	110	60	210	130
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	42	250	153	83	292	181
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	12.2	11	19
HCM LOS	B	B	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	14%	62%
Vol Thru, %	65%	0%	38%
Vol Right, %	35%	86%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	170	210	340
LT Vol	0	30	210
Through Vol	110	0	130
RT Vol	60	180	0
Lane Flow Rate	236	292	472
Geometry Grp	1	1	1
Degree of Util (X)	0.343	0.427	0.687
Departure Headway (Hd)	5.237	5.268	5.236
Convergence, Y/N	Yes	Yes	Yes
Cap	685	682	689
Service Time	3.276	3.309	3.267
HCM Lane V/C Ratio	0.345	0.428	0.685
HCM Control Delay, s/veh	11	12.2	19
HCM Lane LOS	B	B	C
HCM 95th-tile Q	1.5	2.1	5.5

HCM 7th TWSC
7: Sulphur Spring Ave & Crane Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	20	140	130	10
Future Vol, veh/h	10	10	20	140	130	10
Conflicting Peds, #/hr	2	0	0	2	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	14	14	28	194	181	14
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	224	0	-	0	170	127
Stage 1	-	-	-	-	127	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1339	-	-	-	818	921
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1336	-	-	-	807	919
Mov Cap-2 Maneuver	-	-	-	-	807	-
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	975	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.86	0		10.81		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	814	
HCM Lane V/C Ratio	0.01	-	-	-	0.239	
HCM Ctrl Dly (s/v)	7.7	0	-	-	10.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.9	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	10	30	0	30	10	720	40	30	900	10
Future Vol, veh/h	10	0	10	30	0	30	10	720	40	30	900	10
Conflicting Peds, #/hr	0	0	5	5	0	0	13	0	2	2	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	11	0	11	32	0	32	11	758	42	32	947	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1808	1852	971	1818	1836	781	971	0	0	802	0	0
Stage 1	1029	1029	-	802	802	-	-	-	-	-	-	-
Stage 2	779	823	-	1016	1034	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.18	6.58	6.28	4.18	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.572	4.072	3.372	2.272	-	-	2.272	-	-
Pot Cap-1 Maneuver	59	72	299	58	73	385	686	-	-	796	-	-
Stage 1	275	304	-	369	388	-	-	-	-	-	-	-
Stage 2	380	379	-	280	302	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	51	67	294	53	68	385	678	-	-	794	-	-
Mov Cap-2 Maneuver	51	67	-	53	68	-	-	-	-	-	-	-
Stage 1	261	288	-	362	381	-	-	-	-	-	-	-
Stage 2	343	373	-	258	286	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	59.77		103.35		0.13		0.31					
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	678	-	-	86	92	794	-	-				
HCM Lane V/C Ratio	0.016	-	-	0.244	0.684	0.04	-	-				
HCM Ctrl Dly (s/v)	10.4	-	-	59.8	103.3	9.7	-	-				
HCM Lane LOS	B	-	-	F	F	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.9	3.4	0.1	-	-				

HCM 7th TWSC
9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT			WT	WT	
Traffic Vol, veh/h	30	30	50	740	810	130
Future Vol, veh/h	30	30	50	740	810	130
Conflicting Peds, #/hr	0	4	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	31	31	52	771	844	135
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1794	923	987	0	-	0
Stage 1	919	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	85	319	677	-	-	-
Stage 1	379	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	73	315	672	-	-	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	65.5	0.68		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	114	-	118	-	-	
HCM Lane V/C Ratio	0.078	-	0.529	-	-	
HCM Ctrl Dly (s/v)	10.8	0	65.5	-	-	
HCM Lane LOS	B	A	F	-	-	
HCM 95th %tile Q(veh)	0.3	-	2.5	-	-	

HCM 7th Signalized Intersection Summary
10: Main St & Madrona Ave/Fulton Ln

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	100	50	50	20	60	80	40	610	20	120	610	110	
Future Volume (veh/h)	100	50	50	20	60	80	40	610	20	120	610	110	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.97	1.00		0.97	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No			No			No			No			
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1287	1287	1811	1287	1287	
Adj Flow Rate, veh/h	119	60	50	24	71	66	48	726	23	143	726	126	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6	
Cap, veh/h	159	68	52	60	155	128	55	832	26	198	714	124	
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.67	0.67	0.67	0.67	0.67	0.67	
Sat Flow, veh/h	615	359	272	150	815	670	627	1239	39	690	1063	185	
Grp Volume(v), veh/h	229	0	0	161	0	0	48	0	749	143	0	852	
Grp Sat Flow(s),veh/h/ln	1246	0	0	1635	0	0	627	0	1279	690	0	1248	
Q Serve(g_s), s	12.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.4	26.9	0.0	87.3	
Cycle Q Clear(g_c), s	23.8	0.0	0.0	11.3	0.0	0.0	87.3	0.0	60.4	87.3	0.0	87.3	
Prop In Lane	0.52		0.22	0.15		0.41	1.00		0.03	1.00		0.15	
Lane Grp Cap(c), veh/h	280	0	0	344	0	0	55	0	859	198	0	838	
V/C Ratio(X)	0.82	0.00	0.00	0.47	0.00	0.00	0.87	0.00	0.87	0.72	0.00	1.02	
Avail Cap(c_a), veh/h	280	0	0	344	0	0	55	0	859	198	0	838	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	
Uniform Delay (d), s/veh	52.9	0.0	0.0	47.1	0.0	0.0	65.0	0.0	16.9	51.6	0.0	21.4	
Incr Delay (d2), s/veh	16.1	0.0	0.0	0.4	0.0	0.0	72.3	0.0	9.4	10.6	0.0	35.3	
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	8.7	0.0	0.0	4.8	0.0	0.0	2.7	0.0	18.9	5.3	0.0	31.7	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d), s/veh	69.0	0.0	0.0	47.5	0.0	0.0	137.3	0.0	26.4	62.1	0.0	56.7	
LnGrp LOS	E			D			F			C			F
Approach Vol, veh/h	229			161			797			995			
Approach Delay, s/veh	69.0			47.5			33.0			57.5			
Approach LOS	E			D			C			E			
Timer - Assigned Phs	2			4			6			8			
Phs Duration (G+Y+Rc), s	96.0			34.0			96.0			34.0			
Change Period (Y+Rc), s	8.7			9.2			8.7			9.2			
Max Green Setting (Gmax), s	87.3			24.8			87.3			24.8			
Max Q Clear Time (g_c+I1), s	89.3			25.8			89.3			13.3			
Green Ext Time (p_c), s	0.0			0.0			0.0			0.2			
Intersection Summary													
HCM 7th Control Delay, s/veh	49.0												
HCM 7th LOS	D												

HCM 7th TWSC
11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	150	10	20	120	20
Future Vol, veh/h	30	150	10	20	120	20
Conflicting Peds, #/hr	0	1	1	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	45	224	15	30	179	30
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	270	0	220	158
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	63	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1288	-	766	885
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1287	-	754	884
Mov Cap-2 Maneuver	-	-	-	-	754	-
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	943	-
Approach	EB	WB		NB		
HCM Ctrl Dly, s/v	0	2.61		11.41		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	770	-	-	600	-	
HCM Lane V/C Ratio	0.271	-	-	0.012	-	
HCM Ctrl Dly (s/v)	11.4	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.1	-	-	0	-	

HCM 7th Signalized Intersection Summary
12: Main St & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	90	40	30	70	190	50	420	50	170	440	70
Future Volume (veh/h)	60	90	40	30	70	190	50	420	50	170	440	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.97		0.95	0.97		0.93	1.00		0.99	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1796	1276	1276	1796	1276	1796
Adj Flow Rate, veh/h	63	94	31	31	73	122	52	438	47	177	458	67
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	130	155	44	78	107	155	134	461	49	213	490	72
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.08	0.41	0.41	0.12	0.45	0.45
Sat Flow, veh/h	370	857	242	139	594	859	1711	1132	121	1711	1082	158
Grp Volume(v), veh/h	188	0	0	226	0	0	52	0	485	177	0	525
Grp Sat Flow(s),veh/h/ln	1469	0	0	1592	0	0	1711	0	1254	1711	0	1240
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	0.0	2.2	0.0	28.7	7.8	0.0	30.8
Cycle Q Clear(g_c), s	9.1	0.0	0.0	10.1	0.0	0.0	2.2	0.0	28.7	7.8	0.0	30.8
Prop In Lane	0.34		0.16	0.14		0.54	1.00		0.10	1.00		0.13
Lane Grp Cap(c), veh/h	328	0	0	341	0	0	134	0	510	213	0	561
V/C Ratio(X)	0.57	0.00	0.00	0.66	0.00	0.00	0.39	0.00	0.95	0.83	0.00	0.94
Avail Cap(c_a), veh/h	393	0	0	407	0	0	201	0	649	243	0	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.2	0.0	0.0	30.0	0.0	0.0	33.6	0.0	22.0	32.8	0.0	19.9
Incr Delay (d2), s/veh	0.6	0.0	0.0	1.9	0.0	0.0	0.7	0.0	19.4	17.1	0.0	17.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.0	4.1	0.0	0.0	0.9	0.0	10.6	4.2	0.0	10.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.8	0.0	0.0	31.8	0.0	0.0	34.3	0.0	41.4	49.9	0.0	37.3
LnGrp LOS	C			C			C		D	D		D
Approach Vol, veh/h		188			226			537			702	
Approach Delay, s/veh		29.8			31.8			40.7			40.4	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.7	43.4		22.6	14.2	39.9		22.6				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	9.0	41.6		17.3	10.9	39.7		17.3				
Max Q Clear Time (g_c+I1), s	4.2	32.8		12.1	9.8	30.7		11.1				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	0.5		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			38.1									
HCM 7th LOS			D									

HCM 7th AWSC
13: Railroad Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection												
Intersection Delay, s/veh	17.6											
Intersection LOS	C											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	30	200	80	20	200	40	80	110	60	60	70	20
Future Vol, veh/h	30	200	80	20	200	40	80	110	60	60	70	20
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	37	244	98	24	244	49	98	134	73	73	85	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	20	17.3	17.4	13.8
HCM LOS	C	C	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	32%	10%	8%	40%
Vol Thru, %	44%	65%	77%	47%
Vol Right, %	24%	26%	15%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	250	310	260	150
LT Vol	80	30	20	60
Through Vol	110	200	200	70
RT Vol	60	80	40	20
Lane Flow Rate	305	378	317	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.552	0.649	0.56	0.352
Departure Headway (Hd)	6.518	6.176	6.357	6.929
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	552	582	564	516
Service Time	4.59	4.243	4.428	5.014
HCM Lane V/C Ratio	0.553	0.649	0.562	0.355
HCM Control Delay, s/veh	17.4	20	17.3	13.8
HCM Lane LOS	C	C	C	B
HCM 95th-tile Q	3.3	4.7	3.4	1.6

HCM 7th TWSC
14: Library Ln & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	40	190	30	0	180	10	10	0	0	0	0	10
Future Vol, veh/h	40	190	30	0	180	10	10	0	0	0	0	10
Conflicting Peds, #/hr	6	0	4	4	0	6	2	0	4	4	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	53	250	39	0	237	13	13	0	0	0	0	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	256	0	0	293	0	0	618	635	278	609	648	251
Stage 1	-	-	-	-	-	-	379	379	-	249	249	-
Stage 2	-	-	-	-	-	-	239	256	-	359	399	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1303	-	-	1262	-	-	400	395	759	406	388	785
Stage 1	-	-	-	-	-	-	641	613	-	752	698	-
Stage 2	-	-	-	-	-	-	762	694	-	657	601	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1296	-	-	1258	-	-	372	372	753	382	365	779
Mov Cap-2 Maneuver	-	-	-	-	-	-	372	372	-	382	365	-
Stage 1	-	-	-	-	-	-	607	581	-	748	694	-
Stage 2	-	-	-	-	-	-	748	690	-	622	569	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.21			0			15.03			9.7		
HCM LOS							C			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	372	270	-	-	1258	-	-	779				
HCM Lane V/C Ratio	0.035	0.041	-	-	-	-	-	0.017				
HCM Ctrl Dly (s/v)	15	7.9	0	-	0	-	-	9.7				
HCM Lane LOS	C	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1				

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	20	500	110	20	490
Future Vol, veh/h	40	20	500	110	20	490
Conflicting Peds, #/hr	22	0	0	17	17	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	42	21	526	116	21	516
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1181	601	0	0	659	0
Stage 1	601	-	-	-	-	-
Stage 2	580	-	-	-	-	-
Critical Hdwy	6.49	6.29	-	-	4.19	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	-	-	2.281	-
Pot Cap-1 Maneuver	203	487	-	-	897	-
Stage 1	534	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	191	480	-	-	882	-
Mov Cap-2 Maneuver	326	-	-	-	-	-
Stage 1	525	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	16.91	0		0.36		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	365	882	-	
HCM Lane V/C Ratio	-	-	0.173	0.024	-	
HCM Ctrl Dly (s/v)	-	-	16.9	9.2	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-	

HCM 7th TWSC
16: Church St/Railroad Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	50	60	20	10	40	190	10	10	10	140	10	10
Future Vol, veh/h	50	60	20	10	40	190	10	10	10	140	10	10
Conflicting Peds, #/hr	4	0	30	4	0	30	3	0	4	4	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	63	75	25	13	50	238	13	13	13	175	13	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	318	0	0	130	0	0	327	585	122	434	479	202
Stage 1	-	-	-	-	-	-	243	243	-	224	224	-
Stage 2	-	-	-	-	-	-	84	343	-	210	255	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1237	-	-	1449	-	-	624	422	927	530	484	837
Stage 1	-	-	-	-	-	-	759	703	-	777	717	-
Stage 2	-	-	-	-	-	-	921	636	-	790	695	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1202	-	-	1408	-	-	541	372	897	458	427	810
Mov Cap-2 Maneuver	-	-	-	-	-	-	541	372	-	458	427	-
Stage 1	-	-	-	-	-	-	696	645	-	746	689	-
Stage 2	-	-	-	-	-	-	878	611	-	719	637	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.14			0.32			12.3			18.27		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	531	659	-	-	64	-	-	469				
HCM Lane V/C Ratio	0.071	0.052	-	-	0.009	-	-	0.427				
HCM Ctrl Dly (s/v)	12.3	8.2	0	-	7.6	0	-	18.3				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	-	2.1				

HCM 7th TWSC
17: Mitchell Dr & Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	5.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	40	60	120	20
Future Vol, veh/h	30	30	40	60	120	20
Conflicting Peds, #/hr	3	0	0	3	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	34	46	69	138	23
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	118	0	-	0	152	50
Stage 1	-	-	-	-	49	-
Stage 2	-	-	-	-	103	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1464	-	-	-	837	1015
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	918	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1460	-	-	-	812	1012
Mov Cap-2 Maneuver	-	-	-	-	812	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	916	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.76	0		10.33		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	836	
HCM Lane V/C Ratio	0.024	-	-	-	0.193	
HCM Ctrl Dly (s/v)	7.5	0	-	-	10.3	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7	

HCM 7th Signalized Intersection Summary
18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	170	200	40	100	80	610	80	80	490	10
Future Volume (veh/h)	0	0	170	200	40	100	80	610	80	80	490	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1287	1287	1811	1287	1287
Adj Flow Rate, veh/h	0	0	173	204	41	20	82	622	82	82	500	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	0	27	122	225	45	231	111	633	83	111	716	14
Arrive On Green	0.00	0.00	0.01	0.16	0.16	0.16	0.06	0.57	0.57	0.06	0.57	0.57
Sat Flow, veh/h	0	1811	1535	1448	291	1490	1725	1110	146	1725	1257	25
Grp Volume(v), veh/h	0	0	173	245	0	20	82	0	704	82	0	510
Grp Sat Flow(s),veh/h/ln	0	1811	1535	1739	0	1490	1725	0	1256	1725	0	1282
Q Serve(g_s), s	0.0	0.0	2.0	18.5	0.0	1.5	6.2	0.0	73.1	6.2	0.0	37.9
Cycle Q Clear(g_c), s	0.0	0.0	2.0	18.5	0.0	1.5	6.2	0.0	73.1	6.2	0.0	37.9
Prop In Lane	0.00		1.00	0.83		1.00	1.00		0.12	1.00		0.02
Lane Grp Cap(c), veh/h	0	27	122	270	0	231	111	0	716	111	0	731
V/C Ratio(X)	0.00	0.00	1.42	0.91	0.00	0.09	0.74	0.00	0.98	0.74	0.00	0.70
Avail Cap(c_a), veh/h	0	27	122	373	0	320	265	0	810	133	0	731
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	61.4	55.4	0.0	48.2	61.3	0.0	28.1	61.3	0.0	20.5
Incr Delay (d2), s/veh	0.0	0.0	231.1	17.2	0.0	0.1	3.6	0.0	25.5	12.2	0.0	2.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	12.0	9.5	0.0	0.6	2.9	0.0	26.3	3.1	0.0	11.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	292.5	72.6	0.0	48.3	64.9	0.0	53.6	73.5	0.0	23.0
LnGrp LOS			F	E		D	E		D	E		C
Approach Vol, veh/h	173			265			786			592		
Approach Delay, s/veh	292.5			70.8			54.8			30.0		
Approach LOS	F			E			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.3	83.7		30.4	13.3	83.7		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	20.5	72.8		28.6	10.3	* 86		2.0				
Max Q Clear Time (g_c+I1), s	8.2	39.9		20.5	8.2	75.1		4.0				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	0.9		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh

71.7

HCM 7th LOS

E

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.

Fehr & Peers

Synchro 12 Report

HCM 7th Signalized Intersection Summary
19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	80	70	50	820	760	120
Future Volume (veh/h)	80	70	50	820	760	120
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	0.99	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1266	1266	1266
Adj Flow Rate, veh/h	87	55	54	891	826	126
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	8	8	8	8	8
Cap, veh/h	75	47	91	1053	798	122
Arrive On Green	0.08	0.08	0.05	0.83	0.75	0.75
Sat Flow, veh/h	983	621	1697	1266	1069	163
Grp Volume(v), veh/h	143	0	54	891	0	952
Grp Sat Flow(s), veh/h/ln	1616	0	1697	1266	0	1232
Q Serve(g_s), s	11.3	0.0	4.6	59.7	0.0	111.2
Cycle Q Clear(g_c), s	11.3	0.0	4.6	59.7	0.0	111.2
Prop In Lane	0.61	0.38	1.00			0.13
Lane Grp Cap(c), veh/h	122	0	91	1053	0	919
V/C Ratio(X)	1.17	0.00	0.59	0.85	0.00	1.04
Avail Cap(c_a), veh/h	122	0	102	1095	0	919
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	68.9	0.0	68.9	7.1	0.0	18.9
Incr Delay (d2), s/veh	133.3	0.0	3.6	5.7	0.0	39.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	2.1	13.3	0.0	36.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	202.1	0.0	72.5	12.9	0.0	58.2
LnGrp LOS	F		E	B		F
Approach Vol, veh/h	143			945	952	
Approach Delay, s/veh	202.1			16.3	58.2	
Approach LOS	F			B	E	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	2.7	120.3		133.0	16.0	
Change Period (Y+Rc), s	4.7	9.1		* 9.1	4.7	
Max Green Setting (Gmax), s	111.2			* 1.3E+02	11.3	
Max Q Clear Time (g_c+I), s	111.2			61.7	13.3	
Green Ext Time (p_c), s	0.0	0.0		1.0	0.0	
Intersection Summary						
HCM 7th Control Delay, s/veh			48.9			
HCM 7th LOS			D			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC
20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	120	100	850	790	40
Future Vol, veh/h	20	120	100	850	790	40
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	20	121	101	859	798	40
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1880	819	839	0	-	0
Stage 1	819	-	-	-	-	-
Stage 2	1061	-	-	-	-	-
Critical Hdwy	6.49	6.29	4.19	-	-	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	2.281	-	-	-
Pot Cap-1 Maneuver	75	365	766	-	-	-
Stage 1	421	-	-	-	-	-
Stage 2	323	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	65	364	765	-	-	-
Mov Cap-2 Maneuver	186	-	-	-	-	-
Stage 1	365	-	-	-	-	-
Stage 2	323	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	20.72	1.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	765	-	186	364	-	-
HCM Lane V/C Ratio	0.132	-	0.109	0.333	-	-
HCM Ctrl Dly (s/v)	10.4	-	26.7	19.7	-	-
HCM Lane LOS	B	-	D	C	-	-
HCM 95th %tile Q(veh)	0.5	-	0.4	1.4	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	80	20	30	110	10
Future Vol, veh/h	20	80	20	30	110	10
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	24	95	24	36	131	12
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7.4	7.8	8.4
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	92%	0%	40%
Vol Thru, %	0%	20%	60%
Vol Right, %	8%	80%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	120	100	50
LT Vol	110	0	20
Through Vol	0	20	30
RT Vol	10	80	0
Lane Flow Rate	143	119	60
Geometry Grp	1	1	1
Degree of Util (X)	0.174	0.128	0.074
Departure Headway (Hd)	4.392	3.878	4.488
Convergence, Y/N	Yes	Yes	Yes
Cap	807	930	802
Service Time	2.473	1.88	2.491
HCM Lane V/C Ratio	0.177	0.128	0.075
HCM Control Delay, s/veh	8.4	7.4	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.4	0.2

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	190	340	90	100	30
Future Vol, veh/h	10	190	340	90	100	30
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	241	430	114	127	38
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	545	0	-	0	755	489
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	267	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1019	-	-	-	375	577
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	776	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1018	-	-	-	369	576
Mov Cap-2 Maneuver	-	-	-	-	369	-
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	775	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.43	0		20.01		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	90	-	-	-	402	
HCM Lane V/C Ratio	0.012	-	-	-	0.409	
HCM Ctrl Dly (s/v)	8.6	0	-	-	20	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	1.9	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Pope Street

Cumulative Conditions Plus Project Adams Weekday AM

Intersection												
Int Delay, s/veh	12.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	160	120	90	270	10	120	0	50	10	10	20
Future Vol, veh/h	20	160	120	90	270	10	120	0	50	10	10	20
Conflicting Peds, #/hr	2	0	1	1	0	2	3	0	1	1	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	26	208	156	117	351	13	156	0	65	13	13	26
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	366	0	0	365	0	0	933	938	288	854	1009	362
Stage 1	-	-	-	-	-	-	339	339	-	593	593	-
Stage 2	-	-	-	-	-	-	594	599	-	261	417	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1187	-	-	1188	-	-	246	263	749	278	239	680
Stage 1	-	-	-	-	-	-	674	638	-	490	492	-
Stage 2	-	-	-	-	-	-	490	489	-	742	590	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1185	-	-	1187	-	-	196	232	748	223	210	677
Mov Cap-2 Maneuver	-	-	-	-	-	-	196	232	-	223	210	-
Stage 1	-	-	-	-	-	-	658	624	-	441	443	-
Stage 2	-	-	-	-	-	-	411	440	-	662	576	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.54			2.03			52.78			18.03		
HCM LOS							F			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	196	748	1185	-	-	1187	-	-	328			
HCM Lane V/C Ratio	0.795	0.087	0.022	-	-	0.098	-	-	0.158			
HCM Ctrl Dly (s/v)	70.5	10.3	8.1	-	-	8.4	-	-	18			
HCM Lane LOS	F	B	A	-	-	A	-	-	C			
HCM 95th %tile Q(veh)	5.5	0.3	0.1	-	-	0.3	-	-	0.6			

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	20	30	560	630	30
Future Vol, veh/h	20	20	30	560	630	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	21	21	31	583	656	31
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1318	672	688	0	-	0
Stage 1	672	-	-	-	-	-
Stage 2	646	-	-	-	-	-
Critical Hdwy	6.46	6.26	4.16	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	2.254	-	-	-
Pot Cap-1 Maneuver	170	449	888	-	-	-
Stage 1	500	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	161	449	888	-	-	-
Mov Cap-2 Maneuver	161	-	-	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	23.37	0.47		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	92	-	237	-	-	
HCM Lane V/C Ratio	0.035	-	0.176	-	-	
HCM Ctrl Dly (s/v)	9.2	0	23.4	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-	

HCM 7th TWSC

25: Silverado Trail & Howell Mountain Rd

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	25	15	725	38	12	738
Future Vol, veh/h	25	15	725	38	12	738
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	26	15	740	39	12	753
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1538	759	0	0	779	0
Stage 1	759	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.16	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.254	-
Pot Cap-1 Maneuver	125	400	-	-	821	-
Stage 1	455	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	123	400	-	-	821	-
Mov Cap-2 Maneuver	260	-	-	-	-	-
Stage 1	455	-	-	-	-	-
Stage 2	439	-	-	-	-	-
Approach	WB	NB	SB			
HCM Ctrl Dly, s/v	18.93	0	0.15			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	299	821	-	
HCM Lane V/C Ratio	-	-	0.136	0.015	-	
HCM Ctrl Dly (s/v)	-	-	18.9	9.5	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.5	0	-	

HCM 7th TWSC
26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	9.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	138	82	175	625	548	215
Future Vol, veh/h	138	82	175	625	548	215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	147	87	186	665	583	229
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1620	583	812	0	-	0
Stage 1	583	-	-	-	-	-
Stage 2	1037	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	~ 112	508	806	-	-	-
Stage 1	554	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 86	508	806	-	-	-
Mov Cap-2 Maneuver	211	-	-	-	-	-
Stage 1	426	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	66.65	2.36		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	806	-	270	-	-	
HCM Lane V/C Ratio	0.231	-	0.868	-	-	
HCM Ctrl Dly (s/v)	10.8	-	66.6	-	-	
HCM Lane LOS	B	-	F	-	-	
HCM 95th %tile Q(veh)	0.9	-	7.4	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	10	0	890	10	10	880	10
Future Vol, veh/h	0	0	0	0	0	10	0	890	10	10	880	10
Conflicting Peds, #/hr	0	0	0	0	0	0	15	0	1	1	0	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	0	0	0	0	0	11	0	957	11	11	946	11
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1945	1957	967	1931	1957	963	972	0	0	969	0	0
Stage 1	988	988	-	963	963	-	-	-	-	-	-	-
Stage 2	957	969	-	968	993	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.18	6.58	6.28	4.18	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.572	4.072	3.372	2.272	-	-	2.272	-	-
Pot Cap-1 Maneuver	47	61	301	48	61	302	686	-	-	688	-	-
Stage 1	290	317	-	299	326	-	-	-	-	-	-	-
Stage 2	302	324	-	298	316	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	44	60	296	47	60	302	676	-	-	687	-	-
Mov Cap-2 Maneuver	44	60	-	47	60	-	-	-	-	-	-	-
Stage 1	281	308	-	299	326	-	-	-	-	-	-	-
Stage 2	291	324	-	293	306	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0			17.38			0			0.11		
HCM LOS	A			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	676	-	-	-	302	687	-	-				
HCM Lane V/C Ratio	-	-	-	-	0.036	0.016	-	-				
HCM Ctrl Dly (s/v)	0	-	-	0	17.4	10.3	-	-				
HCM Lane LOS	A	-	-	A	C	B	-	-				
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-				

HCM 7th TWSC
28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection												
Int Delay, s/veh	22.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	10	10	10	70	10	10	20	750	130	10	820	30
Future Vol, veh/h	10	10	10	70	10	10	20	750	130	10	820	30
Conflicting Peds, #/hr	0	0	0	0	0	0	9	0	1	1	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	9	9	9	9	9	9	9	9	9	9	9	9
Mvmt Flow	10	10	10	72	10	10	21	773	134	10	845	31

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1710	1840	870	1754	1788	841	885	0	0	908	0	0
Stage 1	890	890	-	882	882	-	-	-	-	-	-	-
Stage 2	820	949	-	871	906	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.59	6.29	7.19	6.59	6.29	4.19	-	-	4.19	-	-
Critical Hdwy Stg 1	6.19	5.59	-	6.19	5.59	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.59	-	6.19	5.59	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.081	3.381	3.581	4.081	3.381	2.281	-	-	2.281	-	-
Pot Cap-1 Maneuver	69	72	341	~ 64	78	354	736	-	-	721	-	-
Stage 1	328	352	-	331	355	-	-	-	-	-	-	-
Stage 2	359	330	-	336	346	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	55	69	338	~ 51	74	354	730	-	-	721	-	-
Mov Cap-2 Maneuver	55	69	-	~ 51	74	-	-	-	-	-	-	-
Stage 1	320	344	-	322	344	-	-	-	-	-	-	-
Stage 2	329	320	-	312	338	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	71.03	\$ 447.48	0.22	0.12
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	730	-	-	84 58	721	-	-
HCM Lane V/C Ratio	0.028	-	-	0.368 1.589	0.014	-	-
HCM Ctrl Dly (s/v)	10.1	-	-	71\$ 447.5	10.1	-	-
HCM Lane LOS	B	-	-	F F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4 8.4	0	-	-

Notes	
~: Volume exceeds capacity	\$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	10	10	10	30	10	20	10	70	20	20	130	10
Future Vol, veh/h	10	10	10	30	10	20	10	70	20	20	130	10
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	16	16	48	16	32	16	111	32	32	206	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.3	8.6	8.6	9.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	33%	50%	13%
Vol Thru, %	70%	33%	17%	81%
Vol Right, %	20%	33%	33%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	30	60	160
LT Vol	10	10	30	20
Through Vol	70	10	10	130
RT Vol	20	10	20	10
Lane Flow Rate	159	48	95	254
Geometry Grp	1	1	1	1
Degree of Util (X)	0.198	0.065	0.128	0.315
Departure Headway (Hd)	4.482	4.879	4.846	4.465
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	800	732	738	805
Service Time	2.514	2.922	2.886	2.494
HCM Lane V/C Ratio	0.199	0.066	0.129	0.316
HCM Control Delay, s/veh	8.6	8.3	8.6	9.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	0.2	0.4	1.4

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection

Intersection Delay, s/veh 11.7

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	70	70	40	50	30	30	80	80	30	120	30
Future Vol, veh/h	10	70	70	40	50	30	30	80	80	30	120	30
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	15	103	103	59	74	44	44	118	118	44	176	44
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay, s/veh	11.3			11			12			12.2		
HCM LOS	B			B			B			B		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	7%	33%	17%
Vol Thru, %	42%	47%	42%	67%
Vol Right, %	42%	47%	25%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	150	120	180
LT Vol	30	10	40	30
Through Vol	80	70	50	120
RT Vol	80	70	30	30
Lane Flow Rate	279	221	176	265
Geometry Grp	1	1	1	1
Degree of Util (X)	0.411	0.336	0.281	0.402
Departure Headway (Hd)	5.295	5.477	5.733	5.462
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	676	653	623	656
Service Time	3.351	3.538	3.799	3.518
HCM Lane V/C Ratio	0.413	0.338	0.283	0.404
HCM Control Delay, s/veh	12	11.3	11	12.2
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2	1.5	1.1	1.9

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection												
Intersection Delay, s/veh 11.2												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	40	70	40	10	70	80	20	80	20	50	120	30
Future Vol, veh/h	40	70	40	10	70	80	20	80	20	50	120	30
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	56	97	56	14	97	111	28	111	28	69	167	42
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	11	10.8	10.5	12.1
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	27%	6%	25%
Vol Thru, %	67%	47%	44%	60%
Vol Right, %	17%	27%	50%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	150	160	200
LT Vol	20	40	10	50
Through Vol	80	70	70	120
RT Vol	20	40	80	30
Lane Flow Rate	167	208	222	278
Geometry Grp	1	1	1	1
Degree of Util (X)	0.255	0.314	0.323	0.413
Departure Headway (Hd)	5.517	5.432	5.238	5.358
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	650	660	684	672
Service Time	3.561	3.476	3.281	3.398
HCM Lane V/C Ratio	0.257	0.315	0.325	0.414
HCM Control Delay, s/veh	10.5	11	10.8	12.1
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1	1.3	1.4	2

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	90	140	570	490	40
Future Vol, veh/h	40	90	140	570	490	40
Conflicting Peds, #/hr	0	10	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	42	94	146	594	510	42
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1425	549	560	0	-	0
Stage 1	539	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	145	524	982	-	-	-
Stage 1	573	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	111	515	974	-	-	-
Mov Cap-2 Maneuver	239	-	-	-	-	-
Stage 1	441	-	-	-	-	-
Stage 2	390	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	19.61	1.84		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	355	-	380	-	-	
HCM Lane V/C Ratio	0.15	-	0.356	-	-	
HCM Ctrl Dly (s/v)	9.3	0	19.6	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.5	-	1.6	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	30	130	0	0	320	100	10	0	10	30	10	70
Future Vol, veh/h	30	130	0	0	320	100	10	0	10	30	10	70
Conflicting Peds, #/hr	16	0	4	4	0	16	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	32	140	0	0	344	108	11	0	11	32	11	75
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	468	0	0	144	0	0	559	676	145	619	622	415
Stage 1	-	-	-	-	-	-	208	208	-	414	414	-
Stage 2	-	-	-	-	-	-	350	468	-	205	208	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1089	-	-	1433	-	-	438	374	900	399	401	635
Stage 1	-	-	-	-	-	-	791	728	-	614	591	-
Stage 2	-	-	-	-	-	-	664	560	-	794	728	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1072	-	-	1427	-	-	361	355	896	376	381	625
Mov Cap-2 Maneuver	-	-	-	-	-	-	361	355	-	376	381	-
Stage 1	-	-	-	-	-	-	763	701	-	604	582	-
Stage 2	-	-	-	-	-	-	573	551	-	759	701	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.59			0			12.3			14.31		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	515	338	-	-	1427	-	-	504				
HCM Lane V/C Ratio	0.042	0.03	-	-	-	-	-	0.235				
HCM Ctrl Dly (s/v)	12.3	8.5	0	-	0	-	-	14.3				
HCM Lane LOS	B	A	A	-	A	-	-	B				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.9				

HCM 7th Signalized Intersection Summary
34: Silverado Trail & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	10	100	20	10	10	150	570	20	10	630	10
Future Volume (veh/h)	10	10	100	20	10	10	150	570	20	10	630	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	11	11	7	22	11	1	163	620	21	11	685	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	29	29	50	96	48	4	206	964	33	25	798	12
Arrive On Green	0.03	0.03	0.03	0.08	0.08	0.08	0.12	0.54	0.54	0.01	0.44	0.44
Sat Flow, veh/h	905	905	1572	1157	579	53	1767	1784	60	1767	1824	27
Grp Volume(v), veh/h	22	0	7	34	0	0	163	0	641	11	0	695
Grp Sat Flow(s),veh/h/ln	1810	0	1572	1788	0	0	1767	0	1845	1767	0	1851
Q Serve(g_s), s	0.7	0.0	0.3	1.1	0.0	0.0	5.4	0.0	14.8	0.4	0.0	20.4
Cycle Q Clear(g_c), s	0.7	0.0	0.3	1.1	0.0	0.0	5.4	0.0	14.8	0.4	0.0	20.4
Prop In Lane	0.50		1.00	0.65		0.03	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	58	0	50	148	0	0	206	0	996	25	0	809
V/C Ratio(X)	0.38	0.00	0.14	0.23	0.00	0.00	0.79	0.00	0.64	0.45	0.00	0.86
Avail Cap(c_a), veh/h	510	0	443	148	0	0	310	0	1314	146	0	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.6	0.0	28.4	25.9	0.0	0.0	25.9	0.0	9.8	29.5	0.0	15.3
Incr Delay (d2), s/veh	4.1	0.0	1.3	0.8	0.0	0.0	7.8	0.0	0.7	12.1	0.0	4.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.1	0.5	0.0	0.0	2.5	0.0	4.5	0.2	0.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.7	0.0	29.7	26.7	0.0	0.0	33.7	0.0	10.5	41.7	0.0	20.1
LnGrp LOS	C		C	C			C		B	D		C
Approach Vol, veh/h	29			34			804			706		
Approach Delay, s/veh	32.0			26.7			15.2			20.4		
Approach LOS	C			C			B			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.4	31.8		9.6	6.2	38.0		6.5				
Change Period (Y+Rc), s	5.4	5.4		4.6	5.4	5.4		4.6				
Max Green Setting (Gmax), s	10.6	37.4		5.0	5.0	43.0		17.0				
Max Q Clear Time (g_c+I1), s	7.4	22.4		3.1	2.4	16.8		2.7				
Green Ext Time (p_c), s	0.1	4.0		0.0	0.0	4.3		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh	18.1											
HCM 7th LOS	B											

HCM 7th TWSC

4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	5.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	70	20	10	60
Future Vol, veh/h	30	10	70	20	10	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	37	12	85	24	12	73
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	49	0	238	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	195	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1552	-	748	1025
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	835	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1552	-	707	1025
Mov Cap-2 Maneuver	-	-	-	-	707	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	789	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.8		9.1	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	963	-	-	1400	-	
HCM Lane V/C Ratio	0.089	-	-	0.055	-	
HCM Ctrl Dly (s/v)	9.1	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-	

HCM 7th TWSC

5: Valley View St & Spring St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	7.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	60	40	160	50	40	220
Future Vol, veh/h	60	40	160	50	40	220
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	70	47	186	58	47	256
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	118	0	525	95
Stage 1	-	-	-	-	95	-
Stage 2	-	-	-	-	430	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1464	-	511	959
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	654	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1461	-	443	957
Mov Cap-2 Maneuver	-	-	-	-	443	-
Stage 1	-	-	-	-	924	-
Stage 2	-	-	-	-	568	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.96		12.04	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	812	-	-	1371	-	
HCM Lane V/C Ratio	0.372	-	-	0.127	-	
HCM Ctrl Dly (s/v)	12	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.7	-	-	0.4	-	

HCM 7th AWSC

Saint Helena Streets Master Plan

6: Crane Ave/Valley View St & Grayson Ave Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Intersection Delay, s/veh	9.4					
Intersection LOS	A					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	90	180	30	70	160
Future Vol, veh/h	10	90	180	30	70	160
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	12	105	209	35	81	186
Number of Lanes	1	0	1	0	0	1
Approach	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		1	
Conflicting Approach Left	NB				WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right	SB		WB			
Conflicting Lanes Right	1		1		0	
HCM Control Delay, s/veh	8.4		9.4		9.9	
HCM LOS	A		A		A	
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	10%	30%			
Vol Thru, %	86%	0%	70%			
Vol Right, %	14%	90%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	210	100	230			
LT Vol	0	10	70			
Through Vol	180	0	160			
RT Vol	30	90	0			
Lane Flow Rate	244	116	267			
Geometry Grp	1	1	1			
Degree of Util (X)	0.3	0.148	0.337			
Departure Headway (Hd)	4.429	4.567	4.543			
Convergence, Y/N	Yes	Yes	Yes			
Cap	811	784	792			
Service Time	2.459	2.601	2.573			
HCM Lane V/C Ratio	0.301	0.148	0.337			
HCM Control Delay, s/veh	9.4	8.4	9.9			
HCM Lane LOS	A	A	A			
HCM 95th-tile Q	1.3	0.5	1.5			

HCM 7th TWSC

Saint Helena Streets Master Plan

7: Sulphur Spring Ave & Crane Ave Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	40	30	160	140	20
Future Vol, veh/h	30	40	30	160	140	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	38	51	38	205	179	26
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	244	0	-	0	269	141
Stage 1	-	-	-	-	141	-
Stage 2	-	-	-	-	128	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1317	-	-	-	718	904
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1317	-	-	-	696	904
Mov Cap-2 Maneuver	-	-	-	-	696	-
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	895	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.35	0		12.02		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	771	-	-	-	717	
HCM Lane V/C Ratio	0.029	-	-	-	0.286	
HCM Ctrl Dly (s/v)	7.8	0	-	-	12	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2	

HCM 7th TWSC

8: Main St & Pratt Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday PM

Intersection												
Int Delay, s/veh	50.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙ ↘			↙ ↘		
Traffic Vol, veh/h	10	10	10	50	10	60	10	940	40	30	690	10
Future Vol, veh/h	10	10	10	50	10	60	10	940	40	30	690	10
Conflicting Peds, #/hr	0	0	0	0	0	0	12	0	1	1	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	11	11	57	11	69	11	1080	46	34	793	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1989	2030	811	1995	2013	1104	817	0	0	1127	0	0
Stage 1	880	880	-	1127	1127	-	-	-	-	-	-	-
Stage 2	1109	1150	-	868	886	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	45	57	378	~ 45	58	255	807	-	-	616	-	-
Stage 1	340	364	-	247	278	-	-	-	-	-	-	-
Stage 2	253	271	-	346	361	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	24	52	374	~ 32	54	255	798	-	-	615	-	-
Mov Cap-2 Maneuver	24	52	-	~ 32	54	-	-	-	-	-	-	-
Stage 1	318	339	-	243	274	-	-	-	-	-	-	-
Stage 2	174	267	-	306	337	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	188.2		\$ 735.1			0.1			0.46			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	798	-	-	47	60	615	-	-				
HCM Lane V/C Ratio	0.014	-	-	0.726	2.286	0.056	-	-				
HCM Ctrl Dly (s/v)	9.6	-	-	188.2	\$ 735.1	11.2	-	-				
HCM Lane LOS	A	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	0	-	-	2.9	13.5	0.2	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th TWSC

9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	19.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	40	30	920	710	40
Future Vol, veh/h	70	40	30	920	710	40
Conflicting Peds, #/hr	0	1	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	80	45	34	1045	807	45
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1950	838	859	0	-	0
Stage 1	837	-	-	-	-	-
Stage 2	1114	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	~ 70	365	778	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 62	362	772	-	-	-
Mov Cap-2 Maneuver	~ 62	-	-	-	-	-
Stage 1	376	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	\$ 321.82	0.31		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	57	-	89	-	-	
HCM Lane V/C Ratio	0.044	-	1.407	-	-	
HCM Ctrl Dly (s/v)	9.9	\$ 321.8		-	-	
HCM Lane LOS	A	A	F	-	-	
HCM 95th %tile Q(veh)	0.1	-	9.5	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

10: Main St & Madrona Ave/Fulton Ln Cumulative Conditions Plus Project Adams Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	50	20	20	50	180	30	650	20	80	610	60
Future Volume (veh/h)	120	50	20	20	50	180	30	650	20	80	610	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.96	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	128	53	17	21	53	100	32	691	20	85	649	62
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	208	71	20	68	108	174	186	778	23	194	722	69
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	775	399	110	116	604	973	733	1275	37	733	1184	113
Grp Volume(v), veh/h	198	0	0	174	0	0	32	0	711	85	0	711
Grp Sat Flow(s),veh/h/ln	1284	0	0	1694	0	0	733	0	1312	733	0	1297
Q Serve(g_s), s	4.7	0.0	0.0	0.0	0.0	0.0	3.3	0.0	39.1	9.5	0.0	40.0
Cycle Q Clear(g_c), s	12.8	0.0	0.0	8.1	0.0	0.0	43.3	0.0	39.1	48.5	0.0	40.0
Prop In Lane	0.65		0.09	0.12		0.57	1.00		0.03	1.00		0.09
Lane Grp Cap(c), veh/h	299	0	0	350	0	0	186	0	800	194	0	791
V/C Ratio(X)	0.66	0.00	0.00	0.50	0.00	0.00	0.17	0.00	0.89	0.44	0.00	0.90
Avail Cap(c_a), veh/h	701	0	0	813	0	0	284	0	977	292	0	966
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.9	0.0	0.0	31.9	0.0	0.0	32.9	0.0	14.0	34.7	0.0	14.2
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.4	0.0	0.0	0.2	0.0	7.8	0.6	0.0	8.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	0.0	3.3	0.0	0.0	0.6	0.0	11.8	1.7	0.0	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.8	0.0	0.0	32.3	0.0	0.0	33.1	0.0	21.8	35.3	0.0	22.9
LnGrp LOS	C			C			C		C	D		C
Approach Vol, veh/h	198			174			743			796		
Approach Delay, s/veh	34.8			32.3			22.3			24.2		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	60.3			24.3			60.3			24.3		
Change Period (Y+Rc), s	8.7			9.2			8.7			9.2		
Max Green Setting (Gmax), s	63.0			40.0			63.0			40.0		
Max Q Clear Time (g_c+l1), s	50.5			10.1			45.3			14.8		
Green Ext Time (p_c), s	1.1			0.2			1.0			0.3		
Intersection Summary												
HCM 7th Control Delay, s/veh	25.3											
HCM 7th LOS	C											

HCM 7th TWSC

11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	6.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	110	10	30	210	10
Future Vol, veh/h	30	110	10	30	210	10
Conflicting Peds, #/hr	0	5	5	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	124	11	34	236	11
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	162	0	159	101
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1410	-	830	952
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	962	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1404	-	818	948
Mov Cap-2 Maneuver	-	-	-	-	818	-
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	952	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		1.9		11.24	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1		EBT	EBR	WBL	WBT
Capacity (veh/h)	823		-	-	450	-
HCM Lane V/C Ratio	0.3		-	-	0.008	-
HCM Ctrl Dly (s/v)	11.2		-	-	7.6	0
HCM Lane LOS	B		-	-	A	A
HCM 95th %tile Q(veh)	1.3		-	-	0	-

HCM 7th Signalized Intersection Summary
12: Main St & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	100	30	70	80	180	40	440	40	170	440	40
Future Volume (veh/h)	80	100	30	70	80	180	40	440	40	170	440	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.86	0.96		0.86	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1856
Adj Flow Rate, veh/h	85	106	25	74	85	143	43	468	40	181	468	40
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	141	158	32	115	108	155	117	485	41	214	550	47
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.07	0.41	0.41	0.12	0.46	0.46
Sat Flow, veh/h	379	714	143	291	488	701	1767	1194	102	1767	1193	102
Grp Volume(v), veh/h	216	0	0	302	0	0	43	0	508	181	0	508
Grp Sat Flow(s),veh/h/ln	1237	0	0	1480	0	0	1767	0	1296	1767	0	1295
Q Serve(g_s), s	0.0	0.0	0.0	3.0	0.0	0.0	2.1	0.0	33.8	8.8	0.0	30.7
Cycle Q Clear(g_c), s	14.5	0.0	0.0	17.5	0.0	0.0	2.1	0.0	33.8	8.8	0.0	30.7
Prop In Lane	0.39		0.12	0.25		0.47	1.00		0.08	1.00		0.08
Lane Grp Cap(c), veh/h	331	0	0	379	0	0	117	0	527	214	0	597
V/C Ratio(X)	0.65	0.00	0.00	0.80	0.00	0.00	0.37	0.00	0.96	0.84	0.00	0.85
Avail Cap(c_a), veh/h	346	0	0	394	0	0	180	0	539	214	0	597
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.8	0.0	0.0	33.4	0.0	0.0	39.4	0.0	25.6	38.0	0.0	21.1
Incr Delay (d2), s/veh	3.1	0.0	0.0	9.6	0.0	0.0	0.7	0.0	29.2	24.2	0.0	10.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	0.0	7.2	0.0	0.0	0.9	0.0	14.2	5.2	0.0	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.8	0.0	0.0	43.0	0.0	0.0	40.1	0.0	54.8	62.2	0.0	31.8
LnGrp LOS	C			D			D		D	E		C
Approach Vol, veh/h	216			302			551			689		
Approach Delay, s/veh	34.8			43.0			53.7			39.8		
Approach LOS	C			D			D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	49.4		28.3	15.4	44.6		28.3				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	9.0	38.4		20.5	10.7	36.7		20.5				
Max Q Clear Time (g_c+I1), s	4.1	32.7		19.5	10.8	35.8		16.5				
Green Ext Time (p_c), s	0.0	0.4		0.1	0.0	0.1		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh	44.1											
HCM 7th LOS	D											

HCM 7th AWSC

13: Railroad Ave & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday PM

Intersection												
Intersection Delay, s/veh 20.2												
Intersection LOS C												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	220	90	60	260	100	60	90	30	60	80	30
Future Vol, veh/h	20	220	90	60	260	100	60	90	30	60	80	30
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	244	100	67	289	111	67	100	33	67	89	33
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.8	26.4	14.3	14.1
HCM LOS	C	D	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	6%	14%	35%
Vol Thru, %	50%	67%	62%	47%
Vol Right, %	17%	27%	24%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	180	330	420	170
LT Vol	60	20	60	60
Through Vol	90	220	260	80
RT Vol	30	90	100	30
Lane Flow Rate	200	367	467	189
Geometry Grp	1	1	1	1
Degree of Util (X)	0.385	0.622	0.772	0.366
Departure Headway (Hd)	6.936	6.106	5.955	6.971
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	516	590	607	514
Service Time	5.015	4.172	4.016	5.049
HCM Lane V/C Ratio	0.388	0.622	0.769	0.368
HCM Control Delay, s/veh	14.3	18.8	26.4	14.1
HCM Lane LOS	B	C	D	B
HCM 95th-ile Q	1.8	4.3	7.2	1.7

HCM 7th TWSC

14: Library Ln & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday PM

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	70	140	10	0	200	0	40	0	10	10	10	50
Future Vol, veh/h	70	140	10	0	200	0	40	0	10	10	10	50
Conflicting Peds, #/hr	4	0	5	5	0	4	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	74	147	11	0	211	0	42	0	11	11	11	53
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	215	0	0	163	0	0	521	520	162	513	525	215
Stage 1	-	-	-	-	-	-	305	305	-	215	215	-
Stage 2	-	-	-	-	-	-	216	215	-	299	310	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1350	-	-	1410	-	-	465	459	881	470	456	823
Stage 1	-	-	-	-	-	-	702	660	-	785	723	-
Stage 2	-	-	-	-	-	-	784	723	-	708	657	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1344	-	-	1403	-	-	397	428	873	433	425	820
Mov Cap-2 Maneuver	-	-	-	-	-	-	397	428	-	433	425	-
Stage 1	-	-	-	-	-	-	657	618	-	782	720	-
Stage 2	-	-	-	-	-	-	723	720	-	655	614	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	2.49			0			14.15			11.24		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	446	565	-	-	1403	-	-	651				
HCM Lane V/C Ratio	0.118	0.055	-	-	-	-	-	0.113				
HCM Ctrl Dly (s/v)	14.2	7.8	0	-	0	-	-	11.2				
HCM Lane LOS	B	A	A	-	A	-	-	B				
HCM 95th %tile Q(veh)	0.4	0.2	-	-	0	-	-	0.4				

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	30	490	80	30	510
Future Vol, veh/h	60	30	490	80	30	510
Conflicting Peds, #/hr	53	0	0	72	72	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	66	33	538	88	33	560
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1334	654	0	0	698	0
Stage 1	654	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	169	465	-	-	893	-
Stage 1	515	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	143	433	-	-	832	-
Mov Cap-2 Maneuver	279	-	-	-	-	-
Stage 1	480	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	21.45	0		0.53		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	317	832	-	
HCM Lane V/C Ratio	-	-	0.312	0.04	-	
HCM Ctrl Dly (s/v)	-	-	21.4	9.5	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	1.3	0.1	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

16: Church St/Railroad Ave & Hunt Ave Cumulative Conditions Plus Project Adams Weekday PM

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	80	10	10	50	140	10	10	10	190	10	20
Future Vol, veh/h	30	80	10	10	50	140	10	10	10	190	10	20
Conflicting Peds, #/hr	20	0	22	20	0	22	12	0	20	0	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	33	89	11	11	56	156	11	11	11	211	11	22
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	233	0	0	122	0	0	278	438	136	359	366	167
Stage 1	-	-	-	-	-	-	183	183	-	178	178	-
Stage 2	-	-	-	-	-	-	95	255	-	181	189	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1329	-	-	1459	-	-	672	511	909	595	561	874
Stage 1	-	-	-	-	-	-	816	746	-	822	750	-
Stage 2	-	-	-	-	-	-	909	694	-	818	742	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1301	-	-	1429	-	-	598	472	873	531	518	846
Mov Cap-2 Maneuver	-	-	-	-	-	-	598	472	-	531	518	-
Stage 1	-	-	-	-	-	-	777	711	-	797	728	-
Stage 2	-	-	-	-	-	-	854	674	-	759	707	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.96			0.38			11.27			16.7		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	608	440	-	-	78	-	-	549				
HCM Lane V/C Ratio	0.055	0.026	-	-	0.008	-	-	0.445				
HCM Ctrl Dly (s/v)	11.3	7.8	0	-	7.5	0	-	16.7				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	2.3				

HCM 7th TWSC
17: Mitchell Dr & Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	30	50	70	150	20
Future Vol, veh/h	20	30	50	70	150	20
Conflicting Peds, #/hr	8	0	0	8	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	22	33	55	77	165	22
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	140	0	-	0	140	69
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	77	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1437	-	-	-	851	991
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	944	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1426	-	-	-	825	978
Mov Cap-2 Maneuver	-	-	-	-	825	-
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	936	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.03	0		10.51		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	720	-	-	-	840	
HCM Lane V/C Ratio	0.015	-	-	-	0.222	
HCM Ctrl Dly (s/v)	7.6	0	-	-	10.5	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.8	

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

18: Main St & Mitchell Dr/Pope St Cumulative Conditions Plus Project Adams Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	210	160	30	80	100	560	70	80	510	10
Future Volume (veh/h)	0	0	210	160	30	80	100	560	70	80	510	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.89	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	0	0	226	172	32	15	108	602	75	86	548	11
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	32	147	216	40	202	134	616	77	130	688	14
Arrive On Green	0.00	0.00	0.02	0.14	0.14	0.14	0.08	0.54	0.54	0.07	0.53	0.53
Sat Flow, veh/h	0	1856	1572	1501	279	1398	1767	1146	143	1767	1287	26
Grp Volume(v), veh/h	0	0	226	204	0	15	108	0	677	86	0	559
Grp Sat Flow(s),veh/h/ln	0	1856	1572	1780	0	1398	1767	0	1289	1767	0	1313
Q Serve(g_s), s	0.0	0.0	2.0	12.7	0.0	1.1	6.9	0.0	58.7	5.4	0.0	39.6
Cycle Q Clear(g_c), s	0.0	0.0	2.0	12.7	0.0	1.1	6.9	0.0	58.7	5.4	0.0	39.6
Prop In Lane	0.00		1.00	0.84		1.00	1.00		0.11	1.00		0.02
Lane Grp Cap(c), veh/h	0	32	147	257	0	202	134	0	693	130	0	702
V/C Ratio(X)	0.00	0.00	1.54	0.79	0.00	0.07	0.80	0.00	0.98	0.66	0.00	0.80
Avail Cap(c_a), veh/h	0	32	147	368	0	289	362	0	907	162	0	741
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	52.0	47.4	0.0	42.5	52.2	0.0	25.9	51.8	0.0	21.6
Incr Delay (d2), s/veh	0.0	0.0	273.5	4.7	0.0	0.1	4.2	0.0	20.1	3.7	0.0	5.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	15.4	6.0	0.0	0.4	3.2	0.0	21.1	2.6	0.0	12.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	325.5	52.1	0.0	42.5	56.4	0.0	46.0	55.4	0.0	26.8
LnGrp LOS			F	D		D	E		D	E		C
Approach Vol, veh/h	226			219			785			645		
Approach Delay, s/veh	325.5			51.4			47.4			30.6		
Approach LOS	F			D			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.4	69.0		26.2	13.1	69.3		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	23.5	64.7		23.7	10.5	* 81		2.0				
Max Q Clear Time (g_c+I1), s	8.9	41.6		14.7	7.4	60.7		4.0				
Green Ext Time (p_c), s	0.0	0.7		0.2	0.0	0.9		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh 75.6

HCM 7th LOS E

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

19: Main St & Grayson Avenue

Cumulative Conditions Plus Project Adams Weekday PM

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	70	70	750	860	60
Future Volume (veh/h)	70	70	70	750	860	60
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1318	1318	1318
Adj Flow Rate, veh/h	75	51	75	806	925	63
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	75	51	102	1098	906	62
Arrive On Green	0.08	0.08	0.06	0.83	0.74	0.74
Sat Flow, veh/h	995	676	1767	1318	1218	83
Grp Volume(v), veh/h	127	0	75	806	0	988
Grp Sat Flow(s), veh/h/ln	1684	0	1767	1318	0	1301
Q Serve(g_s), s	11.2	0.0	6.2	39.3	0.0	111.0
Cycle Q Clear(g_c), s	11.2	0.0	6.2	39.3	0.0	111.0
Prop In Lane	0.59	0.40	1.00			0.06
Lane Grp Cap(c), veh/h	126	0	102	1098	0	967
V/C Ratio(X)	1.01	0.00	0.74	0.73	0.00	1.02
Avail Cap(c_a), veh/h	126	0	110	1139	0	967
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	69.0	0.0	69.2	5.4	0.0	19.1
Incr Delay (d2), s/veh	81.5	0.0	17.8	2.1	0.0	34.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	0.0	3.3	8.6	0.0	37.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	150.5	0.0	87.0	7.4	0.0	53.6
LnGrp LOS	F		F	A		F
Approach Vol, veh/h	127			881	988	
Approach Delay, s/veh	150.5			14.2	53.6	
Approach LOS	F			B	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	33.3	120.1			133.4	15.9
Change Period (Y+Rc), s	4.7	9.1			* 9.1	4.7
Max Green Setting (Gmax), s	111.0				* 1.3E+02	11.2
Max Q Clear Time (g_c+I), s	113.0				41.3	13.2
Green Ext Time (p_c), s	0.0	0.0			0.8	0.0
Intersection Summary						
HCM 7th Control Delay, s/veh			42.4			
HCM 7th LOS			D			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC

Saint Helena Streets Master Plan

20: Main St & Sulphur Springs Ave

Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	140	140	790	880	50
Future Vol, veh/h	30	140	140	790	880	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	32	151	151	849	946	54
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2124	973	1000	0	-	0
Stage 1	973	-	-	-	-	-
Stage 2	1151	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	55	305	688	-	-	-
Stage 1	365	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	43	305	688	-	-	-
Mov Cap-2 Maneuver	153	-	-	-	-	-
Stage 1	285	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	29.06	1.76		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	688	-	153	305	-	-
HCM Lane V/C Ratio	0.219	-	0.211	0.494	-	-
HCM Ctrl Dly (s/v)	11.7	-	34.7	27.8	-	-
HCM Lane LOS	B	-	D	D	-	-
HCM 95th %tile Q(veh)	0.8	-	0.8	2.6	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday PM

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	100	10	20	90	10
Future Vol, veh/h	20	100	10	20	90	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	22	108	11	22	97	11
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7.3	7.6	8.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	90%	0%	33%
Vol Thru, %	0%	17%	67%
Vol Right, %	10%	83%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	100	120	30
LT Vol	90	0	10
Through Vol	0	20	20
RT Vol	10	100	0
Lane Flow Rate	108	129	32
Geometry Grp	1	1	1
Degree of Util (X)	0.13	0.131	0.039
Departure Headway (Hd)	4.35	3.665	4.308
Convergence, Y/N	Yes	Yes	Yes
Cap	819	964	820
Service Time	2.4	1.741	2.391
HCM Lane V/C Ratio	0.132	0.134	0.039
HCM Control Delay, s/veh	8.1	7.3	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.5	0.1

HCM 7th TWSC

22: Pope Street & Starr Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	230	260	80	110	20
Future Vol, veh/h	30	230	260	80	110	20
Conflicting Peds, #/hr	2	0	0	2	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	261	295	91	125	23
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	388	0	-	0	672	345
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	330	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1165	-	-	-	419	696
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	727	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1162	-	-	-	403	693
Mov Cap-2 Maneuver	-	-	-	-	403	-
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	725	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.95	0		17.64		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	208	-	-	-	431	
HCM Lane V/C Ratio	0.029	-	-	-	0.343	
HCM Ctrl Dly (s/v)	8.2	0	-	-	17.6	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	1.5	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Poplar St - Base Conditions Plus Project Adams Weekday PM

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	270	40	20	260	10	40	0	30	10	0	20
Future Vol, veh/h	40	270	40	20	260	10	40	0	30	10	0	20
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	47	318	47	24	306	12	47	0	35	12	0	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	318	0	0	366	0	0	791	801	342	771	819	314
Stage 1	-	-	-	-	-	-	436	436	-	359	359	-
Stage 2	-	-	-	-	-	-	355	365	-	412	460	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1237	-	-	1187	-	-	306	317	698	316	309	724
Stage 1	-	-	-	-	-	-	597	578	-	657	625	-
Stage 2	-	-	-	-	-	-	660	622	-	615	564	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1237	-	-	1186	-	-	278	298	697	283	291	723
Mov Cap-2 Maneuver	-	-	-	-	-	-	278	298	-	283	291	-
Stage 1	-	-	-	-	-	-	573	555	-	644	613	-
Stage 2	-	-	-	-	-	-	625	609	-	562	542	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.92			0.56			16.21			13.17		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	278	697	1237	-	-	1186	-	-	476
HCM Lane V/C Ratio	0.169	0.051	0.038	-	-	0.02	-	-	0.074
HCM Ctrl Dly (s/v)	20.5	10.4	8	-	-	8.1	-	-	13.2
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0.2	0.1	-	-	0.1	-	-	0.2

HCM 7th TWSC

24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	30	620	780	30
Future Vol, veh/h	30	30	30	620	780	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	34	34	697	876	34
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1657	893	910	0	-	0
Stage 1	893	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	107	339	744	-	-	-
Stage 1	398	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	99	339	744	-	-	-
Mov Cap-2 Maneuver	99	-	-	-	-	-
Stage 1	369	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	45.74	0.46		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	83	-	153	-	-	
HCM Lane V/C Ratio	0.045	-	0.44	-	-	
HCM Ctrl Dly (s/v)	10.1	0	45.7	-	-	
HCM Lane LOS	B	A	E	-	-	
HCM 95th %tile Q(veh)	0.1	-	2	-	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

25: Silverado Trail & Howell Mountain ~~and~~ Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	22	738	17	13	887
Future Vol, veh/h	38	22	738	17	13	887
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	44	25	848	20	15	1020
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1907	858	0	0	868	0
Stage 1	858	-	-	-	-	-
Stage 2	1049	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	75	355	-	-	772	-
Stage 1	414	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	73	355	-	-	772	-
Mov Cap-2 Maneuver	200	-	-	-	-	-
Stage 1	414	-	-	-	-	-
Stage 2	329	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	26.14	0		0.14		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	238	772	-	
HCM Lane V/C Ratio	-	-	0.289	0.019	-	
HCM Ctrl Dly (s/v)	-	-	26.1	9.8	-	
HCM Lane LOS	-	-	D	A	-	
HCM 95th %tile Q(veh)	-	-	1.2	0.1	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

26: Silverado Trail & Pope Street

Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	24.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	127	173	102	628	707	218
Future Vol, veh/h	127	173	102	628	707	218
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	143	194	115	706	794	245
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1729	794	1039	0	-	0
Stage 1	794	-	-	-	-	-
Stage 2	935	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	~ 97	386	665	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	380	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 80	386	665	-	-	-
Mov Cap-2 Maneuver	207	-	-	-	-	-
Stage 1	367	-	-	-	-	-
Stage 2	380	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	154.49	1.61		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	665	-	283	-	-	
HCM Lane V/C Ratio	0.172	-	1.193	-	-	
HCM Ctrl Dly (s/v)	11.5	-	154.5	-	-	
HCM Lane LOS	B	-	F	-	-	
HCM 95th %tile Q(veh)	0.6	-	15.2	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday PM

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↗	↖	
Traffic Vol, veh/h	0	0	0	10	10	20	10	810	0	10	910	20
Future Vol, veh/h	0	0	0	10	10	20	10	810	0	10	910	20
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	0	11	11	22	11	871	0	11	978	22
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1914	1908	994	1892	1919	871	1005	0	0	871	0	0
Stage 1	1016	1016	-	892	892	-	-	-	-	-	-	-
Stage 2	898	892	-	1000	1027	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	51	68	296	53	67	349	685	-	-	770	-	-
Stage 1	286	314	-	335	359	-	-	-	-	-	-	-
Stage 2	333	359	-	292	311	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	38	65	295	51	64	349	682	-	-	770	-	-
Mov Cap-2 Maneuver	38	65	-	51	64	-	-	-	-	-	-	-
Stage 1	280	308	-	325	348	-	-	-	-	-	-	-
Stage 2	293	348	-	288	305	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Ctrl Dly, s/v	0		68.82		0.13			0.1				
HCM LOS	A		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	22	-	-	-	97	770	-	-				
HCM Lane V/C Ratio	0.016	-	-	-	0.443	0.014	-	-				
HCM Ctrl Dly (s/v)	10.4	0	-	0	68.8	9.7	-	-				
HCM Lane LOS	B	A	-	A	F	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	-	1.9	0	-	-				

HCM 7th TWSC

28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday PM

Intersection												
Int Delay, s/veh	33.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	20	10	30	70	0	20	20	690	120	30	840	10
Future Vol, veh/h	20	10	30	70	0	20	20	690	120	30	840	10
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	11	33	76	0	22	22	750	130	33	913	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1787	1918	928	1842	1858	815	934	0	0	880	0	0
Stage 1	994	994	-	859	859	-	-	-	-	-	-	-
Stage 2	793	924	-	984	999	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	63	67	323	~ 57	73	376	729	-	-	764	-	-
Stage 1	294	322	-	350	372	-	-	-	-	-	-	-
Stage 2	380	347	-	298	320	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	54	62	320	~ 40	67	376	722	-	-	764	-	-
Mov Cap-2 Maneuver	54	62	-	~ 40	67	-	-	-	-	-	-	-
Stage 1	279	305	-	339	361	-	-	-	-	-	-	-
Stage 2	347	336	-	247	303	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	99.06		\$ 627.42			0.24			0.34			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	722	-	-	96	50	764	-	-				
HCM Lane V/C Ratio	0.03	-	-	0.678	1.964	0.043	-	-				
HCM Ctrl Dly (s/v)	10.1	-	-	99.1	\$ 627.4	9.9	-	-				
HCM Lane LOS	B	-	-	F	F	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	3.4	9.8	0.1	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday PM

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	10	30	10	10	10	90	30	10	90	10
Future Vol, veh/h	10	10	10	30	10	10	10	90	30	10	90	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	12	12	12	35	12	12	12	106	35	12	106	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.7	8	8.1	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	33%	60%	9%
Vol Thru, %	69%	33%	20%	82%
Vol Right, %	23%	33%	20%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	30	50	110
LT Vol	10	10	30	10
Through Vol	90	10	10	90
RT Vol	30	10	10	10
Lane Flow Rate	153	35	59	129
Geometry Grp	1	1	1	1
Degree of Util (X)	0.178	0.044	0.075	0.155
Departure Headway (Hd)	4.193	4.509	4.613	4.3
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	860	796	779	839
Service Time	2.196	2.526	2.629	2.304
HCM Lane V/C Ratio	0.178	0.044	0.076	0.154
HCM Control Delay, s/veh	8.1	7.7	8	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.1	0.2	0.5

HCM 7th AWSC

30: Oak Ave & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday PM

Intersection												
Intersection Delay, s/veh	9.3											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	40	40	60	40	20	20	90	130	30	110	10
Future Vol, veh/h	10	40	40	60	40	20	20	90	130	30	110	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	44	44	66	44	22	22	99	143	33	121	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.7	9.3	9.6	9.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	11%	50%	20%
Vol Thru, %	38%	44%	33%	73%
Vol Right, %	54%	44%	17%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	240	90	120	150
LT Vol	20	10	60	30
Through Vol	90	40	40	110
RT Vol	130	40	20	10
Lane Flow Rate	264	99	132	165
Geometry Grp	1	1	1	1
Degree of Util (X)	0.324	0.134	0.185	0.221
Departure Headway (Hd)	4.419	4.865	5.057	4.826
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	810	731	704	740
Service Time	2.469	2.934	3.123	2.882
HCM Lane V/C Ratio	0.326	0.135	0.188	0.223
HCM Control Delay, s/veh	9.6	8.7	9.3	9.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.4	0.5	0.7	0.8

HCM 7th AWSC

31: Oak Ave & Spring St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekday PM

Intersection												
Intersection Delay, s/veh	9.9											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	70	40	60	20	80	50	40	110	20	40	100	50
Future Vol, veh/h	70	40	60	20	80	50	40	110	20	40	100	50
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	77	44	66	22	88	55	44	121	22	44	110	55
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9.9	9.6	10	10.1
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	41%	13%	21%
Vol Thru, %	65%	24%	53%	53%
Vol Right, %	12%	35%	33%	26%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	170	170	150	190
LT Vol	40	70	20	40
Through Vol	110	40	80	100
RT Vol	20	60	50	50
Lane Flow Rate	187	187	165	209
Geometry Grp	1	1	1	1
Degree of Util (X)	0.263	0.26	0.229	0.287
Departure Headway (Hd)	5.067	5.013	5.002	4.949
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	701	708	709	716
Service Time	3.162	3.109	3.1	3.042
HCM Lane V/C Ratio	0.267	0.264	0.233	0.292
HCM Control Delay, s/veh	10	9.9	9.6	10.1
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	1.1	1	0.9	1.2

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday PM

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	70	100	540	530	40
Future Vol, veh/h	30	70	100	540	530	40
Conflicting Peds, #/hr	0	59	47	0	0	47
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	32	75	108	581	570	43
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1434	697	660	0	-	0
Stage 1	638	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	147	439	923	-	-	-
Stage 1	524	-	-	-	-	-
Stage 2	443	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	110	396	882	-	-	-
Mov Cap-2 Maneuver	240	-	-	-	-	-
Stage 1	411	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	20.99	1.51		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	281	-	331	-	-	
HCM Lane V/C Ratio	0.122	-	0.324	-	-	
HCM Ctrl Dly (s/v)	9.6	0	21	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.4	-	1.4	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekday PM

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	50	120	0	0	230	70	0	0	0	60	0	110
Future Vol, veh/h	50	120	0	0	230	70	0	0	0	60	0	110
Conflicting Peds, #/hr	15	0	6	6	0	15	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	54	130	0	0	250	76	0	0	0	65	0	120
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	341	0	0	136	0	0	496	586	137	543	548	304
Stage 1	-	-	-	-	-	-	245	245	-	303	303	-
Stage 2	-	-	-	-	-	-	251	341	-	240	245	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1212	-	-	1441	-	-	482	421	908	449	442	733
Stage 1	-	-	-	-	-	-	756	701	-	704	662	-
Stage 2	-	-	-	-	-	-	751	637	-	761	701	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1195	-	-	1433	-	-	380	392	902	420	412	722
Mov Cap-2 Maneuver	-	-	-	-	-	-	380	392	-	420	412	-
Stage 1	-	-	-	-	-	-	715	663	-	694	652	-
Stage 2	-	-	-	-	-	-	626	628	-	723	663	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	2.4			0			0			14.17		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	529	-	-	1433	-	-	576				
HCM Lane V/C Ratio	-	0.045	-	-	-	-	-	0.321				
HCM Ctrl Dly (s/v)	0	8.2	0	-	0	-	-	14.2				
HCM Lane LOS	A	A	A	-	A	-	-	B				
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	1.4				

HCM 7th Signalized Intersection Summary 34: Silverado Trail & Adams St

Saint Helena Streets Master Plan Cumulative Conditions Plus Project Adams Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	10	90	20	10	10	110	630	20	10	790	10
Future Volume (veh/h)	10	10	90	20	10	10	110	630	20	10	790	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	11	11	6	22	11	0	120	685	21	11	859	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	28	28	48	42	21	0	153	1077	33	25	967	12
Arrive On Green	0.03	0.03	0.03	0.03	0.03	0.00	0.09	0.60	0.60	0.01	0.53	0.53
Sat Flow, veh/h	905	905	1572	1197	599	0	1767	1791	55	1767	1828	23
Grp Volume(v), veh/h	22	0	6	33	0	0	120	0	706	11	0	870
Grp Sat Flow(s),veh/h/ln	1810	0	1572	1796	0	0	1767	0	1846	1767	0	1851
Q Serve(g_s), s	0.7	0.0	0.2	1.1	0.0	0.0	4.2	0.0	15.5	0.4	0.0	26.2
Cycle Q Clear(g_c), s	0.7	0.0	0.2	1.1	0.0	0.0	4.2	0.0	15.5	0.4	0.0	26.2
Prop In Lane	0.50		1.00	0.67		0.00	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	56	0	48	63	0	0	153	0	1110	25	0	979
V/C Ratio(X)	0.39	0.00	0.12	0.53	0.00	0.00	0.78	0.00	0.64	0.45	0.00	0.89
Avail Cap(c_a), veh/h	491	0	426	143	0	0	197	0	1266	141	0	1210
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.8	0.0	29.6	29.8	0.0	0.0	28.1	0.0	8.1	30.7	0.0	13.1
Incr Delay (d2), s/veh	4.5	0.0	1.1	6.7	0.0	0.0	14.4	0.0	0.9	12.2	0.0	7.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.1	0.6	0.0	0.0	2.2	0.0	4.4	0.2	0.0	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.3	0.0	30.7	36.5	0.0	0.0	42.5	0.0	8.9	42.9	0.0	20.3
LnGrp LOS	C		C	D			D		A	D		C
Approach Vol, veh/h	28			33			826			881		
Approach Delay, s/veh	33.5			36.5			13.8			20.6		
Approach LOS	C			D			B			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.8	38.6		6.8	6.3	43.1		6.5				
Change Period (Y+Rc), s	5.4	5.4		4.6	5.4	5.4		4.6				
Max Green Setting (Gmax), s	7.0	41.0		5.0	5.0	43.0		17.0				
Max Q Clear Time (g_c+I1), s	6.2	28.2		3.1	2.4	17.5		2.7				
Green Ext Time (p_c), s	0.0	5.0		0.0	0.0	4.9		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh	17.9											
HCM 7th LOS	B											

HCM 7th TWSC
4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	20	20	10	10
Future Vol, veh/h	30	10	20	20	10	10
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	37	12	25	25	12	12
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	52	0	120	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	74	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1547	-	873	1020
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	946	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1543	-	856	1017
Mov Cap-2 Maneuver	-	-	-	-	856	-
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	931	-
Approach	EB	WB		NB		
HCM Ctrl Dly, s/v	0	3.69		8.98		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	930	-	-	900	-	
HCM Lane V/C Ratio	0.027	-	-	0.016	-	
HCM Ctrl Dly (s/v)	9	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

HCM 7th TWSC
5: Valley View St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	5.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	40	40	40	30	90
Future Vol, veh/h	40	40	40	40	30	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	56	56	56	56	42	127
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	113	0	254	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	169	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1471	-	733	972
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	858	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1471	-	704	972
Mov Cap-2 Maneuver	-	-	-	-	704	-
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	824	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.77		10.01	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	887	-	-	900	-	
HCM Lane V/C Ratio	0.19	-	-	0.038	-	
HCM Ctrl Dly (s/v)	10	-	-	7.5	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-	

HCM 7th AWSC
6: Crane Ave/Valley View St & Grayson Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	30	90	30	20	70
Future Vol, veh/h	20	30	90	30	20	70
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	29	44	132	44	29	103
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	7.8	8.1	8.2
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	40%	22%
Vol Thru, %	75%	0%	78%
Vol Right, %	25%	60%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	120	50	90
LT Vol	0	20	20
Through Vol	90	0	70
RT Vol	30	30	0
Lane Flow Rate	176	74	132
Geometry Grp	1	1	1
Degree of Util (X)	0.198	0.089	0.157
Departure Headway (Hd)	4.03	4.342	4.259
Convergence, Y/N	Yes	Yes	Yes
Cap	877	830	831
Service Time	2.113	2.342	2.344
HCM Lane V/C Ratio	0.201	0.089	0.159
HCM Control Delay, s/veh	8.1	7.8	8.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0.3	0.6

HCM 7th TWSC
7: Sulphur Spring Ave & Crane Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	10	50	70	10
Future Vol, veh/h	10	10	10	50	70	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	15	15	74	103	15
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	88	0	-	0	96	51
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1501	-	-	-	901	1014
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	976	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1501	-	-	-	893	1014
Mov Cap-2 Maneuver	-	-	-	-	893	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	976	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.71	0		9.57		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	906	
HCM Lane V/C Ratio	0.01	-	-	-	0.13	
HCM Ctrl Dly (s/v)	7.4	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	10	30	0	20	20	640	30	20	620	10
Future Vol, veh/h	10	10	10	30	0	20	20	640	30	20	620	10
Conflicting Peds, #/hr	1	0	2	2	0	1	6	0	1	1	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	10	10	10	31	0	21	21	667	31	21	646	10
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1408	1439	659	1420	1429	684	662	0	0	699	0	0
Stage 1	699	699	-	725	725	-	-	-	-	-	-	-
Stage 2	709	741	-	695	704	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	116	132	462	114	134	447	922	-	-	893	-	-
Stage 1	429	440	-	415	428	-	-	-	-	-	-	-
Stage 2	423	422	-	431	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	105	125	458	97	127	446	916	-	-	892	-	-
Mov Cap-2 Maneuver	105	125	-	97	127	-	-	-	-	-	-	-
Stage 1	417	428	-	405	418	-	-	-	-	-	-	-
Stage 2	394	412	-	401	425	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	34.68		44.56		0.26		0.28					
HCM LOS	D		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	916	-	-	152	141	892	-	-				
HCM Lane V/C Ratio	0.023	-	-	0.205	0.368	0.023	-	-				
HCM Ctrl Dly (s/v)	9	-	-	34.7	44.6	9.1	-	-				
HCM Lane LOS	A	-	-	D	E	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.7	1.5	0.1	-	-				

HCM 7th TWSC
9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	30	30	650	630	30
Future Vol, veh/h	40	30	30	650	630	30
Conflicting Peds, #/hr	0	1	9	0	0	9
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	40	30	30	657	636	30
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1378	662	676	0	-	0
Stage 1	661	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	159	460	911	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	148	456	903	-	-	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	30.95	0.4		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	79	-	208	-	-	
HCM Lane V/C Ratio	0.034	-	0.34	-	-	
HCM Ctrl Dly (s/v)	9.1	0	30.9	-	-	
HCM Lane LOS	A	A	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	1.4	-	-	

HCM 7th Signalized Intersection Summary
10: Main St & Madrona Ave/Fulton Ln

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	
Lane Configurations											
Traffic Volume (veh/h)	80	20	40	10	20	80	20	520	10	50	
Future Volume (veh/h)	80	20	40	10	20	80	20	520	10	50	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	
Adj Flow Rate, veh/h	86	22	23	11	22	9	22	559	10	54	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	
Cap, veh/h	214	40	32	107	137	45	164	738	13	328	
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.54	0.54	0.54	0.54	
Sat Flow, veh/h	905	345	266	234	1128	372	774	1290	23	836	
Grp Volume(v), veh/h	131	0	0	42	0	0	22	0	569	54	
Grp Sat Flow(s),veh/h/ln	1516	0	0	1734	0	0	774	0	1313	836	
Q Serve(g_s), s	3.2	0.0	0.0	0.0	0.0	0.0	1.5	0.0	19.0	3.0	
Cycle Q Clear(g_c), s	4.4	0.0	0.0	1.1	0.0	0.0	26.5	0.0	19.0	22.0	
Prop In Lane	0.66		0.18	0.26		0.21	1.00		0.02	1.00	
Lane Grp Cap(c), veh/h	287	0	0	289	0	0	164	0	751	328	
V/C Ratio(X)	0.46	0.00	0.00	0.15	0.00	0.00	0.13	0.00	0.76	0.16	
Avail Cap(c_a), veh/h	582	0	0	616	0	0	418	0	1090	533	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	
Uniform Delay (d), s/veh	25.0	0.0	0.0	23.5	0.0	0.0	27.4	0.0	9.4	17.8	
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.9	0.1	
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	0.5	0.0	0.0	0.3	0.0	4.5	0.6	
Unsig. Movement Delay, s/veh											
LnGrp Delay(d), s/veh	25.4	0.0	0.0	23.6	0.0	0.0	27.5	0.0	10.3	17.9	
LnGrp LOS	C			C			C			B	B
Approach Vol, veh/h	131			42			591				
Approach Delay, s/veh	25.4			23.6			11.0				
Approach LOS	C			C			B				
Timer - Assigned Phs	2			4			6			8	
Phs Duration (G+Y+Rc), s	37.9			16.2			37.9			16.2	
Change Period (Y+Rc), s	8.7			9.2			8.7			9.2	
Max Green Setting (Gmax), s	44.9			17.2			44.9			17.2	
Max Q Clear Time (g_c+I1), s	28.5			6.4			27.0			3.1	
Green Ext Time (p_c), s	0.7			0.1			0.9			0.0	
Intersection Summary											
HCM 7th Control Delay, s/veh	25.4										
HCM 7th LOS	C										

HCM 7th Signalized Intersection Summary
 10: Main St & Madrona Ave/Fulton Ln

Saint Helena Streets Master Plan
 Cumulative Conditions Plus Project Adams Weekend MD



Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	560	50
Future Volume (veh/h)	560	50
Initial Q (Qb), veh	15	0
Lane Width Adj.	1.00	1.00
Ped-Bike Adj(A_pbT)		0.99
Parking Bus, Adj	1.00	1.00
Work Zone On Approach	No	
Adj Sat Flow, veh/h/ln	1318	1318
Adj Flow Rate, veh/h	602	50
Peak Hour Factor	0.93	0.93
Percent Heavy Veh, %	3	3
Cap, veh/h	702	44
Arrive On Green	0.54	0.54
Sat Flow, veh/h	1200	100
Grp Volume(v), veh/h	0	652
Grp Sat Flow(s),veh/h/ln	0	1300
Q Serve(g_s), s	0.0	25.0
Cycle Q Clear(g_c), s	0.0	25.0
Prop In Lane		0.08
Lane Grp Cap(c), veh/h	0	746
V/C Ratio(X)	0.00	0.87
Avail Cap(c_a), veh/h	0	1079
HCM Platoon Ratio	1.00	1.00
Upstream Filter(I)	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.9
Incr Delay (d2), s/veh	0.0	4.2
Initial Q Delay(d3), s/veh	0.0	23.1
%ile BackOfQ(50%),veh/ln	0.0	12.7
Unsig. Movement Delay, s/veh		
LnGrp Delay(d), s/veh	0.0	39.2
LnGrp LOS		D
Approach Vol, veh/h	706	
Approach Delay, s/veh	37.5	
Approach LOS	D	
Timer - Assigned Phs		

HCM 7th TWSC
11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	5.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	60	10	10	100	10
Future Vol, veh/h	10	60	10	10	100	10
Conflicting Peds, #/hr	0	3	3	0	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	76	13	13	127	13
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	92	0	96	54
Stage 1	-	-	-	-	54	-
Stage 2	-	-	-	-	42	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1497	-	901	1011
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	978	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1493	-	888	1008
Mov Cap-2 Maneuver	-	-	-	-	888	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	966	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.72		9.75	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	897	-	-	900	-	
HCM Lane V/C Ratio	0.155	-	-	0.008	-	
HCM Ctrl Dly (s/v)	9.7	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.5	-	-	0	-	

HCM 7th Signalized Intersection Summary
12: Main St & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations										
Traffic Volume (veh/h)	40	40	30	40	40	160	20	350	30	150
Future Volume (veh/h)	40	40	30	40	40	160	20	350	30	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.80		0.71	0.76		0.71	1.00		0.91	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856
Adj Flow Rate, veh/h	41	41	13	41	41	69	21	361	27	155
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	186	168	45	117	106	134	76	410	31	212
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.04	0.32	0.32	0.12
Sat Flow, veh/h	500	732	195	230	463	583	1767	1202	90	1767
Grp Volume(v), veh/h	95	0	0	151	0	0	21	0	388	155
Grp Sat Flow(s),veh/h/ln	1427	0	0	1275	0	0	1767	0	1292	1767
Q Serve(g_s), s	0.0	0.0	0.0	1.6	0.0	0.0	0.8	0.0	20.2	5.9
Cycle Q Clear(g_c), s	3.2	0.0	0.0	6.6	0.0	0.0	0.8	0.0	20.2	5.9
Prop In Lane	0.43		0.14	0.27		0.46	1.00		0.07	1.00
Lane Grp Cap(c), veh/h	399	0	0	356	0	0	76	0	440	212
V/C Ratio(X)	0.24	0.00	0.00	0.42	0.00	0.00	0.28	0.00	0.88	0.73
Avail Cap(c_a), veh/h	423	0	0	378	0	0	231	0	576	246
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	0.0	0.0	23.8	0.0	0.0	33.2	0.0	22.2	30.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.3	0.0	0.0	0.7	0.0	10.1	7.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	2.2	0.0	0.0	0.4	0.0	7.0	2.9
Unsig. Movement Delay, s/veh										
LnGrp Delay(d), s/veh	22.6	0.0	0.0	24.1	0.0	0.0	33.9	0.0	32.4	37.4
LnGrp LOS	C			C			C		C	D
Approach Vol, veh/h	95			151			409			
Approach Delay, s/veh	22.6			24.1			32.5			
Approach LOS	C			C			C			
Timer - Assigned Phs	1	2		4	5	6		8		
Phs Duration (G+Y+Rc), s	7.7	36.8		25.2	13.3	31.3		25.2		
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7		
Max Green Setting (Gmax), s	9.1	31.7		17.1	9.7	31.1		17.1		
Max Q Clear Time (g_c+I1), s	2.8	26.1		5.2	7.9	22.2		8.6		
Green Ext Time (p_c), s	0.0	0.4		0.1	0.0	0.4		0.2		
Intersection Summary										
HCM 7th Control Delay, s/veh	41.1									
HCM 7th LOS	D									

HCM 7th Signalized Intersection Summary
12: Main St & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD



Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	420	40
Future Volume (veh/h)	420	40
Initial Q (Qb), veh	12	0
Lane Width Adj.	1.00	1.00
Ped-Bike Adj(A_pbT)		0.86
Parking Bus, Adj	1.00	1.00
Work Zone On Approach	No	
Adj Sat Flow, veh/h/ln	1318	1856
Adj Flow Rate, veh/h	433	37
Peak Hour Factor	0.97	0.97
Percent Heavy Veh, %	3	3
Cap, veh/h	515	26
Arrive On Green	0.40	0.40
Sat Flow, veh/h	1180	101
Grp Volume(v), veh/h	0	470
Grp Sat Flow(s),veh/h/ln	0	1281
Q Serve(g_s), s	0.0	24.1
Cycle Q Clear(g_c), s	0.0	24.1
Prop In Lane		0.08
Lane Grp Cap(c), veh/h	0	541
V/C Ratio(X)	0.00	0.87
Avail Cap(c_a), veh/h	0	582
HCM Platoon Ratio	1.00	1.00
Upstream Filter(l)	0.00	1.00
Uniform Delay (d), s/veh	0.0	20.3
Incr Delay (d2), s/veh	0.0	11.8
Initial Q Delay(d3), s/veh	0.0	27.0
%ile BackOfQ(50%),veh/ln	0.0	13.6
Unsig. Movement Delay, s/veh		
LnGrp Delay(d), s/veh	0.0	59.1
LnGrp LOS		E
Approach Vol, veh/h	625	
Approach Delay, s/veh	53.7	
Approach LOS	D	
Timer - Assigned Phs		

HCM 7th AWSC
13: Railroad Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection												
Intersection Delay, s/veh	9.6											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	150	60	10	160	50	40	50	10	40	40	10
Future Vol, veh/h	10	150	60	10	160	50	40	50	10	40	40	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	163	65	11	174	54	43	54	11	43	43	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9.7	9.8	9.3	9.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	5%	5%	44%
Vol Thru, %	50%	68%	73%	44%
Vol Right, %	10%	27%	23%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	220	220	90
LT Vol	40	10	10	40
Through Vol	50	150	160	40
RT Vol	10	60	50	10
Lane Flow Rate	109	239	239	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.157	0.306	0.308	0.142
Departure Headway (Hd)	5.206	4.614	4.64	5.224
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	684	775	770	681
Service Time	3.279	2.669	2.695	3.299
HCM Lane V/C Ratio	0.159	0.308	0.31	0.144
HCM Control Delay, s/veh	9.3	9.7	9.8	9.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	1.3	1.3	0.5

HCM 7th TWSC
14: Library Ln & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	120	10	0	130	0	10	0	0	0	0	20
Future Vol, veh/h	20	120	10	0	130	0	10	0	0	0	0	20
Conflicting Peds, #/hr	1	0	6	6	0	1	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	28	167	14	0	181	0	14	0	0	0	0	28
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	182	0	0	187	0	0	416	417	184	408	424	182
Stage 1	-	-	-	-	-	-	235	235	-	182	182	-
Stage 2	-	-	-	-	-	-	181	182	-	226	242	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.16	6.56	6.26	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.254	-	-	3.554	4.054	3.354	3.554	4.054	3.354
Pot Cap-1 Maneuver	1370	-	-	1364	-	-	540	521	849	547	516	851
Stage 1	-	-	-	-	-	-	759	703	-	811	742	-
Stage 2	-	-	-	-	-	-	812	742	-	767	698	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1369	-	-	1356	-	-	508	506	841	532	501	850
Mov Cap-2 Maneuver	-	-	-	-	-	-	508	506	-	532	501	-
Stage 1	-	-	-	-	-	-	738	683	-	810	741	-
Stage 2	-	-	-	-	-	-	785	741	-	747	678	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.02			0			12.29			9.38		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	508	236	-	-	1356	-	-	850				
HCM Lane V/C Ratio	0.027	0.02	-	-	-	-	-	0.033				
HCM Ctrl Dly (s/v)	12.3	7.7	0	-	0	-	-	9.4				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1				

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	20	380	70	30	460
Future Vol, veh/h	20	20	380	70	30	460
Conflicting Peds, #/hr	172	3	0	301	301	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	20	20	384	71	30	465
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1417	723	0	0	756	0
Stage 1	720	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	150	424	-	-	851	-
Stage 1	480	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	85	302	-	-	607	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	343	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Approach	WB	NB	SB			
HCM Ctrl Dly, s/v	22.63	0	0.69			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	244	607	-	
HCM Lane V/C Ratio	-	-	0.165	0.05	-	
HCM Ctrl Dly (s/v)	-	-	22.6	11.2	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	0.6	0.2	-	

HCM 7th TWSC
16: Church St/Railroad Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	40	20	30	20	60	10	20	40	50	40	20
Future Vol, veh/h	40	40	20	30	20	60	10	20	40	50	40	20
Conflicting Peds, #/hr	17	0	49	17	0	49	5	0	17	3	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	43	43	21	32	21	64	11	21	43	53	43	21
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	134	0	0	113	0	0	299	385	119	321	364	107
Stage 1	-	-	-	-	-	-	187	187	-	166	166	-
Stage 2	-	-	-	-	-	-	111	198	-	155	198	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1444	-	-	1470	-	-	652	547	930	630	562	944
Stage 1	-	-	-	-	-	-	812	743	-	834	759	-
Stage 2	-	-	-	-	-	-	891	735	-	845	735	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1377	-	-	1402	-	-	522	470	872	508	483	896
Mov Cap-2 Maneuver	-	-	-	-	-	-	522	470	-	508	483	-
Stage 1	-	-	-	-	-	-	749	686	-	776	706	-
Stage 2	-	-	-	-	-	-	794	684	-	741	678	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.08			2.08			11.25			13.5		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	651	675	-	-	427	-	-	540				
HCM Lane V/C Ratio	0.114	0.031	-	-	0.023	-	-	0.217				
HCM Ctrl Dly (s/v)	11.2	7.7	0	-	7.6	0	-	13.5				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.1	-	-	0.8				

HCM 7th TWSC
17: Mitchell Dr & Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	0	30	70	90	10
Future Vol, veh/h	20	0	30	70	90	10
Conflicting Peds, #/hr	3	0	0	3	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	25	0	37	86	111	12
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	126	0	-	0	89	41
Stage 1	-	-	-	-	40	-
Stage 2	-	-	-	-	49	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1454	-	-	-	909	1027
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	971	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1449	-	-	-	888	1023
Mov Cap-2 Maneuver	-	-	-	-	888	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	968	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	7.53	0		9.63		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1449	-	-	-	900	
HCM Lane V/C Ratio	0.017	-	-	-	0.137	
HCM Ctrl Dly (s/v)	7.5	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	

HCM 7th Signalized Intersection Summary
18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations										
Traffic Volume (veh/h)	0	0	140	110	30	40	90	460	50	40
Future Volume (veh/h)	0	0	140	110	30	40	90	460	50	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	15	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.90	1.00		0.93	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856
Adj Flow Rate, veh/h	0	0	143	112	31	7	92	469	51	41
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	45	187	225	62	226	168	544	16	117
Arrive On Green	0.00	0.00	0.02	0.16	0.16	0.16	0.10	0.42	0.42	0.07
Sat Flow, veh/h	0	1856	1572	1399	387	1410	1767	1159	126	1767
Grp Volume(v), veh/h	0	0	143	143	0	7	92	0	520	41
Grp Sat Flow(s),veh/h/ln	0	1856	1572	1786	0	1410	1767	0	1285	1767
Q Serve(g_s), s	0.0	0.0	2.0	5.9	0.0	0.3	4.0	0.0	31.8	1.8
Cycle Q Clear(g_c), s	0.0	0.0	2.0	5.9	0.0	0.3	4.0	0.0	31.8	1.8
Prop In Lane	0.00		1.00	0.78		1.00	1.00		0.10	1.00
Lane Grp Cap(c), veh/h	0	45	187	288	0	226	168	0	575	117
V/C Ratio(X)	0.00	0.00	0.76	0.50	0.00	0.03	0.55	0.00	0.90	0.35
Avail Cap(c_a), veh/h	0	46	192	419	0	331	199	0	585	196
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	35.6	31.9	0.0	29.5	36.0	0.0	23.5	37.2
Incr Delay (d2), s/veh	0.0	0.0	14.5	0.5	0.0	0.0	1.0	0.0	16.9	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.7	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.5	2.6	0.0	0.1	1.8	0.0	21.5	0.8
Unsig. Movement Delay, s/veh										
LnGrp Delay(d), s/veh	0.0	0.0	50.1	32.4	0.0	29.5	37.0	0.0	91.1	37.9
LnGrp LOS			D	C		C	D		F	D
Approach Vol, veh/h	143			150			612			
Approach Delay, s/veh	50.1			32.2			83.0			
Approach LOS	D			C			F			
Timer - Assigned Phs	1	2		4	5	6		8		
Phs Duration (G+Y+Rc), s	12.6	39.4		23.0	10.1	41.8		6.0		
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0		
Max Green Setting (Gmax), s	9.1	33.8		19.0	9.0	* 37		2.0		
Max Q Clear Time (g_c+I1), s	6.0	29.5		7.9	3.8	33.8		4.0		
Green Ext Time (p_c), s	0.0	0.3		0.1	0.0	0.3		0.0		

Intersection Summary

HCM 7th Control Delay, s/veh

66.1

HCM 7th LOS

E

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 7th Signalized Intersection Summary
18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD



Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	450	10
Future Volume (veh/h)	450	10
Initial Q (Qb), veh	10	0
Lane Width Adj.	1.00	1.00
Ped-Bike Adj(A_pbT)		0.91
Parking Bus, Adj	1.00	1.00
Work Zone On Approach	No	
Adj Sat Flow, veh/h/ln	1318	1318
Adj Flow Rate, veh/h	459	10
Peak Hour Factor	0.98	0.98
Percent Heavy Veh, %	3	3
Cap, veh/h	530	6
Arrive On Green	0.39	0.39
Sat Flow, veh/h	1282	28
Grp Volume(v), veh/h	0	469
Grp Sat Flow(s),veh/h/ln	0	1310
Q Serve(g_s), s	0.0	27.5
Cycle Q Clear(g_c), s	0.0	27.5
Prop In Lane		0.02
Lane Grp Cap(c), veh/h	0	528
V/C Ratio(X)	0.00	0.89
Avail Cap(c_a), veh/h	0	547
HCM Platoon Ratio	1.00	1.00
Upstream Filter(l)	0.00	1.00
Uniform Delay (d), s/veh	0.0	24.1
Incr Delay (d2), s/veh	0.0	15.3
Initial Q Delay(d3), s/veh	0.0	23.0
%ile BackOfQ(50%),veh/ln	0.0	14.8
Unsig. Movement Delay, s/veh		
LnGrp Delay(d), s/veh	0.0	62.4
LnGrp LOS		E
Approach Vol, veh/h	510	
Approach Delay, s/veh	60.4	
Approach LOS	E	
Timer - Assigned Phs		

HCM 7th Signalized Intersection Summary
19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	30	40	680	720	20
Future Volume (veh/h)	20	30	40	680	720	20
Initial Q (Qb), veh	0	0	0	15	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach No				No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1318	1318	1318
Adj Flow Rate, veh/h	20	1	41	694	735	19
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	88	4	125	982	775	20
Arrive On Green	0.06	0.06	0.07	0.74	0.59	0.59
Sat Flow, veh/h	1601	80	1767	1318	1278	33
Grp Volume(v), veh/h	22	0	41	694	0	754
Grp Sat Flow(s), veh/h/ln	1761	0	1767	1318	0	1311
Q Serve(g_s), s	0.8	0.0	1.5	19.4	0.0	36.4
Cycle Q Clear(g_c), s	0.8	0.0	1.5	19.4	0.0	36.4
Prop In Lane	0.91	0.05	1.00			0.03
Lane Grp Cap(c), veh/h	96	0	125	982	0	795
V/C Ratio(X)	0.23	0.00	0.33	0.71	0.00	0.95
Avail Cap(c_a), veh/h	293	0	244	1381	0	1021
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.6	0.0	30.8	5.6	0.0	12.6
Incr Delay (d2), s/veh	0.4	0.0	0.6	0.4	0.0	13.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	5.7	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.6	5.5	0.0	10.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	32.0	0.0	31.4	11.7	0.0	26.2
LnGrp LOS	C		C	B		C
Approach Vol, veh/h	22			735	754	
Approach Delay, s/veh	32.0			12.8	26.2	
Approach LOS	C			B	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	48.2				57.7	8.4
Change Period (Y+Rc), s	4.7	9.1			* 9.1	4.7
Max Green Setting (Gmax), s	51.4				* 69	11.0
Max Q Clear Time (g_c+I3), s	38.4				21.4	2.8
Green Ext Time (p_c), s	0.0	0.7			0.7	0.0

Intersection Summary

HCM 7th Control Delay, s/veh	19.8
HCM 7th LOS	B

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 7th TWSC
20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	50	40	710	730	20
Future Vol, veh/h	10	50	40	710	730	20
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	10	51	41	724	745	20
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1565	759	769	0	-	0
Stage 1	759	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	122	405	841	-	-	-
Stage 1	460	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	115	403	837	-	-	-
Mov Cap-2 Maneuver	252	-	-	-	-	-
Stage 1	436	-	-	-	-	-
Stage 2	436	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	16	0.51		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	837	-	252	403	-	-
HCM Lane V/C Ratio	0.049	-	0.041	0.127	-	-
HCM Ctrl Dly (s/v)	9.5	-	19.9	15.2	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	0.4	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	60	10	10	40	10
Future Vol, veh/h	10	60	10	10	40	10
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	78	13	13	52	13
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7	7.4	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	80%	0%	50%
Vol Thru, %	0%	14%	50%
Vol Right, %	20%	86%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	50	70	20
LT Vol	40	0	10
Through Vol	0	10	10
RT Vol	10	60	0
Lane Flow Rate	65	91	26
Geometry Grp	1	1	1
Degree of Util (X)	0.076	0.09	0.031
Departure Headway (Hd)	4.193	3.57	4.235
Convergence, Y/N	Yes	Yes	Yes
Cap	853	998	842
Service Time	2.226	1.613	2.279
HCM Lane V/C Ratio	0.076	0.091	0.031
HCM Control Delay, s/veh	7.6	7	7.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.1

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	170	190	50	40	20
Future Vol, veh/h	20	170	190	50	40	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	21	177	198	52	42	21
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	250	0	-	0	443	224
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	219	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1310	-	-	-	571	813
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	815	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1310	-	-	-	560	813
Mov Cap-2 Maneuver	-	-	-	-	560	-
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	815	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.82	0		11.4		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	189	-	-	-	625	
HCM Lane V/C Ratio	0.016	-	-	-	0.1	
HCM Ctrl Dly (s/v)	7.8	0	-	-	11.4	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.3	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Pope Street

Cumulative Conditions Plus Project Adams Weekend MD

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	120	30	20	200	20	30	10	10	10	10	20
Future Vol, veh/h	30	120	30	20	200	20	30	10	10	10	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	34	135	34	22	225	22	34	11	11	11	11	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	247	0	0	169	0	0	494	511	152	489	517	236
Stage 1	-	-	-	-	-	-	219	219	-	281	281	-
Stage 2	-	-	-	-	-	-	275	292	-	208	236	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1313	-	-	1403	-	-	484	464	892	488	461	801
Stage 1	-	-	-	-	-	-	781	720	-	724	677	-
Stage 2	-	-	-	-	-	-	729	669	-	792	708	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1313	-	-	1403	-	-	440	445	892	451	442	801
Mov Cap-2 Maneuver	-	-	-	-	-	-	440	445	-	451	442	-
Stage 1	-	-	-	-	-	-	761	701	-	712	666	-
Stage 2	-	-	-	-	-	-	685	658	-	750	690	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.3	0.63	13.09	11.82
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	441	892	1313	-	-	1403	-	-	573
HCM Lane V/C Ratio	0.102	0.013	0.026	-	-	0.016	-	-	0.078
HCM Ctrl Dly (s/v)	14.1	9.1	7.8	-	-	7.6	-	-	11.8
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	0.1	-	-	0	-	-	0.3

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	30	20	520	540	20
Future Vol, veh/h	10	30	20	520	540	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	34	22	584	607	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1247	618	629	0	-	0
Stage 1	618	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	191	487	948	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	184	487	948	-	-	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	16.99	0.33		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	67	-	345	-	-	
HCM Lane V/C Ratio	0.024	-	0.13	-	-	
HCM Ctrl Dly (s/v)	8.9	0	17	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

HCM 7th TWSC

25: Silverado Trail & Howell Mountain Rd

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	26	634	38	12	668
Future Vol, veh/h	24	26	634	38	12	668
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	27	29	704	42	13	742
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1494	726	0	0	747	0
Stage 1	726	-	-	-	-	-
Stage 2	769	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	135	423	-	-	857	-
Stage 1	477	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	133	423	-	-	857	-
Mov Cap-2 Maneuver	272	-	-	-	-	-
Stage 1	477	-	-	-	-	-
Stage 2	449	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	17.93	0		0.16		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	334	857	-	
HCM Lane V/C Ratio	-	-	0.166	0.016	-	
HCM Ctrl Dly (s/v)	-	-	17.9	9.3	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.6	0	-	

HCM 7th TWSC
26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	78	42	76	594	538	154
Future Vol, veh/h	78	42	76	594	538	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	86	46	84	653	591	169
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1411	591	760	0	-	0
Stage 1	591	-	-	-	-	-
Stage 2	820	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	152	505	847	-	-	-
Stage 1	551	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	137	505	847	-	-	-
Mov Cap-2 Maneuver	273	-	-	-	-	-
Stage 1	497	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	23.44	1.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBTEBLn1	SBT	SBR		
Capacity (veh/h)	847	-	325	-	-	
HCM Lane V/C Ratio	0.099	-	0.406	-	-	
HCM Ctrl Dly (s/v)	9.7	-	23.4	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.3	-	1.9	-	-	

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	10	0	690	10	10	730	10
Future Vol, veh/h	0	0	10	0	0	10	0	690	10	10	730	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	10	0	0	10	0	704	10	10	745	10
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1474	1485	750	1474	1485	709	755	0	0	714	0	0
Stage 1	770	770	-	709	709	-	-	-	-	-	-	-
Stage 2	704	714	-	765	776	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	104	124	410	104	124	432	851	-	-	881	-	-
Stage 1	392	408	-	423	436	-	-	-	-	-	-	-
Stage 2	426	433	-	394	406	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	100	123	410	100	123	432	851	-	-	881	-	-
Mov Cap-2 Maneuver	100	123	-	100	123	-	-	-	-	-	-	-
Stage 1	387	404	-	423	436	-	-	-	-	-	-	-
Stage 2	416	433	-	380	402	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	14.01		13.53			0			0.12			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	851	-	-	410	432	881	-	-				
HCM Lane V/C Ratio	-	-	-	0.025	0.024	0.012	-	-				
HCM Ctrl Dly (s/v)	0	-	-	14	13.5	9.1	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

HCM 7th TWSC
28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection												
Int Delay, s/veh	10.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	20	10	40	60	10	30	20	550	130	40	650	10
Future Vol, veh/h	20	10	40	60	10	30	20	550	130	40	650	10
Conflicting Peds, #/hr	0	0	0	0	0	0	15	0	3	3	0	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	21	10	42	63	10	31	21	573	135	42	677	10
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1400	1534	697	1451	1471	644	703	0	0	711	0	0
Stage 1	781	781	-	685	685	-	-	-	-	-	-	-
Stage 2	620	753	-	766	786	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	117	116	439	108	126	471	890	-	-	884	-	-
Stage 1	387	404	-	436	447	-	-	-	-	-	-	-
Stage 2	474	416	-	394	402	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	92	106	433	82	116	470	878	-	-	881	-	-
Mov Cap-2 Maneuver	92	106	-	82	116	-	-	-	-	-	-	-
Stage 1	363	379	-	425	435	-	-	-	-	-	-	-
Stage 2	422	405	-	330	377	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Ctrl Dly, s/v	40.19		133.83		0.26		0.53		0.53		0.53	
HCM LOS	E		F									
Minor Lane/Major Mvmt	NBL		NBT		NBREBLn1WBLn1		SBL		SBT		SBR	
Capacity (veh/h)	878		-		173 114		881		-		-	
HCM Lane V/C Ratio	0.024		-		0.422 0.917		0.047		-		-	
HCM Ctrl Dly (s/v)	9.2		-		40.2 133.8		9.3		-		-	
HCM Lane LOS	A		-		E F		A		-		-	
HCM 95th %tile Q(veh)	0.1		-		1.9 5.7		0.1		-		-	

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection										
Intersection Delay, s/veh	7.7									
Intersection LOS	A									
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations										
Traffic Vol, veh/h	0	10	0	20	10	10	10	90	20	10
Future Vol, veh/h	0	10	0	20	10	10	10	90	20	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	11	0	22	11	11	11	97	22	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0
Approach	EB		WB		NB		SB			
Opposing Approach	WB		EB		SB		NB			
Opposing Lanes	1		1		1		1			
Conflicting Approach Left	SB		NB		EB		WB			
Conflicting Lanes Left	1		1		1		1			
Conflicting Approach Right	NB		SB		WB		EB			
Conflicting Lanes Right	1		1		1		1			
HCM Control Delay, s/veh	7.5		7.6		7.8		7.7			
HCM LOS	A		A		A		A			
Lane	NBLn1	EBLn1	WBLn1	SBLn1						
Vol Left, %	8%	0%	50%	13%						
Vol Thru, %	75%	100%	25%	88%						
Vol Right, %	17%	0%	25%	0%						
Sign Control	Stop	Stop	Stop	Stop						
Traffic Vol by Lane	120	10	40	80						
LT Vol	10	0	20	10						
Through Vol	90	10	10	70						
RT Vol	20	0	10	0						
Lane Flow Rate	129	11	43	86						
Geometry Grp	1	1	1	1						
Degree of Util (X)	0.144	0.013	0.052	0.1						
Departure Headway (Hd)	4.026	4.468	4.382	4.168						
Convergence, Y/N	Yes	Yes	Yes	Yes						
Cap	884	806	822	853						
Service Time	2.081	2.469	2.382	2.227						
HCM Lane V/C Ratio	0.146	0.014	0.052	0.101						
HCM Control Delay, s/veh	7.8	7.5	7.6	7.7						
HCM Lane LOS	A	A	A	A						
HCM 95th-tile Q	0.5	0	0.2	0.3						

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBT	SBR
----------	-----	-----

Lane Configurations



Traffic Vol, veh/h	70	0
--------------------	----	---

Future Vol, veh/h	70	0
-------------------	----	---

Peak Hour Factor	0.93	0.93
------------------	------	------

Heavy Vehicles, %	3	3
-------------------	---	---

Mvmt Flow	75	0
-----------	----	---

Number of Lanes	1	0
-----------------	---	---

Approach

Opposing Approach

Opposing Lanes

Conflicting Approach Left

Conflicting Lanes Left

Conflicting Approach Right

Conflicting Lanes Right

HCM Control Delay, s/veh

HCM LOS

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection												
Intersection Delay, s/veh	8.8											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	30	10	60	30	20	20	90	80	10	60	10
Future Vol, veh/h	10	30	10	60	30	20	20	90	80	10	60	10
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	12	37	12	74	37	25	25	111	99	12	74	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.3	8.9	9	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	20%	55%	13%
Vol Thru, %	47%	60%	27%	75%
Vol Right, %	42%	20%	18%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	50	110	80
LT Vol	20	10	60	10
Through Vol	90	30	30	60
RT Vol	80	10	20	10
Lane Flow Rate	235	62	136	99
Geometry Grp	1	1	1	1
Degree of Util (X)	0.281	0.082	0.18	0.127
Departure Headway (Hd)	4.318	4.795	4.778	4.641
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	833	746	750	771
Service Time	2.344	2.834	2.812	2.674
HCM Lane V/C Ratio	0.282	0.083	0.181	0.128
HCM Control Delay, s/veh	9	8.3	8.9	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.2	0.3	0.7	0.4

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection												
Intersection Delay, s/veh	9											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	40	40	30	40	40	30	90	20	30	70	20
Future Vol, veh/h	40	40	40	30	40	40	30	90	20	30	70	20
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	48	48	48	36	48	48	36	108	24	36	84	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.9	8.8	9.2	9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	33%	27%	25%
Vol Thru, %	64%	33%	36%	58%
Vol Right, %	14%	33%	36%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	120	110	120
LT Vol	30	40	30	30
Through Vol	90	40	40	70
RT Vol	20	40	40	20
Lane Flow Rate	169	145	133	145
Geometry Grp	1	1	1	1
Degree of Util (X)	0.222	0.19	0.174	0.191
Departure Headway (Hd)	4.743	4.73	4.715	4.766
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	754	755	757	749
Service Time	2.794	2.78	2.767	2.819
HCM Lane V/C Ratio	0.224	0.192	0.176	0.194
HCM Control Delay, s/veh	9.2	8.9	8.8	9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.7	0.6	0.7

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	60	80	420	440	40
Future Vol, veh/h	30	60	80	420	440	40
Conflicting Peds, #/hr	0	155	202	0	0	202
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	31	63	83	438	458	42
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1285	836	702	0	-	0
Stage 1	681	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	181	365	891	-	-	-
Stage 1	501	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	100	252	719	-	-	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	342	-	-	-	-	-
Stage 2	439	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	29.27	1.71		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	288	-	240	-	-	
HCM Lane V/C Ratio	0.116	-	0.39	-	-	
HCM Ctrl Dly (s/v)	10.7	0	29.3	-	-	
HCM Lane LOS	B	A	D	-	-	
HCM 95th %tile Q(veh)	0.4	-	1.8	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

Intersection													
Int Delay, s/veh	3.3												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕			↕		
Traffic Vol, veh/h	30	90	0	10	200	40	10	0	0	30	0	70	
Future Vol, veh/h	30	90	0	10	200	40	10	0	0	30	0	70	
Conflicting Peds, #/hr	10	0	7	7	0	10	2	0	0	0	0	2	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89	
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	
Mvmt Flow	34	101	0	11	225	45	11	0	0	34	0	79	
Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	280	0	0	108	0	0	425	478	108	448	455	259	
Stage 1	-	-	-	-	-	-	176	176	-	280	280	-	
Stage 2	-	-	-	-	-	-	249	302	-	169	176	-	
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23	
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-	
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327	
Pot Cap-1 Maneuver	1277	-	-	1476	-	-	538	485	943	519	500	777	
Stage 1	-	-	-	-	-	-	824	752	-	725	678	-	
Stage 2	-	-	-	-	-	-	753	662	-	831	752	-	
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	
Mov Cap-1 Maneuver	1265	-	-	1466	-	-	461	460	937	495	473	768	
Mov Cap-2 Maneuver	-	-	-	-	-	-	461	460	-	495	473	-	
Stage 1	-	-	-	-	-	-	795	726	-	711	665	-	
Stage 2	-	-	-	-	-	-	668	650	-	808	726	-	
Approach	EB			WB			NB			SB			
HCM Ctrl Dly, s/v	1.98			0.3			13			11.58			
HCM LOS							B			B			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	461	450	-	-	70	-	-	659					
HCM Lane V/C Ratio	0.024	0.027	-	-	0.008	-	-	0.17					
HCM Ctrl Dly (s/v)	13	7.9	0	-	7.5	0	-	11.6					
HCM Lane LOS	B	A	A	-	A	A	-	B					
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.6					

HCM 7th Signalized Intersection Summary
34: Silverado Trail & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Adams Weekend MD

										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations										
Traffic Volume (veh/h)	10	10	110	20	10	10	120	520	20	10
Future Volume (veh/h)	10	10	110	20	10	10	120	520	20	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	11	11	9	22	11	0	130	565	21	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	32	32	56	45	22	0	167	863	32	25
Arrive On Green	0.04	0.04	0.04	0.04	0.04	0.00	0.09	0.49	0.49	0.01
Sat Flow, veh/h	905	905	1572	1197	599	0	1767	1778	66	1767
Grp Volume(v), veh/h	22	0	9	33	0	0	130	0	586	11
Grp Sat Flow(s),veh/h/ln	1810	0	1572	1796	0	0	1767	0	1844	1767
Q Serve(g_s), s	0.6	0.0	0.3	0.8	0.0	0.0	3.4	0.0	11.2	0.3
Cycle Q Clear(g_c), s	0.6	0.0	0.3	0.8	0.0	0.0	3.4	0.0	11.2	0.3
Prop In Lane	0.50		1.00	0.67		0.00	1.00		0.04	1.00
Lane Grp Cap(c), veh/h	64	0	56	67	0	0	167	0	895	25
V/C Ratio(X)	0.34	0.00	0.16	0.49	0.00	0.00	0.78	0.00	0.66	0.44
Avail Cap(c_a), veh/h	658	0	572	192	0	0	287	0	1301	189
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	22.0	0.0	21.9	22.1	0.0	0.0	20.7	0.0	9.1	22.9
Incr Delay (d2), s/veh	3.1	0.0	1.3	5.5	0.0	0.0	7.6	0.0	0.8	11.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.1	0.4	0.0	0.0	1.5	0.0	3.1	0.2
Unsig. Movement Delay, s/veh										
LnGrp Delay(d), s/veh	25.1	0.0	23.2	27.6	0.0	0.0	28.3	0.0	9.9	34.3
LnGrp LOS	C		C	C			C		A	C
Approach Vol, veh/h	31			33			716			
Approach Delay, s/veh	24.6			27.6			13.2			
Approach LOS	C			C			B			
Timer - Assigned Phs	1	2		4	5	6		8		
Phs Duration (G+Y+Rc), s	9.8	24.3		6.3	6.1	28.1		6.3		
Change Period (Y+Rc), s	5.4	5.4		4.6	5.4	5.4		4.6		
Max Green Setting (Gmax), s	7.6	30.4		5.0	5.0	33.0		17.0		
Max Q Clear Time (g_c+I1), s	5.4	15.6		2.8	2.3	13.2		2.6		
Green Ext Time (p_c), s	0.1	3.3		0.0	0.0	3.5		0.1		
Intersection Summary										
HCM 7th Control Delay, s/veh	14.6									
HCM 7th LOS	B									

HCM 7th Signalized Intersection Summary
 34: Silverado Trail & Adams St

Saint Helena Streets Master Plan
 Cumulative Conditions Plus Project Adams Weekend MD



Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	550	10
Future Volume (veh/h)	550	10
Initial Q (Qb), veh	0	0
Lane Width Adj.	1.00	1.00
Ped-Bike Adj(A_pbT)		1.00
Parking Bus, Adj	1.00	1.00
Work Zone On Approach	No	
Adj Sat Flow, veh/h/ln	1856	1856
Adj Flow Rate, veh/h	598	10
Peak Hour Factor	0.92	0.92
Percent Heavy Veh, %	3	3
Cap, veh/h	737	12
Arrive On Green	0.40	0.40
Sat Flow, veh/h	1820	30
Grp Volume(v), veh/h	0	608
Grp Sat Flow(s),veh/h/ln	0	1850
Q Serve(g_s), s	0.0	13.6
Cycle Q Clear(g_c), s	0.0	13.6
Prop In Lane		0.02
Lane Grp Cap(c), veh/h	0	749
V/C Ratio(X)	0.00	0.81
Avail Cap(c_a), veh/h	0	1203
HCM Platoon Ratio	1.00	1.00
Upstream Filter(l)	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.3
Incr Delay (d2), s/veh	0.0	2.3
Initial Q Delay(d3), s/veh	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.4
Unsig. Movement Delay, s/veh		
LnGrp Delay(d), s/veh	0.0	14.6
LnGrp LOS		B
Approach Vol, veh/h	619	
Approach Delay, s/veh	14.9	
Approach LOS	B	
Timer - Assigned Phs		

HCM 7th TWSC

4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	5.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	85	40	10	41
Future Vol, veh/h	30	10	85	40	10	41
Conflicting Peds, #/hr	0	9	9	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	39	13	112	53	13	54
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	62	0	332	55
Stage 1	-	-	-	-	55	-
Stage 2	-	-	-	-	277	-
Critical Hdwy	-	-	4.16	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.254	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	1516	-	654	1001
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	760	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1503	-	599	992
Mov Cap-2 Maneuver	-	-	-	-	599	-
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	701	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.16		9.44	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	879	-	-	1224	-	
HCM Lane V/C Ratio	0.076	-	-	0.074	-	
HCM Ctrl Dly (s/v)	9.4	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-	

HCM 7th TWSC

5: Valley View St & Spring St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	10.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Vol, veh/h	40	50	235	30	40	221
Future Vol, veh/h	40	50	235	30	40	221
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	58	72	341	43	58	320
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	133	0	822	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	725	-
Critical Hdwy	-	-	4.14	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1439	-	341	953
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	476	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1435	-	257	951
Mov Cap-2 Maneuver	-	-	-	-	257	-
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	360	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		7.35		16.99	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	673	-	-	1400	-	
HCM Lane V/C Ratio	0.562	-	-	0.237	-	
HCM Ctrl Dly (s/v)	17	-	-	8.3	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	3.5	-	-	0.9	-	

HCM 7th AWSC

Saint Helena Streets Master Plan

6: Crane Ave/Valley View St & Grayson Ave Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Intersection Delay, s/veh	14.2					
Intersection LOS	B					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	180	101	60	210	115
Future Vol, veh/h	30	180	101	60	210	115
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	42	250	140	83	292	160
Number of Lanes	1	0	1	0	0	1
Approach	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		1	
Conflicting Approach Left	NB				WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right	SB		WB			
Conflicting Lanes Right	1		1		0	
HCM Control Delay, s/veh	11.9		10.7		17.5	
HCM LOS	B		B		C	
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	14%	65%			
Vol Thru, %	63%	0%	35%			
Vol Right, %	37%	86%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	161	210	325			
LT Vol	0	30	210			
Through Vol	101	0	115			
RT Vol	60	180	0			
Lane Flow Rate	224	292	451			
Geometry Grp	1	1	1			
Degree of Util (X)	0.322	0.42	0.653			
Departure Headway (Hd)	5.179	5.183	5.209			
Convergence, Y/N	Yes	Yes	Yes			
Cap	693	694	695			
Service Time	3.214	3.219	3.236			
HCM Lane V/C Ratio	0.323	0.421	0.649			
HCM Control Delay, s/veh	10.7	11.9	17.5			
HCM Lane LOS	B	B	C			
HCM 95th-tile Q	1.4	2.1	4.9			

HCM 7th TWSC

7: Sulphur Spring Ave & Crane Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	4.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	20	131	115	10
Future Vol, veh/h	10	10	20	131	115	10
Conflicting Peds, #/hr	2	0	0	2	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	14	14	28	182	160	14
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	212	0	-	0	163	121
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1353	-	-	-	825	928
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1350	-	-	-	813	926
Mov Cap-2 Maneuver	-	-	-	-	813	-
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	975	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.85	0		10.55		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	821	
HCM Lane V/C Ratio	0.01	-	-	-	0.211	
HCM Ctrl Dly (s/v)	7.7	0	-	-	10.6	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.8	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↱	↰		↱	↰	
Traffic Vol, veh/h	10	0	10	30	0	30	10	720	40	30	900	10
Future Vol, veh/h	10	0	10	30	0	30	10	720	40	30	900	10
Conflicting Peds, #/hr	0	0	5	5	0	0	13	0	2	2	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	11	0	11	32	0	32	11	758	42	32	947	11
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1808	1852	971	1818	1836	781	971	0	0	802	0	0
Stage 1	1029	1029	-	802	802	-	-	-	-	-	-	-
Stage 2	779	823	-	1016	1034	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.18	6.58	6.28	4.18	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.572	4.072	3.372	2.272	-	-	2.272	-	-
Pot Cap-1 Maneuver	59	72	299	58	73	385	686	-	-	796	-	-
Stage 1	275	304	-	369	388	-	-	-	-	-	-	-
Stage 2	380	379	-	280	302	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	51	67	294	53	68	385	678	-	-	794	-	-
Mov Cap-2 Maneuver	51	67	-	53	68	-	-	-	-	-	-	-
Stage 1	261	288	-	362	381	-	-	-	-	-	-	-
Stage 2	343	373	-	258	286	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Ctrl Dly, s/v	59.77		103.35		0.13			0.31				
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	678	-	-	86	92	794	-	-				
HCM Lane V/C Ratio	0.016	-	-	0.244	0.684	0.04	-	-				
HCM Ctrl Dly (s/v)	10.4	-	-	59.8	103.3	9.7	-	-				
HCM Lane LOS	B	-	-	F	F	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.9	3.4	0.1	-	-				

HCM 7th TWSC
9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	50	740	810	130
Future Vol, veh/h	30	30	50	740	810	130
Conflicting Peds, #/hr	0	4	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	31	31	52	771	844	135
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1794	923	987	0	-	0
Stage 1	919	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	85	319	677	-	-	-
Stage 1	379	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	73	315	672	-	-	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	65.5	0.68		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	114	-	118	-	-	
HCM Lane V/C Ratio	0.078	-	0.529	-	-	
HCM Ctrl Dly (s/v)	10.8	0	65.5	-	-	
HCM Lane LOS	B	A	F	-	-	
HCM 95th %tile Q(veh)	0.3	-	2.5	-	-	

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

10: Main St & Madrona Ave/Fulton Ln

Cumulative Conditions Plus Project Oak Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	50	15	20	60	80	19	550	20	120	540	180
Future Volume (veh/h)	160	50	15	20	60	80	19	550	20	120	540	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1287	1287	1811	1287	1287
Adj Flow Rate, veh/h	190	60	16	24	71	66	23	655	23	143	643	204
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	174	40	11	59	141	117	61	857	30	313	646	205
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.69	0.69	0.69	0.69	0.69	0.69
Sat Flow, veh/h	755	238	64	162	840	696	630	1234	43	737	930	295
Grp Volume(v), veh/h	266	0	0	161	0	0	23	0	678	143	0	847
Grp Sat Flow(s),veh/h/ln	1057	0	0	1699	0	0	630	0	1278	737	0	1225
Q Serve(g_s), s	10.4	0.0	0.0	0.0	0.0	0.0	1.3	0.0	44.9	20.3	0.0	89.0
Cycle Q Clear(g_c), s	21.8	0.0	0.0	11.4	0.0	0.0	90.3	0.0	44.9	65.2	0.0	89.0
Prop In Lane	0.71		0.06	0.15		0.41	1.00		0.03	1.00		0.24
Lane Grp Cap(c), veh/h	225	0	0	317	0	0	61	0	887	313	0	851
V/C Ratio(X)	1.18	0.00	0.00	0.51	0.00	0.00	0.37	0.00	0.76	0.46	0.00	1.00
Avail Cap(c_a), veh/h	225	0	0	317	0	0	61	0	887	313	0	851
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.4	0.0	0.0	49.8	0.0	0.0	64.8	0.0	12.9	34.1	0.0	19.7
Incr Delay (d2), s/veh	118.6	0.0	0.0	0.6	0.0	0.0	1.4	0.0	3.6	0.4	0.0	29.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.9	0.0	0.0	4.9	0.0	0.0	0.8	0.0	13.0	3.7	0.0	30.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	176.0	0.0	0.0	50.4	0.0	0.0	66.2	0.0	16.5	34.5	0.0	49.4
LnGrp LOS	F			D			E		B	C		D
Approach Vol, veh/h	266			161			701			990		
Approach Delay, s/veh	176.0			50.4			18.1			47.2		
Approach LOS	F			D			B			D		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	99.0			31.0			99.0			31.0		
Change Period (Y+Rc), s	8.7			9.2			8.7			9.2		
Max Green Setting (Gmax), s	90.3			21.8			90.3			21.8		
Max Q Clear Time (g_c+I1), s	92.3			23.8			91.0			13.4		
Green Ext Time (p_c), s	0.0			0.0			0.0			0.1		

Intersection Summary

HCM 7th Control Delay, s/veh

54.0

HCM 7th LOS

D

Notes

User approved pedestrian interval to be less than phase max green.

HCM 7th TWSC

11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻		↻
Traffic Vol, veh/h	30	150	10	20	120	20
Future Vol, veh/h	30	150	10	20	120	20
Conflicting Peds, #/hr	0	1	1	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	45	224	15	30	179	30
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	270	0	220	158
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	63	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1288	-	766	885
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1287	-	754	884
Mov Cap-2 Maneuver	-	-	-	-	754	-
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	943	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		2.61		11.41	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	770	-	-	600	-	
HCM Lane V/C Ratio	0.271	-	-	0.012	-	
HCM Ctrl Dly (s/v)	11.4	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.1	-	-	0	-	

HCM 7th Signalized Intersection Summary 12: Main St & Adams St

Saint Helena Streets Master Plan Cumulative Conditions Plus Project Oak Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	90	40	30	70	40	50	489	50	70	435	70
Future Volume (veh/h)	60	90	40	30	70	40	50	489	50	70	435	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.96		0.94	0.97		0.92	1.00		0.99	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1796	1276	1276	1796	1276	1796
Adj Flow Rate, veh/h	63	94	31	31	73	25	52	509	48	73	453	67
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	130	148	43	99	177	53	133	530	50	157	513	76
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.08	0.46	0.46	0.09	0.48	0.48
Sat Flow, veh/h	420	907	262	253	1083	321	1711	1148	108	1711	1080	160
Grp Volume(v), veh/h	188	0	0	129	0	0	52	0	557	73	0	520
Grp Sat Flow(s),veh/h/ln	1588	0	0	1657	0	0	1711	0	1256	1711	0	1240
Q Serve(g_s), s	3.1	0.0	0.0	0.0	0.0	0.0	2.3	0.0	33.5	3.2	0.0	29.6
Cycle Q Clear(g_c), s	8.4	0.0	0.0	5.3	0.0	0.0	2.3	0.0	33.5	3.2	0.0	29.6
Prop In Lane	0.34		0.16	0.24		0.19	1.00		0.09	1.00		0.13
Lane Grp Cap(c), veh/h	322	0	0	328	0	0	133	0	580	157	0	589
V/C Ratio(X)	0.58	0.00	0.00	0.39	0.00	0.00	0.39	0.00	0.96	0.47	0.00	0.88
Avail Cap(c_a), veh/h	404	0	0	413	0	0	200	0	671	200	0	663
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.7	0.0	0.0	29.5	0.0	0.0	34.2	0.0	20.3	33.6	0.0	18.5
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.3	0.0	0.0	0.7	0.0	22.8	0.8	0.0	11.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.0	2.2	0.0	0.0	1.0	0.0	12.7	1.3	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.3	0.0	0.0	29.8	0.0	0.0	34.9	0.0	43.2	34.4	0.0	29.9
LnGrp LOS	C			C			C		D	C		C
Approach Vol, veh/h		188			129			609			593	
Approach Delay, s/veh		31.3			29.8			42.5			30.5	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.8	45.8		21.5	11.9	44.7		21.5				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	9.1	41.7		17.1	9.1	41.7		17.1				
Max Q Clear Time (g_c+I1), s	4.3	31.6		7.3	5.2	35.5		10.4				
Green Ext Time (p_c), s	0.0	0.6		0.1	0.0	0.5		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			35.3									
HCM 7th LOS			D									

HCM 7th AWSC

13: Railroad Ave & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday AM

Intersection												
Intersection Delay, s/veh 11.4												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	100	80	20	50	40	80	110	60	60	70	20
Future Vol, veh/h	30	100	80	20	50	40	80	110	60	60	70	20
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	37	122	98	24	61	49	98	134	73	73	85	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh 11.5		10	12.4	10.7
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	32%	14%	18%	40%
Vol Thru, %	44%	48%	45%	47%
Vol Right, %	24%	38%	36%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	250	210	110	150
LT Vol	80	30	20	60
Through Vol	110	100	50	70
RT Vol	60	80	40	20
Lane Flow Rate	305	256	134	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.444	0.377	0.206	0.28
Departure Headway (Hd)	5.244	5.3	5.527	5.511
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	686	679	648	651
Service Time	3.285	3.343	3.578	3.557
HCM Lane V/C Ratio	0.445	0.377	0.207	0.281
HCM Control Delay, s/veh	12.4	11.5	10	10.7
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	2.3	1.8	0.8	1.1

HCM 7th TWSC

14: Library Ln & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday AM

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	90	30	0	30	10	10	0	0	0	0	10
Future Vol, veh/h	40	90	30	0	30	10	10	0	0	0	0	10
Conflicting Peds, #/hr	6	0	4	4	0	6	2	0	4	4	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	53	118	39	0	39	13	13	0	0	0	0	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	162	0	0	289	306	146	280	319	54
Stage 1	-	-	-	-	-	-	247	247	-	52	52	-
Stage 2	-	-	-	-	-	-	41	59	-	228	267	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1539	-	-	1411	-	-	661	606	898	671	596	1010
Stage 1	-	-	-	-	-	-	754	700	-	958	850	-
Stage 2	-	-	-	-	-	-	971	844	-	773	686	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1530	-	-	1405	-	-	624	577	891	639	568	1003
Mov Cap-2 Maneuver	-	-	-	-	-	-	624	577	-	639	568	-
Stage 1	-	-	-	-	-	-	723	671	-	953	845	-
Stage 2	-	-	-	-	-	-	956	839	-	741	658	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.86			0			10.89			8.64		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	624	429	-	-	1405	-	-	1003				
HCM Lane V/C Ratio	0.021	0.034	-	-	-	-	-	0.013				
HCM Ctrl Dly (s/v)	10.9	7.4	0	-	0	-	-	8.6				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0				

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	20	569	110	20	485
Future Vol, veh/h	40	20	569	110	20	485
Conflicting Peds, #/hr	22	0	0	17	17	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	42	21	599	116	21	511
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1248	674	0	0	732	0
Stage 1	674	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Critical Hdwy	6.49	6.29	-	-	4.19	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	-	-	2.281	-
Pot Cap-1 Maneuver	185	443	-	-	842	-
Stage 1	494	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	174	436	-	-	828	-
Mov Cap-2 Maneuver	309	-	-	-	-	-
Stage 1	486	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	17.88	0		0.37		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	342	828	-	
HCM Lane V/C Ratio	-	-	0.185	0.025	-	
HCM Ctrl Dly (s/v)	-	-	17.9	9.5	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

16: Church St/Railroad Ave & Hunt Ave Cumulative Conditions Plus Project Oak Weekday AM

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	50	60	20	10	40	190	10	10	10	140	10	10
Future Vol, veh/h	50	60	20	10	40	190	10	10	10	140	10	10
Conflicting Peds, #/hr	4	0	30	4	0	30	3	0	4	4	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	63	75	25	13	50	238	13	13	13	175	13	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	318	0	0	130	0	0	327	585	122	434	479	202
Stage 1	-	-	-	-	-	-	243	243	-	224	224	-
Stage 2	-	-	-	-	-	-	84	343	-	210	255	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1237	-	-	1449	-	-	624	422	927	530	484	837
Stage 1	-	-	-	-	-	-	759	703	-	777	717	-
Stage 2	-	-	-	-	-	-	921	636	-	790	695	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1202	-	-	1408	-	-	541	372	897	458	427	810
Mov Cap-2 Maneuver	-	-	-	-	-	-	541	372	-	458	427	-
Stage 1	-	-	-	-	-	-	696	645	-	746	689	-
Stage 2	-	-	-	-	-	-	878	611	-	719	637	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	3.14		0.32		12.3		18.27	
HCM LOS					B		C	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	531	659	-	-	64	-	-	469
HCM Lane V/C Ratio	0.071	0.052	-	-	0.009	-	-	0.427
HCM Ctrl Dly (s/v)	12.3	8.2	0	-	7.6	0	-	18.3
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	-	2.1

HCM 7th TWSC

17: Oak Ave & Mitchell Dr

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday AM

Intersection												
Int Delay, s/veh	11.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	30	10	12	40	60	10	150	10	120	92	20
Future Vol, veh/h	30	30	10	12	40	60	10	150	10	120	92	20
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	92	92	87	87	92	92	92	87	92	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	34	34	11	13	46	69	11	163	11	138	100	23
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	118	0	0	45	0	0	232	253	40	295	224	84
Stage 1	-	-	-	-	-	-	109	109	-	110	110	-
Stage 2	-	-	-	-	-	-	123	144	-	185	114	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1464	-	-	1556	-	-	721	649	1029	656	673	972
Stage 1	-	-	-	-	-	-	894	803	-	893	803	-
Stage 2	-	-	-	-	-	-	879	776	-	814	799	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1460	-	-	1556	-	-	578	625	1029	467	649	968
Mov Cap-2 Maneuver	-	-	-	-	-	-	578	625	-	467	649	-
Stage 1	-	-	-	-	-	-	872	784	-	883	793	-
Stage 2	-	-	-	-	-	-	742	767	-	623	780	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.25			0.75			12.94			17.27		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	637	742	-	-	164	-	-	551				
HCM Lane V/C Ratio	0.29	0.024	-	-	0.008	-	-	0.473				
HCM Ctrl Dly (s/v)	12.9	7.5	0	-	7.3	0	-	17.3				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0	-	-	2.5				

HCM 7th Signalized Intersection Summary
18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	170	188	52	150	80	569	80	100	437	10
Future Volume (veh/h)	0	0	170	188	52	150	80	569	80	100	437	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1287	1287	1811	1287	1287
Adj Flow Rate, veh/h	0	0	173	192	53	48	82	581	82	102	446	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	0	30	132	214	59	233	120	593	84	125	680	15
Arrive On Green	0.00	0.00	0.02	0.16	0.16	0.16	0.07	0.54	0.54	0.07	0.54	0.54
Sat Flow, veh/h	0	1811	1535	1366	377	1491	1725	1099	155	1725	1253	28
Grp Volume(v), veh/h	0	0	173	245	0	48	82	0	663	102	0	456
Grp Sat Flow(s),veh/h/ln	0	1811	1535	1743	0	1491	1725	0	1255	1725	0	1281
Q Serve(g_s), s	0.0	0.0	2.0	16.8	0.0	3.4	5.6	0.0	62.7	7.1	0.0	30.7
Cycle Q Clear(g_c), s	0.0	0.0	2.0	16.8	0.0	3.4	5.6	0.0	62.7	7.1	0.0	30.7
Prop In Lane	0.00		1.00	0.78		1.00	1.00		0.12	1.00		0.02
Lane Grp Cap(c), veh/h	0	30	132	273	0	233	120	0	677	125	0	696
V/C Ratio(X)	0.00	0.00	1.31	0.90	0.00	0.21	0.68	0.00	0.98	0.82	0.00	0.66
Avail Cap(c_a), veh/h	0	30	132	420	0	360	297	0	858	177	0	756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	55.5	50.3	0.0	44.7	55.2	0.0	27.3	55.5	0.0	19.7
Incr Delay (d2), s/veh	0.0	0.0	184.3	11.0	0.0	0.2	2.6	0.0	21.8	12.1	0.0	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	10.8	8.2	0.0	1.3	2.6	0.0	22.2	3.5	0.0	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	239.8	61.3	0.0	44.8	57.8	0.0	49.1	67.7	0.0	21.0
LnGrp LOS			F	E		D	E		D	E		C
Approach Vol, veh/h	173			293			745			558		
Approach Delay, s/veh	239.8			58.6			50.0			29.6		
Approach LOS	F			E			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.1	73.6		28.7	13.5	73.3		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	20.9	71.7		29.3	12.5	* 83		2.0				
Max Q Clear Time (g_c+I1), s	7.6	32.7		18.8	9.1	64.7		4.0				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	0.9		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh 63.5

HCM 7th LOS E

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.

HCM 7th Signalized Intersection Summary 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan Cumulative Conditions Plus Project Oak Weekday AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	190	140	839	735	80
Future Volume (veh/h)	20	190	140	839	735	80
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	0.99	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1266	1266	1266
Adj Flow Rate, veh/h	22	17	152	912	799	85
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	8	8	8	8	8
Cap, veh/h	55	42	168	1063	794	84
Arrive On Green	0.06	0.06	0.10	0.84	0.71	0.71
Sat Flow, veh/h	885	684	1697	1266	1122	119
Grp Volume(v), veh/h	40	0	152	912	0	884
Grp Sat Flow(s), veh/h/ln	1609	0	1697	1266	0	1241
Q Serve(g_s), s	3.4	0.0	12.5	58.0	0.0	99.6
Cycle Q Clear(g_c), s	3.4	0.0	12.5	58.0	0.0	99.6
Prop In Lane	0.55	0.42	1.00			0.10
Lane Grp Cap(c), veh/h	99	0	168	1063	0	879
V/C Ratio(X)	0.40	0.00	0.91	0.86	0.00	1.01
Avail Cap(c_a), veh/h	206	0	168	1099	0	879
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	63.5	0.0	62.8	6.4	0.0	20.5
Incr Delay (d2), s/veh	1.0	0.0	42.8	6.4	0.0	31.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4	0.0	7.4	12.1	0.0	32.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	64.5	0.0	105.6	12.8	0.0	52.4
LnGrp LOS	E		F	B		F
Approach Vol, veh/h	40			1064	884	
Approach Delay, s/veh	64.5			26.1	52.4	
Approach LOS	E			C	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	8.6	108.7			127.3	13.4
Change Period (Y+Rc), s	4.7	9.1			* 9.1	4.7
Max Green Setting (Gmax), s	99.6				* 1.2E+02	18.0
Max Q Clear Time (g_c+1.5), s	101.6				60.0	5.4
Green Ext Time (p_c), s	0.0	0.0			1.0	0.0
Intersection Summary						
HCM 7th Control Delay, s/veh			38.6			
HCM 7th LOS			D			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC

20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	105	91	959	885	40
Future Vol, veh/h	20	105	91	959	885	40
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	20	106	92	969	894	40
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2068	915	935	0	-	0
Stage 1	915	-	-	-	-	-
Stage 2	1153	-	-	-	-	-
Critical Hdwy	6.49	6.29	4.19	-	-	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	2.281	-	-	-
Pot Cap-1 Maneuver	57	321	704	-	-	-
Stage 1	379	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	49	320	704	-	-	-
Mov Cap-2 Maneuver	164	-	-	-	-	-
Stage 1	329	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	23.04	0.94		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	704	-	164	320	-	-
HCM Lane V/C Ratio	0.131	-	0.124	0.331	-	-
HCM Ctrl Dly (s/v)	10.9	-	30.1	21.7	-	-
HCM Lane LOS	B	-	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	0.4	1.4	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	80	20	30	110	10
Future Vol, veh/h	20	80	20	30	110	10
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	24	95	24	36	131	12
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7.4	7.8	8.4
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	92%	0%	40%
Vol Thru, %	0%	20%	60%
Vol Right, %	8%	80%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	120	100	50
LT Vol	110	0	20
Through Vol	0	20	30
RT Vol	10	80	0
Lane Flow Rate	143	119	60
Geometry Grp	1	1	1
Degree of Util (X)	0.174	0.128	0.074
Departure Headway (Hd)	4.392	3.878	4.488
Convergence, Y/N	Yes	Yes	Yes
Cap	807	930	802
Service Time	2.473	1.88	2.491
HCM Lane V/C Ratio	0.177	0.128	0.075
HCM Control Delay, s/veh	8.4	7.4	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.4	0.2

HCM 7th TWSC

22: Pope Street & Starr Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	10	210	390	90	100	30
Future Vol, veh/h	10	210	390	90	100	30
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	266	494	114	127	38
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	609	0	-	0	844	553
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	292	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	965	-	-	-	332	531
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	755	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	964	-	-	-	327	530
Mov Cap-2 Maneuver	-	-	-	-	327	-
Stage 1	-	-	-	-	566	-
Stage 2	-	-	-	-	755	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.4	0		23.3		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	82	-	-	-	358	
HCM Lane V/C Ratio	0.013	-	-	-	0.459	
HCM Ctrl Dly (s/v)	8.8	0	-	-	23.3	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	2.3	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Pope Street Alternative Conditions Plus Project Oak Weekday AM

Intersection												
Int Delay, s/veh	15.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	180	120	90	320	10	120	0	50	10	10	20
Future Vol, veh/h	20	180	120	90	320	10	120	0	50	10	10	20
Conflicting Peds, #/hr	2	0	1	1	0	2	3	0	1	1	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	26	234	156	117	416	13	156	0	65	13	13	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	431	0	0	391	0	0	1023	1029	314	945	1100	427
Stage 1	-	-	-	-	-	-	365	365	-	658	658	-
Stage 2	-	-	-	-	-	-	659	664	-	287	443	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1124	-	-	1162	-	-	213	233	724	241	211	625
Stage 1	-	-	-	-	-	-	652	622	-	452	460	-
Stage 2	-	-	-	-	-	-	451	457	-	719	574	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1121	-	-	1161	-	-	167	204	723	192	185	622
Mov Cap-2 Maneuver	-	-	-	-	-	-	167	204	-	192	185	-
Stage 1	-	-	-	-	-	-	637	607	-	405	413	-
Stage 2	-	-	-	-	-	-	376	410	-	638	560	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.52			1.81			78.63			20.14		
HCM LOS							F			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	167	723	1121	-	-	1161	-	-	289
HCM Lane V/C Ratio	0.931	0.09	0.023	-	-	0.101	-	-	0.18
HCM Ctrl Dly (s/v)	107	10.5	8.3	-	-	8.4	-	-	20.1
HCM Lane LOS	F	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	7	0.3	0.1	-	-	0.3	-	-	0.6

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	20	30	560	630	30
Future Vol, veh/h	20	20	30	560	630	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	21	21	31	583	656	31
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1318	672	688	0	-	0
Stage 1	672	-	-	-	-	-
Stage 2	646	-	-	-	-	-
Critical Hdwy	6.46	6.26	4.16	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	2.254	-	-	-
Pot Cap-1 Maneuver	170	449	888	-	-	-
Stage 1	500	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	161	449	888	-	-	-
Mov Cap-2 Maneuver	161	-	-	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	23.37	0.47		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	92	-	237	-	-	
HCM Lane V/C Ratio	0.035	-	0.176	-	-	
HCM Ctrl Dly (s/v)	9.2	0	23.4	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

25: Silverado Trail & Howell Mountain Rd Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	10	580	40	10	640
Future Vol, veh/h	30	10	580	40	10	640
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	31	10	592	41	10	653
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1287	612	0	0	633	0
Stage 1	612	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.16	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.254	-
Pot Cap-1 Maneuver	178	486	-	-	931	-
Stage 1	533	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	176	486	-	-	931	-
Mov Cap-2 Maneuver	314	-	-	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	16.86	0		0.14		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	344	931	-	
HCM Lane V/C Ratio	-	-	0.119	0.011	-	
HCM Ctrl Dly (s/v)	-	-	16.9	8.9	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.4	0	-	

HCM 7th TWSC

26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	9.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	140	100	220	480	450	220
Future Vol, veh/h	140	100	220	480	450	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	149	106	234	511	479	234
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1457	479	713	0	-	0
Stage 1	479	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	~ 141	583	878	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 104	583	878	-	-	-
Mov Cap-2 Maneuver	230	-	-	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	54.83	3.33		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	878	-	308	-	-	
HCM Lane V/C Ratio	0.267	-	0.83	-	-	
HCM Ctrl Dly (s/v)	10.6	-	54.8	-	-	
HCM Lane LOS	B	-	F	-	-	
HCM 95th %tile Q(veh)	1.1	-	7	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↗	↖	
Traffic Vol, veh/h	0	0	0	0	0	10	0	849	10	10	815	10
Future Vol, veh/h	0	0	0	0	0	10	0	849	10	10	815	10
Conflicting Peds, #/hr	0	0	0	0	0	0	15	0	1	1	0	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	0	0	0	0	0	11	0	913	11	11	876	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1831	1843	897	1817	1843	919	902	0	0	925	0	0
Stage 1	918	918	-	919	919	-	-	-	-	-	-	-
Stage 2	913	925	-	898	924	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.18	6.58	6.28	4.18	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.572	4.072	3.372	2.272	-	-	2.272	-	-
Pot Cap-1 Maneuver	57	72	330	58	72	320	729	-	-	715	-	-
Stage 1	317	342	-	317	342	-	-	-	-	-	-	-
Stage 2	320	340	-	326	340	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	53	70	325	57	70	320	719	-	-	714	-	-
Mov Cap-2 Maneuver	53	70	-	57	70	-	-	-	-	-	-	-
Stage 1	308	332	-	317	342	-	-	-	-	-	-	-
Stage 2	309	340	-	321	331	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	0		16.64		0		0.12					
HCM LOS	A		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	719	-	-	-	320	714	-	-				
HCM Lane V/C Ratio	-	-	-	-	0.034	0.015	-	-				
HCM Ctrl Dly (s/v)	0	-	-	0	16.6	10.1	-	-				
HCM Lane LOS	A	-	-	A	C	B	-	-				
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-				

HCM 7th TWSC

28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday AM

Intersection												
Int Delay, s/veh	16.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	10	10	10	70	10	10	20	709	130	10	755	30
Future Vol, veh/h	10	10	10	70	10	10	20	709	130	10	755	30
Conflicting Peds, #/hr	0	0	0	0	0	0	9	0	1	1	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	9	9	9	9	9	9	9	9	9	9	9	9
Mvmt Flow	10	10	10	72	10	10	21	731	134	10	778	31
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1601	1731	803	1644	1679	799	818	0	0	866	0	0
Stage 1	823	823	-	840	840	-	-	-	-	-	-	-
Stage 2	777	907	-	804	839	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.59	6.29	7.19	6.59	6.29	4.19	-	-	4.19	-	-
Critical Hdwy Stg 1	6.19	5.59	-	6.19	5.59	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.59	-	6.19	5.59	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.081	3.381	3.581	4.081	3.381	2.281	-	-	2.281	-	-
Pot Cap-1 Maneuver	82	85	373	77	91	375	780	-	-	748	-	-
Stage 1	357	378	-	350	371	-	-	-	-	-	-	-
Stage 2	379	345	-	366	372	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	67	81	370	~ 63	87	374	774	-	-	748	-	-
Mov Cap-2 Maneuver	67	81	-	~ 63	87	-	-	-	-	-	-	-
Stage 1	349	369	-	340	361	-	-	-	-	-	-	-
Stage 2	349	336	-	342	363	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	56.28			\$ 307.58			0.23			0.12		
HCM LOS	F			F								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	774	-	-	100	71	748	-	-				
HCM Lane V/C Ratio	0.027	-	-	0.309	1.3	0.014	-	-				
HCM Ctrl Dly (s/v)	9.8	-	-	56.3	\$ 307.6	9.9	-	-				
HCM Lane LOS	A	-	-	F	F	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	1.2	7.4	0	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

Intersection												
Intersection Delay, s/veh	12.4											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	10	10	10	30	10	20	10	160	20	20	250	10
Future Vol, veh/h	10	10	10	30	10	20	10	160	20	20	250	10
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	16	16	48	16	32	16	254	32	32	397	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay, s/veh	9.3			9.7			11.1			14.1		
HCM LOS	A			A			B			B		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	5%	33%	50%	7%								
Vol Thru, %	84%	33%	17%	89%								
Vol Right, %	11%	33%	33%	4%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	190	30	60	280								
LT Vol	10	10	30	20								
Through Vol	160	10	10	250								
RT Vol	20	10	20	10								
Lane Flow Rate	302	48	95	444								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.402	0.077	0.151	0.579								
Departure Headway (Hd)	4.801	5.799	5.724	4.688								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	742	621	630	764								
Service Time	2.883	3.802	3.727	2.762								
HCM Lane V/C Ratio	0.407	0.077	0.151	0.581								
HCM Control Delay, s/veh	11.1	9.3	9.7	14.1								
HCM Lane LOS	B	A	A	B								
HCM 95th-tile Q	1.9	0.2	0.5	3.8								

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

Intersection												
Intersection Delay, s/veh 20.9												
Intersection LOS C												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	70	70	40	50	30	30	170	80	30	240	30
Future Vol, veh/h	10	70	70	40	50	30	30	170	80	30	240	30
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	15	103	103	59	74	44	44	250	118	44	353	44
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh 4.6		13.9	22.2	25.7
HCM LOS	B	B	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	7%	33%	10%
Vol Thru, %	61%	47%	42%	80%
Vol Right, %	29%	47%	25%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	280	150	120	300
LT Vol	30	10	40	30
Through Vol	170	70	50	240
RT Vol	80	70	30	30
Lane Flow Rate	412	221	176	441
Geometry Grp	1	1	1	1
Degree of Util (X)	0.698	0.414	0.347	0.753
Departure Headway (Hd)	6.099	6.755	7.07	6.142
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	589	529	505	587
Service Time	4.172	4.842	5.163	4.213
HCM Lane V/C Ratio	0.699	0.418	0.349	0.751
HCM Control Delay, s/veh	22.2	14.6	13.9	25.7
HCM Lane LOS	C	B	B	D
HCM 95th-ile Q	5.5	2	1.5	6.7

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

Intersection												
Intersection Delay, s/veh24.1												
Intersection LOS C												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	70	40	38	70	80	20	170	80	50	240	30
Future Vol, veh/h	40	70	40	38	70	80	20	170	80	50	240	30
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	56	97	56	53	97	111	28	236	111	69	333	42
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh15.9		17.5	23	32.7
HCM LOS	C	C	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	27%	20%	16%
Vol Thru, %	63%	47%	37%	75%
Vol Right, %	30%	27%	43%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	270	150	188	320
LT Vol	20	40	38	50
Through Vol	170	70	70	240
RT Vol	80	40	80	30
Lane Flow Rate	375	208	261	444
Geometry Grp	1	1	1	1
Degree of Util (X)	0.687	0.426	0.514	0.817
Departure Headway (Hd)	6.598	7.365	7.083	6.616
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	548	487	507	551
Service Time	4.663	5.444	5.155	4.616
HCM Lane V/C Ratio	0.684	0.427	0.515	0.806
HCM Control Delay, s/veh	23	15.9	17.5	32.7
HCM Lane LOS	C	C	C	D
HCM 95th-tile Q	5.3	2.1	2.9	8.1

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	100	90	140	579	457	68
Future Vol, veh/h	100	90	140	579	457	68
Conflicting Peds, #/hr	0	10	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	104	94	146	603	476	71
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1414	529	555	0	-	0
Stage 1	519	-	-	-	-	-
Stage 2	895	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	147	538	986	-	-	-
Stage 1	585	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	112	529	979	-	-	-
Mov Cap-2 Maneuver	241	-	-	-	-	-
Stage 1	450	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	32.02	1.82		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	350	-	324	-	-	
HCM Lane V/C Ratio	0.149	-	0.61	-	-	
HCM Ctrl Dly (s/v)	9.3	0	32	-	-	
HCM Lane LOS	A	A	D	-	-	
HCM 95th %tile Q(veh)	0.5	-	3.8	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	150	0	0	370	100	10	0	10	30	10	70
Future Vol, veh/h	30	150	0	0	370	100	10	0	10	30	10	70
Conflicting Peds, #/hr	16	0	4	4	0	16	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	32	161	0	0	398	108	11	0	11	32	11	75
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	521	0	0	165	0	0	634	751	166	694	697	469
Stage 1	-	-	-	-	-	-	230	230	-	468	468	-
Stage 2	-	-	-	-	-	-	404	521	-	227	230	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1040	-	-	1407	-	-	390	338	875	356	363	593
Stage 1	-	-	-	-	-	-	771	712	-	574	560	-
Stage 2	-	-	-	-	-	-	621	530	-	774	712	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1024	-	-	1401	-	-	317	320	871	334	344	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	317	320	-	334	344	-
Stage 1	-	-	-	-	-	-	741	685	-	565	551	-
Stage 2	-	-	-	-	-	-	530	522	-	737	685	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.44			0			13.12			15.51		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	465	300	-	-	1401	-	-	460				
HCM Lane V/C Ratio	0.046	0.032	-	-	-	-	-	0.257				
HCM Ctrl Dly (s/v)	13.1	8.6	0	-	0	-	-	15.5				
HCM Lane LOS	B	A	A	-	A	-	-	C				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	1				

HCM 7th TWSC
35: Grayson Ave & Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday AM

Intersection						
Int Delay, s/veh	4.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	90	130	90	120	40
Future Vol, veh/h	60	90	130	90	120	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	65	98	141	98	130	43
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	239	0	-	0	418	190
Stage 1	-	-	-	-	190	-
Stage 2	-	-	-	-	228	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1322	-	-	-	589	849
Stage 1	-	-	-	-	840	-
Stage 2	-	-	-	-	807	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1322	-	-	-	558	849
Mov Cap-2 Maneuver	-	-	-	-	558	-
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	807	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.15	0		13.22		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	720	-	-	-	611	
HCM Lane V/C Ratio	0.049	-	-	-	0.285	
HCM Ctrl Dly (s/v)	7.9	0	-	-	13.2	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.2	-	-	-	1.2	

HCM 7th TWSC

36: Oak Ave & Charter Oak Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday AM

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	30	10	10	60	10	10	150	10	10	160	10
Future Vol, veh/h	10	30	10	10	60	10	10	150	10	10	160	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	33	11	11	65	11	11	163	11	11	174	11

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	418	397	179	402	397	168	185	0	0	174	0	0
Stage 1	201	201	-	190	190	-	-	-	-	-	-	-
Stage 2	217	196	-	212	207	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	543	539	861	557	539	873	1384	-	-	1397	-	-
Stage 1	798	733	-	809	741	-	-	-	-	-	-	-
Stage 2	783	737	-	788	729	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	463	530	861	508	530	873	1384	-	-	1397	-	-
Mov Cap-2 Maneuver	463	530	-	508	530	-	-	-	-	-	-	-
Stage 1	792	727	-	802	735	-	-	-	-	-	-	-
Stage 2	698	731	-	737	723	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	12.17		12.71		0.45		0.42	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	105	-	-	557	554	99	-	-
HCM Lane V/C Ratio	0.008	-	-	0.098	0.157	0.008	-	-
HCM Ctrl Dly (s/v)	7.6	0	-	12.2	12.7	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.6	0	-	-

HCM 7th TWSC

4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	5.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	49	20	10	39
Future Vol, veh/h	30	10	49	20	10	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	37	12	60	24	12	48
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	49	0	187	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	144	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1552	-	800	1025
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	881	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1552	-	769	1025
Mov Cap-2 Maneuver	-	-	-	-	769	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	846	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.26		9	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	960	-	-	1278	-	
HCM Lane V/C Ratio	0.062	-	-	0.039	-	
HCM Ctrl Dly (s/v)	9	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	

HCM 7th TWSC

5: Valley View St & Spring St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	7.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Vol, veh/h	60	40	139	50	40	199
Future Vol, veh/h	60	40	139	50	40	199
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	70	47	162	58	47	231
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	118	0	476	95
Stage 1	-	-	-	-	95	-
Stage 2	-	-	-	-	381	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1464	-	545	959
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	688	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1461	-	482	957
Mov Cap-2 Maneuver	-	-	-	-	482	-
Stage 1	-	-	-	-	924	-
Stage 2	-	-	-	-	609	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.71		11.6	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	822	-	-	1324	-	
HCM Lane V/C Ratio	0.338	-	-	0.111	-	
HCM Ctrl Dly (s/v)	11.6	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.5	-	-	0.4	-	

HCM 7th AWSC

Saint Helena Streets Master Plan

6: Crane Ave/Valley View St & Grayson Ave Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Intersection Delay, s/veh	9					
Intersection LOS	A					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	90	159	30	70	139
Future Vol, veh/h	10	90	159	30	70	139
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	12	105	185	35	81	162
Number of Lanes	1	0	1	0	0	1
Approach	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		1	
Conflicting Approach Left	NB				WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right	SB		WB			
Conflicting Lanes Right	1		1		0	
HCM Control Delay, s/veh	8.2		9		9.5	
HCM LOS	A		A		A	
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	10%	33%			
Vol Thru, %	84%	0%	67%			
Vol Right, %	16%	90%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	189	100	209			
LT Vol	0	10	70			
Through Vol	159	0	139			
RT Vol	30	90	0			
Lane Flow Rate	220	116	243			
Geometry Grp	1	1	1			
Degree of Util (X)	0.268	0.144	0.305			
Departure Headway (Hd)	4.387	4.458	4.517			
Convergence, Y/N	Yes	Yes	Yes			
Cap	820	803	797			
Service Time	2.412	2.49	2.542			
HCM Lane V/C Ratio	0.268	0.144	0.305			
HCM Control Delay, s/veh	9	8.2	9.5			
HCM Lane LOS	A	A	A			
HCM 95th-tile Q	1.1	0.5	1.3			

HCM 7th TWSC

7: Sulphur Spring Ave & Crane Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	40	30	139	119	20
Future Vol, veh/h	30	40	30	139	119	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	38	51	38	178	153	26
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	217	0	-	0	256	128
Stage 1	-	-	-	-	128	-
Stage 2	-	-	-	-	128	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1347	-	-	-	731	920
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1347	-	-	-	709	920
Mov Cap-2 Maneuver	-	-	-	-	709	-
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	895	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.32	0		11.48		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	771	-	-	-	733	
HCM Lane V/C Ratio	0.029	-	-	-	0.243	
HCM Ctrl Dly (s/v)	7.8	0	-	-	11.5	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

Intersection												
Int Delay, s/veh	50.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↱	↱		↱	↱	
Traffic Vol, veh/h	10	10	10	50	10	60	10	940	40	30	690	10
Future Vol, veh/h	10	10	10	50	10	60	10	940	40	30	690	10
Conflicting Peds, #/hr	0	0	0	0	0	0	12	0	1	1	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	11	11	57	11	69	11	1080	46	34	793	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1989	2030	811	1995	2013	1104	817	0	0	1127	0	0
Stage 1	880	880	-	1127	1127	-	-	-	-	-	-	-
Stage 2	1109	1150	-	868	886	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	45	57	378	~ 45	58	255	807	-	-	616	-	-
Stage 1	340	364	-	247	278	-	-	-	-	-	-	-
Stage 2	253	271	-	346	361	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	24	52	374	~ 32	54	255	798	-	-	615	-	-
Mov Cap-2 Maneuver	24	52	-	~ 32	54	-	-	-	-	-	-	-
Stage 1	318	339	-	243	274	-	-	-	-	-	-	-
Stage 2	174	267	-	306	337	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	188.2		\$ 735.1			0.1			0.46			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	798	-	-	47	60	615	-	-				
HCM Lane V/C Ratio	0.014	-	-	0.726	2.286	0.056	-	-				
HCM Ctrl Dly (s/v)	9.6	-	-	188.2	\$ 735.1	11.2	-	-				
HCM Lane LOS	A	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	0	-	-	2.9	13.5	0.2	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th TWSC
9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	19.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	40	30	920	710	40
Future Vol, veh/h	70	40	30	920	710	40
Conflicting Peds, #/hr	0	1	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	80	45	34	1045	807	45
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1950	838	859	0	-	0
Stage 1	837	-	-	-	-	-
Stage 2	1114	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	~ 70	365	778	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 62	362	772	-	-	-
Mov Cap-2 Maneuver	~ 62	-	-	-	-	-
Stage 1	376	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	\$ 321.82	0.31		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	57	-	89	-	-	
HCM Lane V/C Ratio	0.044	-	1.407	-	-	
HCM Ctrl Dly (s/v)	9.9	0\$ 321.8		-	-	
HCM Lane LOS	A	A	F	-	-	
HCM 95th %tile Q(veh)	0.1	-	9.5	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

10: Main St & Madrona Ave/Fulton Ln

Cumulative Conditions Plus Project Oak Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	50	11	20	50	180	21	590	20	80	550	120
Future Volume (veh/h)	180	50	11	20	50	180	21	590	20	80	550	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	191	53	11	21	53	103	22	628	20	85	585	121
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	274	59	12	69	141	233	115	733	23	202	610	126
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.58	0.58	0.58	0.58	0.58	0.58
Sat Flow, veh/h	884	251	51	112	601	991	736	1270	40	777	1058	219
Grp Volume(v), veh/h	255	0	0	177	0	0	22	0	648	85	0	706
Grp Sat Flow(s),veh/h/ln	1185	0	0	1704	0	0	736	0	1311	777	0	1277
Q Serve(g_s), s	11.5	0.0	0.0	0.0	0.0	0.0	2.8	0.0	39.4	9.8	0.0	49.7
Cycle Q Clear(g_c), s	20.3	0.0	0.0	8.8	0.0	0.0	52.5	0.0	39.4	49.1	0.0	49.7
Prop In Lane	0.75		0.04	0.12		0.58	1.00		0.03	1.00		0.17
Lane Grp Cap(c), veh/h	345	0	0	443	0	0	115	0	756	202	0	737
V/C Ratio(X)	0.74	0.00	0.00	0.40	0.00	0.00	0.19	0.00	0.86	0.42	0.00	0.96
Avail Cap(c_a), veh/h	384	0	0	490	0	0	131	0	784	219	0	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.3	0.0	0.0	31.2	0.0	0.0	43.9	0.0	16.8	37.4	0.0	19.0
Incr Delay (d2), s/veh	5.4	0.0	0.0	0.2	0.0	0.0	0.3	0.0	8.6	0.5	0.0	22.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	0.0	0.0	3.5	0.0	0.0	0.5	0.0	12.7	1.9	0.0	18.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.7	0.0	0.0	31.4	0.0	0.0	44.2	0.0	25.4	37.9	0.0	41.2
LnGrp LOS	D			C			D		C	D		D
Approach Vol, veh/h	255			177			670			791		
Approach Delay, s/veh	41.7			31.4			26.0			40.8		
Approach LOS	D			C			C			D		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	63.6			31.6			63.6			31.6		
Change Period (Y+Rc), s	8.7			9.2			8.7			9.2		
Max Green Setting (Gmax), s	56.9			25.2			56.9			25.2		
Max Q Clear Time (g_c+I1), s	51.7			10.8			54.5			22.3		
Green Ext Time (p_c), s	0.8			0.2			0.4			0.1		
Intersection Summary												
HCM 7th Control Delay, s/veh	34.8											
HCM 7th LOS	C											

HCM 7th TWSC

11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	6.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	110	10	30	210	10
Future Vol, veh/h	30	110	10	30	210	10
Conflicting Peds, #/hr	0	5	5	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	124	11	34	236	11
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	162	0	159	101
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1410	-	830	952
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	962	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1404	-	818	948
Mov Cap-2 Maneuver	-	-	-	-	818	-
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	952	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		1.9		11.24	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	823	-	-	450	-	
HCM Lane V/C Ratio	0.3	-	-	0.008	-	
HCM Ctrl Dly (s/v)	11.2	-	-	7.6	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.3	-	-	0	-	

HCM 7th Signalized Intersection Summary 12: Main St & Adams St

Saint Helena Streets Master Plan Cumulative Conditions Plus Project Oak Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	100	30	70	80	70	40	481	40	80	461	40
Future Volume (veh/h)	80	100	30	70	80	70	40	481	40	80	461	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.92		0.85	0.92		0.85	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1856
Adj Flow Rate, veh/h	85	106	26	74	85	54	43	512	40	85	490	39
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	150	157	33	137	134	72	121	533	42	165	561	45
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.07	0.44	0.44	0.09	0.47	0.47
Sat Flow, veh/h	453	795	170	397	681	366	1767	1204	94	1767	1201	96
Grp Volume(v), veh/h	217	0	0	213	0	0	43	0	552	85	0	529
Grp Sat Flow(s),veh/h/ln	1418	0	0	1444	0	0	1767	0	1298	1767	0	1296
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	1.9	0.0	34.1	3.8	0.0	30.4
Cycle Q Clear(g_c), s	12.1	0.0	0.0	11.4	0.0	0.0	1.9	0.0	34.1	3.8	0.0	30.4
Prop In Lane	0.39		0.12	0.35		0.25	1.00		0.07	1.00		0.07
Lane Grp Cap(c), veh/h	340	0	0	343	0	0	121	0	574	165	0	606
V/C Ratio(X)	0.64	0.00	0.00	0.62	0.00	0.00	0.36	0.00	0.96	0.52	0.00	0.87
Avail Cap(c_a), veh/h	357	0	0	360	0	0	194	0	651	194	0	650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.2	0.0	0.0	31.0	0.0	0.0	36.8	0.0	22.4	35.7	0.0	19.8
Incr Delay (d2), s/veh	2.5	0.0	0.0	2.1	0.0	0.0	0.7	0.0	23.7	0.9	0.0	11.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	0.0	4.1	0.0	0.0	0.8	0.0	13.5	1.7	0.0	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.8	0.0	0.0	33.1	0.0	0.0	37.5	0.0	46.1	36.6	0.0	31.0
LnGrp LOS	C			C			D		D	D		C
Approach Vol, veh/h		217			213			595			614	
Approach Delay, s/veh		33.8			33.1			45.5			31.8	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.3	47.4		25.0	12.4	45.3		25.0				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	9.1	41.5		17.3	9.1	41.5		17.3				
Max Q Clear Time (g_c+I1), s	3.9	32.4		13.4	5.8	36.1		14.1				
Green Ext Time (p_c), s	0.0	0.6		0.1	0.0	0.5		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh				37.2								
HCM 7th LOS				D								

HCM 7th AWSC

13: Railroad Ave & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday PM

Intersection												
Intersection Delay, s/veh 12.8												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	130	90	60	150	100	60	90	30	60	80	30
Future Vol, veh/h	20	130	90	60	150	100	60	90	30	60	80	30
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	144	100	67	167	111	67	100	33	67	89	33
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	2.3	14.2	12	11.8
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	8%	19%	35%
Vol Thru, %	50%	54%	48%	47%
Vol Right, %	17%	38%	32%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	180	240	310	170
LT Vol	60	20	60	60
Through Vol	90	130	150	80
RT Vol	30	90	100	30
Lane Flow Rate	200	267	344	189
Geometry Grp	1	1	1	1
Degree of Util (X)	0.331	0.406	0.518	0.314
Departure Headway (Hd)	5.957	5.487	5.412	5.977
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	600	651	661	597
Service Time	4.035	3.561	3.48	4.058
HCM Lane V/C Ratio	0.333	0.41	0.52	0.317
HCM Control Delay, s/veh	12	12.3	14.2	11.8
HCM Lane LOS	B	B	B	B
HCM 95th-ile Q	1.4	2	3	1.3

HCM 7th TWSC

14: Library Ln & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday PM

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	70	50	10	0	90	0	40	0	10	10	10	50
Future Vol, veh/h	70	50	10	0	90	0	40	0	10	10	10	50
Conflicting Peds, #/hr	4	0	5	5	0	4	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	74	53	11	0	95	0	42	0	11	11	11	53
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	99	0	0	68	0	0	310	309	67	303	314	99
Stage 1	-	-	-	-	-	-	210	210	-	99	99	-
Stage 2	-	-	-	-	-	-	100	99	-	204	216	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1488	-	-	1527	-	-	640	604	994	648	600	954
Stage 1	-	-	-	-	-	-	790	726	-	905	811	-
Stage 2	-	-	-	-	-	-	904	811	-	796	723	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1482	-	-	1519	-	-	561	568	985	603	564	951
Mov Cap-2 Maneuver	-	-	-	-	-	-	561	568	-	603	564	-
Stage 1	-	-	-	-	-	-	745	686	-	902	808	-
Stage 2	-	-	-	-	-	-	843	808	-	744	682	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	4.07			0			11.42			9.92		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	614	938	-	-	1519	-	-	805				
HCM Lane V/C Ratio	0.086	0.05	-	-	-	-	-	0.091				
HCM Ctrl Dly (s/v)	11.4	7.6	0	-	0	-	-	9.9				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0	-	-	0.3				

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	30	531	80	30	531
Future Vol, veh/h	60	30	531	80	30	531
Conflicting Peds, #/hr	53	0	0	72	72	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	66	33	584	88	33	584
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1402	699	0	0	743	0
Stage 1	699	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	153	438	-	-	859	-
Stage 1	491	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	130	408	-	-	801	-
Mov Cap-2 Maneuver	265	-	-	-	-	-
Stage 1	457	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	22.76	0		0.52		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	300	801	-	
HCM Lane V/C Ratio	-	-	0.329	0.041	-	
HCM Ctrl Dly (s/v)	-	-	22.8	9.7	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	1.4	0.1	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

16: Church St/Railroad Ave & Hunt Ave Cumulative Conditions Plus Project Oak Weekday PM

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	80	10	10	50	140	10	10	10	190	10	20
Future Vol, veh/h	30	80	10	10	50	140	10	10	10	190	10	20
Conflicting Peds, #/hr	20	0	22	20	0	22	12	0	20	0	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	33	89	11	11	56	156	11	11	11	211	11	22
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	233	0	0	122	0	0	278	438	136	359	366	167
Stage 1	-	-	-	-	-	-	183	183	-	178	178	-
Stage 2	-	-	-	-	-	-	95	255	-	181	189	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1329	-	-	1459	-	-	672	511	909	595	561	874
Stage 1	-	-	-	-	-	-	816	746	-	822	750	-
Stage 2	-	-	-	-	-	-	909	694	-	818	742	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1301	-	-	1429	-	-	598	472	873	531	518	846
Mov Cap-2 Maneuver	-	-	-	-	-	-	598	472	-	531	518	-
Stage 1	-	-	-	-	-	-	777	711	-	797	728	-
Stage 2	-	-	-	-	-	-	854	674	-	759	707	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.96			0.38			11.27			16.7		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	608	440	-	-	78	-	-	549				
HCM Lane V/C Ratio	0.055	0.026	-	-	0.008	-	-	0.445				
HCM Ctrl Dly (s/v)	11.3	7.8	0	-	7.5	0	-	16.7				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	2.3				

HCM 7th TWSC

17: Oak Ave & Mitchell Dr

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday PM

Intersection												
Int Delay, s/veh	10.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	30	10	6	50	70	10	130	10	150	66	20
Future Vol, veh/h	20	30	10	6	50	70	10	130	10	150	66	20
Conflicting Peds, #/hr	8	0	0	0	0	8	0	0	0	0	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	92	92	91	91	92	92	92	91	92	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	33	11	7	55	77	11	141	11	165	72	22
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	140	0	0	44	0	0	192	235	38	262	202	107
Stage 1	-	-	-	-	-	-	82	82	-	114	114	-
Stage 2	-	-	-	-	-	-	110	153	-	148	88	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1437	-	-	1558	-	-	765	664	1031	689	692	944
Stage 1	-	-	-	-	-	-	923	825	-	888	799	-
Stage 2	-	-	-	-	-	-	893	769	-	853	820	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1426	-	-	1558	-	-	652	645	1031	520	673	931
Mov Cap-2 Maneuver	-	-	-	-	-	-	652	645	-	520	673	-
Stage 1	-	-	-	-	-	-	909	812	-	877	789	-
Stage 2	-	-	-	-	-	-	784	760	-	686	807	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	2.53			0.34			12.2			16.17		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	662	573	-	-	76	-	-	578				
HCM Lane V/C Ratio	0.246	0.015	-	-	0.004	-	-	0.447				
HCM Ctrl Dly (s/v)	12.2	7.6	0	-	7.3	0	-	16.2				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	1	0	-	-	0	-	-	2.3				

HCM 7th Signalized Intersection Summary
18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	210	154	36	120	100	521	70	110	477	10
Future Volume (veh/h)	0	0	210	154	36	120	100	521	70	110	477	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.89	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	0	0	226	166	39	16	108	560	75	118	513	11
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	35	156	215	50	209	142	575	77	145	653	14
Arrive On Green	0.00	0.00	0.02	0.15	0.15	0.15	0.08	0.51	0.51	0.08	0.51	0.51
Sat Flow, veh/h	0	1856	1572	1444	339	1403	1767	1135	152	1767	1285	28
Grp Volume(v), veh/h	0	0	226	205	0	16	108	0	635	118	0	524
Grp Sat Flow(s),veh/h/ln	0	1856	1572	1783	0	1403	1767	0	1287	1767	0	1313
Q Serve(g_s), s	0.0	0.0	2.0	11.8	0.0	1.1	6.4	0.0	51.5	7.0	0.0	35.0
Cycle Q Clear(g_c), s	0.0	0.0	2.0	11.8	0.0	1.1	6.4	0.0	51.5	7.0	0.0	35.0
Prop In Lane	0.00		1.00	0.81		1.00	1.00		0.12	1.00		0.02
Lane Grp Cap(c), veh/h	0	35	156	265	0	209	142	0	652	145	0	667
V/C Ratio(X)	0.00	0.00	1.45	0.77	0.00	0.08	0.76	0.00	0.97	0.81	0.00	0.79
Avail Cap(c_a), veh/h	0	35	156	404	0	318	401	0	916	236	0	776
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	48.2	43.9	0.0	39.3	48.2	0.0	25.7	48.4	0.0	21.5
Incr Delay (d2), s/veh	0.0	0.0	233.5	2.1	0.0	0.1	3.1	0.0	17.7	4.2	0.0	3.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	14.3	5.4	0.0	0.4	3.0	0.0	18.3	3.3	0.0	11.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	281.7	46.0	0.0	39.3	51.3	0.0	43.4	52.6	0.0	25.4
LnGrp LOS			F	D		D	D		D	D		C
Approach Vol, veh/h	226			221			743			642		
Approach Delay, s/veh	281.7			45.5			44.5			30.4		
Approach LOS	F			D			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.3	62.2		25.6	13.5	62.0		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	24.3	63.3		24.3	14.3	* 76		2.0				
Max Q Clear Time (g_c+I1), s	8.4	37.0		13.8	9.0	53.5		4.0				
Green Ext Time (p_c), s	0.0	0.7		0.2	0.0	0.9		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh 68.9

HCM 7th LOS E

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 7th Signalized Intersection Summary
19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	160	160	751	851	30
Future Volume (veh/h)	30	160	160	751	851	30
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1318	1318	1318
Adj Flow Rate, veh/h	32	32	172	808	915	31
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	57	57	184	1105	890	30
Arrive On Green	0.07	0.07	0.10	0.84	0.70	0.70
Sat Flow, veh/h	821	821	1767	1318	1267	43
Grp Volume(v), veh/h	65	0	172	808	0	946
Grp Sat Flow(s), veh/h/ln	1667	0	1767	1318	0	1310
Q Serve(g_s), s	5.6	0.0	14.4	38.1	0.0	104.5
Cycle Q Clear(g_c), s	5.6	0.0	14.4	38.1	0.0	104.5
Prop In Lane	0.49	0.49	1.00			0.03
Lane Grp Cap(c), veh/h	115	0	184	1105	0	920
V/C Ratio(X)	0.57	0.00	0.93	0.73	0.00	1.03
Avail Cap(c_a), veh/h	129	0	184	1141	0	920
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	67.1	0.0	66.1	5.0	0.0	22.1
Incr Delay (d2), s/veh	1.8	0.0	47.1	2.0	0.0	37.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	8.9	8.1	0.0	37.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	68.9	0.0	113.2	7.0	0.0	59.2
LnGrp LOS	E		F	A		F
Approach Vol, veh/h	65			980	946	
Approach Delay, s/veh	68.9			25.7	59.2	
Approach LOS	E			C	E	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	20.2	113.6		133.8	15.0	
Change Period (Y+Rc), s	4.7	9.1		* 9.1	4.7	
Max Green Setting (Gmax), s	104.5			* 1.3E+02	11.5	
Max Q Clear Time (g_c+10), s	106.5			40.1	7.6	
Green Ext Time (p_c), s	0.0	0.0		0.8	0.0	
Intersection Summary						
HCM 7th Control Delay, s/veh			43.0			
HCM 7th LOS			D			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC

20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	119	119	881	961	50
Future Vol, veh/h	30	119	119	881	961	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	32	128	128	947	1033	54
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2263	1060	1087	0	-	0
Stage 1	1060	-	-	-	-	-
Stage 2	1203	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	45	271	638	-	-	-
Stage 1	332	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	36	271	638	-	-	-
Mov Cap-2 Maneuver	141	-	-	-	-	-
Stage 1	265	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	31.29	1.43		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	638	-	141	271	-	-
HCM Lane V/C Ratio	0.201	-	0.228	0.472	-	-
HCM Ctrl Dly (s/v)	12.1	-	37.9	29.6	-	-
HCM Lane LOS	B	-	E	D	-	-
HCM 95th %tile Q(veh)	0.7	-	0.8	2.4	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	100	10	20	90	10
Future Vol, veh/h	20	100	10	20	90	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	22	108	11	22	97	11
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7.3	7.6	8.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	90%	0%	33%
Vol Thru, %	0%	17%	67%
Vol Right, %	10%	83%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	100	120	30
LT Vol	90	0	10
Through Vol	0	20	20
RT Vol	10	100	0
Lane Flow Rate	108	129	32
Geometry Grp	1	1	1
Degree of Util (X)	0.13	0.131	0.039
Departure Headway (Hd)	4.35	3.665	4.308
Convergence, Y/N	Yes	Yes	Yes
Cap	819	964	820
Service Time	2.4	1.741	2.391
HCM Lane V/C Ratio	0.132	0.134	0.039
HCM Control Delay, s/veh	8.1	7.3	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.5	0.1

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	260	300	80	110	20
Future Vol, veh/h	30	260	300	80	110	20
Conflicting Peds, #/hr	2	0	0	2	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	295	341	91	125	23
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	434	0	-	0	752	390
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	364	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1121	-	-	-	377	656
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	701	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1118	-	-	-	361	653
Mov Cap-2 Maneuver	-	-	-	-	361	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	700	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.86	0		19.87		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	186	-	-	-	388	
HCM Lane V/C Ratio	0.03	-	-	-	0.381	
HCM Ctrl Dly (s/v)	8.3	0	-	-	19.9	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	1.7	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Pope Street
Alternative Conditions Plus Project Oak Weekday PM

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	300	40	20	300	10	40	0	30	10	0	20
Future Vol, veh/h	40	300	40	20	300	10	40	0	30	10	0	20
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	47	353	47	24	353	12	47	0	35	12	0	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	365	0	0	401	0	0	874	883	377	853	901	361
Stage 1	-	-	-	-	-	-	472	472	-	406	406	-
Stage 2	-	-	-	-	-	-	402	412	-	447	495	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1188	-	-	1152	-	-	269	283	667	278	277	681
Stage 1	-	-	-	-	-	-	571	557	-	620	596	-
Stage 2	-	-	-	-	-	-	623	593	-	589	544	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1188	-	-	1151	-	-	244	266	666	248	260	680
Mov Cap-2 Maneuver	-	-	-	-	-	-	244	266	-	248	260	-
Stage 1	-	-	-	-	-	-	548	535	-	607	584	-
Stage 2	-	-	-	-	-	-	588	581	-	535	522	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.86			0.5			17.88			14.12		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	244	666	1188	-	-	1151	-	-	430
HCM Lane V/C Ratio	0.193	0.053	0.04	-	-	0.02	-	-	0.082
HCM Ctrl Dly (s/v)	23.3	10.7	8.2	-	-	8.2	-	-	14.1
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0.2	0.1	-	-	0.1	-	-	0.3

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	30	620	780	30
Future Vol, veh/h	30	30	30	620	780	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	34	34	697	876	34
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1657	893	910	0	-	0
Stage 1	893	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	107	339	744	-	-	-
Stage 1	398	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	99	339	744	-	-	-
Mov Cap-2 Maneuver	99	-	-	-	-	-
Stage 1	369	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	45.74	0.46		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	83	-	153	-	-	
HCM Lane V/C Ratio	0.045	-	0.44	-	-	
HCM Ctrl Dly (s/v)	10.1	0	45.7	-	-	
HCM Lane LOS	B	A	E	-	-	
HCM 95th %tile Q(veh)	0.1	-	2	-	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

25: Silverado Trail & Howell Mountain Rd Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	10	640	20	10	800
Future Vol, veh/h	50	10	640	20	10	800
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	57	11	736	23	11	920
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1690	747	0	0	759	0
Stage 1	747	-	-	-	-	-
Stage 2	943	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	102	411	-	-	848	-
Stage 1	466	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	101	411	-	-	848	-
Mov Cap-2 Maneuver	234	-	-	-	-	-
Stage 1	466	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	24.55	0		0.11		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	252	848	-	
HCM Lane V/C Ratio	-	-	0.273	0.014	-	
HCM Ctrl Dly (s/v)	-	-	24.6	9.3	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	1.1	0	-	

HCM 7th TWSC

26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	25.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	130	200	130	530	620	230
Future Vol, veh/h	130	200	130	530	620	230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	146	225	146	596	697	258
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1584	697	955	0	-	0
Stage 1	697	-	-	-	-	-
Stage 2	888	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	~ 119	440	716	-	-	-
Stage 1	492	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 94	440	716	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	138.36	2.23		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	716	-	319	-	-	
HCM Lane V/C Ratio	0.204	-	1.164	-	-	
HCM Ctrl Dly (s/v)	11.3	-	138.4	-	-	
HCM Lane LOS	B	-	F	-	-	
HCM 95th %tile Q(veh)	0.8	-	15.5	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↗	↖	
Traffic Vol, veh/h	0	0	0	10	10	20	10	771	0	10	871	20
Future Vol, veh/h	0	0	0	10	10	20	10	771	0	10	871	20
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	0	11	11	22	11	829	0	11	937	22
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1830	1824	952	1809	1835	829	963	0	0	829	0	0
Stage 1	974	974	-	851	851	-	-	-	-	-	-	-
Stage 2	856	851	-	958	985	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	59	77	313	61	75	369	711	-	-	798	-	-
Stage 1	302	329	-	353	375	-	-	-	-	-	-	-
Stage 2	351	375	-	308	325	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	45	73	312	58	72	369	707	-	-	798	-	-
Mov Cap-2 Maneuver	45	73	-	58	72	-	-	-	-	-	-	-
Stage 1	296	323	-	344	365	-	-	-	-	-	-	-
Stage 2	312	365	-	304	319	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Ctrl Dly, s/v	0		57.68		0.13			0.11				
HCM LOS	A		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	23	-	-	-	110	798	-	-				
HCM Lane V/C Ratio	0.015	-	-	-	0.393	0.013	-	-				
HCM Ctrl Dly (s/v)	10.2	0	-	0	57.7	9.6	-	-				
HCM Lane LOS	B	A	-	A	F	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	-	1.6	0	-	-				

HCM 7th TWSC

28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday PM

Intersection												
Int Delay, s/veh	27											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	20	10	30	70	0	20	20	651	120	30	801	10
Future Vol, veh/h	20	10	30	70	0	20	20	651	120	30	801	10
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	11	33	76	0	22	22	708	130	33	871	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1702	1833	886	1758	1773	773	892	0	0	838	0	0
Stage 1	951	951	-	816	816	-	-	-	-	-	-	-
Stage 2	751	882	-	941	957	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	72	76	342	~ 66	82	397	756	-	-	792	-	-
Stage 1	311	337	-	369	389	-	-	-	-	-	-	-
Stage 2	401	363	-	315	335	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	63	70	339	~ 47	76	397	749	-	-	792	-	-
Mov Cap-2 Maneuver	63	70	-	~ 47	76	-	-	-	-	-	-	-
Stage 1	295	320	-	359	378	-	-	-	-	-	-	-
Stage 2	368	352	-	263	318	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	78.23		\$ 476.47			0.25			0.35			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	749	-	-	109	59	792	-	-				
HCM Lane V/C Ratio	0.029	-	-	0.598	1.663	0.041	-	-				
HCM Ctrl Dly (s/v)	9.9	-	-	78.23	\$ 476.5	9.7	-	-				
HCM Lane LOS	A	-	-	F	F	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	2.9	9	0.1	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	10	30	10	10	10	180	30	10	180	10
Future Vol, veh/h	10	10	10	30	10	10	10	180	30	10	180	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	12	12	12	35	12	12	12	212	35	12	212	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.3	8.6	9.4	9.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	33%	60%	5%
Vol Thru, %	82%	33%	20%	90%
Vol Right, %	14%	33%	20%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	220	30	50	200
LT Vol	10	10	30	10
Through Vol	180	10	10	180
RT Vol	30	10	10	10
Lane Flow Rate	259	35	59	235
Geometry Grp	1	1	1	1
Degree of Util (X)	0.314	0.049	0.083	0.29
Departure Headway (Hd)	4.371	4.997	5.093	4.444
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	823	715	702	809
Service Time	2.393	3.036	3.131	2.468
HCM Lane V/C Ratio	0.315	0.049	0.084	0.29
HCM Control Delay, s/veh	9.4	8.3	8.6	9.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.3	0.2	0.3	1.2

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

Intersection												
Intersection Delay, s/veh11.3												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	10	40	40	60	40	20	20	180	130	30	200	10
Future Vol, veh/h	10	40	40	60	40	20	20	180	130	30	200	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	44	44	66	44	22	22	198	143	33	220	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh9.5		10.2	12.2	11.2
HCM LOS	A	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	11%	50%	13%
Vol Thru, %	55%	44%	33%	83%
Vol Right, %	39%	44%	17%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	330	90	120	240
LT Vol	20	10	60	30
Through Vol	180	40	40	200
RT Vol	130	40	20	10
Lane Flow Rate	363	99	132	264
Geometry Grp	1	1	1	1
Degree of Util (X)	0.482	0.151	0.208	0.375
Departure Headway (Hd)	4.78	5.502	5.674	5.114
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	758	651	632	707
Service Time	2.789	3.545	3.715	3.125
HCM Lane V/C Ratio	0.479	0.152	0.209	0.373
HCM Control Delay, s/veh	12.2	9.5	10.2	11.2
HCM Lane LOS	B	A	B	B
HCM 95th-tile Q	2.6	0.5	0.8	1.7

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

Intersection												
Intersection Delay, s/veh 13.1												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	70	40	60	44	80	50	40	200	60	40	190	50
Future Vol, veh/h	70	40	60	44	80	50	40	200	60	40	190	50
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	77	44	66	48	88	55	44	220	66	44	209	55
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB		WB		NB		SB					
Opposing Approach	WB		EB		SB		NB					
Opposing Lanes	1		1		1		1					
Conflicting Approach Left	SB		NB		EB		WB					
Conflicting Lanes Left	1		1		1		1					
Conflicting Approach Right	NB		SB		WB		EB					
Conflicting Lanes Right	1		1		1		1					
HCM Control Delay, s/veh	11.7		11.8		14.1		13.6					
HCM LOS	B		B		B		B					

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	41%	25%	14%
Vol Thru, %	67%	24%	46%	68%
Vol Right, %	20%	35%	29%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	300	170	174	280
LT Vol	40	70	44	40
Through Vol	200	40	80	190
RT Vol	60	60	50	50
Lane Flow Rate	330	187	191	308
Geometry Grp	1	1	1	1
Degree of Util (X)	0.505	0.309	0.317	0.475
Departure Headway (Hd)	5.514	5.962	5.959	5.563
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	649	598	598	643
Service Time	3.586	4.048	4.043	3.637
HCM Lane V/C Ratio	0.508	0.313	0.319	0.479
HCM Control Delay, s/veh	14.1	11.7	11.8	13.6
HCM Lane LOS	B	B	B	B
HCM 95th-ile Q	2.9	1.3	1.4	2.6

HCM 7th TWSC

32: Main St & Spring St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	70	100	541	527	64
Future Vol, veh/h	70	70	100	541	527	64
Conflicting Peds, #/hr	0	59	47	0	0	47
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	75	75	108	582	567	69
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1445	707	682	0	-	0
Stage 1	648	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	144	434	906	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	108	391	865	-	-	-
Mov Cap-2 Maneuver	238	-	-	-	-	-
Stage 1	405	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	29.16	1.52		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	281	-	296	-	-	
HCM Lane V/C Ratio	0.124	-	0.509	-	-	
HCM Ctrl Dly (s/v)	9.8	0	29.2	-	-	
HCM Lane LOS	A	A	D	-	-	
HCM 95th %tile Q(veh)	0.4	-	2.7	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	50	150	0	0	270	70	0	0	0	60	0	110
Future Vol, veh/h	50	150	0	0	270	70	0	0	0	60	0	110
Conflicting Peds, #/hr	15	0	6	6	0	15	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	54	163	0	0	293	76	0	0	0	65	0	120
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	385	0	0	169	0	0	572	662	170	619	624	348
Stage 1	-	-	-	-	-	-	278	278	-	347	347	-
Stage 2	-	-	-	-	-	-	294	385	-	273	278	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1168	-	-	1402	-	-	429	381	871	399	400	693
Stage 1	-	-	-	-	-	-	727	679	-	667	633	-
Stage 2	-	-	-	-	-	-	712	609	-	731	679	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1152	-	-	1394	-	-	334	354	865	373	372	683
Mov Cap-2 Maneuver	-	-	-	-	-	-	334	354	-	373	372	-
Stage 1	-	-	-	-	-	-	685	640	-	658	624	-
Stage 2	-	-	-	-	-	-	586	601	-	692	640	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	2.07			0			0			15.45		
HCM LOS							A			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	450	-	-	1394	-	-	528				
HCM Lane V/C Ratio	-	0.047	-	-	-	-	-	0.35				
HCM Ctrl Dly (s/v)	0	8.3	0	-	0	-	-	15.4				
HCM Lane LOS	A	A	A	-	A	-	-	C				
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	1.6				

HCM 7th TWSC
35: Grayson Ave & Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Oak Weekday PM

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	100	100	90	90	30
Future Vol, veh/h	40	100	100	90	90	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	43	109	109	98	98	33
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	207	0	-	0	353	158
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	196	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1359	-	-	-	642	885
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	835	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1359	-	-	-	621	885
Mov Cap-2 Maneuver	-	-	-	-	621	-
Stage 1	-	-	-	-	839	-
Stage 2	-	-	-	-	835	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	2.21	0		11.66		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	514	-	-	-	671	
HCM Lane V/C Ratio	0.032	-	-	-	0.194	
HCM Ctrl Dly (s/v)	7.7	0	-	-	11.7	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7	

HCM 7th TWSC

36: Oak Ave & Charter Oak Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Oak Weekday PM

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	60	10	10	30	10	10	130	10	10	120	10
Future Vol, veh/h	10	60	10	10	30	10	10	130	10	10	120	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	65	11	11	33	11	11	141	11	11	130	11

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	337	332	136	353	332	147	141	0	0	152	0	0
Stage 1	158	158	-	168	168	-	-	-	-	-	-	-
Stage 2	179	174	-	185	163	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	615	586	910	600	586	898	1436	-	-	1422	-	-
Stage 1	842	765	-	831	757	-	-	-	-	-	-	-
Stage 2	820	753	-	815	761	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	564	577	910	518	577	898	1436	-	-	1422	-	-
Mov Cap-2 Maneuver	564	577	-	518	577	-	-	-	-	-	-	-
Stage 1	835	759	-	824	751	-	-	-	-	-	-	-
Stage 2	769	747	-	730	755	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	11.98	11.52	0.5	0.54
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	118	-	-	603	606	127	-
HCM Lane V/C Ratio	0.008	-	-	0.144	0.09	0.008	-
HCM Ctrl Dly (s/v)	7.5	0	-	12	11.5	7.6	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.5	0.3	0	-

HCM 7th TWSC
4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection						
Int Delay, s/veh	2.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	14	20	10	7
Future Vol, veh/h	30	10	14	20	10	7
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	37	12	17	25	12	9
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	52	0	105	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	59	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1547	-	890	1020
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	961	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1543	-	877	1017
Mov Cap-2 Maneuver	-	-	-	-	877	-
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	950	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.03		8.96	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	930	-	-	741	-	
HCM Lane V/C Ratio	0.023	-	-	0.011	-	
HCM Ctrl Dly (s/v)	9	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

HCM 7th TWSC
5: Valley View St & Spring St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection						
Int Delay, s/veh	5.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↶		↶
Traffic Vol, veh/h	40	40	34	40	30	87
Future Vol, veh/h	40	40	34	40	30	87
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	56	56	48	56	42	123
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	113	0	237	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	152	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1471	-	749	972
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	873	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1471	-	724	972
Mov Cap-2 Maneuver	-	-	-	-	724	-
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	844	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.46		9.94	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	893	-	-	827	-	
HCM Lane V/C Ratio	0.184	-	-	0.033	-	
HCM Ctrl Dly (s/v)	9.9	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-	

HCM 7th AWSC
6: Crane Ave/Valley View St & Grayson Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	30	87	30	20	64
Future Vol, veh/h	20	30	87	30	20	64
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	29	44	128	44	29	94
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	7.7	8.1	8.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	40%	24%
Vol Thru, %	74%	0%	76%
Vol Right, %	26%	60%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	117	50	84
LT Vol	0	20	20
Through Vol	87	0	64
RT Vol	30	30	0
Lane Flow Rate	172	74	124
Geometry Grp	1	1	1
Degree of Util (X)	0.192	0.088	0.146
Departure Headway (Hd)	4.02	4.311	4.259
Convergence, Y/N	Yes	Yes	Yes
Cap	881	836	831
Service Time	2.097	2.311	2.34
HCM Lane V/C Ratio	0.195	0.089	0.149
HCM Control Delay, s/veh	8.1	7.7	8.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0.3	0.5

HCM 7th TWSC
7: Sulphur Spring Ave & Crane Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	10	47	64	10
Future Vol, veh/h	10	10	10	47	64	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	15	15	69	94	15
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	84	0	-	0	93	49
Stage 1	-	-	-	-	49	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1507	-	-	-	904	1016
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	976	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1507	-	-	-	895	1016
Mov Cap-2 Maneuver	-	-	-	-	895	-
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	976	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.71	0		9.49		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	910	
HCM Lane V/C Ratio	0.01	-	-	-	0.12	
HCM Ctrl Dly (s/v)	7.4	0	-	-	9.5	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↘		↙	↘	
Traffic Vol, veh/h	10	10	10	30	0	20	20	640	30	20	620	10
Future Vol, veh/h	10	10	10	30	0	20	20	640	30	20	620	10
Conflicting Peds, #/hr	1	0	2	2	0	1	6	0	1	1	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	10	10	10	31	0	21	21	667	31	21	646	10
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1408	1439	659	1420	1429	684	662	0	0	699	0	0
Stage 1	699	699	-	725	725	-	-	-	-	-	-	-
Stage 2	709	741	-	695	704	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	116	132	462	114	134	447	922	-	-	893	-	-
Stage 1	429	440	-	415	428	-	-	-	-	-	-	-
Stage 2	423	422	-	431	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	105	125	458	97	127	446	916	-	-	892	-	-
Mov Cap-2 Maneuver	105	125	-	97	127	-	-	-	-	-	-	-
Stage 1	417	428	-	405	418	-	-	-	-	-	-	-
Stage 2	394	412	-	401	425	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Ctrl Dly, s/v	34.68		44.56		0.26			0.28				
HCM LOS	D		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	916	-	-	152	141	892	-	-				
HCM Lane V/C Ratio	0.023	-	-	0.205	0.368	0.023	-	-				
HCM Ctrl Dly (s/v)	9	-	-	34.7	44.6	9.1	-	-				
HCM Lane LOS	A	-	-	D	E	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.7	1.5	0.1	-	-				

HCM 7th TWSC
9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	30	30	650	630	30
Future Vol, veh/h	40	30	30	650	630	30
Conflicting Peds, #/hr	0	1	9	0	0	9
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	40	30	30	657	636	30
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1378	662	676	0	-	0
Stage 1	661	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	159	460	911	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	148	456	903	-	-	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	30.95	0.4		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	79	-	208	-	-	
HCM Lane V/C Ratio	0.034	-	0.34	-	-	
HCM Ctrl Dly (s/v)	9.1	0	30.9	-	-	
HCM Lane LOS	A	A	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	1.4	-	-	

HCM 7th Signalized Intersection Summary
10: Main St & Madrona Ave/Fulton Ln

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	20	26	10	20	80	13	460	10	50	500	110
Future Volume (veh/h)	140	20	26	10	20	80	13	460	10	50	500	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	15	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	151	22	22	11	22	12	14	495	10	54	538	107
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	276	27	26	105	165	73	144	731	15	375	640	92
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1135	172	166	220	1071	470	779	1287	26	887	1066	212
Grp Volume(v), veh/h	195	0	0	45	0	0	14	0	505	54	0	645
Grp Sat Flow(s),veh/h/ln	1474	0	0	1761	0	0	779	0	1313	887	0	1279
Q Serve(g_s), s	6.1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	17.0	2.9	0.0	27.6
Cycle Q Clear(g_c), s	7.4	0.0	0.0	1.3	0.0	0.0	28.6	0.0	17.0	19.8	0.0	27.6
Prop In Lane	0.77		0.11	0.24		0.27	1.00		0.02	1.00		0.17
Lane Grp Cap(c), veh/h	329	0	0	344	0	0	144	0	746	375	0	732
V/C Ratio(X)	0.59	0.00	0.00	0.13	0.00	0.00	0.10	0.00	0.68	0.14	0.00	0.88
Avail Cap(c_a), veh/h	551	0	0	593	0	0	479	0	1220	690	0	1188
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.3	0.0	0.0	24.5	0.0	0.0	31.4	0.0	9.9	17.1	0.0	13.6
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.4	0.1	0.0	2.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.5
%ile BackOfQ(50%),veh/ln	3.0	0.0	0.0	0.6	0.0	0.0	0.2	0.0	4.4	0.6	0.0	14.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.0	0.0	0.0	24.6	0.0	0.0	31.5	0.0	10.3	17.1	0.0	41.8
LnGrp LOS	C			C			C		B	B		D
Approach Vol, veh/h		195			45			519			699	
Approach Delay, s/veh		28.0			24.6			10.8			39.9	
Approach LOS		C			C			B			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		18.4		40.0		18.4				
Change Period (Y+Rc), s		8.7		9.2		8.7		9.2				
Max Green Setting (Gmax), s		54.3		17.8		54.3		17.8				
Max Q Clear Time (g_c+I1), s		30.6		9.4		29.6		3.3				
Green Ext Time (p_c), s		0.7		0.2		1.0		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh				27.5								
HCM 7th LOS				C								

HCM 7th TWSC
11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection						
Int Delay, s/veh	5.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↷		↶
Traffic Vol, veh/h	10	60	10	10	100	10
Future Vol, veh/h	10	60	10	10	100	10
Conflicting Peds, #/hr	0	3	3	0	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	76	13	13	127	13
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	92	0	96	54
Stage 1	-	-	-	-	54	-
Stage 2	-	-	-	-	42	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1497	-	901	1011
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	978	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1493	-	888	1008
Mov Cap-2 Maneuver	-	-	-	-	888	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	966	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.72		9.75	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	897	-	-	900	-	
HCM Lane V/C Ratio	0.155	-	-	0.008	-	
HCM Ctrl Dly (s/v)	9.7	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.5	-	-	0	-	

HCM 7th Signalized Intersection Summary 12: Main St & Adams St

Saint Helena Streets Master Plan Cumulative MD Plus Project Oak Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	40	30	40	40	40	20	403	30	40	456	40
Future Volume (veh/h)	40	40	30	40	40	40	20	403	30	40	456	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	12	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.75		0.70	0.75		0.70	1.00		0.93	1.00		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1856
Adj Flow Rate, veh/h	41	41	15	41	41	18	21	415	28	41	470	38
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	168	150	46	162	146	53	75	508	34	121	544	31
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.04	0.39	0.39	0.07	0.42	0.42
Sat Flow, veh/h	456	688	209	433	666	241	1767	1214	82	1767	1187	96
Grp Volume(v), veh/h	97	0	0	100	0	0	21	0	443	41	0	508
Grp Sat Flow(s),veh/h/ln	1354	0	0	1341	0	0	1767	0	1296	1767	0	1283
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.8	0.0	22.7	1.6	0.0	27.3
Cycle Q Clear(g_c), s	3.4	0.0	0.0	3.6	0.0	0.0	0.8	0.0	22.7	1.6	0.0	27.3
Prop In Lane	0.42		0.15	0.41		0.18	1.00		0.06	1.00		0.07
Lane Grp Cap(c), veh/h	364	0	0	360	0	0	75	0	542	121	0	575
V/C Ratio(X)	0.27	0.00	0.00	0.28	0.00	0.00	0.28	0.00	0.82	0.34	0.00	0.88
Avail Cap(c_a), veh/h	394	0	0	391	0	0	225	0	755	225	0	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.6	0.0	0.0	24.7	0.0	0.0	35.2	0.0	19.4	33.7	0.0	20.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.7	0.0	3.4	0.6	0.0	8.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.1
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	1.5	0.0	0.0	0.4	0.0	6.9	0.7	0.0	14.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.7	0.0	0.0	24.8	0.0	0.0	35.9	0.0	22.8	34.3	0.0	55.9
LnGrp LOS	C			C			D		C	C		E
Approach Vol, veh/h	97			100			464			549		
Approach Delay, s/veh	24.7			24.8			23.4			54.3		
Approach LOS	C			C			C			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.8	38.6		25.2	9.7	36.7		25.2				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	9.1	41.7		17.1	9.1	41.7		17.1				
Max Q Clear Time (g_c+I1), s	2.8	29.3		5.4	3.6	24.7		5.6				
Green Ext Time (p_c), s	0.0	0.6		0.1	0.0	0.5		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh	37.6											
HCM 7th LOS	D											

HCM 7th AWSC
13: Railroad Ave & Adams St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection												
Intersection Delay, s/veh	8.1											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	10	40	60	10	40	50	40	50	10	40	40	10
Future Vol, veh/h	10	40	60	10	40	50	40	50	10	40	40	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	43	65	11	43	54	43	54	11	43	43	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8	7.9	8.3	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	9%	10%	44%
Vol Thru, %	50%	36%	40%	44%
Vol Right, %	10%	55%	50%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	110	100	90
LT Vol	40	10	10	40
Through Vol	50	40	40	40
RT Vol	10	60	50	10
Lane Flow Rate	109	120	109	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.138	0.141	0.129	0.125
Departure Headway (Hd)	4.586	4.248	4.289	4.601
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	783	845	837	780
Service Time	2.609	2.268	2.309	2.624
HCM Lane V/C Ratio	0.139	0.142	0.13	0.126
HCM Control Delay, s/veh	8.3	8	7.9	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.5	0.4	0.4

HCM 7th TWSC
14: Library Ln & Adams St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	20	10	10	0	10	0	10	0	0	0	0	20
Future Vol, veh/h	20	10	10	0	10	0	10	0	0	0	0	20
Conflicting Peds, #/hr	1	0	6	6	0	1	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	28	14	14	0	14	0	14	0	0	0	0	28
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	15	0	0	34	0	0	96	97	31	88	104	15
Stage 1	-	-	-	-	-	-	82	82	-	15	15	-
Stage 2	-	-	-	-	-	-	14	15	-	73	89	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.16	6.56	6.26	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.254	-	-	3.554	4.054	3.354	3.554	4.054	3.354
Pot Cap-1 Maneuver	1577	-	-	1552	-	-	877	785	1032	887	778	1053
Stage 1	-	-	-	-	-	-	916	819	-	995	875	-
Stage 2	-	-	-	-	-	-	996	875	-	926	813	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1576	-	-	1543	-	-	834	766	1022	867	759	1052
Mov Cap-2 Maneuver	-	-	-	-	-	-	834	766	-	867	759	-
Stage 1	-	-	-	-	-	-	894	799	-	994	874	-
Stage 2	-	-	-	-	-	-	970	874	-	906	794	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.66			0			9.39			8.51		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	834	818	-	-	1543	-	-	1052				
HCM Lane V/C Ratio	0.017	0.018	-	-	-	-	-	0.026				
HCM Ctrl Dly (s/v)	9.4	7.3	0	-	0	-	-	8.5				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1				

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	20	433	70	30	496
Future Vol, veh/h	20	20	433	70	30	496
Conflicting Peds, #/hr	172	3	0	301	301	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	20	20	437	71	30	501
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1507	777	0	0	809	0
Stage 1	774	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	132	395	-	-	812	-
Stage 1	453	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	75	281	-	-	579	-
Mov Cap-2 Maneuver	192	-	-	-	-	-
Stage 1	323	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	24.11	0		0.66		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	228	579	-	
HCM Lane V/C Ratio	-	-	0.177	0.052	-	
HCM Ctrl Dly (s/v)	-	-	24.1	11.6	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	0.6	0.2	-	

HCM 7th TWSC
16: Church St/Railroad Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	40	20	30	20	60	10	20	40	50	40	20
Future Vol, veh/h	40	40	20	30	20	60	10	20	40	50	40	20
Conflicting Peds, #/hr	17	0	49	17	0	49	5	0	17	3	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	43	43	21	32	21	64	11	21	43	53	43	21
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	134	0	0	113	0	0	299	385	119	321	364	107
Stage 1	-	-	-	-	-	-	187	187	-	166	166	-
Stage 2	-	-	-	-	-	-	111	198	-	155	198	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1444	-	-	1470	-	-	652	547	930	630	562	944
Stage 1	-	-	-	-	-	-	812	743	-	834	759	-
Stage 2	-	-	-	-	-	-	891	735	-	845	735	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1377	-	-	1402	-	-	522	470	872	508	483	896
Mov Cap-2 Maneuver	-	-	-	-	-	-	522	470	-	508	483	-
Stage 1	-	-	-	-	-	-	749	686	-	776	706	-
Stage 2	-	-	-	-	-	-	794	684	-	741	678	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.08			2.08			11.25			13.5		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	651	675	-	-	427	-	-	540				
HCM Lane V/C Ratio	0.114	0.031	-	-	0.023	-	-	0.217				
HCM Ctrl Dly (s/v)	11.2	7.7	0	-	7.6	0	-	13.5				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.1	-	-	0.8				

HCM 7th TWSC
17: Oak Ave & Mitchell Dr

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	10	10	10	30	70	10	80	10	90	71	10
Future Vol, veh/h	20	10	10	10	30	70	10	80	10	90	71	10
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	92	92	81	81	92	92	92	81	92	81
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	25	12	11	11	37	86	11	87	11	111	77	12
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	126	0	0	23	0	0	166	215	18	210	178	84
Stage 1	-	-	-	-	-	-	67	67	-	105	105	-
Stage 2	-	-	-	-	-	-	98	148	-	105	73	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1454	-	-	1585	-	-	797	681	1058	745	714	972
Stage 1	-	-	-	-	-	-	941	837	-	898	806	-
Stage 2	-	-	-	-	-	-	906	773	-	898	833	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1449	-	-	1585	-	-	683	662	1058	625	695	968
Mov Cap-2 Maneuver	-	-	-	-	-	-	683	662	-	625	695	-
Stage 1	-	-	-	-	-	-	924	823	-	889	798	-
Stage 2	-	-	-	-	-	-	801	765	-	781	818	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.88			0.59			11.19			12.73		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	690	848	-	-	128	-	-	665				
HCM Lane V/C Ratio	0.158	0.017	-	-	0.007	-	-	0.302				
HCM Ctrl Dly (s/v)	11.2	7.5	0	-	7.3	0	-	12.7				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	1.3				

HCM 7th Signalized Intersection Summary 18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan Cumulative MD Plus Project Oak Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	140	109	31	70	90	473	50	60	457	10
Future Volume (veh/h)	0	0	140	109	31	70	90	473	50	60	457	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	12	0	0	6	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.89	1.00		0.93	1.00		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	0	0	143	111	32	12	92	483	51	61	466	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	44	184	220	63	222	165	533	16	143	544	9
Arrive On Green	0.00	0.00	0.02	0.16	0.16	0.16	0.09	0.43	0.43	0.08	0.42	0.42
Sat Flow, veh/h	0	1856	1572	1387	400	1404	1767	1163	123	1767	1283	28
Grp Volume(v), veh/h	0	0	143	143	0	12	92	0	534	61	0	476
Grp Sat Flow(s),veh/h/ln	0	1856	1572	1786	0	1404	1767	0	1286	1767	0	1310
Q Serve(g_s), s	0.0	0.0	2.0	6.2	0.0	0.6	4.2	0.0	34.4	2.8	0.0	28.3
Cycle Q Clear(g_c), s	0.0	0.0	2.0	6.2	0.0	0.6	4.2	0.0	34.4	2.8	0.0	28.3
Prop In Lane	0.00		1.00	0.78		1.00	1.00		0.10	1.00		0.02
Lane Grp Cap(c), veh/h	0	44	184	283	0	222	165	0	566	143	0	548
V/C Ratio(X)	0.00	0.00	0.78	0.51	0.00	0.05	0.56	0.00	0.94	0.43	0.00	0.87
Avail Cap(c_a), veh/h	0	44	185	400	0	314	189	0	559	187	0	546
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	36.5	32.8	0.0	30.4	36.9	0.0	24.2	37.3	0.0	23.4
Incr Delay (d2), s/veh	0.0	0.0	17.0	0.5	0.0	0.0	1.1	0.0	24.8	0.8	0.0	13.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.2	0.0	0.0	6.6
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.7	2.7	0.0	0.2	1.9	0.0	22.7	1.2	0.0	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	53.6	33.3	0.0	30.5	38.0	0.0	100.3	38.1	0.0	43.6
LnGrp LOS	D			C			D			F		
Approach Vol, veh/h	143			155			626			537		
Approach Delay, s/veh	53.6			33.1			91.2			43.0		
Approach LOS	D			C			F			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.7	43.1		23.2	11.6	44.2		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	9.1	33.8		19.0	9.0	* 37		2.0				
Max Q Clear Time (g_c+I1), s	6.2	30.3		8.2	4.8	36.4		4.0				
Green Ext Time (p_c), s	0.0	0.3		0.1	0.0	0.1		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	63.6											
HCM 7th LOS	E											
Notes												
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 7th Signalized Intersection Summary 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan Cumulative MD Plus Project Oak Ave

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	110	110	703	736	10
Future Volume (veh/h)	10	110	110	703	736	10
Initial Q (Qb), veh	0	0	0	15	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1318	1318	1318
Adj Flow Rate, veh/h	10	11	112	717	751	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	41	45	187	1013	781	10
Arrive On Green	0.05	0.05	0.11	0.76	0.59	0.59
Sat Flow, veh/h	758	834	1767	1318	1297	17
Grp Volume(v), veh/h	22	0	112	717	0	761
Grp Sat Flow(s), veh/h/ln	1668	0	1767	1318	0	1315
Q Serve(g_s), s	1.0	0.0	4.6	21.3	0.0	42.2
Cycle Q Clear(g_c), s	1.0	0.0	4.6	21.3	0.0	42.2
Prop In Lane	0.45	0.50	1.00			0.01
Lane Grp Cap(c), veh/h	89	0	187	1013	0	792
V/C Ratio(X)	0.25	0.00	0.60	0.71	0.00	0.96
Avail Cap(c_a), veh/h	243	0	218	1208	0	891
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	33.2	5.5	0.0	14.6
Incr Delay (d2), s/veh	0.5	0.0	1.5	1.1	0.0	19.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	5.4	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	2.0	6.0	0.0	14.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	35.8	0.0	34.8	11.9	0.0	34.0
LnGrp LOS	D		C	B		C
Approach Vol, veh/h	22			829	761	
Approach Delay, s/veh	35.8			15.0	34.0	
Approach LOS	D			B	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	2.8	53.9			66.8	8.8
Change Period (Y+Rc), s	4.7	9.1			* 9.1	4.7
Max Green Setting (Gmax), s	9.3	51.2			* 69	11.0
Max Q Clear Time (g_c+I), s	10.6	44.2			23.3	3.0
Green Ext Time (p_c), s	0.0	0.6			0.7	0.0
Intersection Summary						
HCM 7th Control Delay, s/veh			24.3			
HCM 7th LOS			C			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC
20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection								
Int Delay, s/veh	0.8							
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Vol, veh/h	10	44	37	803	826	20		
Future Vol, veh/h	10	44	37	803	826	20		
Conflicting Peds, #/hr	0	0	4	0	0	4		
Sign Control	Stop	Stop	Free	Free	Free	Free		
RT Channelized	-	None	-	None	-	None		
Storage Length	150	0	80	-	-	-		
Veh in Median Storage, #	0	-	-	0	0	-		
Grade, %	0	-	-	0	0	-		
Peak Hour Factor	98	98	98	98	98	98		
Heavy Vehicles, %	3	3	3	3	3	3		
Mvmt Flow	10	45	38	819	843	20		
Major/Minor	Minor2		Major1		Major2			
Conflicting Flow All	1752	857	867	0	-	0		
Stage 1	857	-	-	-	-	-		
Stage 2	895	-	-	-	-	-		
Critical Hdwy	6.43	6.23	4.13	-	-	-		
Critical Hdwy Stg 1	5.43	-	-	-	-	-		
Critical Hdwy Stg 2	5.43	-	-	-	-	-		
Follow-up Hdwy	3.527	3.327	2.227	-	-	-		
Pot Cap-1 Maneuver	93	355	772	-	-	-		
Stage 1	414	-	-	-	-	-		
Stage 2	397	-	-	-	-	-		
Platoon blocked, %				-	-	-		
Mov Cap-1 Maneuver	88	354	769	-	-	-		
Mov Cap-2 Maneuver	220	-	-	-	-	-		
Stage 1	392	-	-	-	-	-		
Stage 2	396	-	-	-	-	-		
Approach	EB		NB		SB			
HCM Ctrl Dly, s/v	17.66		0.44		0			
HCM LOS	C							
Minor Lane/Major Mvmt	NBL		NBT		EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	769		-		220	354	-	-
HCM Lane V/C Ratio	0.049		-		0.046	0.127	-	-
HCM Ctrl Dly (s/v)	9.9		-		22.1	16.6	-	-
HCM Lane LOS	A		-		C	C	-	-
HCM 95th %tile Q(veh)	0.2		-		0.1	0.4	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	60	10	10	40	10
Future Vol, veh/h	10	60	10	10	40	10
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	78	13	13	52	13
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7	7.4	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	80%	0%	50%
Vol Thru, %	0%	14%	50%
Vol Right, %	20%	86%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	50	70	20
LT Vol	40	0	10
Through Vol	0	10	10
RT Vol	10	60	0
Lane Flow Rate	65	91	26
Geometry Grp	1	1	1
Degree of Util (X)	0.076	0.09	0.031
Departure Headway (Hd)	4.193	3.57	4.235
Convergence, Y/N	Yes	Yes	Yes
Cap	853	998	842
Service Time	2.226	1.613	2.279
HCM Lane V/C Ratio	0.076	0.091	0.031
HCM Control Delay, s/veh	7.6	7	7.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.1

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	190	220	50	40	20
Future Vol, veh/h	20	190	220	50	40	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	21	198	229	52	42	21
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	281	0	-	0	495	255
Stage 1	-	-	-	-	255	-
Stage 2	-	-	-	-	240	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1276	-	-	-	532	781
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	798	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1276	-	-	-	522	781
Mov Cap-2 Maneuver	-	-	-	-	522	-
Stage 1	-	-	-	-	771	-
Stage 2	-	-	-	-	798	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.75	0		11.86		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	171	-	-	-	587	
HCM Lane V/C Ratio	0.016	-	-	-	0.106	
HCM Ctrl Dly (s/v)	7.9	0	-	-	11.9	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

HCM 7th TWSC
23: College Ave/Paseo Grand Dr & Pope Street

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	140	30	20	230	20	30	10	10	10	10	20
Future Vol, veh/h	30	140	30	20	230	20	30	10	10	10	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	34	157	34	22	258	22	34	11	11	11	11	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	281	0	0	191	0	0	551	567	174	545	573	270
Stage 1	-	-	-	-	-	-	242	242	-	315	315	-
Stage 2	-	-	-	-	-	-	309	326	-	230	258	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1276	-	-	1377	-	-	444	431	867	448	428	767
Stage 1	-	-	-	-	-	-	760	704	-	694	654	-
Stage 2	-	-	-	-	-	-	699	647	-	770	692	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1276	-	-	1377	-	-	402	413	867	412	410	767
Mov Cap-2 Maneuver	-	-	-	-	-	-	402	413	-	412	410	-
Stage 1	-	-	-	-	-	-	740	685	-	683	643	-
Stage 2	-	-	-	-	-	-	656	636	-	728	674	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.18	0.57	13.85	12.34
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	405	867	1276	-	-	1377	-	-	535
HCM Lane V/C Ratio	0.111	0.013	0.026	-	-	0.016	-	-	0.084
HCM Ctrl Dly (s/v)	15	9.2	7.9	-	-	7.7	-	-	12.3
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	0.1	-	-	0	-	-	0.3

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	30	20	520	540	20
Future Vol, veh/h	10	30	20	520	540	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	34	22	584	607	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1247	618	629	0	-	0
Stage 1	618	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	191	487	948	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	184	487	948	-	-	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	16.99	0.33		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	67	-	345	-	-	
HCM Lane V/C Ratio	0.024	-	0.13	-	-	
HCM Ctrl Dly (s/v)	8.9	0	17	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

HCM 7th TWSC
25: Silverado Trail & Howell Mountain Rd

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	20	520	40	10	560
Future Vol, veh/h	30	20	520	40	10	560
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	33	22	578	44	11	622
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1244	600	0	0	622	0
Stage 1	600	-	-	-	-	-
Stage 2	644	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	191	499	-	-	954	-
Stage 1	546	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	189	499	-	-	954	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	16.08	0		0.15		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	380	954	-	
HCM Lane V/C Ratio	-	-	0.146	0.012	-	
HCM Ctrl Dly (s/v)	-	-	16.1	8.8	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.5	0	-	

HCM 7th TWSC
26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	60	100	480	430	160
Future Vol, veh/h	80	60	100	480	430	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	88	66	110	527	473	176
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1220	473	648	0	-	0
Stage 1	473	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	198	590	933	-	-	-
Stage 1	625	-	-	-	-	-
Stage 2	466	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	175	590	933	-	-	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	466	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	20.2	1.62		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	933	-	389	-	-	
HCM Lane V/C Ratio	0.118	-	0.396	-	-	
HCM Ctrl Dly (s/v)	9.4	-	20.2	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.4	-	1.8	-	-	

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↗	↖	
Traffic Vol, veh/h	0	0	10	0	0	10	0	703	10	10	736	10
Future Vol, veh/h	0	0	10	0	0	10	0	703	10	10	736	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	10	0	0	10	0	717	10	10	751	10
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1494	1504	756	1494	1504	722	761	0	0	728	0	0
Stage 1	777	777	-	722	722	-	-	-	-	-	-	-
Stage 2	717	728	-	771	782	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	101	121	406	101	121	425	846	-	-	871	-	-
Stage 1	389	406	-	416	430	-	-	-	-	-	-	-
Stage 2	419	427	-	391	404	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	97	119	406	97	119	425	846	-	-	871	-	-
Mov Cap-2 Maneuver	97	119	-	97	119	-	-	-	-	-	-	-
Stage 1	384	401	-	416	430	-	-	-	-	-	-	-
Stage 2	409	427	-	377	399	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	14.09		13.68		0		0.12					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	846	-	-	406	425	871	-	-				
HCM Lane V/C Ratio	-	-	-	0.025	0.024	0.012	-	-				
HCM Ctrl Dly (s/v)	0	-	-	14.1	13.7	9.2	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

HCM 7th TWSC
28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection												
Int Delay, s/veh	11.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↘		↙	↘	
Traffic Vol, veh/h	20	10	40	60	10	30	20	563	130	40	656	10
Future Vol, veh/h	20	10	40	60	10	30	20	563	130	40	656	10
Conflicting Peds, #/hr	0	0	0	0	0	0	15	0	3	3	0	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	21	10	42	63	10	31	21	586	135	42	683	10
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1420	1553	704	1471	1491	657	709	0	0	725	0	0
Stage 1	787	787	-	699	699	-	-	-	-	-	-	-
Stage 2	633	767	-	772	792	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	113	113	436	105	123	463	886	-	-	873	-	-
Stage 1	383	401	-	429	440	-	-	-	-	-	-	-
Stage 2	466	410	-	391	399	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	89	103	429	79	112	462	873	-	-	871	-	-
Mov Cap-2 Maneuver	89	103	-	79	112	-	-	-	-	-	-	-
Stage 1	360	377	-	417	429	-	-	-	-	-	-	-
Stage 2	414	399	-	327	375	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Ctrl Dly, s/v	41.86		145.11		0.26			0.53				
HCM LOS	E		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	873	-	-	168	110	871	-	-				
HCM Lane V/C Ratio	0.024	-	-	0.434	0.949	0.048	-	-				
HCM Ctrl Dly (s/v)	9.2	-	-	41.9	145.1	9.3	-	-				
HCM Lane LOS	A	-	-	E	F	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	2	5.9	0.2	-	-				

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	10	0	20	10	10	10	160	20	10	150	0
Future Vol, veh/h	0	10	0	20	10	10	10	160	20	10	150	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	11	0	22	11	11	11	172	22	11	161	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.9	8	8.5	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	0%	50%	6%
Vol Thru, %	84%	100%	25%	94%
Vol Right, %	11%	0%	25%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	10	40	160
LT Vol	10	0	20	10
Through Vol	160	10	10	150
RT Vol	20	0	10	0
Lane Flow Rate	204	11	43	172
Geometry Grp	1	1	1	1
Degree of Util (X)	0.234	0.014	0.057	0.201
Departure Headway (Hd)	4.123	4.829	4.736	4.213
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	858	745	761	840
Service Time	2.211	2.832	2.736	2.305
HCM Lane V/C Ratio	0.238	0.015	0.057	0.205
HCM Control Delay, s/veh	8.5	7.9	8	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0	0.2	0.7

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection												
Intersection Delay, s/veh	10											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	30	10	60	30	20	20	160	80	10	140	10
Future Vol, veh/h	10	30	10	60	30	20	20	160	80	10	140	10
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	12	37	12	74	37	25	25	198	99	12	173	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.9	9.6	10.7	9.6
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	20%	55%	6%
Vol Thru, %	62%	60%	27%	88%
Vol Right, %	31%	20%	18%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	260	50	110	160
LT Vol	20	10	60	10
Through Vol	160	30	30	140
RT Vol	80	10	20	10
Lane Flow Rate	321	62	136	198
Geometry Grp	1	1	1	1
Degree of Util (X)	0.404	0.09	0.197	0.264
Departure Headway (Hd)	4.535	5.261	5.222	4.809
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	790	674	682	743
Service Time	2.588	3.348	3.298	2.87
HCM Lane V/C Ratio	0.406	0.092	0.199	0.266
HCM Control Delay, s/veh	10.7	8.9	9.6	9.6
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	2	0.3	0.7	1.1

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection												
Intersection Delay, s/veh10.6												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	40	40	40	39	40	40	30	160	30	30	150	20
Future Vol, veh/h	40	40	40	39	40	40	30	160	30	30	150	20
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	48	48	48	47	48	48	36	193	36	36	181	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh9.9		9.9	11.1	10.8
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	33%	33%	15%
Vol Thru, %	73%	33%	34%	75%
Vol Right, %	14%	33%	34%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	220	120	119	200
LT Vol	30	40	39	30
Through Vol	160	40	40	150
RT Vol	30	40	40	20
Lane Flow Rate	265	145	143	241
Geometry Grp	1	1	1	1
Degree of Util (X)	0.373	0.215	0.214	0.341
Departure Headway (Hd)	5.068	5.365	5.364	5.099
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	713	669	670	706
Service Time	3.068	3.399	3.397	3.127
HCM Lane V/C Ratio	0.372	0.217	0.213	0.341
HCM Control Delay, s/veh	11.1	9.9	9.9	10.8
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	1.7	0.8	0.8	1.5

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	60	80	463	467	49
Future Vol, veh/h	40	60	80	463	467	49
Conflicting Peds, #/hr	0	155	202	0	0	202
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	42	63	83	482	486	51
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1363	869	740	0	-	0
Stage 1	714	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	162	350	862	-	-	-
Stage 1	483	-	-	-	-	-
Stage 2	518	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	88	241	696	-	-	-
Mov Cap-2 Maneuver	207	-	-	-	-	-
Stage 1	327	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	33.84	1.6		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	265	-	226	-	-	
HCM Lane V/C Ratio	0.12	-	0.461	-	-	
HCM Ctrl Dly (s/v)	10.9	0	33.8	-	-	
HCM Lane LOS	B	A	D	-	-	
HCM 95th %tile Q(veh)	0.4	-	2.2	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	110	0	10	230	40	10	0	0	30	0	70
Future Vol, veh/h	30	110	0	10	230	40	10	0	0	30	0	70
Conflicting Peds, #/hr	10	0	7	7	0	10	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	34	124	0	11	258	45	11	0	0	34	0	79
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	313	0	0	131	0	0	481	534	131	504	511	293
Stage 1	-	-	-	-	-	-	198	198	-	313	313	-
Stage 2	-	-	-	-	-	-	283	336	-	191	198	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1241	-	-	1449	-	-	494	451	916	476	464	744
Stage 1	-	-	-	-	-	-	802	735	-	695	655	-
Stage 2	-	-	-	-	-	-	722	640	-	808	735	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1229	-	-	1439	-	-	420	426	910	454	439	736
Mov Cap-2 Maneuver	-	-	-	-	-	-	420	426	-	454	439	-
Stage 1	-	-	-	-	-	-	773	709	-	682	643	-
Stage 2	-	-	-	-	-	-	637	628	-	785	709	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.72			0.27			13.8			12.09		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	420	386	-	-	62	-	-	620				
HCM Lane V/C Ratio	0.027	0.027	-	-	0.008	-	-	0.181				
HCM Ctrl Dly (s/v)	13.8	8	0	-	7.5	0	-	12.1				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.7				

HCM 7th TWSC
35: Grayson Ave & Oak Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	40	50	70	80	10
Future Vol, veh/h	10	40	50	70	80	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	43	54	76	87	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	130	0	-	0	158	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	65	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1449	-	-	-	831	962
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	955	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1449	-	-	-	825	962
Mov Cap-2 Maneuver	-	-	-	-	825	-
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	955	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	1.5	0		9.86		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	360	-	-	-	838	
HCM Lane V/C Ratio	0.008	-	-	-	0.117	
HCM Ctrl Dly (s/v)	7.5	0	-	-	9.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

HCM 7th TWSC
36: Oak Ave & Charter Oak Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Ave

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	70	10	10	40	10	10	80	10	10	90	10
Future Vol, veh/h	10	70	10	10	40	10	10	80	10	10	90	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	76	11	11	43	11	11	87	11	11	98	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	255	245	103	272	245	92	109	0	0	98	0	0
Stage 1	125	125	-	114	114	-	-	-	-	-	-	-
Stage 2	130	120	-	158	130	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	696	656	949	679	656	962	1476	-	-	1489	-	-
Stage 1	877	791	-	888	799	-	-	-	-	-	-	-
Stage 2	871	795	-	842	786	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	632	646	949	584	646	962	1476	-	-	1489	-	-
Mov Cap-2 Maneuver	632	646	-	584	646	-	-	-	-	-	-	-
Stage 1	870	784	-	881	793	-	-	-	-	-	-	-
Stage 2	807	789	-	746	780	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	11.32		10.95			0.75			0.68			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	176	-	-	668	670	160	-	-				
HCM Lane V/C Ratio	0.007	-	-	0.147	0.097	0.007	-	-				
HCM Ctrl Dly (s/v)	7.5	0	-	11.3	10.9	7.4	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.5	0.3	0	-	-				

HCM 7th TWSC

4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday AM

Intersection						
Int Delay, s/veh	5.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	100	40	10	50
Future Vol, veh/h	30	10	100	40	10	50
Conflicting Peds, #/hr	0	9	9	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	39	13	132	53	13	66
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	62	0	372	55
Stage 1	-	-	-	-	55	-
Stage 2	-	-	-	-	317	-
Critical Hdwy	-	-	4.16	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.254	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	1516	-	621	1001
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	730	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1503	-	560	992
Mov Cap-2 Maneuver	-	-	-	-	560	-
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	663	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.45		9.5	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	879	-	-	1286	-	
HCM Lane V/C Ratio	0.09	-	-	0.088	-	
HCM Ctrl Dly (s/v)	9.5	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.3	-	-	0.3	-	

HCM 7th TWSC

5: Valley View St & Spring St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday AM

Intersection						
Int Delay, s/veh	10.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	50	250	30	40	230
Future Vol, veh/h	40	50	250	30	40	230
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	58	72	362	43	58	333
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	133	0	865	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	768	-
Critical Hdwy	-	-	4.14	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1439	-	321	953
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	454	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1435	-	238	951
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	337	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		7.46		18.17	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	658	-	-	1400	-	
HCM Lane V/C Ratio	0.595	-	-	0.253	-	
HCM Ctrl Dly (s/v)	18.2	-	-	8.4	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	3.9	-	-	1	-	

HCM 7th AWSC

Saint Helena Streets Master Plan

6: Crane Ave/Valley View St & Grayson Ave Cumulative Conditions Plus Project Pope Weekday AM

Intersection						
Intersection Delay, s/veh	15.1					
Intersection LOS	C					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	180	110	60	210	130
Future Vol, veh/h	30	180	110	60	210	130
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	42	250	153	83	292	181
Number of Lanes	1	0	1	0	0	1
Approach	WB	NB		SB		
Opposing Approach		SB		NB		
Opposing Lanes	0	1		1		
Conflicting Approach Left	NB			WB		
Conflicting Lanes Left	1	0		1		
Conflicting Approach Right	SB	WB				
Conflicting Lanes Right	1	1		0		
HCM Control Delay, s/veh	12.2	11		19		
HCM LOS	B	B		C		
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	14%	62%			
Vol Thru, %	65%	0%	38%			
Vol Right, %	35%	86%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	170	210	340			
LT Vol	0	30	210			
Through Vol	110	0	130			
RT Vol	60	180	0			
Lane Flow Rate	236	292	472			
Geometry Grp	1	1	1			
Degree of Util (X)	0.343	0.427	0.687			
Departure Headway (Hd)	5.237	5.268	5.236			
Convergence, Y/N	Yes	Yes	Yes			
Cap	685	682	689			
Service Time	3.276	3.309	3.267			
HCM Lane V/C Ratio	0.345	0.428	0.685			
HCM Control Delay, s/veh	11	12.2	19			
HCM Lane LOS	B	B	C			
HCM 95th-tile Q	1.5	2.1	5.5			

HCM 7th TWSC

Saint Helena Streets Master Plan

7: Sulphur Spring Ave & Crane Ave

Cumulative Conditions Plus Project Pope Weekday AM

Intersection						
Int Delay, s/veh	5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	20	140	130	10
Future Vol, veh/h	10	10	20	140	130	10
Conflicting Peds, #/hr	2	0	0	2	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	14	14	28	194	181	14
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	224	0	-	0	170	127
Stage 1	-	-	-	-	127	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1339	-	-	-	818	921
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1336	-	-	-	807	919
Mov Cap-2 Maneuver	-	-	-	-	807	-
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	975	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.86	0		10.81		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	814	
HCM Lane V/C Ratio	0.01	-	-	-	0.239	
HCM Ctrl Dly (s/v)	7.7	0	-	-	10.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.9	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday AM

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↘		↙	↘	
Traffic Vol, veh/h	10	0	10	30	0	30	10	720	40	30	900	10
Future Vol, veh/h	10	0	10	30	0	30	10	720	40	30	900	10
Conflicting Peds, #/hr	0	0	5	5	0	0	13	0	2	2	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	11	0	11	32	0	32	11	758	42	32	947	11
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1808	1852	971	1818	1836	781	971	0	0	802	0	0
Stage 1	1029	1029	-	802	802	-	-	-	-	-	-	-
Stage 2	779	823	-	1016	1034	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.18	6.58	6.28	4.18	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.572	4.072	3.372	2.272	-	-	2.272	-	-
Pot Cap-1 Maneuver	59	72	299	58	73	385	686	-	-	796	-	-
Stage 1	275	304	-	369	388	-	-	-	-	-	-	-
Stage 2	380	379	-	280	302	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	51	67	294	53	68	385	678	-	-	794	-	-
Mov Cap-2 Maneuver	51	67	-	53	68	-	-	-	-	-	-	-
Stage 1	261	288	-	362	381	-	-	-	-	-	-	-
Stage 2	343	373	-	258	286	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	59.77			103.35			0.13			0.31		
HCM LOS	F			F								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	678	-	-	86	92	794	-	-				
HCM Lane V/C Ratio	0.016	-	-	0.244	0.684	0.04	-	-				
HCM Ctrl Dly (s/v)	10.4	-	-	59.8	103.3	9.7	-	-				
HCM Lane LOS	B	-	-	F	F	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.9	3.4	0.1	-	-				

HCM 7th TWSC

9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday AM

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	50	740	810	130
Future Vol, veh/h	30	30	50	740	810	130
Conflicting Peds, #/hr	0	4	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	31	31	52	771	844	135
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1794	923	987	0	-	0
Stage 1	919	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	85	319	677	-	-	-
Stage 1	379	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	73	315	672	-	-	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	65.5	0.68		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	114	-	118	-	-	
HCM Lane V/C Ratio	0.078	-	0.529	-	-	
HCM Ctrl Dly (s/v)	10.8	0	65.5	-	-	
HCM Lane LOS	B	A	F	-	-	
HCM 95th %tile Q(veh)	0.3	-	2.5	-	-	

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

10: Main St & Madrona Ave/Fulton Ln Cumulative Conditions Plus Project Pope Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	50	50	20	60	80	40	610	20	120	610	110
Future Volume (veh/h)	100	50	50	20	60	80	40	610	20	120	610	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1287	1287	1811	1287	1287
Adj Flow Rate, veh/h	119	60	50	24	71	66	48	726	23	143	726	126
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	159	68	52	60	155	128	55	832	26	198	714	124
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.67	0.67	0.67	0.67	0.67	0.67
Sat Flow, veh/h	615	359	272	150	815	670	627	1239	39	690	1063	185
Grp Volume(v), veh/h	229	0	0	161	0	0	48	0	749	143	0	852
Grp Sat Flow(s),veh/h/ln	1246	0	0	1635	0	0	627	0	1279	690	0	1248
Q Serve(g_s), s	12.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.4	26.9	0.0	87.3
Cycle Q Clear(g_c), s	23.8	0.0	0.0	11.3	0.0	0.0	87.3	0.0	60.4	87.3	0.0	87.3
Prop In Lane	0.52		0.22	0.15		0.41	1.00		0.03	1.00		0.15
Lane Grp Cap(c), veh/h	280	0	0	344	0	0	55	0	859	198	0	838
V/C Ratio(X)	0.82	0.00	0.00	0.47	0.00	0.00	0.87	0.00	0.87	0.72	0.00	1.02
Avail Cap(c_a), veh/h	280	0	0	344	0	0	55	0	859	198	0	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.9	0.0	0.0	47.1	0.0	0.0	65.0	0.0	16.9	51.6	0.0	21.4
Incr Delay (d2), s/veh	16.1	0.0	0.0	0.4	0.0	0.0	72.3	0.0	9.4	10.6	0.0	35.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	0.0	4.8	0.0	0.0	2.7	0.0	18.9	5.3	0.0	31.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.0	0.0	0.0	47.5	0.0	0.0	137.3	0.0	26.4	62.1	0.0	56.7
LnGrp LOS	E			D			F		C	E		F
Approach Vol, veh/h	229			161			797			995		
Approach Delay, s/veh	69.0			47.5			33.0			57.5		
Approach LOS	E			D			C			E		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	96.0			34.0			96.0			34.0		
Change Period (Y+Rc), s	8.7			9.2			8.7			9.2		
Max Green Setting (Gmax), s	87.3			24.8			87.3			24.8		
Max Q Clear Time (g_c+I1), s	89.3			25.8			89.3			13.3		
Green Ext Time (p_c), s	0.0			0.0			0.0			0.2		
Intersection Summary												
HCM 7th Control Delay, s/veh	49.0											
HCM 7th LOS	D											

HCM 7th TWSC

11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday AM

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↷	↷	
Traffic Vol, veh/h	30	150	10	20	120	20
Future Vol, veh/h	30	150	10	20	120	20
Conflicting Peds, #/hr	0	1	1	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	45	224	15	30	179	30
Major/Minor	Major1		Major2	Minor1		
Conflicting Flow All	0	0	270	0	220	158
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	63	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1288	-	766	885
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1287	-	754	884
Mov Cap-2 Maneuver	-	-	-	-	754	-
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	943	-
Approach	EB		WB	NB		
HCM Ctrl Dly, s/v	0		2.61	11.41		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	770	-	-	600	-	
HCM Lane V/C Ratio	0.271	-	-	0.012	-	
HCM Ctrl Dly (s/v)	11.4	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.1	-	-	0	-	

HCM 7th Signalized Intersection Summary 12: Main St & Adams St

Saint Helena Streets Master Plan Cumulative Conditions Plus Project Pope Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	90	40	30	70	40	50	570	50	70	540	70
Future Volume (veh/h)	60	90	40	30	70	40	50	570	50	70	540	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.96		0.94	0.97		0.92	1.00		1.00	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1796	1276	1276	1796	1276	1796
Adj Flow Rate, veh/h	63	94	37	31	73	35	52	594	51	73	562	72
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	115	134	47	83	151	63	121	611	52	139	594	76
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.07	0.53	0.53	0.08	0.54	0.54
Sat Flow, veh/h	413	854	299	232	967	404	1711	1158	99	1711	1103	141
Grp Volume(v), veh/h	194	0	0	139	0	0	52	0	645	73	0	634
Grp Sat Flow(s),veh/h/ln	1566	0	0	1604	0	0	1711	0	1258	1711	0	1244
Q Serve(g_s), s	3.7	0.0	0.0	0.0	0.0	0.0	2.7	0.0	46.9	3.9	0.0	45.2
Cycle Q Clear(g_c), s	11.0	0.0	0.0	7.3	0.0	0.0	2.7	0.0	46.9	3.9	0.0	45.2
Prop In Lane	0.32		0.19	0.22		0.25	1.00		0.08	1.00		0.11
Lane Grp Cap(c), veh/h	296	0	0	298	0	0	121	0	664	139	0	670
V/C Ratio(X)	0.66	0.00	0.00	0.47	0.00	0.00	0.43	0.00	0.97	0.52	0.00	0.95
Avail Cap(c_a), veh/h	926	0	0	941	0	0	1071	0	1014	1071	0	1003
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.0	0.0	0.0	36.6	0.0	0.0	42.0	0.0	21.6	41.6	0.0	20.5
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.4	0.0	0.0	0.9	0.0	14.4	1.1	0.0	10.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.0	3.0	0.0	0.0	1.2	0.0	15.5	1.7	0.0	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.9	0.0	0.0	37.0	0.0	0.0	42.8	0.0	36.0	42.7	0.0	31.2
LnGrp LOS	D			D			D		D	D		C
Approach Vol, veh/h		194			139			697			707	
Approach Delay, s/veh		38.9			37.0			36.5			32.4	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.4	59.4		23.5	12.4	58.5		23.5				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	59.0	76.0		55.0	59.0	76.0		55.0				
Max Q Clear Time (g_c+I1), s	4.7	47.2		9.3	5.9	48.9		13.0				
Green Ext Time (p_c), s	0.0	0.9		0.2	0.0	0.9		0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			35.2									
HCM 7th LOS			D									

HCM 7th AWSC

13: Railroad Ave & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday AM

Intersection												
Intersection Delay, s/veh 11.4												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	100	80	20	50	40	80	110	60	60	70	20
Future Vol, veh/h	30	100	80	20	50	40	80	110	60	60	70	20
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	37	122	98	24	61	49	98	134	73	73	85	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay, s/veh	1.5			10			12.4			10.7		
HCM LOS	B			A			B			B		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	32%	14%	18%	40%
Vol Thru, %	44%	48%	45%	47%
Vol Right, %	24%	38%	36%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	250	210	110	150
LT Vol	80	30	20	60
Through Vol	110	100	50	70
RT Vol	60	80	40	20
Lane Flow Rate	305	256	134	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.444	0.377	0.206	0.28
Departure Headway (Hd)	5.244	5.3	5.527	5.511
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	686	679	648	651
Service Time	3.285	3.343	3.578	3.557
HCM Lane V/C Ratio	0.445	0.377	0.207	0.281
HCM Control Delay, s/veh	12.4	11.5	10	10.7
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	2.3	1.8	0.8	1.1

HCM 7th TWSC

14: Library Ln & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday AM

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	90	30	0	30	10	10	0	0	0	0	10
Future Vol, veh/h	40	90	30	0	30	10	10	0	0	0	0	10
Conflicting Peds, #/hr	6	0	4	4	0	6	2	0	4	4	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	53	118	39	0	39	13	13	0	0	0	0	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	162	0	0	289	306	146	280	319	54
Stage 1	-	-	-	-	-	-	247	247	-	52	52	-
Stage 2	-	-	-	-	-	-	41	59	-	228	267	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1539	-	-	1411	-	-	661	606	898	671	596	1010
Stage 1	-	-	-	-	-	-	754	700	-	958	850	-
Stage 2	-	-	-	-	-	-	971	844	-	773	686	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1530	-	-	1405	-	-	624	577	891	639	568	1003
Mov Cap-2 Maneuver	-	-	-	-	-	-	624	577	-	639	568	-
Stage 1	-	-	-	-	-	-	723	671	-	953	845	-
Stage 2	-	-	-	-	-	-	956	839	-	741	658	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.86			0			10.89			8.64		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	624	429	-	-	1405	-	-	1003				
HCM Lane V/C Ratio	0.021	0.034	-	-	-	-	-	0.013				
HCM Ctrl Dly (s/v)	10.9	7.4	0	-	0	-	-	8.6				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0				

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday AM

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	20	650	110	20	590
Future Vol, veh/h	40	20	650	110	20	590
Conflicting Peds, #/hr	22	0	0	17	17	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	42	21	684	116	21	621
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1444	759	0	0	817	0
Stage 1	759	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Critical Hdwy	6.49	6.29	-	-	4.19	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	-	-	2.281	-
Pot Cap-1 Maneuver	140	395	-	-	781	-
Stage 1	450	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	131	389	-	-	769	-
Mov Cap-2 Maneuver	267	-	-	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	20.3	0		0.32		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	298	769	-	
HCM Lane V/C Ratio	-	-	0.212	0.027	-	
HCM Ctrl Dly (s/v)	-	-	20.3	9.8	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

16: Church St/Railroad Ave & Hunt Ave Cumulative Conditions Plus Project Pope Weekday AM

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	50	60	20	10	40	190	10	10	10	140	10	10
Future Vol, veh/h	50	60	20	10	40	190	10	10	10	140	10	10
Conflicting Peds, #/hr	4	0	30	4	0	30	3	0	4	4	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	63	75	25	13	50	238	13	13	13	175	13	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	318	0	0	130	0	0	327	585	122	434	479	202
Stage 1	-	-	-	-	-	-	243	243	-	224	224	-
Stage 2	-	-	-	-	-	-	84	343	-	210	255	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1237	-	-	1449	-	-	624	422	927	530	484	837
Stage 1	-	-	-	-	-	-	759	703	-	777	717	-
Stage 2	-	-	-	-	-	-	921	636	-	790	695	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1202	-	-	1408	-	-	541	372	897	458	427	810
Mov Cap-2 Maneuver	-	-	-	-	-	-	541	372	-	458	427	-
Stage 1	-	-	-	-	-	-	696	645	-	746	689	-
Stage 2	-	-	-	-	-	-	878	611	-	719	637	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	3.14		0.32		12.3		18.27	
HCM LOS					B		C	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	531	659	-	-	64	-	-	469
HCM Lane V/C Ratio	0.071	0.052	-	-	0.009	-	-	0.427
HCM Ctrl Dly (s/v)	12.3	8.2	0	-	7.6	0	-	18.3
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	-	2.1

HCM 7th TWSC
17: Mitchell Dr & Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday AM

Intersection						
Int Delay, s/veh	5.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	40	60	120	20
Future Vol, veh/h	30	30	40	60	120	20
Conflicting Peds, #/hr	3	0	0	3	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	34	46	69	138	23
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	118	0	-	0	152	50
Stage 1	-	-	-	-	49	-
Stage 2	-	-	-	-	103	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1464	-	-	-	837	1015
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	918	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1460	-	-	-	812	1012
Mov Cap-2 Maneuver	-	-	-	-	812	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	916	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.76	0		10.33		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	836	
HCM Lane V/C Ratio	0.024	-	-	-	0.193	
HCM Ctrl Dly (s/v)	7.5	0	-	-	10.3	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7	

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

18: Main St & Mitchell Dr/Pope St

Cumulative Conditions Plus Project Pope Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	170	200	40	170	80	690	80	110	560	10
Future Volume (veh/h)	0	0	170	200	40	170	80	690	80	110	560	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	25	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1287	1287	1811	1287	1287
Adj Flow Rate, veh/h	0	0	173	204	41	66	82	704	82	112	571	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	0	25	111	222	45	229	102	706	32	133	752	13
Arrive On Green	0.00	0.00	0.01	0.15	0.15	0.15	0.06	0.58	0.58	0.08	0.60	0.60
Sat Flow, veh/h	0	1811	1535	1448	291	1490	1725	1128	131	1725	1261	22
Grp Volume(v), veh/h	0	0	173	245	0	66	82	0	786	112	0	581
Grp Sat Flow(s),veh/h/ln	0	1811	1535	1739	0	1490	1725	0	1259	1725	0	1283
Q Serve(g_s), s	0.0	0.0	2.0	20.5	0.0	5.8	6.9	0.0	85.3	9.4	0.0	49.2
Cycle Q Clear(g_c), s	0.0	0.0	2.0	20.5	0.0	5.8	6.9	0.0	85.3	9.4	0.0	49.2
Prop In Lane	0.00		1.00	0.83		1.00	1.00		0.10	1.00		0.02
Lane Grp Cap(c), veh/h	0	25	111	267	0	229	102	0	738	133	0	766
V/C Ratio(X)	0.00	0.00	1.55	0.92	0.00	0.29	0.81	0.00	1.06	0.84	0.00	0.76
Avail Cap(c_a), veh/h	0	25	111	322	0	276	225	0	729	144	0	766
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	68.3	61.5	0.0	55.2	68.5	0.0	31.0	67.1	0.0	21.9
Incr Delay (d2), s/veh	0.0	0.0	288.6	25.1	0.0	0.3	5.5	0.0	51.7	30.4	0.0	4.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	121.9	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	13.2	11.0	0.0	2.2	3.2	0.0	61.2	5.3	0.0	15.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	356.9	86.6	0.0	55.5	74.1	0.0	204.6	97.5	0.0	25.9
LnGrp LOS			F	F		E	E		F	F		C
Approach Vol, veh/h	173			311			868			693		
Approach Delay, s/veh	356.9			80.0			192.3			37.4		
Approach LOS	F			E			F			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.4	95.6		32.3	16.0	93.0		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	19.2	75.4		27.3	12.3	* 85		2.0				
Max Q Clear Time (g_c+I1), s	8.9	51.2		22.5	11.4	87.3		4.0				
Green Ext Time (p_c), s	0.0	0.8		0.2	0.0	0.0		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh

136.7

HCM 7th LOS

F

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.

Fehr & Peers

Synchro 12 Report

HCM 7th Signalized Intersection Summary 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday AM

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	80	70	50	900	830	120
Future Volume (veh/h)	80	70	50	900	830	120
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	0.99	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1266	1266	1266
Adj Flow Rate, veh/h	87	55	54	978	902	127
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	8	8	8	8	8
Cap, veh/h	75	47	91	1053	807	114
Arrive On Green	0.08	0.08	0.05	0.83	0.75	0.75
Sat Flow, veh/h	983	621	1697	1266	1082	152
Grp Volume(v), veh/h	143	0	54	978	0	1029
Grp Sat Flow(s), veh/h/ln	1616	0	1697	1266	0	1234
Q Serve(g_s), s	11.3	0.0	4.6	85.3	0.0	111.2
Cycle Q Clear(g_c), s	11.3	0.0	4.6	85.3	0.0	111.2
Prop In Lane	0.61	0.38	1.00			0.12
Lane Grp Cap(c), veh/h	122	0	91	1053	0	921
V/C Ratio(X)	1.17	0.00	0.59	0.93	0.00	1.12
Avail Cap(c_a), veh/h	122	0	102	1095	0	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	68.9	0.0	68.9	9.3	0.0	18.9
Incr Delay (d2), s/veh	133.3	0.0	3.6	12.8	0.0	67.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	2.1	20.4	0.0	44.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	202.1	0.0	72.5	22.1	0.0	86.3
LnGrp LOS	F		E	C		F
Approach Vol, veh/h	143			1032	1029	
Approach Delay, s/veh	202.1			24.8	86.3	
Approach LOS	F			C	F	
Timer - Assigned Phs	1	2		6		8
Phs Duration (G+Y+Rc), s	2.7	120.3		133.0		16.0
Change Period (Y+Rc), s	4.7	9.1		* 9.1		4.7
Max Green Setting (Gmax), s	9.1	111.2		* 1.3E+02		11.3
Max Q Clear Time (g_c+I), s	10.6	113.2		87.3		13.3
Green Ext Time (p_c), s	0.0	0.0		1.1		0.0
Intersection Summary						
HCM 7th Control Delay, s/veh			65.0			
HCM 7th LOS			E			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC

20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday AM

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	120	100	930	860	40
Future Vol, veh/h	20	120	100	930	860	40
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	20	121	101	939	869	40
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2031	890	910	0	-	0
Stage 1	890	-	-	-	-	-
Stage 2	1141	-	-	-	-	-
Critical Hdwy	6.49	6.29	4.19	-	-	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	2.281	-	-	-
Pot Cap-1 Maneuver	60	332	720	-	-	-
Stage 1	390	-	-	-	-	-
Stage 2	295	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	52	332	719	-	-	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	295	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	23.07	1.05		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	719	-	167	332	-	-
HCM Lane V/C Ratio	0.14	-	0.121	0.366	-	-
HCM Ctrl Dly (s/v)	10.8	-	29.6	22	-	-
HCM Lane LOS	B	-	D	C	-	-
HCM 95th %tile Q(veh)	0.5	-	0.4	1.6	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday AM

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	80	20	30	110	10
Future Vol, veh/h	20	80	20	30	110	10
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	24	95	24	36	131	12
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7.4	7.8	8.4
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	92%	0%	40%
Vol Thru, %	0%	20%	60%
Vol Right, %	8%	80%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	120	100	50
LT Vol	110	0	20
Through Vol	0	20	30
RT Vol	10	80	0
Lane Flow Rate	143	119	60
Geometry Grp	1	1	1
Degree of Util (X)	0.174	0.128	0.074
Departure Headway (Hd)	4.392	3.878	4.488
Convergence, Y/N	Yes	Yes	Yes
Cap	807	930	802
Service Time	2.473	1.88	2.491
HCM Lane V/C Ratio	0.177	0.128	0.075
HCM Control Delay, s/veh	8.4	7.4	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.4	0.2

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday AM

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	220	410	90	100	30
Future Vol, veh/h	10	220	410	90	100	30
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	278	519	114	127	38
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	634	0	-	0	882	578
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	944	-	-	-	316	514
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	746	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	943	-	-	-	310	513
Mov Cap-2 Maneuver	-	-	-	-	310	-
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	745	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.39	0		25.01		
HCM LOS				D		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	78	-	-	-	341	
HCM Lane V/C Ratio	0.013	-	-	-	0.482	
HCM Ctrl Dly (s/v)	8.9	0	-	-	25	
HCM Lane LOS	A	A	-	-	D	
HCM 95th %tile Q(veh)	0	-	-	-	2.5	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Pope Street Alternative Conditions Plus Project Pope Weekday AM

Intersection												
Int Delay, s/veh	18.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	190	120	90	340	10	120	0	50	10	10	20
Future Vol, veh/h	20	190	120	90	340	10	120	0	50	10	10	20
Conflicting Peds, #/hr	2	0	1	1	0	2	3	0	1	1	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	26	247	156	117	442	13	156	0	65	13	13	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	457	0	0	404	0	0	1062	1068	327	984	1139	453
Stage 1	-	-	-	-	-	-	378	378	-	684	684	-
Stage 2	-	-	-	-	-	-	685	690	-	300	456	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1099	-	-	1150	-	-	200	221	712	227	200	605
Stage 1	-	-	-	-	-	-	642	614	-	437	447	-
Stage 2	-	-	-	-	-	-	437	444	-	707	567	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1097	-	-	1149	-	-	156	193	711	180	175	602
Mov Cap-2 Maneuver	-	-	-	-	-	-	156	193	-	180	175	-
Stage 1	-	-	-	-	-	-	626	599	-	392	401	-
Stage 2	-	-	-	-	-	-	362	398	-	627	553	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.51	1.74	93.99	21.17
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	156	711	1097	-	-	1149	-	-	274
HCM Lane V/C Ratio	0.996	0.091	0.024	-	-	0.102	-	-	0.189
HCM Ctrl Dly (s/v)	128.8	10.6	8.4	-	-	8.5	-	-	21.2
HCM Lane LOS	F	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	7.6	0.3	0.1	-	-	0.3	-	-	0.7

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday AM

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	20	30	560	630	30
Future Vol, veh/h	20	20	30	560	630	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	21	21	31	583	656	31
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1318	672	688	0	-	0
Stage 1	672	-	-	-	-	-
Stage 2	646	-	-	-	-	-
Critical Hdwy	6.46	6.26	4.16	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	2.254	-	-	-
Pot Cap-1 Maneuver	170	449	888	-	-	-
Stage 1	500	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	161	449	888	-	-	-
Mov Cap-2 Maneuver	161	-	-	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	23.37	0.47		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	92	-	237	-	-	
HCM Lane V/C Ratio	0.035	-	0.176	-	-	
HCM Ctrl Dly (s/v)	9.2	0	23.4	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-	

HCM 7th Signalized Intersection Summary Saint Helena Streets Master Plan 25: Silverado Trail & Pope Street/Howell Mountain Rd Conditions Plus Project Pope Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	10	110	30	10	10	240	440	40	10	420	220
Future Volume (veh/h)	140	10	110	30	10	10	240	440	40	10	420	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	1826	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	146	10	33	31	10	0	250	458	39	10	438	208
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	5	5	5	5	5	5	5	5	5
Cap, veh/h	181	12	428	50	16	0	288	529	45	448	480	228
Arrive On Green	0.11	0.11	0.11	0.04	0.04	0.00	0.17	0.32	0.32	0.26	0.41	0.41
Sat Flow, veh/h	1632	112	1547	1330	429	0	1739	1659	141	1739	1170	556
Grp Volume(v), veh/h	156	0	33	41	0	0	250	0	497	10	0	646
Grp Sat Flow(s),veh/h/ln	1744	0	1547	1759	0	0	1739	0	1800	1739	0	1726
Q Serve(g_s), s	7.0	0.0	1.3	1.9	0.0	0.0	11.3	0.0	20.9	0.3	0.0	28.4
Cycle Q Clear(g_c), s	7.0	0.0	1.3	1.9	0.0	0.0	11.3	0.0	20.9	0.3	0.0	28.4
Prop In Lane	0.94		1.00	0.76		0.00	1.00		0.08	1.00		0.32
Lane Grp Cap(c), veh/h	194	0	428	66	0	0	288	0	574	448	0	708
V/C Ratio(X)	0.81	0.00	0.08	0.63	0.00	0.00	0.87	0.00	0.87	0.02	0.00	0.91
Avail Cap(c_a), veh/h	204	0	437	109	0	0	320	0	1082	448	0	827
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.0	0.0	21.5	38.2	0.0	0.0	32.7	0.0	25.8	22.3	0.0	22.4
Incr Delay (d2), s/veh	19.9	0.0	0.1	9.4	0.0	0.0	20.2	0.0	4.1	0.0	0.0	13.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	0.5	1.0	0.0	0.0	5.9	0.0	8.4	0.1	0.0	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.9	0.0	21.6	47.6	0.0	0.0	52.9	0.0	29.9	22.3	0.0	35.4
LnGrp LOS	D		C	D			D		C	C		D
Approach Vol, veh/h	189			41			747			656		
Approach Delay, s/veh	49.1			47.6			37.6			35.2		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	27.2	32.2		13.5	19.8	39.6		7.6				
Change Period (Y+Rc), s	6.5	6.5		4.6	6.5	6.5		4.6				
Max Green Setting (Gmax), s	5.0	48.4		9.4	14.8	38.6		5.0				
Max Q Clear Time (g_c+I1), s	2.3	22.9		9.0	13.3	30.4		3.9				
Green Ext Time (p_c), s	0.0	2.7		0.0	0.1	2.7		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	38.2											
HCM 7th LOS	D											
Notes												
User approved changes to right turn type.												

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday AM

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↗	↖	
Traffic Vol, veh/h	0	0	0	0	0	10	0	970	10	10	950	10
Future Vol, veh/h	0	0	0	0	0	10	0	970	10	10	950	10
Conflicting Peds, #/hr	0	0	0	0	0	0	15	0	1	1	0	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	0	0	0	0	0	11	0	1043	11	11	1022	11
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2106	2118	1042	2092	2118	1049	1047	0	0	1055	0	0
Stage 1	1063	1063	-	1049	1049	-	-	-	-	-	-	-
Stage 2	1043	1055	-	1043	1069	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.18	6.58	6.28	4.18	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.572	4.072	3.372	2.272	-	-	2.272	-	-
Pot Cap-1 Maneuver	36	49	272	37	49	269	642	-	-	638	-	-
Stage 1	263	292	-	268	297	-	-	-	-	-	-	-
Stage 2	270	295	-	270	291	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	33	47	268	36	47	269	633	-	-	637	-	-
Mov Cap-2 Maneuver	33	47	-	36	47	-	-	-	-	-	-	-
Stage 1	255	283	-	267	297	-	-	-	-	-	-	-
Stage 2	259	295	-	265	282	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0			18.96			0			0.11		
HCM LOS	A			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	633	-	-	-	269	637	-	-				
HCM Lane V/C Ratio	-	-	-	-	0.04	0.017	-	-				
HCM Ctrl Dly (s/v)	0	-	-	0	19	10.7	-	-				
HCM Lane LOS	A	-	-	A	C	B	-	-				
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.1	-	-				

HCM 7th TWSC

28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday AM

Intersection												
Int Delay, s/veh	33.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	10	10	10	70	10	10	20	830	130	10	890	30
Future Vol, veh/h	10	10	10	70	10	10	20	830	130	10	890	30
Conflicting Peds, #/hr	0	0	0	0	0	0	9	0	1	1	0	9
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	9	9	9	9	9	9	9	9	9	9	9	9
Mvmt Flow	10	10	10	72	10	10	21	856	134	10	918	31
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1865	1995	942	1908	1943	924	957	0	0	991	0	0
Stage 1	963	963	-	965	965	-	-	-	-	-	-	-
Stage 2	902	1032	-	943	978	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.59	6.29	7.19	6.59	6.29	4.19	-	-	4.19	-	-
Critical Hdwy Stg 1	6.19	5.59	-	6.19	5.59	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.59	-	6.19	5.59	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.081	3.381	3.581	4.081	3.381	2.281	-	-	2.281	-	-
Pot Cap-1 Maneuver	53	58	309	~ 50	62	317	691	-	-	671	-	-
Stage 1	298	325	-	298	324	-	-	-	-	-	-	-
Stage 2	323	301	-	306	320	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	41	55	307	~ 37	59	317	685	-	-	670	-	-
Mov Cap-2 Maneuver	41	55	-	~ 37	59	-	-	-	-	-	-	-
Stage 1	291	317	-	288	314	-	-	-	-	-	-	-
Stage 2	293	292	-	282	312	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	102.97			\$ 722.92			0.21			0.11		
HCM LOS	F			F								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	685	-	-	65	43	670	-	-				
HCM Lane V/C Ratio	0.03	-	-	0.476	2.133	0.015	-	-				
HCM Ctrl Dly (s/v)	10.4	-	-	103	\$ 722.9	10.5	-	-				
HCM Lane LOS	B	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	1.9	9.7	0	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday AM

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	10	30	10	20	10	70	20	20	130	10
Future Vol, veh/h	10	10	10	30	10	20	10	70	20	20	130	10
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	16	16	48	16	32	16	111	32	32	206	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.3	8.6	8.6	9.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	33%	50%	13%
Vol Thru, %	70%	33%	17%	81%
Vol Right, %	20%	33%	33%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	30	60	160
LT Vol	10	10	30	20
Through Vol	70	10	10	130
RT Vol	20	10	20	10
Lane Flow Rate	159	48	95	254
Geometry Grp	1	1	1	1
Degree of Util (X)	0.198	0.065	0.128	0.315
Departure Headway (Hd)	4.482	4.879	4.846	4.465
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	800	732	738	805
Service Time	2.514	2.922	2.886	2.494
HCM Lane V/C Ratio	0.199	0.066	0.129	0.316
HCM Control Delay, s/veh	8.6	8.3	8.6	9.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	0.2	0.4	1.4

HCM 7th AWSC

30: Oak Ave & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday AM

Intersection												
Intersection Delay, s/veh	11.7											
Intersection LOS	B											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	70	70	40	50	30	30	80	80	30	120	30
Future Vol, veh/h	10	70	70	40	50	30	30	80	80	30	120	30
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	15	103	103	59	74	44	44	118	118	44	176	44
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	11.3	11	12	12.2
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	7%	33%	17%
Vol Thru, %	42%	47%	42%	67%
Vol Right, %	42%	47%	25%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	150	120	180
LT Vol	30	10	40	30
Through Vol	80	70	50	120
RT Vol	80	70	30	30
Lane Flow Rate	279	221	176	265
Geometry Grp	1	1	1	1
Degree of Util (X)	0.411	0.336	0.281	0.402
Departure Headway (Hd)	5.295	5.477	5.733	5.462
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	676	653	623	656
Service Time	3.351	3.538	3.799	3.518
HCM Lane V/C Ratio	0.413	0.338	0.283	0.404
HCM Control Delay, s/veh	12	11.3	11	12.2
HCM Lane LOS	B	B	B	B
HCM 95th-ile Q	2	1.5	1.1	1.9

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday AM

Intersection												
Intersection Delay, s/veh 11.2												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	40	70	40	10	70	80	20	80	20	50	120	30
Future Vol, veh/h	40	70	40	10	70	80	20	80	20	50	120	30
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	56	97	56	14	97	111	28	111	28	69	167	42
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	11	10.8	10.5	12.1
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	27%	6%	25%
Vol Thru, %	67%	47%	44%	60%
Vol Right, %	17%	27%	50%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	150	160	200
LT Vol	20	40	10	50
Through Vol	80	70	70	120
RT Vol	20	40	80	30
Lane Flow Rate	167	208	222	278
Geometry Grp	1	1	1	1
Degree of Util (X)	0.255	0.314	0.323	0.413
Departure Headway (Hd)	5.517	5.432	5.238	5.358
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	650	660	684	672
Service Time	3.561	3.476	3.281	3.398
HCM Lane V/C Ratio	0.257	0.315	0.325	0.414
HCM Control Delay, s/veh	10.5	11	10.8	12.1
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1	1.3	1.4	2

HCM 7th TWSC

32: Main St & Spring St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday AM

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	90	140	720	590	40
Future Vol, veh/h	40	90	140	720	590	40
Conflicting Peds, #/hr	0	10	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	42	94	146	750	615	42
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1685	653	664	0	-	0
Stage 1	643	-	-	-	-	-
Stage 2	1042	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	100	457	897	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	71	449	890	-	-	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	365	-	-	-	-	-
Stage 2	329	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	24.63	1.6		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	293	-	316	-	-	
HCM Lane V/C Ratio	0.164	-	0.428	-	-	
HCM Ctrl Dly (s/v)	9.8	0	24.6	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.6	-	2.1	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday AM

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	160	0	0	390	100	10	0	10	30	10	70
Future Vol, veh/h	30	160	0	0	390	100	10	0	10	30	10	70
Conflicting Peds, #/hr	16	0	4	4	0	16	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	32	172	0	0	419	108	11	0	11	32	11	75
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	543	0	0	176	0	0	666	783	177	727	730	490
Stage 1	-	-	-	-	-	-	241	241	-	489	489	-
Stage 2	-	-	-	-	-	-	426	543	-	238	241	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1021	-	-	1394	-	-	371	324	863	338	348	576
Stage 1	-	-	-	-	-	-	761	705	-	559	548	-
Stage 2	-	-	-	-	-	-	605	518	-	763	705	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1005	-	-	1389	-	-	299	307	859	317	329	567
Mov Cap-2 Maneuver	-	-	-	-	-	-	299	307	-	317	329	-
Stage 1	-	-	-	-	-	-	731	677	-	550	539	-
Stage 2	-	-	-	-	-	-	513	510	-	726	677	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.37			0			13.52			16.07		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	444	284	-	-	1389	-	-	443				
HCM Lane V/C Ratio	0.048	0.032	-	-	-	-	-	0.267				
HCM Ctrl Dly (s/v)	13.5	8.7	0	-	0	-	-	16.1				
HCM Lane LOS	B	A	A	-	A	-	-	C				
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	1.1				

HCM 7th TWSC

4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday PM

Intersection						
Int Delay, s/veh	5.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	70	20	10	60
Future Vol, veh/h	30	10	70	20	10	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	37	12	85	24	12	73
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	49	0	238	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	195	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1552	-	748	1025
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	835	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1552	-	707	1025
Mov Cap-2 Maneuver	-	-	-	-	707	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	789	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.8		9.1	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	963	-	-	1400	-	
HCM Lane V/C Ratio	0.089	-	-	0.055	-	
HCM Ctrl Dly (s/v)	9.1	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-	

HCM 7th TWSC

5: Valley View St & Spring St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday PM

Intersection						
Int Delay, s/veh	7.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	60	40	160	50	40	220
Future Vol, veh/h	60	40	160	50	40	220
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	70	47	186	58	47	256
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	118	0	525	95
Stage 1	-	-	-	-	95	-
Stage 2	-	-	-	-	430	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1464	-	511	959
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	654	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1461	-	443	957
Mov Cap-2 Maneuver	-	-	-	-	443	-
Stage 1	-	-	-	-	924	-
Stage 2	-	-	-	-	568	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.96		12.04	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	812	-	-	1371	-	
HCM Lane V/C Ratio	0.372	-	-	0.127	-	
HCM Ctrl Dly (s/v)	12	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.7	-	-	0.4	-	

HCM 7th AWSC

Saint Helena Streets Master Plan

6: Crane Ave/Valley View St & Grayson Ave Cumulative Conditions Plus Project Pope Weekday PM

Intersection						
Intersection Delay, s/veh	9.4					
Intersection LOS	A					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	90	180	30	70	160
Future Vol, veh/h	10	90	180	30	70	160
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	12	105	209	35	81	186
Number of Lanes	1	0	1	0	0	1
Approach	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		1	
Conflicting Approach Left	NB				WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right	SB		WB			
Conflicting Lanes Right	1		1		0	
HCM Control Delay, s/veh	8.4		9.4		9.9	
HCM LOS	A		A		A	
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	10%	30%			
Vol Thru, %	86%	0%	70%			
Vol Right, %	14%	90%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	210	100	230			
LT Vol	0	10	70			
Through Vol	180	0	160			
RT Vol	30	90	0			
Lane Flow Rate	244	116	267			
Geometry Grp	1	1	1			
Degree of Util (X)	0.3	0.148	0.337			
Departure Headway (Hd)	4.429	4.567	4.543			
Convergence, Y/N	Yes	Yes	Yes			
Cap	811	784	792			
Service Time	2.459	2.601	2.573			
HCM Lane V/C Ratio	0.301	0.148	0.337			
HCM Control Delay, s/veh	9.4	8.4	9.9			
HCM Lane LOS	A	A	A			
HCM 95th-tile Q	1.3	0.5	1.5			

HCM 7th TWSC

Saint Helena Streets Master Plan

7: Sulphur Spring Ave & Crane Ave

Cumulative Conditions Plus Project Pope Weekday PM

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	40	30	160	140	20
Future Vol, veh/h	30	40	30	160	140	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	38	51	38	205	179	26
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	244	0	-	0	269	141
Stage 1	-	-	-	-	141	-
Stage 2	-	-	-	-	128	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1317	-	-	-	718	904
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1317	-	-	-	696	904
Mov Cap-2 Maneuver	-	-	-	-	696	-
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	895	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.35	0		12.02		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	771	-	-	-	717	
HCM Lane V/C Ratio	0.029	-	-	-	0.286	
HCM Ctrl Dly (s/v)	7.8	0	-	-	12	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

Intersection												
Int Delay, s/veh	50.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕		↕		↕	
Traffic Vol, veh/h	10	10	10	50	10	60	10	940	40	30	690	10
Future Vol, veh/h	10	10	10	50	10	60	10	940	40	30	690	10
Conflicting Peds, #/hr	0	0	0	0	0	0	12	0	1	1	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	11	11	57	11	69	11	1080	46	34	793	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1989	2030	811	1995	2013	1104	817	0	0	1127	0	0
Stage 1	880	880	-	1127	1127	-	-	-	-	-	-	-
Stage 2	1109	1150	-	868	886	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	45	57	378	~ 45	58	255	807	-	-	616	-	-
Stage 1	340	364	-	247	278	-	-	-	-	-	-	-
Stage 2	253	271	-	346	361	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	24	52	374	~ 32	54	255	798	-	-	615	-	-
Mov Cap-2 Maneuver	24	52	-	~ 32	54	-	-	-	-	-	-	-
Stage 1	318	339	-	243	274	-	-	-	-	-	-	-
Stage 2	174	267	-	306	337	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	188.2		\$ 735.1			0.1			0.46			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	798	-	-	47	60	615	-	-				
HCM Lane V/C Ratio	0.014	-	-	0.726	2.286	0.056	-	-				
HCM Ctrl Dly (s/v)	9.6	-	-	188.2	\$ 735.1	11.2	-	-				
HCM Lane LOS	A	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	0	-	-	2.9	13.5	0.2	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th TWSC

9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday PM

Intersection						
Int Delay, s/veh	19.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	40	30	920	710	40
Future Vol, veh/h	70	40	30	920	710	40
Conflicting Peds, #/hr	0	1	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	80	45	34	1045	807	45
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1950	838	859	0	-	0
Stage 1	837	-	-	-	-	-
Stage 2	1114	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	~ 70	365	778	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 62	362	772	-	-	-
Mov Cap-2 Maneuver	~ 62	-	-	-	-	-
Stage 1	376	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	\$ 321.82	0.31		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	57	-	89	-	-	
HCM Lane V/C Ratio	0.044	-	1.407	-	-	
HCM Ctrl Dly (s/v)	9.9	0\$ 321.8		-	-	
HCM Lane LOS	A	A	F	-	-	
HCM 95th %tile Q(veh)	0.1	-	9.5	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

10: Main St & Madrona Ave/Fulton Ln Cumulative Conditions Plus Project Pope Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	50	20	20	50	180	30	650	20	80	610	60
Future Volume (veh/h)	120	50	20	20	50	180	30	650	20	80	610	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.96	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	128	53	17	21	53	100	32	691	20	85	649	62
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	208	71	20	68	108	174	186	778	23	194	722	69
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	775	399	110	116	604	973	733	1275	37	733	1184	113
Grp Volume(v), veh/h	198	0	0	174	0	0	32	0	711	85	0	711
Grp Sat Flow(s),veh/h/ln	1284	0	0	1694	0	0	733	0	1312	733	0	1297
Q Serve(g_s), s	4.7	0.0	0.0	0.0	0.0	0.0	3.3	0.0	39.1	9.5	0.0	40.0
Cycle Q Clear(g_c), s	12.8	0.0	0.0	8.1	0.0	0.0	43.3	0.0	39.1	48.5	0.0	40.0
Prop In Lane	0.65		0.09	0.12		0.57	1.00		0.03	1.00		0.09
Lane Grp Cap(c), veh/h	299	0	0	350	0	0	186	0	800	194	0	791
V/C Ratio(X)	0.66	0.00	0.00	0.50	0.00	0.00	0.17	0.00	0.89	0.44	0.00	0.90
Avail Cap(c_a), veh/h	701	0	0	813	0	0	284	0	977	292	0	966
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.9	0.0	0.0	31.9	0.0	0.0	32.9	0.0	14.0	34.7	0.0	14.2
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.4	0.0	0.0	0.2	0.0	7.8	0.6	0.0	8.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	0.0	3.3	0.0	0.0	0.6	0.0	11.8	1.7	0.0	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.8	0.0	0.0	32.3	0.0	0.0	33.1	0.0	21.8	35.3	0.0	22.9
LnGrp LOS	C			C			C		C	D		C
Approach Vol, veh/h	198			174			743			796		
Approach Delay, s/veh	34.8			32.3			22.3			24.2		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	60.3			24.3			60.3			24.3		
Change Period (Y+Rc), s	8.7			9.2			8.7			9.2		
Max Green Setting (Gmax), s	63.0			40.0			63.0			40.0		
Max Q Clear Time (g_c+I1), s	50.5			10.1			45.3			14.8		
Green Ext Time (p_c), s	1.1			0.2			1.0			0.3		
Intersection Summary												
HCM 7th Control Delay, s/veh	25.3											
HCM 7th LOS	C											

HCM 7th TWSC

11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday PM

Intersection						
Int Delay, s/veh	6.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	110	10	30	210	10
Future Vol, veh/h	30	110	10	30	210	10
Conflicting Peds, #/hr	0	5	5	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	124	11	34	236	11
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	162	0	159	101
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1410	-	830	952
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	962	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1404	-	818	948
Mov Cap-2 Maneuver	-	-	-	-	818	-
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	952	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		1.9		11.24	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	823	-	-	450	-	
HCM Lane V/C Ratio	0.3	-	-	0.008	-	
HCM Ctrl Dly (s/v)	11.2	-	-	7.6	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.3	-	-	0	-	

HCM 7th Signalized Intersection Summary
12: Main St & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	100	30	70	80	70	40	550	40	80	530	40
Future Volume (veh/h)	80	100	30	70	80	70	40	550	40	80	530	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.95		0.84	0.97		0.84	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1856
Adj Flow Rate, veh/h	85	106	29	74	85	65	43	585	42	85	564	42
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	132	137	33	120	116	76	113	603	43	148	625	47
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.06	0.50	0.50	0.08	0.52	0.52
Sat Flow, veh/h	423	721	174	373	613	403	1767	1213	87	1767	1208	90
Grp Volume(v), veh/h	220	0	0	224	0	0	43	0	627	85	0	606
Grp Sat Flow(s),veh/h/ln	1317	0	0	1389	0	0	1767	0	1300	1767	0	1298
Q Serve(g_s), s	0.9	0.0	0.0	0.0	0.0	0.0	2.3	0.0	45.2	4.5	0.0	40.8
Cycle Q Clear(g_c), s	16.0	0.0	0.0	15.1	0.0	0.0	2.3	0.0	45.2	4.5	0.0	40.8
Prop In Lane	0.39		0.13	0.33		0.29	1.00		0.07	1.00		0.07
Lane Grp Cap(c), veh/h	301	0	0	313	0	0	113	0	647	148	0	672
V/C Ratio(X)	0.73	0.00	0.00	0.72	0.00	0.00	0.38	0.00	0.97	0.57	0.00	0.90
Avail Cap(c_a), veh/h	854	0	0	858	0	0	1081	0	1024	1081	0	1023
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.8	0.0	0.0	37.5	0.0	0.0	43.3	0.0	23.5	42.5	0.0	21.1
Incr Delay (d2), s/veh	1.3	0.0	0.0	1.1	0.0	0.0	0.8	0.0	13.0	1.3	0.0	5.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.0	0.0	5.2	0.0	0.0	1.0	0.0	15.4	2.0	0.0	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.1	0.0	0.0	38.7	0.0	0.0	44.1	0.0	36.5	43.8	0.0	26.6
LnGrp LOS	D			D			D		D	D		C
Approach Vol, veh/h	220			224			670			691		
Approach Delay, s/veh	39.1			38.7			37.0			28.7		
Approach LOS	D			D			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	58.6		27.0	12.8	56.7		27.0				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	59.0	76.0		55.0	59.0	76.0		55.0				
Max Q Clear Time (g_c+I1), s	4.3	42.8		17.1	6.5	47.2		18.0				
Green Ext Time (p_c), s	0.0	0.8		0.4	0.0	0.8		0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh	34.3											
HCM 7th LOS	C											

HCM 7th AWSC

13: Railroad Ave & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday PM

Intersection												
Intersection Delay, s/veh 12.8												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	20	130	90	60	150	100	60	90	30	60	80	30
Future Vol, veh/h	20	130	90	60	150	100	60	90	30	60	80	30
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	144	100	67	167	111	67	100	33	67	89	33
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	2.3	14.2	12	11.8
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	8%	19%	35%
Vol Thru, %	50%	54%	48%	47%
Vol Right, %	17%	38%	32%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	180	240	310	170
LT Vol	60	20	60	60
Through Vol	90	130	150	80
RT Vol	30	90	100	30
Lane Flow Rate	200	267	344	189
Geometry Grp	1	1	1	1
Degree of Util (X)	0.331	0.406	0.518	0.314
Departure Headway (Hd)	5.957	5.487	5.412	5.977
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	600	651	661	597
Service Time	4.035	3.561	3.48	4.058
HCM Lane V/C Ratio	0.333	0.41	0.52	0.317
HCM Control Delay, s/veh	12	12.3	14.2	11.8
HCM Lane LOS	B	B	B	B
HCM 95th-ile Q	1.4	2	3	1.3

HCM 7th TWSC

14: Library Ln & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday PM

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	70	50	10	0	90	0	40	0	10	10	10	50
Future Vol, veh/h	70	50	10	0	90	0	40	0	10	10	10	50
Conflicting Peds, #/hr	4	0	5	5	0	4	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	74	53	11	0	95	0	42	0	11	11	11	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	99	0	0	68	0	0	310	309	67	303	314	99
Stage 1	-	-	-	-	-	-	210	210	-	99	99	-
Stage 2	-	-	-	-	-	-	100	99	-	204	216	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1488	-	-	1527	-	-	640	604	994	648	600	954
Stage 1	-	-	-	-	-	-	790	726	-	905	811	-
Stage 2	-	-	-	-	-	-	904	811	-	796	723	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1482	-	-	1519	-	-	561	568	985	603	564	951
Mov Cap-2 Maneuver	-	-	-	-	-	-	561	568	-	603	564	-
Stage 1	-	-	-	-	-	-	745	686	-	902	808	-
Stage 2	-	-	-	-	-	-	843	808	-	744	682	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	4.07			0			11.42			9.92		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	614	938	-	-	1519	-	-	805
HCM Lane V/C Ratio	0.086	0.05	-	-	-	-	-	0.091
HCM Ctrl Dly (s/v)	11.4	7.6	0	-	0	-	-	9.9
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0	-	-	0.3

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	30	600	80	30	600
Future Vol, veh/h	60	30	600	80	30	600
Conflicting Peds, #/hr	53	0	0	72	72	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	66	33	659	88	33	659
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1554	775	0	0	819	0
Stage 1	775	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	124	396	-	-	805	-
Stage 1	452	-	-	-	-	-
Stage 2	451	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	105	369	-	-	750	-
Mov Cap-2 Maneuver	237	-	-	-	-	-
Stage 1	421	-	-	-	-	-
Stage 2	409	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	25.91	0		0.48		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	269	750	-	
HCM Lane V/C Ratio	-	-	0.367	0.044	-	
HCM Ctrl Dly (s/v)	-	-	25.9	10	-	
HCM Lane LOS	-	-	D	B	-	
HCM 95th %tile Q(veh)	-	-	1.6	0.1	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

16: Church St/Railroad Ave & Hunt Ave Cumulative Conditions Plus Project Pope Weekday PM

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	80	10	10	50	140	10	10	10	190	10	20
Future Vol, veh/h	30	80	10	10	50	140	10	10	10	190	10	20
Conflicting Peds, #/hr	20	0	22	20	0	22	12	0	20	0	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	33	89	11	11	56	156	11	11	11	211	11	22
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	233	0	0	122	0	0	278	438	136	359	366	167
Stage 1	-	-	-	-	-	-	183	183	-	178	178	-
Stage 2	-	-	-	-	-	-	95	255	-	181	189	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1329	-	-	1459	-	-	672	511	909	595	561	874
Stage 1	-	-	-	-	-	-	816	746	-	822	750	-
Stage 2	-	-	-	-	-	-	909	694	-	818	742	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1301	-	-	1429	-	-	598	472	873	531	518	846
Mov Cap-2 Maneuver	-	-	-	-	-	-	598	472	-	531	518	-
Stage 1	-	-	-	-	-	-	777	711	-	797	728	-
Stage 2	-	-	-	-	-	-	854	674	-	759	707	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.96			0.38			11.27			16.7		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	608	440	-	-	78	-	-	549				
HCM Lane V/C Ratio	0.055	0.026	-	-	0.008	-	-	0.445				
HCM Ctrl Dly (s/v)	11.3	7.8	0	-	7.5	0	-	16.7				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	2.3				

HCM 7th TWSC
17: Mitchell Dr & Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↑	↗	↘	
Traffic Vol, veh/h	20	30	50	70	150	20
Future Vol, veh/h	20	30	50	70	150	20
Conflicting Peds, #/hr	8	0	0	8	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	22	33	55	77	165	22
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	140	0	-	0	140	69
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	77	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1437	-	-	-	851	991
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	944	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1426	-	-	-	825	978
Mov Cap-2 Maneuver	-	-	-	-	825	-
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	936	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.03	0		10.51		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	720	-	-	-	840	
HCM Lane V/C Ratio	0.015	-	-	-	0.222	
HCM Ctrl Dly (s/v)	7.6	0	-	-	10.5	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.8	

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

18: Main St & Mitchell Dr/Pope St

Cumulative Conditions Plus Project Pope Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	210	160	30	130	100	620	70	120	560	10
Future Volume (veh/h)	0	0	210	160	30	130	100	620	70	120	560	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	25	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.88	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	0	0	226	172	32	30	108	667	75	129	602	11
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	26	137	194	36	178	130	742	31	151	778	14
Arrive On Green	0.00	0.00	0.01	0.13	0.13	0.13	0.07	0.58	0.58	0.09	0.59	0.59
Sat Flow, veh/h	0	1856	1572	1501	279	1381	1767	1161	131	1767	1290	24
Grp Volume(v), veh/h	0	0	226	204	0	30	108	0	742	129	0	613
Grp Sat Flow(s),veh/h/ln	0	1856	1572	1780	0	1381	1767	0	1292	1767	0	1314
Q Serve(g_s), s	0.0	0.0	2.0	15.8	0.0	2.7	8.5	0.0	79.0	10.1	0.0	49.7
Cycle Q Clear(g_c), s	0.0	0.0	2.0	15.8	0.0	2.7	8.5	0.0	79.0	10.1	0.0	49.7
Prop In Lane	0.00		1.00	0.84		1.00	1.00		0.10	1.00		0.02
Lane Grp Cap(c), veh/h	0	26	137	230	0	178	130	0	773	151	0	792
V/C Ratio(X)	0.00	0.00	1.65	0.89	0.00	0.17	0.83	0.00	0.96	0.85	0.00	0.77
Avail Cap(c_a), veh/h	0	26	138	305	0	236	301	0	787	195	0	781
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	66.0	61.9	0.0	56.0	66.1	0.0	29.6	65.2	0.0	21.4
Incr Delay (d2), s/veh	0.0	0.0	322.4	17.6	0.0	0.2	5.2	0.0	22.4	20.1	0.0	4.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.7	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	17.4	8.6	0.0	1.0	4.2	0.0	52.0	5.6	0.0	16.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	388.3	79.5	0.0	56.2	71.3	0.0	150.6	85.3	0.0	25.9
LnGrp LOS			F	E		E	E		F	F		C
Approach Vol, veh/h	226			234			850			742		
Approach Delay, s/veh	388.3			76.5			140.6			36.2		
Approach LOS	F			E			F			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	91.1		28.1	16.7	89.4		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	23.9	74.0		24.0	15.5	* 85		2.0				
Max Q Clear Time (g_c+I1), s	10.5	51.7		17.8	12.1	81.0		4.0				
Green Ext Time (p_c), s	0.0	0.8		0.1	0.0	0.6		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh 122.8

HCM 7th LOS F

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 7th Signalized Intersection Summary 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	70	70	810	910	60
Future Volume (veh/h)	70	70	70	810	910	60
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1318	1318	1318
Adj Flow Rate, veh/h	75	51	75	871	978	63
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	75	51	102	1098	909	59
Arrive On Green	0.08	0.08	0.06	0.83	0.74	0.74
Sat Flow, veh/h	995	676	1767	1318	1223	79
Grp Volume(v), veh/h	127	0	75	871	0	1041
Grp Sat Flow(s), veh/h/ln	1684	0	1767	1318	0	1302
Q Serve(g_s), s	11.2	0.0	6.2	48.7	0.0	111.0
Cycle Q Clear(g_c), s	11.2	0.0	6.2	48.7	0.0	111.0
Prop In Lane	0.59	0.40	1.00			0.06
Lane Grp Cap(c), veh/h	126	0	102	1098	0	968
V/C Ratio(X)	1.01	0.00	0.74	0.79	0.00	1.08
Avail Cap(c_a), veh/h	126	0	110	1139	0	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	69.0	0.0	69.2	6.2	0.0	19.1
Incr Delay (d2), s/veh	81.5	0.0	17.8	3.4	0.0	51.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	0.0	3.3	10.9	0.0	42.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	150.5	0.0	87.0	9.6	0.0	70.5
LnGrp LOS	F		F	A		F
Approach Vol, veh/h	127			946	1041	
Approach Delay, s/veh	150.5			15.8	70.5	
Approach LOS	F			B	E	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	33.3	120.1		133.4	15.9	
Change Period (Y+Rc), s	4.7	9.1		* 9.1	4.7	
Max Green Setting (Gmax), s	111.0			* 1.3E+02	11.2	
Max Q Clear Time (g_c+I), s	113.0			50.7	13.2	
Green Ext Time (p_c), s	0.0	0.0		0.9	0.0	
Intersection Summary						
HCM 7th Control Delay, s/veh			50.8			
HCM 7th LOS			D			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC

Saint Helena Streets Master Plan

20: Main St & Sulphur Springs Ave

Cumulative Conditions Plus Project Pope Weekday PM

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	140	140	850	930	50
Future Vol, veh/h	30	140	140	850	930	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	32	151	151	914	1000	54
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2242	1027	1054	0	-	0
Stage 1	1027	-	-	-	-	-
Stage 2	1215	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	46	283	657	-	-	-
Stage 1	344	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	35	283	657	-	-	-
Mov Cap-2 Maneuver	140	-	-	-	-	-
Stage 1	265	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	32.45	1.71		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	657	-	140	283	-	-
HCM Lane V/C Ratio	0.229	-	0.23	0.531	-	-
HCM Ctrl Dly (s/v)	12.1	-	38.1	31.2	-	-
HCM Lane LOS	B	-	E	D	-	-
HCM 95th %tile Q(veh)	0.9	-	0.8	2.9	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	100	10	20	90	10
Future Vol, veh/h	20	100	10	20	90	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	22	108	11	22	97	11
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7.3	7.6	8.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	90%	0%	33%
Vol Thru, %	0%	17%	67%
Vol Right, %	10%	83%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	100	120	30
LT Vol	90	0	10
Through Vol	0	20	20
RT Vol	10	100	0
Lane Flow Rate	108	129	32
Geometry Grp	1	1	1
Degree of Util (X)	0.13	0.131	0.039
Departure Headway (Hd)	4.35	3.665	4.308
Convergence, Y/N	Yes	Yes	Yes
Cap	819	964	820
Service Time	2.4	1.741	2.391
HCM Lane V/C Ratio	0.132	0.134	0.039
HCM Control Delay, s/veh	8.1	7.3	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.5	0.1

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	30	270	310	80	110	20
Future Vol, veh/h	30	270	310	80	110	20
Conflicting Peds, #/hr	2	0	0	2	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	307	352	91	125	23
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	445	0	-	0	775	402
Stage 1	-	-	-	-	400	-
Stage 2	-	-	-	-	375	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1110	-	-	-	365	646
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	693	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1108	-	-	-	350	644
Mov Cap-2 Maneuver	-	-	-	-	350	-
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	691	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.84	0		20.59		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	180	-	-	-	377	
HCM Lane V/C Ratio	0.031	-	-	-	0.392	
HCM Ctrl Dly (s/v)	8.4	0	-	-	20.6	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	1.8	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Pope Creek Interchange Conditions Plus Project Pope Weekday PM

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	310	40	20	310	10	40	0	30	10	0	20
Future Vol, veh/h	40	310	40	20	310	10	40	0	30	10	0	20
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	47	365	47	24	365	12	47	0	35	12	0	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	376	0	0	413	0	0	897	907	389	876	925	373
Stage 1	-	-	-	-	-	-	483	483	-	418	418	-
Stage 2	-	-	-	-	-	-	414	424	-	459	507	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1177	-	-	1141	-	-	260	275	657	268	268	671
Stage 1	-	-	-	-	-	-	563	551	-	611	589	-
Stage 2	-	-	-	-	-	-	614	586	-	580	538	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1177	-	-	1140	-	-	235	258	656	238	252	670
Mov Cap-2 Maneuver	-	-	-	-	-	-	235	258	-	238	252	-
Stage 1	-	-	-	-	-	-	540	528	-	598	577	-
Stage 2	-	-	-	-	-	-	579	574	-	527	516	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.84			0.48			18.42			14.41		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	235	656	1177	-	-	1140	-	-	418
HCM Lane V/C Ratio	0.2	0.054	0.04	-	-	0.021	-	-	0.084
HCM Ctrl Dly (s/v)	24.1	10.8	8.2	-	-	8.2	-	-	14.4
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0.2	0.1	-	-	0.1	-	-	0.3

HCM 7th TWSC

24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday PM

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	30	620	780	30
Future Vol, veh/h	30	30	30	620	780	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	34	34	697	876	34
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1657	893	910	0	-	0
Stage 1	893	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	107	339	744	-	-	-
Stage 1	398	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	99	339	744	-	-	-
Mov Cap-2 Maneuver	99	-	-	-	-	-
Stage 1	369	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	45.74	0.46		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	83	-	153	-	-	
HCM Lane V/C Ratio	0.045	-	0.44	-	-	
HCM Ctrl Dly (s/v)	10.1	0	45.7	-	-	
HCM Lane LOS	B	A	E	-	-	
HCM 95th %tile Q(veh)	0.1	-	2	-	-	

HCM 7th Signalized Intersection Summary Saint Helena Streets Master Plan 25: Silverado Trail & Pope Street/Howell Mountain Rd Conditions Plus Project Pope Weekday PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	10	210	50	10	10	140	510	20	10	570	230
Future Volume (veh/h)	130	10	210	50	10	10	140	510	20	10	570	230
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	148	11	71	57	11	4	159	580	22	11	648	246
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	166	12	317	73	14	5	179	650	25	413	634	241
Arrive On Green	0.10	0.10	0.10	0.05	0.05	0.05	0.10	0.37	0.37	0.23	0.50	0.50
Sat Flow, veh/h	1650	123	1572	1397	270	98	1767	1776	67	1767	1273	483
Grp Volume(v), veh/h	159	0	71	72	0	0	159	0	602	11	0	894
Grp Sat Flow(s),veh/h/ln	1773	0	1572	1764	0	0	1767	0	1843	1767	0	1756
Q Serve(g_s), s	7.9	0.0	3.4	3.6	0.0	0.0	8.0	0.0	27.6	0.4	0.0	44.7
Cycle Q Clear(g_c), s	7.9	0.0	3.4	3.6	0.0	0.0	8.0	0.0	27.6	0.4	0.0	44.7
Prop In Lane	0.93		1.00	0.79		0.06	1.00		0.04	1.00		0.28
Lane Grp Cap(c), veh/h	178	0	317	92	0	0	179	0	675	413	0	875
V/C Ratio(X)	0.89	0.00	0.22	0.78	0.00	0.00	0.89	0.00	0.89	0.03	0.00	1.02
Avail Cap(c_a), veh/h	178	0	317	98	0	0	179	0	1003	413	0	875
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.9	0.0	29.9	42.0	0.0	0.0	39.8	0.0	26.8	26.5	0.0	22.5
Incr Delay (d2), s/veh	39.0	0.0	0.4	30.9	0.0	0.0	37.3	0.0	7.2	0.0	0.0	35.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	1.3	2.4	0.0	0.0	5.1	0.0	11.9	0.2	0.0	24.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.9	0.0	30.3	72.9	0.0	0.0	77.1	0.0	34.0	26.5	0.0	58.4
LnGrp LOS	E		C	E			E		C	C		F
Approach Vol, veh/h	230			72			761			905		
Approach Delay, s/veh	63.9			72.9			43.0			58.0		
Approach LOS	E			E			D			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	27.5	39.3		13.6	15.6	51.2		9.3				
Change Period (Y+Rc), s	6.5	6.5		4.6	6.5	6.5		4.6				
Max Green Setting (Gmax), s	5.0	48.8		9.0	9.1	44.7		5.0				
Max Q Clear Time (g_c+I1), s	2.4	29.6		9.9	10.0	46.7		5.6				
Green Ext Time (p_c), s	0.0	3.2		0.0	0.0	0.0		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	53.4											
HCM 7th LOS	D											

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↔	↔	
Traffic Vol, veh/h	0	0	0	10	10	20	10	870	0	10	960	20
Future Vol, veh/h	0	0	0	10	10	20	10	870	0	10	960	20
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	0	11	11	22	11	935	0	11	1032	22

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	2032	2027	1048	2011	2037	935	1059	0	0	935	0	0
Stage 1	1070	1070	-	957	957	-	-	-	-	-	-	-
Stage 2	962	957	-	1054	1080	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	42	57	275	44	56	320	654	-	-	728	-	-
Stage 1	267	296	-	308	335	-	-	-	-	-	-	-
Stage 2	306	335	-	272	293	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	30	54	274	41	53	320	651	-	-	728	-	-
Mov Cap-2 Maneuver	30	54	-	41	53	-	-	-	-	-	-	-
Stage 1	261	291	-	298	323	-	-	-	-	-	-	-
Stage 2	267	323	-	268	287	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	90.6	0.12	0.1
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	20	-	-	-	81	728	-
HCM Lane V/C Ratio	0.017	-	-	-	0.528	0.015	-
HCM Ctrl Dly (s/v)	10.6	0	-	0	90.6	10	-
HCM Lane LOS	B	A	-	A	F	B	-
HCM 95th %tile Q(veh)	0.1	-	-	-	2.3	0	-

HCM 7th TWSC

28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekday PM

Intersection												
Int Delay, s/veh	45.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	20	10	30	70	0	20	20	750	120	30	890	10
Future Vol, veh/h	20	10	30	70	0	20	20	750	120	30	890	10
Conflicting Peds, #/hr	0	0	0	0	0	0	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	11	33	76	0	22	22	815	130	33	967	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1907	2037	983	1962	1977	880	988	0	0	946	0	0
Stage 1	1048	1048	-	924	924	-	-	-	-	-	-	-
Stage 2	859	989	-	1038	1053	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	52	56	301	~ 47	61	345	695	-	-	722	-	-
Stage 1	274	303	-	322	347	-	-	-	-	-	-	-
Stage 2	350	323	-	278	302	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	44	52	298	~ 31	56	345	689	-	-	722	-	-
Mov Cap-2 Maneuver	44	52	-	~ 31	56	-	-	-	-	-	-	-
Stage 1	259	287	-	312	336	-	-	-	-	-	-	-
Stage 2	317	313	-	227	285	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	141.78		\$ 902.93			0.23			0.33			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	689	-	-	80	39	722	-	-				
HCM Lane V/C Ratio	0.032	-	-	0.811	2.504	0.045	-	-				
HCM Ctrl Dly (s/v)	10.4	-	-	141.8	\$ 902.9	10.2	-	-				
HCM Lane LOS	B	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	4.1	10.8	0.1	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	10	30	10	10	10	90	30	10	90	10
Future Vol, veh/h	10	10	10	30	10	10	10	90	30	10	90	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	12	12	12	35	12	12	12	106	35	12	106	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.7	8	8.1	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	33%	60%	9%
Vol Thru, %	69%	33%	20%	82%
Vol Right, %	23%	33%	20%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	30	50	110
LT Vol	10	10	30	10
Through Vol	90	10	10	90
RT Vol	30	10	10	10
Lane Flow Rate	153	35	59	129
Geometry Grp	1	1	1	1
Degree of Util (X)	0.178	0.044	0.075	0.155
Departure Headway (Hd)	4.193	4.509	4.613	4.3
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	860	796	779	839
Service Time	2.196	2.526	2.629	2.304
HCM Lane V/C Ratio	0.178	0.044	0.076	0.154
HCM Control Delay, s/veh	8.1	7.7	8	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.1	0.2	0.5

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

Intersection												
Intersection Delay, s/veh	9.3											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	40	40	60	40	20	20	90	130	30	110	10
Future Vol, veh/h	10	40	40	60	40	20	20	90	130	30	110	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	44	44	66	44	22	22	99	143	33	121	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.7	9.3	9.6	9.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	11%	50%	20%
Vol Thru, %	38%	44%	33%	73%
Vol Right, %	54%	44%	17%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	240	90	120	150
LT Vol	20	10	60	30
Through Vol	90	40	40	110
RT Vol	130	40	20	10
Lane Flow Rate	264	99	132	165
Geometry Grp	1	1	1	1
Degree of Util (X)	0.324	0.134	0.185	0.221
Departure Headway (Hd)	4.419	4.865	5.057	4.826
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	810	731	704	740
Service Time	2.469	2.934	3.123	2.882
HCM Lane V/C Ratio	0.326	0.135	0.188	0.223
HCM Control Delay, s/veh	9.6	8.7	9.3	9.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.4	0.5	0.7	0.8

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

Intersection												
Intersection Delay, s/veh	9.9											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	70	40	60	20	80	50	40	110	20	40	100	50
Future Vol, veh/h	70	40	60	20	80	50	40	110	20	40	100	50
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	77	44	66	22	88	55	44	121	22	44	110	55
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9.9	9.6	10	10.1
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	41%	13%	21%
Vol Thru, %	65%	24%	53%	53%
Vol Right, %	12%	35%	33%	26%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	170	170	150	190
LT Vol	40	70	20	40
Through Vol	110	40	80	100
RT Vol	20	60	50	50
Lane Flow Rate	187	187	165	209
Geometry Grp	1	1	1	1
Degree of Util (X)	0.263	0.26	0.229	0.287
Departure Headway (Hd)	5.067	5.013	5.002	4.949
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	701	708	709	716
Service Time	3.162	3.109	3.1	3.042
HCM Lane V/C Ratio	0.267	0.264	0.233	0.292
HCM Control Delay, s/veh	10	9.9	9.6	10.1
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	1.1	1	0.9	1.2

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	70	100	650	620	40
Future Vol, veh/h	30	70	100	650	620	40
Conflicting Peds, #/hr	0	59	47	0	0	47
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	32	75	108	699	667	43
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1649	794	757	0	-	0
Stage 1	735	-	-	-	-	-
Stage 2	914	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	108	386	850	-	-	-
Stage 1	472	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	77	348	812	-	-	-
Mov Cap-2 Maneuver	201	-	-	-	-	-
Stage 1	354	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	25.04	1.35		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	240	-	285	-	-	
HCM Lane V/C Ratio	0.132	-	0.377	-	-	
HCM Ctrl Dly (s/v)	10.1	0	25	-	-	
HCM Lane LOS	B	A	D	-	-	
HCM 95th %tile Q(veh)	0.5	-	1.7	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekday PM

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕				↕			↕			↕	
Traffic Vol, veh/h	50	160	0	0	280	70	0	0	0	60	0	110
Future Vol, veh/h	50	160	0	0	280	70	0	0	0	60	0	110
Conflicting Peds, #/hr	15	0	6	6	0	15	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	54	174	0	0	304	76	0	0	0	65	0	120
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	395	0	0	180	0	0	594	684	181	641	646	358
Stage 1	-	-	-	-	-	-	289	289	-	357	357	-
Stage 2	-	-	-	-	-	-	305	395	-	284	289	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1158	-	-	1390	-	-	415	370	859	386	389	684
Stage 1	-	-	-	-	-	-	717	671	-	658	626	-
Stage 2	-	-	-	-	-	-	702	603	-	721	671	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1141	-	-	1382	-	-	321	343	853	360	361	673
Mov Cap-2 Maneuver	-	-	-	-	-	-	321	343	-	360	361	-
Stage 1	-	-	-	-	-	-	675	632	-	649	617	-
Stage 2	-	-	-	-	-	-	577	594	-	683	632	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.98			0			0			15.84		
HCM LOS							A			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	429	-	-	1382	-	-	515				
HCM Lane V/C Ratio	-	0.048	-	-	-	-	-	0.359				
HCM Ctrl Dly (s/v)	0	8.3	0	-	0	-	-	15.8				
HCM Lane LOS	A	A	A	-	A	-	-	C				
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	1.6				

HCM 7th TWSC

4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekend MD

Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	20	20	10	10
Future Vol, veh/h	30	10	20	20	10	10
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	37	12	25	25	12	12
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	52	0	120	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	74	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1547	-	873	1020
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	946	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1543	-	856	1017
Mov Cap-2 Maneuver	-	-	-	-	856	-
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	931	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.69		8.98	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	930	-	-	900	-	
HCM Lane V/C Ratio	0.027	-	-	0.016	-	
HCM Ctrl Dly (s/v)	9	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

HCM 7th TWSC

5: Valley View St & Spring St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekend MD

Intersection						
Int Delay, s/veh	5.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	40	40	40	30	90
Future Vol, veh/h	40	40	40	40	30	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	56	56	56	56	42	127
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	113	0	254	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	169	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1471	-	733	972
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	858	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1471	-	704	972
Mov Cap-2 Maneuver	-	-	-	-	704	-
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	824	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.77		10.01	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	887	-	-	900	-	
HCM Lane V/C Ratio	0.19	-	-	0.038	-	
HCM Ctrl Dly (s/v)	10	-	-	7.5	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-	

HCM 7th AWSC

Saint Helena Streets Master Plan

6: Crane Ave/Valley View St & Grayson Ave Cumulative Conditions Plus Project Pope Weekend MD

Intersection						
Intersection Delay, s/veh	8.1					
Intersection LOS	A					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	30	90	30	20	70
Future Vol, veh/h	20	30	90	30	20	70
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	29	44	132	44	29	103
Number of Lanes	1	0	1	0	0	1
Approach	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		1	
Conflicting Approach Left	NB				WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right	SB		WB			
Conflicting Lanes Right	1		1		0	
HCM Control Delay, s/veh	7.8		8.1		8.2	
HCM LOS	A		A		A	
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	40%	22%			
Vol Thru, %	75%	0%	78%			
Vol Right, %	25%	60%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	120	50	90			
LT Vol	0	20	20			
Through Vol	90	0	70			
RT Vol	30	30	0			
Lane Flow Rate	176	74	132			
Geometry Grp	1	1	1			
Degree of Util (X)	0.198	0.089	0.157			
Departure Headway (Hd)	4.03	4.342	4.259			
Convergence, Y/N	Yes	Yes	Yes			
Cap	877	830	831			
Service Time	2.113	2.342	2.344			
HCM Lane V/C Ratio	0.201	0.089	0.159			
HCM Control Delay, s/veh	8.1	7.8	8.2			
HCM Lane LOS	A	A	A			
HCM 95th-tile Q	0.7	0.3	0.6			

HCM 7th TWSC

Saint Helena Streets Master Plan

7: Sulphur Spring Ave & Crane Ave

Cumulative Conditions Plus Project Pope Weekend MD

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	10	50	70	10
Future Vol, veh/h	10	10	10	50	70	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	15	15	74	103	15
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	88	0	-	0	96	51
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1501	-	-	-	901	1014
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	976	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1501	-	-	-	893	1014
Mov Cap-2 Maneuver	-	-	-	-	893	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	976	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.71	0		9.57		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	906	
HCM Lane V/C Ratio	0.01	-	-	-	0.13	
HCM Ctrl Dly (s/v)	7.4	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekend MD

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↘		↙	↘	
Traffic Vol, veh/h	10	10	10	30	0	20	20	640	30	20	620	10
Future Vol, veh/h	10	10	10	30	0	20	20	640	30	20	620	10
Conflicting Peds, #/hr	1	0	2	2	0	1	6	0	1	1	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	10	10	10	31	0	21	21	667	31	21	646	10
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1408	1439	659	1420	1429	684	662	0	0	699	0	0
Stage 1	699	699	-	725	725	-	-	-	-	-	-	-
Stage 2	709	741	-	695	704	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	116	132	462	114	134	447	922	-	-	893	-	-
Stage 1	429	440	-	415	428	-	-	-	-	-	-	-
Stage 2	423	422	-	431	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	105	125	458	97	127	446	916	-	-	892	-	-
Mov Cap-2 Maneuver	105	125	-	97	127	-	-	-	-	-	-	-
Stage 1	417	428	-	405	418	-	-	-	-	-	-	-
Stage 2	394	412	-	401	425	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Ctrl Dly, s/v	34.68		44.56		0.26			0.28				
HCM LOS	D		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	916	-	-	152	141	892	-	-				
HCM Lane V/C Ratio	0.023	-	-	0.205	0.368	0.023	-	-				
HCM Ctrl Dly (s/v)	9	-	-	34.7	44.6	9.1	-	-				
HCM Lane LOS	A	-	-	D	E	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.7	1.5	0.1	-	-				

HCM 7th TWSC

9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekend MD

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	30	30	650	630	30
Future Vol, veh/h	40	30	30	650	630	30
Conflicting Peds, #/hr	0	1	9	0	0	9
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	40	30	30	657	636	30
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1378	662	676	0	-	0
Stage 1	661	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	159	460	911	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	148	456	903	-	-	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	30.95	0.4		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	79	-	208	-	-	
HCM Lane V/C Ratio	0.034	-	0.34	-	-	
HCM Ctrl Dly (s/v)	9.1	0	30.9	-	-	
HCM Lane LOS	A	A	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	1.4	-	-	

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

10: Main St & Madrona Ave/Fulton Ln Cumulative Conditions Plus Project Pope Weekend MD

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	20	40	10	20	80	20	520	10	50	560	50
Future Volume (veh/h)	80	20	40	10	20	80	20	520	10	50	560	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	25	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	86	22	28	11	22	13	22	559	11	54	602	52
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	199	39	38	95	124	59	149	775	15	359	741	44
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	873	335	313	213	1025	488	773	1288	25	835	1196	103
Grp Volume(v), veh/h	136	0	0	46	0	0	22	0	570	54	0	654
Grp Sat Flow(s),veh/h/ln	1521	0	0	1725	0	0	773	0	1313	835	0	1299
Q Serve(g_s), s	3.3	0.0	0.0	0.0	0.0	0.0	1.5	0.0	19.1	3.0	0.0	25.3
Cycle Q Clear(g_c), s	4.6	0.0	0.0	1.3	0.0	0.0	26.8	0.0	19.1	22.2	0.0	25.3
Prop In Lane	0.63		0.21	0.24		0.28	1.00		0.02	1.00		0.08
Lane Grp Cap(c), veh/h	275	0	0	279	0	0	149	0	790	359	0	785
V/C Ratio(X)	0.49	0.00	0.00	0.16	0.00	0.00	0.15	0.00	0.72	0.15	0.00	0.83
Avail Cap(c_a), veh/h	1188	0	0	1286	0	0	666	0	1518	804	0	1501
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	0.0	27.4	0.0	0.0	32.2	0.0	9.1	17.1	0.0	12.4
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.5	0.1	0.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.8
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	0.7	0.0	0.0	0.4	0.0	4.7	0.6	0.0	19.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.6	0.0	0.0	27.5	0.0	0.0	32.3	0.0	9.5	17.2	0.0	57.1
LnGrp LOS	C			C			C		A	B		E
Approach Vol, veh/h		136			46			592			708	
Approach Delay, s/veh		29.6			27.5			10.4			54.1	
Approach LOS		C			C			B			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		38.2		16.3		38.2		16.3				
Change Period (Y+Rc), s		8.7		9.2		8.7		9.2				
Max Green Setting (Gmax), s		63.0		40.0		63.0		40.0				
Max Q Clear Time (g_c+I1), s		28.8		6.6		27.3		3.3				
Green Ext Time (p_c), s		0.8		0.2		1.0		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh				33.6								
HCM 7th LOS				C								

HCM 7th TWSC

11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekend MD

Intersection						
Int Delay, s/veh	5.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	60	10	10	100	10
Future Vol, veh/h	10	60	10	10	100	10
Conflicting Peds, #/hr	0	3	3	0	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	76	13	13	127	13
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	92	0	96	54
Stage 1	-	-	-	-	54	-
Stage 2	-	-	-	-	42	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1497	-	901	1011
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	978	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1493	-	888	1008
Mov Cap-2 Maneuver	-	-	-	-	888	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	966	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.72		9.75	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	897	-	-	900	-	
HCM Lane V/C Ratio	0.155	-	-	0.008	-	
HCM Ctrl Dly (s/v)	9.7	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.5	-	-	0	-	

HCM 7th Signalized Intersection Summary
12: Main St & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekend MD

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	40	30	40	40	40	20	470	30	40	530	40
Future Volume (veh/h)	40	40	30	40	40	40	20	470	30	40	530	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	20	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.74		0.67	0.73		0.67	1.00		0.93	1.00		0.88
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1856
Adj Flow Rate, veh/h	41	41	15	41	41	20	21	485	29	41	546	38
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	151	135	41	142	127	51	73	579	35	117	637	13
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.04	0.44	0.44	0.07	0.47	0.47
Sat Flow, veh/h	453	682	208	416	645	259	1767	1226	73	1767	1205	84
Grp Volume(v), veh/h	97	0	0	102	0	0	21	0	514	41	0	584
Grp Sat Flow(s),veh/h/ln	1343	0	0	1319	0	0	1767	0	1299	1767	0	1289
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	0.9	0.0	28.9	1.8	0.0	34.8
Cycle Q Clear(g_c), s	4.0	0.0	0.0	4.4	0.0	0.0	0.9	0.0	28.9	1.8	0.0	34.8
Prop In Lane	0.42		0.15	0.40		0.20	1.00		0.06	1.00		0.07
Lane Grp Cap(c), veh/h	326	0	0	320	0	0	73	0	613	117	0	650
V/C Ratio(X)	0.30	0.00	0.00	0.32	0.00	0.00	0.29	0.00	0.84	0.35	0.00	0.90
Avail Cap(c_a), veh/h	353	0	0	347	0	0	203	0	682	203	0	677
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.7	0.0	0.0	28.8	0.0	0.0	39.0	0.0	19.4	37.5	0.0	21.1
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	0.0	0.0	0.8	0.0	7.5	0.7	0.0	14.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	1.8	0.0	0.0	0.4	0.0	9.5	0.8	0.0	26.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.8	0.0	0.0	29.0	0.0	0.0	39.8	0.0	26.9	38.2	0.0	100.2
LnGrp LOS	C			C			D		C	D		F
Approach Vol, veh/h		97			102			535			625	
Approach Delay, s/veh		28.8			29.0			27.4			96.1	
Approach LOS		C			C			C			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	46.0		25.3	10.1	44.0		25.3				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	9.1	41.7		17.1	9.1	41.7		17.1				
Max Q Clear Time (g_c+I1), s	2.9	36.8		6.0	3.8	30.9		6.4				
Green Ext Time (p_c), s	0.0	0.5		0.1	0.0	0.6		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			59.2									
HCM 7th LOS			E									

HCM 7th AWSC

13: Railroad Ave & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekend MD

Intersection												
Intersection Delay, s/veh	8.1											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	40	60	10	40	50	40	50	10	40	40	10
Future Vol, veh/h	10	40	60	10	40	50	40	50	10	40	40	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	43	65	11	43	54	43	54	11	43	43	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8	7.9	8.3	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	9%	10%	44%
Vol Thru, %	50%	36%	40%	44%
Vol Right, %	10%	55%	50%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	110	100	90
LT Vol	40	10	10	40
Through Vol	50	40	40	40
RT Vol	10	60	50	10
Lane Flow Rate	109	120	109	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.138	0.141	0.129	0.125
Departure Headway (Hd)	4.586	4.248	4.289	4.601
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	783	845	837	780
Service Time	2.609	2.268	2.309	2.624
HCM Lane V/C Ratio	0.139	0.142	0.13	0.126
HCM Control Delay, s/veh	8.3	8	7.9	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.5	0.4	0.4

HCM 7th TWSC

14: Library Ln & Adams St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekend MD

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	10	10	0	10	0	10	0	0	0	0	20
Future Vol, veh/h	20	10	10	0	10	0	10	0	0	0	0	20
Conflicting Peds, #/hr	1	0	6	6	0	1	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	6	3	6	3	3	3	6	6	3	3	6	6
Mvmt Flow	28	14	14	0	14	0	14	0	0	0	0	28
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	15	0	0	34	0	0	96	97	31	88	104	15
Stage 1	-	-	-	-	-	-	82	82	-	15	15	-
Stage 2	-	-	-	-	-	-	14	15	-	73	89	-
Critical Hdwy	4.16	-	-	4.13	-	-	7.16	6.56	6.23	7.13	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.13	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.13	5.56	-
Follow-up Hdwy	2.254	-	-	2.227	-	-	3.554	4.054	3.327	3.527	4.054	3.354
Pot Cap-1 Maneuver	1577	-	-	1571	-	-	877	785	1041	894	778	1053
Stage 1	-	-	-	-	-	-	916	819	-	1002	875	-
Stage 2	-	-	-	-	-	-	996	875	-	934	813	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1576	-	-	1562	-	-	834	766	1031	874	759	1052
Mov Cap-2 Maneuver	-	-	-	-	-	-	834	766	-	874	759	-
Stage 1	-	-	-	-	-	-	894	799	-	1001	874	-
Stage 2	-	-	-	-	-	-	970	874	-	913	794	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.66			0			9.39			8.51		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	834	818	-	-	1562	-	-	1052				
HCM Lane V/C Ratio	0.017	0.018	-	-	-	-	-	0.026				
HCM Ctrl Dly (s/v)	9.4	7.3	0	-	0	-	-	8.5				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1				

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekend MD

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	20	500	70	30	570
Future Vol, veh/h	20	20	500	70	30	570
Conflicting Peds, #/hr	172	3	0	301	301	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	20	20	505	71	30	576
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1650	844	0	0	877	0
Stage 1	841	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	108	362	-	-	766	-
Stage 1	421	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	61	257	-	-	546	-
Mov Cap-2 Maneuver	174	-	-	-	-	-
Stage 1	300	-	-	-	-	-
Stage 2	345	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	26.47	0		0.6		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	208	546	-	
HCM Lane V/C Ratio	-	-	0.195	0.055	-	
HCM Ctrl Dly (s/v)	-	-	26.5	12	-	
HCM Lane LOS	-	-	D	B	-	
HCM 95th %tile Q(veh)	-	-	0.7	0.2	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

16: Church St/Railroad Ave & Hunt Ave Cumulative Conditions Plus Project Pope Weekend MD

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	40	20	30	20	60	10	20	40	50	40	20
Future Vol, veh/h	40	40	20	30	20	60	10	20	40	50	40	20
Conflicting Peds, #/hr	17	0	49	17	0	49	5	0	17	3	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	43	43	21	32	21	64	11	21	43	53	43	21
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	134	0	0	113	0	0	299	385	119	321	364	107
Stage 1	-	-	-	-	-	-	187	187	-	166	166	-
Stage 2	-	-	-	-	-	-	111	198	-	155	198	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1444	-	-	1470	-	-	652	547	930	630	562	944
Stage 1	-	-	-	-	-	-	812	743	-	834	759	-
Stage 2	-	-	-	-	-	-	891	735	-	845	735	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1377	-	-	1402	-	-	522	470	872	508	483	896
Mov Cap-2 Maneuver	-	-	-	-	-	-	522	470	-	508	483	-
Stage 1	-	-	-	-	-	-	749	686	-	776	706	-
Stage 2	-	-	-	-	-	-	794	684	-	741	678	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.08			2.08			11.25			13.5		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	651	675	-	-	427	-	-	540				
HCM Lane V/C Ratio	0.114	0.031	-	-	0.023	-	-	0.217				
HCM Ctrl Dly (s/v)	11.2	7.7	0	-	7.6	0	-	13.5				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.1	-	-	0.8				

HCM 7th TWSC
17: Mitchell Dr & Oak Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekend MD

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	0	30	70	90	10
Future Vol, veh/h	20	0	30	70	90	10
Conflicting Peds, #/hr	3	0	0	3	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	25	0	37	86	111	12
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	126	0	-	0	89	41
Stage 1	-	-	-	-	40	-
Stage 2	-	-	-	-	49	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1454	-	-	-	909	1027
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	971	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1449	-	-	-	888	1023
Mov Cap-2 Maneuver	-	-	-	-	888	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	968	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	7.53	0		9.63		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1449	-	-	-	900	
HCM Lane V/C Ratio	0.017	-	-	-	0.137	
HCM Ctrl Dly (s/v)	7.5	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

18: Main St & Mitchell Dr/Pope St

Cumulative Conditions Plus Project Pope Weekend MD

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	140	110	30	80	90	540	50	70	530	10
Future Volume (veh/h)	0	0	140	110	30	80	90	540	50	70	530	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	35	0	0	15	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.88	1.00		0.94	1.00		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	0	0	143	112	31	11	92	551	51	71	541	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	36	157	190	53	187	143	646	19	134	667	8
Arrive On Green	0.00	0.00	0.02	0.14	0.14	0.14	0.09	0.48	0.48	0.08	0.48	0.48
Sat Flow, veh/h	0	1856	1572	1399	387	1388	1767	1181	109	1767	1288	24
Grp Volume(v), veh/h	0	0	143	143	0	11	92	0	602	71	0	551
Grp Sat Flow(s),veh/h/ln	0	1856	1572	1786	0	1388	1767	0	1291	1767	0	1312
Q Serve(g_s), s	0.0	0.0	2.0	7.1	0.0	0.7	4.8	0.0	43.3	3.7	0.0	36.3
Cycle Q Clear(g_c), s	0.0	0.0	2.0	7.1	0.0	0.7	4.8	0.0	43.3	3.7	0.0	36.3
Prop In Lane	0.00		1.00	0.78		1.00	1.00		0.08	1.00		0.02
Lane Grp Cap(c), veh/h	0	36	157	243	0	187	143	0	696	134	0	653
V/C Ratio(X)	0.00	0.00	0.91	0.59	0.00	0.06	0.64	0.00	0.87	0.53	0.00	0.84
Avail Cap(c_a), veh/h	0	39	168	355	0	276	216	0	768	166	0	702
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	46.2	42.1	0.0	39.1	46.3	0.0	25.1	46.2	0.0	23.8
Incr Delay (d2), s/veh	0.0	0.0	41.3	0.8	0.0	0.0	1.8	0.0	8.7	1.2	0.0	8.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	120.3	0.0	0.0	24.3
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.5	3.5	0.0	0.2	2.4	0.0	41.7	1.8	0.0	19.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	87.5	43.0	0.0	39.1	48.1	0.0	154.1	47.4	0.0	56.1
LnGrp LOS			F	D		D	D		F	D		E
Approach Vol, veh/h	143			154			694			622		
Approach Delay, s/veh	87.5			42.7			140.1			55.2		
Approach LOS	F			D			F			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.9	53.2		23.5	12.3	53.8		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	11.7	51.2		19.0	9.0	* 57		2.0				
Max Q Clear Time (g_c+I1), s	6.8	38.3		9.1	5.7	45.3		4.0				
Green Ext Time (p_c), s	0.0	0.6		0.1	0.0	0.7		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh

93.4

HCM 7th LOS

F

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 7th Signalized Intersection Summary
 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
 Cumulative Conditions Plus Project Pope Weekend MD

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	30	40	760	800	20
Future Volume (veh/h)	20	30	40	760	800	20
Initial Q (Qb), veh	0	0	0	20	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1318	1318	1318
Adj Flow Rate, veh/h	20	2	41	776	816	19
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	83	8	116	1033	849	20
Arrive On Green	0.05	0.05	0.07	0.77	0.65	0.65
Sat Flow, veh/h	1523	152	1767	1318	1282	30
Grp Volume(v), veh/h	23	0	41	776	0	835
Grp Sat Flow(s), veh/h/ln	1752	0	1767	1318	0	1312
Q Serve(g_s), s	1.0	0.0	1.8	26.1	0.0	49.6
Cycle Q Clear(g_c), s	1.0	0.0	1.8	26.1	0.0	49.6
Prop In Lane	0.87	0.09	1.00			0.02
Lane Grp Cap(c), veh/h	95	0	116	1033	0	869
V/C Ratio(X)	0.24	0.00	0.35	0.75	0.00	0.96
Avail Cap(c_a), veh/h	239	0	197	1293	0	999
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.8	0.0	38.3	6.2	0.0	13.3
Incr Delay (d2), s/veh	0.5	0.0	0.7	1.4	0.0	17.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	10.9	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.8	9.5	0.0	15.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	39.3	0.0	38.9	18.5	0.0	31.0
LnGrp LOS	D		D	B		C
Approach Vol, veh/h	23			817	835	
Approach Delay, s/veh	39.3			19.5	31.0	
Approach LOS	D			B	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	60.1	61.5			71.6	9.1
Change Period (Y+Rc), s	4.7	9.1			* 9.1	4.7
Max Green Setting (Gmax), s	60.1	61.5			* 79	11.0
Max Q Clear Time (g_c+I), s	13.8	51.6			28.1	3.0
Green Ext Time (p_c), s	0.0	0.8			0.8	0.0
Intersection Summary						
HCM 7th Control Delay, s/veh			25.5			
HCM 7th LOS			C			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC

Saint Helena Streets Master Plan

20: Main St & Sulphur Springs Ave

Cumulative Conditions Plus Project Pope Weekend MD

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	50	40	790	810	20
Future Vol, veh/h	10	50	40	790	810	20
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	10	51	41	806	827	20
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1728	841	851	0	-	0
Stage 1	841	-	-	-	-	-
Stage 2	888	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	97	363	783	-	-	-
Stage 1	422	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	91	362	780	-	-	-
Mov Cap-2 Maneuver	223	-	-	-	-	-
Stage 1	398	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	17.46	0.48		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	780	-	223	362	-	-
HCM Lane V/C Ratio	0.052	-	0.046	0.141	-	-
HCM Ctrl Dly (s/v)	9.9	-	21.9	16.6	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	0.5	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekend MD

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	60	10	10	40	10
Future Vol, veh/h	10	60	10	10	40	10
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	78	13	13	52	13
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7	7.4	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	80%	0%	50%
Vol Thru, %	0%	14%	50%
Vol Right, %	20%	86%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	50	70	20
LT Vol	40	0	10
Through Vol	0	10	10
RT Vol	10	60	0
Lane Flow Rate	65	91	26
Geometry Grp	1	1	1
Degree of Util (X)	0.076	0.09	0.031
Departure Headway (Hd)	4.193	3.57	4.235
Convergence, Y/N	Yes	Yes	Yes
Cap	853	998	842
Service Time	2.226	1.613	2.279
HCM Lane V/C Ratio	0.076	0.091	0.031
HCM Control Delay, s/veh	7.6	7	7.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.1

HCM 7th TWSC

22: Pope Street & Starr Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekend MD

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	200	230	50	40	20
Future Vol, veh/h	20	200	230	50	40	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	21	208	240	52	42	21
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	292	0	-	0	516	266
Stage 1	-	-	-	-	266	-
Stage 2	-	-	-	-	250	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1264	-	-	-	518	771
Stage 1	-	-	-	-	777	-
Stage 2	-	-	-	-	789	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1264	-	-	-	508	771
Mov Cap-2 Maneuver	-	-	-	-	508	-
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	789	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.72	0		12.05		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	164	-	-	-	573	
HCM Lane V/C Ratio	0.016	-	-	-	0.109	
HCM Ctrl Dly (s/v)	7.9	0	-	-	12	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Pope St Alternative Conditions Plus Project Pope Weekend MD

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	150	30	20	240	20	30	10	10	10	10	20
Future Vol, veh/h	30	150	30	20	240	20	30	10	10	10	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	34	169	34	22	270	22	34	11	11	11	11	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	292	0	0	202	0	0	573	590	185	567	596	281
Stage 1	-	-	-	-	-	-	253	253	-	326	326	-
Stage 2	-	-	-	-	-	-	320	337	-	242	270	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1264	-	-	1364	-	-	429	419	854	432	416	756
Stage 1	-	-	-	-	-	-	749	696	-	685	647	-
Stage 2	-	-	-	-	-	-	689	639	-	760	684	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1264	-	-	1364	-	-	387	401	854	398	398	756
Mov Cap-2 Maneuver	-	-	-	-	-	-	387	401	-	398	398	-
Stage 1	-	-	-	-	-	-	729	677	-	673	636	-
Stage 2	-	-	-	-	-	-	646	629	-	718	666	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.13	0.55	14.18	12.56
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	391	854	1264	-	-	1364	-	-	521
HCM Lane V/C Ratio	0.115	0.013	0.027	-	-	0.016	-	-	0.086
HCM Ctrl Dly (s/v)	15.4	9.3	7.9	-	-	7.7	-	-	12.6
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	0.1	-	-	0.1	-	-	0.3

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekend MD

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	30	20	520	540	20
Future Vol, veh/h	10	30	20	520	540	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	34	22	584	607	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1247	618	629	0	-	0
Stage 1	618	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	191	487	948	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	184	487	948	-	-	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	16.99	0.33		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	67	-	345	-	-	
HCM Lane V/C Ratio	0.024	-	0.13	-	-	
HCM Ctrl Dly (s/v)	8.9	0	17	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

HCM 7th Signalized Intersection Summary Saint Helena Streets Master Plan 25: Silverado Trail & Pope Street/Howell Mountain Road Conditions Plus Project Pope Weekend MD

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	10	70	30	10	20	110	440	40	10	400	160
Future Volume (veh/h)	80	10	70	30	10	20	110	440	40	10	400	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	89	11	42	33	11	1	122	489	41	11	444	161
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	128	16	283	58	19	2	178	584	49	275	518	188
Arrive On Green	0.08	0.08	0.08	0.04	0.04	0.04	0.10	0.35	0.35	0.16	0.40	0.40
Sat Flow, veh/h	1581	195	1534	1307	436	40	1767	1684	141	1767	1290	468
Grp Volume(v), veh/h	100	0	42	45	0	0	122	0	530	11	0	605
Grp Sat Flow(s),veh/h/ln	1776	0	1534	1782	0	0	1767	0	1826	1767	0	1758
Q Serve(g_s), s	3.3	0.0	1.4	1.5	0.0	0.0	4.0	0.0	15.9	0.3	0.0	18.7
Cycle Q Clear(g_c), s	3.3	0.0	1.4	1.5	0.0	0.0	4.0	0.0	15.9	0.3	0.0	18.7
Prop In Lane	0.89		1.00	0.73		0.02	1.00		0.08	1.00		0.27
Lane Grp Cap(c), veh/h	144	0	283	79	0	0	178	0	633	275	0	706
V/C Ratio(X)	0.70	0.00	0.15	0.57	0.00	0.00	0.68	0.00	0.84	0.04	0.00	0.86
Avail Cap(c_a), veh/h	191	0	323	150	0	0	222	0	1115	275	0	1000
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.7	0.0	20.5	27.9	0.0	0.0	25.9	0.0	17.9	21.4	0.0	16.3
Incr Delay (d2), s/veh	6.9	0.0	0.2	6.4	0.0	0.0	6.1	0.0	3.0	0.1	0.0	5.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.5	0.7	0.0	0.0	1.7	0.0	5.6	0.1	0.0	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.6	0.0	20.8	34.4	0.0	0.0	32.0	0.0	21.0	21.4	0.0	21.6
LnGrp LOS	C		C	C			C		C	C		C
Approach Vol, veh/h	142			45			652			616		
Approach Delay, s/veh	29.8			34.4			23.0			21.6		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.8	27.2		9.4	12.5	30.4		7.2				
Change Period (Y+Rc), s	6.5	6.5		4.6	6.5	6.5		4.6				
Max Green Setting (Gmax), s	5.0	36.4		6.4	7.5	33.9		5.0				
Max Q Clear Time (g_c+I1), s	2.3	17.9		5.3	6.0	20.7		3.5				
Green Ext Time (p_c), s	0.0	2.7		0.1	0.0	3.2		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	23.4											
HCM 7th LOS	C											

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekend MD

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↗	↖	
Traffic Vol, veh/h	0	0	10	0	0	10	0	770	10	10	810	10
Future Vol, veh/h	0	0	10	0	0	10	0	770	10	10	810	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	10	0	0	10	0	786	10	10	827	10
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1638	1648	832	1638	1648	791	837	0	0	796	0	0
Stage 1	852	852	-	791	791	-	-	-	-	-	-	-
Stage 2	786	796	-	847	857	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	80	99	368	80	99	388	793	-	-	821	-	-
Stage 1	353	375	-	382	400	-	-	-	-	-	-	-
Stage 2	384	398	-	355	373	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	77	97	368	77	97	388	793	-	-	821	-	-
Mov Cap-2 Maneuver	77	97	-	77	97	-	-	-	-	-	-	-
Stage 1	348	370	-	382	400	-	-	-	-	-	-	-
Stage 2	374	398	-	341	368	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	15.07		14.53		0		0.11					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	793	-	-	368	388	821	-	-				
HCM Lane V/C Ratio	-	-	-	0.028	0.026	0.012	-	-				
HCM Ctrl Dly (s/v)	0	-	-	15.1	14.5	9.4	-	-				
HCM Lane LOS	A	-	-	C	B	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

HCM 7th TWSC

28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekend MD

Intersection												
Int Delay, s/veh	17.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	20	10	40	60	10	30	20	630	130	40	730	10
Future Vol, veh/h	20	10	40	60	10	30	20	630	130	40	730	10
Conflicting Peds, #/hr	0	0	0	0	0	0	15	0	3	3	0	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	21	10	42	63	10	31	21	656	135	42	760	10
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1567	1700	781	1618	1638	727	786	0	0	795	0	0
Stage 1	864	864	-	769	769	-	-	-	-	-	-	-
Stage 2	703	836	-	849	869	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	90	91	393	83	100	422	829	-	-	822	-	-
Stage 1	347	370	-	392	409	-	-	-	-	-	-	-
Stage 2	427	381	-	354	368	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	68	83	388	~ 60	91	421	817	-	-	820	-	-
Mov Cap-2 Maneuver	68	83	-	~ 60	91	-	-	-	-	-	-	-
Stage 1	325	346	-	381	398	-	-	-	-	-	-	-
Stage 2	375	370	-	291	344	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Ctrl Dly, s/v	59.46		260.84		0.24			0.49				
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	817	-	-	135	85	820	-	-				
HCM Lane V/C Ratio	0.026	-	-	0.541	1.229	0.051	-	-				
HCM Ctrl Dly (s/v)	9.5	-	-	59.5	260.8	9.6	-	-				
HCM Lane LOS	A	-	-	F	F	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	2.6	7.6	0.2	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekend MD

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	10	0	20	10	10	10	90	20	10	70	0
Future Vol, veh/h	0	10	0	20	10	10	10	90	20	10	70	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	11	0	22	11	11	11	97	22	11	75	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.5	7.6	7.8	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	0%	50%	13%
Vol Thru, %	75%	100%	25%	88%
Vol Right, %	17%	0%	25%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	10	40	80
LT Vol	10	0	20	10
Through Vol	90	10	10	70
RT Vol	20	0	10	0
Lane Flow Rate	129	11	43	86
Geometry Grp	1	1	1	1
Degree of Util (X)	0.144	0.013	0.052	0.1
Departure Headway (Hd)	4.026	4.468	4.382	4.168
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	884	806	822	853
Service Time	2.081	2.469	2.382	2.227
HCM Lane V/C Ratio	0.146	0.014	0.052	0.101
HCM Control Delay, s/veh	7.8	7.5	7.6	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0	0.2	0.3

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekend MD

Intersection												
Intersection Delay, s/veh	8.8											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	10	30	10	60	30	20	20	90	80	10	60	10
Future Vol, veh/h	10	30	10	60	30	20	20	90	80	10	60	10
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	12	37	12	74	37	25	25	111	99	12	74	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.3	8.9	9	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	20%	55%	13%
Vol Thru, %	47%	60%	27%	75%
Vol Right, %	42%	20%	18%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	50	110	80
LT Vol	20	10	60	10
Through Vol	90	30	30	60
RT Vol	80	10	20	10
Lane Flow Rate	235	62	136	99
Geometry Grp	1	1	1	1
Degree of Util (X)	0.281	0.082	0.18	0.127
Departure Headway (Hd)	4.318	4.795	4.778	4.641
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	833	746	750	771
Service Time	2.344	2.834	2.812	2.674
HCM Lane V/C Ratio	0.282	0.083	0.181	0.128
HCM Control Delay, s/veh	9	8.3	8.9	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.2	0.3	0.7	0.4

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekend MD

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	40	40	40	30	40	40	30	90	20	30	70	20
Future Vol, veh/h	40	40	40	30	40	40	30	90	20	30	70	20
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	48	48	48	36	48	48	36	108	24	36	84	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.9	8.8	9.2	9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	33%	27%	25%
Vol Thru, %	64%	33%	36%	58%
Vol Right, %	14%	33%	36%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	120	110	120
LT Vol	30	40	30	30
Through Vol	90	40	40	70
RT Vol	20	40	40	20
Lane Flow Rate	169	145	133	145
Geometry Grp	1	1	1	1
Degree of Util (X)	0.222	0.19	0.174	0.191
Departure Headway (Hd)	4.743	4.73	4.715	4.766
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	754	755	757	749
Service Time	2.794	2.78	2.767	2.819
HCM Lane V/C Ratio	0.224	0.192	0.176	0.194
HCM Control Delay, s/veh	9.2	8.9	8.8	9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.7	0.6	0.7

HCM 7th TWSC

32: Main St & Spring St

Saint Helena Streets Master Plan

Cumulative Conditions Plus Project Pope Weekend MD

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	60	80	540	550	40
Future Vol, veh/h	30	60	80	540	550	40
Conflicting Peds, #/hr	0	155	202	0	0	202
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	31	63	83	563	573	42
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1525	951	817	0	-	0
Stage 1	796	-	-	-	-	-
Stage 2	729	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	129	314	807	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	476	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	69	216	652	-	-	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	291	-	-	-	-	-
Stage 2	384	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	37.05	1.46		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	232	-	203	-	-	
HCM Lane V/C Ratio	0.128	-	0.461	-	-	
HCM Ctrl Dly (s/v)	11.3	0	37.1	-	-	
HCM Lane LOS	B	A	E	-	-	
HCM 95th %tile Q(veh)	0.4	-	2.2	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative Conditions Plus Project Pope Weekend MD

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	120	0	10	240	40	10	0	0	30	0	70
Future Vol, veh/h	30	120	0	10	240	40	10	0	0	30	0	70
Conflicting Peds, #/hr	10	0	7	7	0	10	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	34	135	0	11	270	45	11	0	0	34	0	79
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	325	0	0	142	0	0	503	556	142	527	534	304
Stage 1	-	-	-	-	-	-	209	209	-	325	325	-
Stage 2	-	-	-	-	-	-	294	347	-	202	209	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1229	-	-	1435	-	-	477	438	903	460	451	733
Stage 1	-	-	-	-	-	-	791	727	-	686	647	-
Stage 2	-	-	-	-	-	-	712	633	-	797	727	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1218	-	-	1425	-	-	405	414	897	438	426	725
Mov Cap-2 Maneuver	-	-	-	-	-	-	405	414	-	438	426	-
Stage 1	-	-	-	-	-	-	762	701	-	673	635	-
Stage 2	-	-	-	-	-	-	627	621	-	773	701	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.61			0.26			14.14			12.29		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	405	360	-	-	60	-	-	606				
HCM Lane V/C Ratio	0.028	0.028	-	-	0.008	-	-	0.185				
HCM Ctrl Dly (s/v)	14.1	8	0	-	7.5	0	-	12.3				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.7				

HCM 7th TWSC

Saint Helena Streets Master Plan

1: Spring Mountain Rd & Elmhurst Ave Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	10	110	10	50	0	70	20	20	100	0
Future Vol, veh/h	0	0	10	110	10	50	0	70	20	20	100	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	14	155	14	70	0	99	28	28	141	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	303	324	141	310	310	113	141	0	0	127	0	0
Stage 1	197	197	-	113	113	-	-	-	-	-	-	-
Stage 2	106	127	-	197	197	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	648	592	904	641	603	938	1436	-	-	1453	-	-
Stage 1	802	736	-	890	800	-	-	-	-	-	-	-
Stage 2	898	789	-	802	736	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	573	580	904	617	590	938	1436	-	-	1453	-	-
Mov Cap-2 Maneuver	573	580	-	617	590	-	-	-	-	-	-	-
Stage 1	785	720	-	890	800	-	-	-	-	-	-	-
Stage 2	816	789	-	773	720	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	9.04		13.07		0		1.25					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1436	-	-	904	684	300	-	-				
HCM Lane V/C Ratio	-	-	-	0.016	0.35	0.019	-	-				
HCM Ctrl Dly (s/v)	0	-	-	9	13.1	7.5	0	-				
HCM Lane LOS	A	-	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	1.6	0.1	-	-				

HCM 7th TWSC

Saint Helena Streets Master Plan

2: Hillview Pl & Spring Mountain Rd Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	170	20	0	70	20	10	10	10	20	10	10
Future Vol, veh/h	30	170	20	0	70	20	10	10	10	20	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	42	236	28	0	97	28	14	14	14	28	14	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	125	0	0	264	0	0	438	458	250	438	458	111
Stage 1	-	-	-	-	-	-	333	333	-	111	111	-
Stage 2	-	-	-	-	-	-	104	125	-	326	347	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1455	-	-	1294	-	-	528	498	786	528	498	939
Stage 1	-	-	-	-	-	-	678	642	-	892	802	-
Stage 2	-	-	-	-	-	-	899	791	-	684	633	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1455	-	-	1294	-	-	488	481	786	487	481	939
Mov Cap-2 Maneuver	-	-	-	-	-	-	488	481	-	487	481	-
Stage 1	-	-	-	-	-	-	655	620	-	892	802	-
Stage 2	-	-	-	-	-	-	871	791	-	635	612	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.03	0	12	12.26
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	556	240	-	-	1294	-	-	552
HCM Lane V/C Ratio	0.075	0.029	-	-	-	-	-	0.101
HCM Ctrl Dly (s/v)	12	7.5	0	-	0	-	-	12.3
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.3

HCM 7th TWSC

Saint Helena Streets Master Plan

3: Madrona Ave & Spring Mountain Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	6.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	41	140	100	49	92	108
Future Vol, veh/h	41	140	100	49	92	108
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	59	203	145	71	133	157
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	216	0	-	0	502	180
Stage 1	-	-	-	-	180	-
Stage 2	-	-	-	-	322	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1348	-	-	-	527	860
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	732	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1348	-	-	-	501	860
Mov Cap-2 Maneuver	-	-	-	-	501	-
Stage 1	-	-	-	-	806	-
Stage 2	-	-	-	-	732	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	1.77	0		15.01		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	408	-	-	-	647	
HCM Lane V/C Ratio	0.044	-	-	-	0.448	
HCM Ctrl Dly (s/v)	7.8	0	-	-	15	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	2.3	

HCM 7th TWSC

Saint Helena Streets Master Plan

4: Hudson Ave & Madrona Ave

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	5.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	88	40	10	41
Future Vol, veh/h	30	10	88	40	10	41
Conflicting Peds, #/hr	0	9	9	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	39	13	116	53	13	54
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	62	0	340	55
Stage 1	-	-	-	-	55	-
Stage 2	-	-	-	-	285	-
Critical Hdwy	-	-	4.16	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.254	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	1516	-	648	1001
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	754	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1503	-	591	992
Mov Cap-2 Maneuver	-	-	-	-	591	-
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	694	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.22		9.45	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	875	-	-	1238	-	
HCM Lane V/C Ratio	0.077	-	-	0.077	-	
HCM Ctrl Dly (s/v)	9.5	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-	

HCM 7th TWSC

5: Valley View St & Spring St

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	10.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	50	238	30	40	221
Future Vol, veh/h	40	50	238	30	40	221
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	58	72	345	43	58	320
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	133	0	831	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	733	-
Critical Hdwy	-	-	4.14	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.236	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1439	-	337	953
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	472	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1435	-	253	951
Mov Cap-2 Maneuver	-	-	-	-	253	-
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	355	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		7.37		17.16	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	669	-	-	1400	-	
HCM Lane V/C Ratio	0.566	-	-	0.24	-	
HCM Ctrl Dly (s/v)	17.2	-	-	8.3	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	3.6	-	-	0.9	-	

HCM 7th AWSC Saint Helena Streets Master Plan
 6: Crane Ave/Valley View St & Grayson Ave Alternative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Intersection Delay, s/veh	14.4					
Intersection LOS	B					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	180	101	60	210	118
Future Vol, veh/h	30	180	101	60	210	118
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	42	250	140	83	292	164
Number of Lanes	1	0	1	0	0	1
Approach	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		1	
Conflicting Approach Left	NB				WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right	SB		WB			
Conflicting Lanes Right	1		1		0	
HCM Control Delay, s/veh	12		10.7		17.8	
HCM LOS	B		B		C	
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	14%	64%			
Vol Thru, %	63%	0%	36%			
Vol Right, %	37%	86%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	161	210	328			
LT Vol	0	30	210			
Through Vol	101	0	118			
RT Vol	60	180	0			
Lane Flow Rate	224	292	456			
Geometry Grp	1	1	1			
Degree of Util (X)	0.322	0.421	0.659			
Departure Headway (Hd)	5.188	5.193	5.21			
Convergence, Y/N	Yes	Yes	Yes			
Cap	693	694	692			
Service Time	3.222	3.23	3.237			
HCM Lane V/C Ratio	0.323	0.421	0.659			
HCM Control Delay, s/veh	10.7	12	17.8			
HCM Lane LOS	B	B	C			
HCM 95th-tile Q	1.4	2.1	5			

HCM 7th TWSC

Saint Helena Streets Master Plan

7: Sulphur Spring Ave & Crane Ave Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	20	131	118	10
Future Vol, veh/h	10	10	20	131	118	10
Conflicting Peds, #/hr	2	0	0	2	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	14	14	28	182	164	14
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	212	0	-	0	163	121
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1353	-	-	-	825	928
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1350	-	-	-	813	926
Mov Cap-2 Maneuver	-	-	-	-	813	-
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	975	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.85	0		10.59		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	821	
HCM Lane V/C Ratio	0.01	-	-	-	0.217	
HCM Ctrl Dly (s/v)	7.7	0	-	-	10.6	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.8	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	10	0	10	30	0	30	10	720	40	30	900	10
Future Vol, veh/h	10	0	10	30	0	30	10	720	40	30	900	10
Conflicting Peds, #/hr	0	0	5	5	0	0	13	0	2	2	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	11	0	11	32	0	32	11	758	42	32	947	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1808	1852	971	1818	1836	781	971	0	0	802	0	0
Stage 1	1029	1029	-	802	802	-	-	-	-	-	-	-
Stage 2	779	823	-	1016	1034	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.18	6.58	6.28	4.18	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.572	4.072	3.372	2.272	-	-	2.272	-	-
Pot Cap-1 Maneuver	59	72	299	58	73	385	686	-	-	796	-	-
Stage 1	275	304	-	369	388	-	-	-	-	-	-	-
Stage 2	380	379	-	280	302	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	51	67	294	53	68	385	678	-	-	794	-	-
Mov Cap-2 Maneuver	51	67	-	53	68	-	-	-	-	-	-	-
Stage 1	261	288	-	362	381	-	-	-	-	-	-	-
Stage 2	343	373	-	258	286	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	59.77		103.35			0.13			0.31			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	678	-	-	86	92	794	-	-				
HCM Lane V/C Ratio	0.016	-	-	0.244	0.684	0.04	-	-				
HCM Ctrl Dly (s/v)	10.4	-	-	59.8	103.3	9.7	-	-				
HCM Lane LOS	B	-	-	F	F	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.9	3.4	0.1	-	-				

HCM 7th TWSC

9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	50	740	810	130
Future Vol, veh/h	30	30	50	740	810	130
Conflicting Peds, #/hr	0	4	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	31	31	52	771	844	135
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1794	923	987	0	-	0
Stage 1	919	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	85	319	677	-	-	-
Stage 1	379	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	73	315	672	-	-	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	65.5	0.68		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	114	-	118	-	-	
HCM Lane V/C Ratio	0.078	-	0.529	-	-	
HCM Ctrl Dly (s/v)	10.8	0	65.5	-	-	
HCM Lane LOS	B	A	F	-	-	
HCM 95th %tile Q(veh)	0.3	-	2.5	-	-	

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

10: Main St & Madrona Ave/Fulton Cumulative AM Plus Project Oak Charter Oak Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	50	22	20	60	80	19	550	20	120	540	180
Future Volume (veh/h)	160	50	22	20	60	80	19	550	20	120	540	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1287	1287	1811	1287	1287
Adj Flow Rate, veh/h	190	60	22	24	71	66	23	655	23	143	643	204
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	226	56	21	68	185	154	55	791	28	228	596	189
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	806	255	93	163	836	694	630	1234	43	737	930	295
Grp Volume(v), veh/h	272	0	0	161	0	0	23	0	678	143	0	847
Grp Sat Flow(s),veh/h/ln	1154	0	0	1694	0	0	630	0	1278	737	0	1224
Q Serve(g_s), s	18.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.8	23.9	0.0	83.3
Cycle Q Clear(g_c), s	28.8	0.0	0.0	10.7	0.0	0.0	83.3	0.0	52.8	76.7	0.0	83.3
Prop In Lane	0.70		0.08	0.15		0.41	1.00		0.03	1.00		0.24
Lane Grp Cap(c), veh/h	303	0	0	407	0	0	55	0	819	228	0	785
V/C Ratio(X)	0.90	0.00	0.00	0.40	0.00	0.00	0.42	0.00	0.83	0.63	0.00	1.08
Avail Cap(c_a), veh/h	303	0	0	407	0	0	55	0	819	228	0	785
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.7	0.0	0.0	43.6	0.0	0.0	65.0	0.0	17.9	47.2	0.0	23.4
Incr Delay (d2), s/veh	26.9	0.0	0.0	0.2	0.0	0.0	1.8	0.0	6.7	4.0	0.0	55.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.3	0.0	0.0	4.6	0.0	0.0	0.8	0.0	16.4	4.7	0.0	34.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.6	0.0	0.0	43.8	0.0	0.0	66.8	0.0	24.5	51.3	0.0	79.1
LnGrp LOS	E			D			E		C	D		F
Approach Vol, veh/h	272			161			701			990		
Approach Delay, s/veh	79.6			43.8			25.9			75.1		
Approach LOS	E			D			C			E		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	92.0			38.0			92.0			38.0		
Change Period (Y+Rc), s	8.7			9.2			8.7			9.2		
Max Green Setting (Gmax), s	83.3			28.8			83.3			28.8		
Max Q Clear Time (g_c+I1), s	85.3			30.8			85.3			12.7		
Green Ext Time (p_c), s	0.0			0.0			0.0			0.2		

Intersection Summary

HCM 7th Control Delay, s/veh

57.1

HCM 7th LOS

E

Notes

User approved pedestrian interval to be less than phase max green.

HCM 7th TWSC

11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	150	10	20	120	20
Future Vol, veh/h	30	150	10	20	120	20
Conflicting Peds, #/hr	0	1	1	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	45	224	15	30	179	30
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	270	0	220	158
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	63	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1288	-	766	885
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1287	-	754	884
Mov Cap-2 Maneuver	-	-	-	-	754	-
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	943	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		2.61		11.41	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	770	-	-	600	-	
HCM Lane V/C Ratio	0.271	-	-	0.012	-	
HCM Ctrl Dly (s/v)	11.4	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.1	-	-	0	-	

HCM 7th Signalized Intersection Summary
12: Main St & Adams St

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	90	40	30	70	40	50	489	50	70	442	70
Future Volume (veh/h)	60	90	40	30	70	40	50	489	50	70	442	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.96		0.94	0.97		0.92	1.00		0.99	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1796	1276	1276	1796	1276	1796
Adj Flow Rate, veh/h	63	94	31	31	73	25	52	509	48	73	460	67
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	130	148	43	99	177	53	133	530	50	157	514	75
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.08	0.46	0.46	0.09	0.48	0.48
Sat Flow, veh/h	420	907	262	253	1083	321	1711	1148	108	1711	1083	158
Grp Volume(v), veh/h	188	0	0	129	0	0	52	0	557	73	0	527
Grp Sat Flow(s),veh/h/ln	1588	0	0	1657	0	0	1711	0	1256	1711	0	1240
Q Serve(g_s), s	3.1	0.0	0.0	0.0	0.0	0.0	2.3	0.0	33.5	3.2	0.0	30.3
Cycle Q Clear(g_c), s	8.4	0.0	0.0	5.3	0.0	0.0	2.3	0.0	33.5	3.2	0.0	30.3
Prop In Lane	0.34		0.16	0.24		0.19	1.00		0.09	1.00		0.13
Lane Grp Cap(c), veh/h	322	0	0	328	0	0	133	0	580	157	0	589
V/C Ratio(X)	0.58	0.00	0.00	0.39	0.00	0.00	0.39	0.00	0.96	0.47	0.00	0.89
Avail Cap(c_a), veh/h	404	0	0	413	0	0	200	0	671	200	0	663
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.7	0.0	0.0	29.5	0.0	0.0	34.2	0.0	20.3	33.6	0.0	18.7
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.3	0.0	0.0	0.7	0.0	22.8	0.8	0.0	12.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.0	2.2	0.0	0.0	1.0	0.0	12.7	1.3	0.0	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.3	0.0	0.0	29.8	0.0	0.0	34.9	0.0	43.2	34.4	0.0	31.4
LnGrp LOS	C			C			C		D	C		C
Approach Vol, veh/h		188			129			609			600	
Approach Delay, s/veh		31.3			29.8			42.5			31.8	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.8	45.8		21.5	11.9	44.7		21.5				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	9.1	41.7		17.1	9.1	41.7		17.1				
Max Q Clear Time (g_c+I1), s	4.3	32.3		7.3	5.2	35.5		10.4				
Green Ext Time (p_c), s	0.0	0.6		0.1	0.0	0.5		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh				35.8								
HCM 7th LOS				D								

HCM 7th AWSC

Saint Helena Streets Master Plan

13: Railroad Ave & Adams St

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection												
Intersection Delay, s/veh 11.4												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	100	80	20	50	40	80	110	60	60	70	20
Future Vol, veh/h	30	100	80	20	50	40	80	110	60	60	70	20
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	37	122	98	24	61	49	98	134	73	73	85	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	11.5	10	12.4	10.7
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	32%	14%	18%	40%
Vol Thru, %	44%	48%	45%	47%
Vol Right, %	24%	38%	36%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	250	210	110	150
LT Vol	80	30	20	60
Through Vol	110	100	50	70
RT Vol	60	80	40	20
Lane Flow Rate	305	256	134	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.444	0.377	0.206	0.28
Departure Headway (Hd)	5.244	5.3	5.527	5.511
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	686	679	648	651
Service Time	3.285	3.343	3.578	3.557
HCM Lane V/C Ratio	0.445	0.377	0.207	0.281
HCM Control Delay, s/veh	12.4	11.5	10	10.7
HCM Lane LOS	B	B	A	B
HCM 95th-ile Q	2.3	1.8	0.8	1.1

HCM 7th TWSC

14: Library Ln & Adams St

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	90	30	0	30	10	10	0	0	0	0	10
Future Vol, veh/h	40	90	30	0	30	10	10	0	0	0	0	10
Conflicting Peds, #/hr	6	0	4	4	0	6	2	0	4	4	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	53	118	39	0	39	13	13	0	0	0	0	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	162	0	0	289	306	146	280	319	54
Stage 1	-	-	-	-	-	-	247	247	-	52	52	-
Stage 2	-	-	-	-	-	-	41	59	-	228	267	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1539	-	-	1411	-	-	661	606	898	671	596	1010
Stage 1	-	-	-	-	-	-	754	700	-	958	850	-
Stage 2	-	-	-	-	-	-	971	844	-	773	686	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1530	-	-	1405	-	-	624	577	891	639	568	1003
Mov Cap-2 Maneuver	-	-	-	-	-	-	624	577	-	639	568	-
Stage 1	-	-	-	-	-	-	723	671	-	953	845	-
Stage 2	-	-	-	-	-	-	956	839	-	741	658	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.86			0			10.89			8.64		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	624	429	-	-	1405	-	-	1003				
HCM Lane V/C Ratio	0.021	0.034	-	-	-	-	-	0.013				
HCM Ctrl Dly (s/v)	10.9	7.4	0	-	0	-	-	8.6				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0				

HCM 7th TWSC

15: Main St & Hunt Ave

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↗		↘	↗
Traffic Vol, veh/h	40	20	569	110	20	492
Future Vol, veh/h	40	20	569	110	20	492
Conflicting Peds, #/hr	22	0	0	17	17	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	42	21	599	116	21	518
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1256	674	0	0	732	0
Stage 1	674	-	-	-	-	-
Stage 2	582	-	-	-	-	-
Critical Hdwy	6.49	6.29	-	-	4.19	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	-	-	2.281	-
Pot Cap-1 Maneuver	183	443	-	-	842	-
Stage 1	494	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	172	436	-	-	828	-
Mov Cap-2 Maneuver	308	-	-	-	-	-
Stage 1	486	-	-	-	-	-
Stage 2	520	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	17.94	0		0.37		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	341	828	-	
HCM Lane V/C Ratio	-	-	0.185	0.025	-	
HCM Ctrl Dly (s/v)	-	-	17.9	9.5	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

16: Church St/Railroad Ave & Hunt Ave Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	50	60	20	10	40	190	10	10	10	140	10	10
Future Vol, veh/h	50	60	20	10	40	190	10	10	10	140	10	10
Conflicting Peds, #/hr	4	0	30	4	0	30	3	0	4	4	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	63	75	25	13	50	238	13	13	13	175	13	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	318	0	0	130	0	0	327	585	122	434	479	202
Stage 1	-	-	-	-	-	-	243	243	-	224	224	-
Stage 2	-	-	-	-	-	-	84	343	-	210	255	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1237	-	-	1449	-	-	624	422	927	530	484	837
Stage 1	-	-	-	-	-	-	759	703	-	777	717	-
Stage 2	-	-	-	-	-	-	921	636	-	790	695	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1202	-	-	1408	-	-	541	372	897	458	427	810
Mov Cap-2 Maneuver	-	-	-	-	-	-	541	372	-	458	427	-
Stage 1	-	-	-	-	-	-	696	645	-	746	689	-
Stage 2	-	-	-	-	-	-	878	611	-	719	637	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.14			0.32			12.3			18.27		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	531	659	-	-	64	-	-	469				
HCM Lane V/C Ratio	0.071	0.052	-	-	0.009	-	-	0.427				
HCM Ctrl Dly (s/v)	12.3	8.2	0	-	7.6	0	-	18.3				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	-	2.1				

HCM 7th TWSC

17: Oak Ave & Mitchell Dr

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection												
Int Delay, s/veh	9.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	30	0	10	40	60	10	90	10	120	110	20
Future Vol, veh/h	10	30	0	10	40	60	10	90	10	120	110	20
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	92	92	87	87	92	92	92	87	92	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	34	0	11	46	69	11	98	11	138	120	23
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	118	0	0	34	0	0	186	197	34	212	163	84
Stage 1	-	-	-	-	-	-	57	57	-	105	105	-
Stage 2	-	-	-	-	-	-	128	140	-	106	57	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1464	-	-	1570	-	-	773	697	1036	743	728	972
Stage 1	-	-	-	-	-	-	952	845	-	898	806	-
Stage 2	-	-	-	-	-	-	873	779	-	897	845	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1460	-	-	1570	-	-	619	684	1036	620	715	968
Mov Cap-2 Maneuver	-	-	-	-	-	-	619	684	-	620	715	-
Stage 1	-	-	-	-	-	-	944	838	-	889	798	-
Stage 2	-	-	-	-	-	-	718	771	-	777	838	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.87			0.63			11.21			14		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	699	450	-	-	139	-	-	678				
HCM Lane V/C Ratio	0.171	0.008	-	-	0.007	-	-	0.413				
HCM Ctrl Dly (s/v)	11.2	7.5	0	-	7.3	0	-	14				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	2				

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

18: Main St & Mitchell Dr/Pope St Cumulative AM Plus Project Oak Charter Oak Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	170	200	40	150	80	629	80	100	472	10
Future Volume (veh/h)	0	0	170	200	40	150	80	629	80	100	472	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1287	1287	1811	1287	1287
Adj Flow Rate, veh/h	0	0	173	204	41	47	82	642	82	102	482	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	0	25	113	223	45	229	104	647	83	123	743	15
Arrive On Green	0.00	0.00	0.01	0.15	0.15	0.15	0.06	0.58	0.58	0.07	0.59	0.59
Sat Flow, veh/h	0	1811	1535	1448	291	1490	1725	1115	142	1725	1256	26
Grp Volume(v), veh/h	0	0	173	245	0	47	82	0	724	102	0	492
Grp Sat Flow(s),veh/h/ln	0	1811	1535	1739	0	1490	1725	0	1257	1725	0	1282
Q Serve(g_s), s	0.0	0.0	2.0	20.0	0.0	4.0	6.8	0.0	82.3	8.4	0.0	36.7
Cycle Q Clear(g_c), s	0.0	0.0	2.0	20.0	0.0	4.0	6.8	0.0	82.3	8.4	0.0	36.7
Prop In Lane	0.00		1.00	0.83		1.00	1.00		0.11	1.00		0.02
Lane Grp Cap(c), veh/h	0	25	113	268	0	229	104	0	730	123	0	758
V/C Ratio(X)	0.00	0.00	1.53	0.92	0.00	0.20	0.79	0.00	0.99	0.83	0.00	0.65
Avail Cap(c_a), veh/h	0	25	113	344	0	295	245	0	730	149	0	758
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	66.9	60.2	0.0	53.4	67.0	0.0	30.0	66.2	0.0	19.6
Incr Delay (d2), s/veh	0.0	0.0	276.2	21.7	0.0	0.2	5.0	0.0	31.3	23.2	0.0	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	12.9	10.5	0.0	1.5	3.2	0.0	30.5	4.5	0.0	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	343.1	81.9	0.0	53.5	72.0	0.0	61.2	89.4	0.0	21.1
LnGrp LOS			F	F		D	E		E	F		C
Approach Vol, veh/h	173			292			806			594		
Approach Delay, s/veh	343.1			77.3			62.3			32.8		
Approach LOS	F			E			E			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.4	93.1		31.9	15.0	91.5		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	20.5	72.8		28.6	12.5	* 84		2.0				
Max Q Clear Time (g_c+I1), s	8.8	38.7		22.0	10.4	84.3		4.0				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	0.0		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh 81.3

HCM 7th LOS F

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

19: Main St & Grayson Avenue

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	80	70	50	929	852	120
Future Volume (veh/h)	80	70	50	929	852	120
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	0.99	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1266	1266	1266
Adj Flow Rate, veh/h	87	55	54	1010	926	127
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	8	8	8	8	8
Cap, veh/h	75	47	91	1053	810	111
Arrive On Green	0.08	0.08	0.05	0.83	0.75	0.75
Sat Flow, veh/h	983	621	1697	1266	1086	149
Grp Volume(v), veh/h	143	0	54	1010	0	1053
Grp Sat Flow(s), veh/h/ln	1616	0	1697	1266	0	1235
Q Serve(g_s), s	11.3	0.0	4.6	99.1	0.0	111.2
Cycle Q Clear(g_c), s	11.3	0.0	4.6	99.1	0.0	111.2
Prop In Lane	0.61	0.38	1.00			0.12
Lane Grp Cap(c), veh/h	122	0	91	1053	0	921
V/C Ratio(X)	1.17	0.00	0.59	0.96	0.00	1.14
Avail Cap(c_a), veh/h	122	0	102	1095	0	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	68.9	0.0	68.9	10.5	0.0	18.9
Incr Delay (d2), s/veh	133.3	0.0	3.6	17.7	0.0	77.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	2.1	24.4	0.0	46.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	202.1	0.0	72.5	28.1	0.0	96.2
LnGrp LOS	F		E	C		F
Approach Vol, veh/h	143			1064	1053	
Approach Delay, s/veh	202.1			30.4	96.2	
Approach LOS	F			C	F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	2.7	120.3			133.0	16.0
Change Period (Y+Rc), s	4.7	9.1			* 9.1	4.7
Max Green Setting (Gmax), s	9.1	111.2			* 1.3E+02	11.3
Max Q Clear Time (g_c+I), s	10.6	113.2			101.1	13.3
Green Ext Time (p_c), s	0.0	0.0			1.2	0.0
Intersection Summary						
HCM 7th Control Delay, s/veh			71.9			
HCM 7th LOS			E			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC

Saint Helena Streets Master Plan

20: Main St & Sulphur Springs Ave Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	108	91	959	882	40
Future Vol, veh/h	20	108	91	959	882	40
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	9	9	9	9	9	9
Mvmt Flow	20	109	92	969	891	40
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2065	912	932	0	-	0
Stage 1	912	-	-	-	-	-
Stage 2	1153	-	-	-	-	-
Critical Hdwy	6.49	6.29	4.19	-	-	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	2.281	-	-	-
Pot Cap-1 Maneuver	57	322	706	-	-	-
Stage 1	381	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	50	322	705	-	-	-
Mov Cap-2 Maneuver	164	-	-	-	-	-
Stage 1	331	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	23.1	0.94		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	705	-	164	322	-	-
HCM Lane V/C Ratio	0.13	-	0.123	0.339	-	-
HCM Ctrl Dly (s/v)	10.9	-	30	21.8	-	-
HCM Lane LOS	B	-	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	0.4	1.5	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	80	20	30	110	10
Future Vol, veh/h	20	80	20	30	110	10
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	24	95	24	36	131	12
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7.4	7.8	8.4
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	92%	0%	40%
Vol Thru, %	0%	20%	60%
Vol Right, %	8%	80%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	120	100	50
LT Vol	110	0	20
Through Vol	0	20	30
RT Vol	10	80	0
Lane Flow Rate	143	119	60
Geometry Grp	1	1	1
Degree of Util (X)	0.174	0.128	0.074
Departure Headway (Hd)	4.392	3.878	4.488
Convergence, Y/N	Yes	Yes	Yes
Cap	807	930	802
Service Time	2.473	1.88	2.491
HCM Lane V/C Ratio	0.177	0.128	0.075
HCM Control Delay, s/veh	8.4	7.4	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.4	0.2

HCM 7th TWSC

22: Pope Street & Starr Ave

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	210	390	90	100	30
Future Vol, veh/h	10	210	390	90	100	30
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	266	494	114	127	38
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	609	0	-	0	844	553
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	292	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	965	-	-	-	332	531
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	755	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	964	-	-	-	327	530
Mov Cap-2 Maneuver	-	-	-	-	327	-
Stage 1	-	-	-	-	566	-
Stage 2	-	-	-	-	755	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.4	0		23.3		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	82	-	-	-	358	
HCM Lane V/C Ratio	0.013	-	-	-	0.459	
HCM Ctrl Dly (s/v)	8.8	0	-	-	23.3	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	2.3	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Capistrano St/AM Plus Project Oak Charter Oak Weekday AM

Intersection												
Int Delay, s/veh	15.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	180	120	90	320	10	120	0	50	10	10	20
Future Vol, veh/h	20	180	120	90	320	10	120	0	50	10	10	20
Conflicting Peds, #/hr	2	0	1	1	0	2	3	0	1	1	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	26	234	156	117	416	13	156	0	65	13	13	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	431	0	0	391	0	0	1023	1029	314	945	1100	427
Stage 1	-	-	-	-	-	-	365	365	-	658	658	-
Stage 2	-	-	-	-	-	-	659	664	-	287	443	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1124	-	-	1162	-	-	213	233	724	241	211	625
Stage 1	-	-	-	-	-	-	652	622	-	452	460	-
Stage 2	-	-	-	-	-	-	451	457	-	719	574	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1121	-	-	1161	-	-	167	204	723	192	185	622
Mov Cap-2 Maneuver	-	-	-	-	-	-	167	204	-	192	185	-
Stage 1	-	-	-	-	-	-	637	607	-	405	413	-
Stage 2	-	-	-	-	-	-	376	410	-	638	560	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.52	1.81	78.63	20.14
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	167	723	1121	-	-	1161	-	-	289
HCM Lane V/C Ratio	0.931	0.09	0.023	-	-	0.101	-	-	0.18
HCM Ctrl Dly (s/v)	107	10.5	8.3	-	-	8.4	-	-	20.1
HCM Lane LOS	F	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	7	0.3	0.1	-	-	0.3	-	-	0.6

HCM 7th TWSC

24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	20	30	560	630	30
Future Vol, veh/h	20	20	30	560	630	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	21	21	31	583	656	31
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1318	672	688	0	-	0
Stage 1	672	-	-	-	-	-
Stage 2	646	-	-	-	-	-
Critical Hdwy	6.46	6.26	4.16	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	2.254	-	-	-
Pot Cap-1 Maneuver	170	449	888	-	-	-
Stage 1	500	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	161	449	888	-	-	-
Mov Cap-2 Maneuver	161	-	-	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	23.37	0.47		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	92	-	237	-	-	
HCM Lane V/C Ratio	0.035	-	0.176	-	-	
HCM Ctrl Dly (s/v)	9.2	0	23.4	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

25: Silverado Trail & Howell Mountain Rd Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	10	580	40	10	640
Future Vol, veh/h	30	10	580	40	10	640
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	31	10	592	41	10	653
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1287	612	0	0	633	0
Stage 1	612	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.16	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.254	-
Pot Cap-1 Maneuver	178	486	-	-	931	-
Stage 1	533	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	176	486	-	-	931	-
Mov Cap-2 Maneuver	314	-	-	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	16.86	0		0.14		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	344	931	-	
HCM Lane V/C Ratio	-	-	0.119	0.011	-	
HCM Ctrl Dly (s/v)	-	-	16.9	8.9	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.4	0	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

26: Silverado Trail & Pope Street Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	9.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	140	100	220	480	450	220
Future Vol, veh/h	140	100	220	480	450	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	149	106	234	511	479	234
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1457	479	713	0	-	0
Stage 1	479	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	~ 141	583	878	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 104	583	878	-	-	-
Mov Cap-2 Maneuver	230	-	-	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	54.83	3.33		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	878	-	308	-	-	
HCM Lane V/C Ratio	0.267	-	0.83	-	-	
HCM Ctrl Dly (s/v)	10.6	-	54.8	-	-	
HCM Lane LOS	B	-	F	-	-	
HCM 95th %tile Q(veh)	1.1	-	7	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

HCM 7th TWSC

27: Main St & Mills Ln

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↗	↖	
Traffic Vol, veh/h	0	0	0	0	0	10	0	999	10	10	972	10
Future Vol, veh/h	0	0	0	0	0	10	0	999	10	10	972	10
Conflicting Peds, #/hr	0	0	0	0	0	0	15	0	1	1	0	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	0	0	0	0	0	11	0	1074	11	11	1045	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2161	2173	1066	2147	2173	1081	1071	0	0	1086	0	0
Stage 1	1087	1087	-	1081	1081	-	-	-	-	-	-	-
Stage 2	1074	1086	-	1067	1092	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.18	6.58	6.28	4.18	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.572	4.072	3.372	2.272	-	-	2.272	-	-
Pot Cap-1 Maneuver	33	45	263	34	45	258	629	-	-	620	-	-
Stage 1	255	285	-	257	287	-	-	-	-	-	-	-
Stage 2	259	285	-	262	283	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	31	43	259	33	43	257	620	-	-	620	-	-
Mov Cap-2 Maneuver	31	43	-	33	43	-	-	-	-	-	-	-
Stage 1	247	276	-	257	287	-	-	-	-	-	-	-
Stage 2	248	285	-	257	274	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	0		19.59		0		0.11					
HCM LOS	A		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	620	-	-	-	257	620	-	-				
HCM Lane V/C Ratio	-	-	-	-	0.042	0.017	-	-				
HCM Ctrl Dly (s/v)	0	-	-	0	19.6	10.9	-	-				
HCM Lane LOS	A	-	-	A	C	B	-	-				
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.1	-	-				

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

28: Main St & Charter Oak Ave

Cumulative AM Plus Project Oak Charter Oak Weekday AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	10	120	70	10	10	110	769	130	10	802	30
Future Volume (veh/h)	10	10	120	70	10	10	110	769	130	10	802	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1413	1413	1413	1413	1413	1413	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	10	10	14	72	10	6	113	793	129	10	827	30
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	27	27	37	119	17	10	140	887	144	21	894	32
Arrive On Green	0.07	0.07	0.07	0.11	0.11	0.11	0.08	0.60	0.60	0.01	0.53	0.53
Sat Flow, veh/h	382	382	534	1096	152	91	1682	1480	241	1682	1692	61
Grp Volume(v), veh/h	34	0	0	88	0	0	113	0	922	10	0	857
Grp Sat Flow(s),veh/h/ln	1298	0	0	1340	0	0	1682	0	1721	1682	0	1753
Q Serve(g_s), s	2.2	0.0	0.0	5.6	0.0	0.0	5.9	0.0	41.5	0.5	0.0	40.5
Cycle Q Clear(g_c), s	2.2	0.0	0.0	5.6	0.0	0.0	5.9	0.0	41.5	0.5	0.0	40.5
Prop In Lane	0.29		0.41	0.82		0.07	1.00		0.14	1.00		0.04
Lane Grp Cap(c), veh/h	91	0	0	146	0	0	140	0	1031	21	0	926
V/C Ratio(X)	0.37	0.00	0.00	0.60	0.00	0.00	0.81	0.00	0.89	0.48	0.00	0.93
Avail Cap(c_a), veh/h	247	0	0	166	0	0	159	0	1111	96	0	1066
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.8	0.0	0.0	38.1	0.0	0.0	40.4	0.0	15.5	44.0	0.0	19.5
Incr Delay (d2), s/veh	2.5	0.0	0.0	4.8	0.0	0.0	23.1	0.0	9.1	16.4	0.0	12.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	2.0	0.0	0.0	3.3	0.0	17.1	0.3	0.0	17.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.4	0.0	0.0	42.9	0.0	0.0	63.5	0.0	24.6	60.4	0.0	31.8
LnGrp LOS	D			D			E		C	E		C
Approach Vol, veh/h	34			88			1035			867		
Approach Delay, s/veh	42.4			42.9			28.9			32.1		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	58.4		11.0	12.2	52.1		14.5				
Change Period (Y+Rc), s	4.7	4.7		4.7	4.7	4.7		4.7				
Max Green Setting (Gmax), s	5.1	57.9		17.1	8.5	54.5		11.1				
Max Q Clear Time (g_c+I1), s	2.5	43.5		4.2	7.9	42.5		7.6				
Green Ext Time (p_c), s	0.0	6.6		0.1	0.0	4.9		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh	31.1											
HCM 7th LOS	C											

HCM 7th AWSC

29: Oak Ave & Pine St

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection												
Intersection Delay, s/veh12.1												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	10	10	10	30	10	20	10	160	20	20	240	10
Future Vol, veh/h	10	10	10	30	10	20	10	160	20	20	240	10
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	16	16	48	16	32	16	254	32	32	381	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh9.2		9.7	11.1	13.6
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	33%	50%	7%
Vol Thru, %	84%	33%	17%	89%
Vol Right, %	11%	33%	33%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	30	60	270
LT Vol	10	10	30	20
Through Vol	160	10	10	240
RT Vol	20	10	20	10
Lane Flow Rate	302	48	95	429
Geometry Grp	1	1	1	1
Degree of Util (X)	0.4	0.076	0.15	0.558
Departure Headway (Hd)	4.78	5.757	5.684	4.685
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	745	626	634	763
Service Time	2.859	3.759	3.685	2.756
HCM Lane V/C Ratio	0.405	0.077	0.15	0.562
HCM Control Delay, s/veh	11.1	9.2	9.7	13.6
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	1.9	0.2	0.5	3.5

HCM 7th AWSC

30: Oak Ave & Adams St

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection	
Intersection Delay, s/veh	20
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	70	70	40	50	30	30	170	80	30	230	30
Future Vol, veh/h	10	70	70	40	50	30	30	170	80	30	230	30
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	15	103	103	59	74	44	44	250	118	44	338	44
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	4.4	13.7	21.7	23.8
HCM LOS	B	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	7%	33%	10%
Vol Thru, %	61%	47%	42%	79%
Vol Right, %	29%	47%	25%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	280	150	120	290
LT Vol	30	10	40	30
Through Vol	170	70	50	230
RT Vol	80	70	30	30
Lane Flow Rate	412	221	176	426
Geometry Grp	1	1	1	1
Degree of Util (X)	0.692	0.41	0.343	0.725
Departure Headway (Hd)	6.052	6.694	7.007	6.122
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	593	534	510	589
Service Time	4.117	4.772	5.09	4.186
HCM Lane V/C Ratio	0.695	0.414	0.345	0.723
HCM Control Delay, s/veh	21.7	14.4	13.7	23.8
HCM Lane LOS	C	B	B	C
HCM 95th-ile Q	5.4	2	1.5	6.1

HCM 7th AWSC

31: Oak Ave & Spring St

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection												
Intersection Delay, s/veh 17.4												
Intersection LOS C												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	70	40	10	70	80	20	170	20	50	230	30
Future Vol, veh/h	40	70	40	10	70	80	20	170	20	50	230	30
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	56	97	56	14	97	111	28	236	28	69	319	42
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh 13.7		13.6	15.4	22.4
HCM LOS	B	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	27%	6%	16%
Vol Thru, %	81%	47%	44%	74%
Vol Right, %	10%	27%	50%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	210	150	160	310
LT Vol	20	40	10	50
Through Vol	170	70	70	230
RT Vol	20	40	80	30
Lane Flow Rate	292	208	222	431
Geometry Grp	1	1	1	1
Degree of Util (X)	0.503	0.381	0.394	0.712
Departure Headway (Hd)	6.208	6.585	6.38	5.952
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	580	544	562	607
Service Time	4.265	4.649	4.442	4.002
HCM Lane V/C Ratio	0.503	0.382	0.395	0.71
HCM Control Delay, s/veh	15.4	13.7	13.6	22.4
HCM Lane LOS	C	B	B	C
HCM 95th-ile Q	2.8	1.8	1.9	5.8

HCM 7th TWSC

32: Main St & Spring St

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	90	140	639	492	40
Future Vol, veh/h	40	90	140	639	492	40
Conflicting Peds, #/hr	0	10	8	0	0	8
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	8	8	8	8	8	8
Mvmt Flow	42	94	146	666	513	42
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1499	551	562	0	-	0
Stage 1	541	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.18	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.272	-	-	-
Pot Cap-1 Maneuver	130	522	980	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	364	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	98	514	972	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	432	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	20.42	1.68		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	323	-	367	-	-	
HCM Lane V/C Ratio	0.15	-	0.369	-	-	
HCM Ctrl Dly (s/v)	9.4	0	20.4	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.5	-	1.7	-	-	

HCM 7th TWSC

33: Pope St & Church St

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	150	0	0	370	100	10	0	10	30	10	70
Future Vol, veh/h	30	150	0	0	370	100	10	0	10	30	10	70
Conflicting Peds, #/hr	16	0	4	4	0	16	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	32	161	0	0	398	108	11	0	11	32	11	75
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	521	0	0	165	0	0	634	751	166	694	697	469
Stage 1	-	-	-	-	-	-	230	230	-	468	468	-
Stage 2	-	-	-	-	-	-	404	521	-	227	230	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1040	-	-	1407	-	-	390	338	875	356	363	593
Stage 1	-	-	-	-	-	-	771	712	-	574	560	-
Stage 2	-	-	-	-	-	-	621	530	-	774	712	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1024	-	-	1401	-	-	317	320	871	334	344	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	317	320	-	334	344	-
Stage 1	-	-	-	-	-	-	741	685	-	565	551	-
Stage 2	-	-	-	-	-	-	530	522	-	737	685	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.44			0			13.12			15.51		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	465	300	-	-	1401	-	-	460				
HCM Lane V/C Ratio	0.046	0.032	-	-	-	-	-	0.257				
HCM Ctrl Dly (s/v)	13.1	8.6	0	-	0	-	-	15.5				
HCM Lane LOS	B	A	A	-	A	-	-	C				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	1				

HCM 7th TWSC

Saint Helena Streets Master Plan

36: Charter Oak Ave & Oak Ave Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	30	60	90	110	0
Future Vol, veh/h	10	30	60	90	110	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	33	65	98	120	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	163	0	-	0	168	-
Stage 1	-	-	-	-	114	-
Stage 2	-	-	-	-	54	-
Critical Hdwy	4.13	-	-	-	6.43	-
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	-
Pot Cap-1 Maneuver	1410	-	-	-	820	0
Stage 1	-	-	-	-	908	0
Stage 2	-	-	-	-	966	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1410	-	-	-	813	-
Mov Cap-2 Maneuver	-	-	-	-	813	-
Stage 1	-	-	-	-	901	-
Stage 2	-	-	-	-	966	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	1.89	0		10.19		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	450	-	-	-	813	
HCM Lane V/C Ratio	0.008	-	-	-	0.147	
HCM Ctrl Dly (s/v)	7.6	0	-	-	10.2	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.5	

HCM 7th AWSC

37: Oak Ave & Madrona Ave

Saint Helena Streets Master Plan

Cumulative AM Plus Project Oak Charter Oak Weekday AM

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	122	90	110	119	10	45	5	100	10	10	0
Future Vol, veh/h	10	122	90	110	119	10	45	5	100	10	10	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	133	98	120	129	11	49	5	109	11	11	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9.4	10.3	9.2	8.7
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	30%	5%	46%	50%
Vol Thru, %	3%	55%	50%	50%
Vol Right, %	67%	41%	4%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	150	222	239	20
LT Vol	45	10	110	10
Through Vol	5	122	119	10
RT Vol	100	90	10	0
Lane Flow Rate	163	241	260	22
Geometry Grp	1	1	1	1
Degree of Util (X)	0.216	0.3	0.342	0.033
Departure Headway (Hd)	4.779	4.473	4.737	5.428
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	747	799	756	655
Service Time	2.835	2.523	2.786	3.502
HCM Lane V/C Ratio	0.218	0.302	0.344	0.034
HCM Control Delay, s/veh	9.2	9.4	10.3	8.7
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.8	1.3	1.5	0.1

HCM 7th TWSC

Saint Helena Streets Master Plan

1: Spring Mountain Rd & Elmhurst Ave Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	10	40	0	30	10	70	50	50	100	10
Future Vol, veh/h	0	0	10	40	0	30	10	70	50	50	100	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	14	56	0	42	14	99	70	70	141	14

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	415	486	148	444	458	134	155	0
Stage 1	289	289	-	162	162	-	-	-
Stage 2	127	197	-	282	296	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-
Pot Cap-1 Maneuver	546	480	896	523	498	913	1419	-
Stage 1	717	671	-	838	762	-	-	-
Stage 2	875	736	-	723	667	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	486	449	896	481	465	913	1419	-
Mov Cap-2 Maneuver	486	449	-	481	465	-	-	-
Stage 1	677	634	-	829	754	-	-	-
Stage 2	825	728	-	672	630	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	9.08	12.13	0.58	2.41
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	128	-	-	896	603	552	-
HCM Lane V/C Ratio	0.01	-	-	0.016	0.163	0.05	-
HCM Ctrl Dly (s/v)	7.6	0	-	9.1	12.1	7.7	0
HCM Lane LOS	A	A	-	A	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0.6	0.2	-

HCM 7th TWSC

Saint Helena Streets Master Plan

2: Hillview Pl & Spring Mountain Rd Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	110	10	10	100	10	10	10	10	10	10	20
Future Vol, veh/h	30	110	10	10	100	10	10	10	10	10	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	42	153	14	14	139	14	14	14	14	14	14	28
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	153	0	0	167	0	0	417	424	160	417	424	146
Stage 1	-	-	-	-	-	-	243	243	-	174	174	-
Stage 2	-	-	-	-	-	-	174	181	-	243	250	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1422	-	-	1405	-	-	545	521	883	545	521	899
Stage 1	-	-	-	-	-	-	758	703	-	826	753	-
Stage 2	-	-	-	-	-	-	826	748	-	758	698	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1422	-	-	1405	-	-	492	498	883	499	498	899
Mov Cap-2 Maneuver	-	-	-	-	-	-	492	498	-	499	498	-
Stage 1	-	-	-	-	-	-	734	680	-	817	745	-
Stage 2	-	-	-	-	-	-	777	740	-	707	675	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.52			0.63			11.69			11.14		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	580	354	-	-	147	-	-	642				
HCM Lane V/C Ratio	0.072	0.029	-	-	0.01	-	-	0.087				
HCM Ctrl Dly (s/v)	11.7	7.6	0	-	7.6	0	-	11.1				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.3				

HCM 7th TWSC

Saint Helena Streets Master Plan

3: Madrona Ave & Spring Mountain Rd Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	56	110	80	54	104	36
Future Vol, veh/h	56	110	80	54	104	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	81	159	116	78	151	52
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	194	0	-	0	477	155
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	322	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1373	-	-	-	545	888
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	732	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1373	-	-	-	510	888
Mov Cap-2 Maneuver	-	-	-	-	510	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	732	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	2.63	0		14.7		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	607	-	-	-	573	
HCM Lane V/C Ratio	0.059	-	-	-	0.354	
HCM Ctrl Dly (s/v)	7.8	0	-	-	14.7	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.2	-	-	-	1.6	

HCM 7th TWSC

4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	5.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	56	20	10	46
Future Vol, veh/h	30	10	56	20	10	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	37	12	68	24	12	56
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	49	0	204	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	161	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1552	-	783	1025
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	865	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1552	-	748	1025
Mov Cap-2 Maneuver	-	-	-	-	748	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	827	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.47		9.03	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	961	-	-	1326	-	
HCM Lane V/C Ratio	0.071	-	-	0.044	-	
HCM Ctrl Dly (s/v)	9	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	

HCM 7th TWSC

5: Valley View St & Spring St

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	7.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	60	40	146	50	40	206
Future Vol, veh/h	60	40	146	50	40	206
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	70	47	170	58	47	240
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	118	0	493	95
Stage 1	-	-	-	-	95	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1464	-	534	959
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	676	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1461	-	469	957
Mov Cap-2 Maneuver	-	-	-	-	469	-
Stage 1	-	-	-	-	924	-
Stage 2	-	-	-	-	595	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		5.8		11.74	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	818	-	-	1341	-	
HCM Lane V/C Ratio	0.35	-	-	0.116	-	
HCM Ctrl Dly (s/v)	11.7	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.6	-	-	0.4	-	

HCM 7th AWSC

Saint Helena Streets Master Plan

6: Crane Ave/Valley View St & Grayson Ave Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Intersection Delay, s/veh	9.2					
Intersection LOS	A					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	90	166	30	70	146
Future Vol, veh/h	10	90	166	30	70	146
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	12	105	193	35	81	170
Number of Lanes	1	0	1	0	0	1
Approach	WB		NB		SB	
Opposing Approach			SB		NB	
Opposing Lanes	0		1		1	
Conflicting Approach Left	NB				WB	
Conflicting Lanes Left	1		0		1	
Conflicting Approach Right	SB		WB			
Conflicting Lanes Right	1		1		0	
HCM Control Delay, s/veh	8.3		9.1		9.6	
HCM LOS	A		A		A	
Lane	NBLn1	WBLn1	SBLn1			
Vol Left, %	0%	10%	32%			
Vol Thru, %	85%	0%	68%			
Vol Right, %	15%	90%	0%			
Sign Control	Stop	Stop	Stop			
Traffic Vol by Lane	196	100	216			
LT Vol	0	10	70			
Through Vol	166	0	146			
RT Vol	30	90	0			
Lane Flow Rate	228	116	251			
Geometry Grp	1	1	1			
Degree of Util (X)	0.279	0.145	0.316			
Departure Headway (Hd)	4.403	4.497	4.527			
Convergence, Y/N	Yes	Yes	Yes			
Cap	816	797	794			
Service Time	2.427	2.528	2.552			
HCM Lane V/C Ratio	0.279	0.146	0.316			
HCM Control Delay, s/veh	9.1	8.3	9.6			
HCM Lane LOS	A	A	A			
HCM 95th-tile Q	1.1	0.5	1.4			

HCM 7th TWSC

Saint Helena Streets Master Plan

7: Sulphur Spring Ave & Crane Ave

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	4.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	40	30	146	126	20
Future Vol, veh/h	30	40	30	146	126	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	38	51	38	187	162	26
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	226	0	-	0	260	132
Stage 1	-	-	-	-	132	-
Stage 2	-	-	-	-	128	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1337	-	-	-	726	915
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	895	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1337	-	-	-	705	915
Mov Cap-2 Maneuver	-	-	-	-	705	-
Stage 1	-	-	-	-	865	-
Stage 2	-	-	-	-	895	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.33	0		11.65		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	771	-	-	-	728	
HCM Lane V/C Ratio	0.029	-	-	-	0.257	
HCM Ctrl Dly (s/v)	7.8	0	-	-	11.7	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	1	

HCM 7th TWSC

8: Main St & Pratt Ave

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection												
Int Delay, s/veh	50.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	10	10	10	50	10	60	10	940	40	30	690	10
Future Vol, veh/h	10	10	10	50	10	60	10	940	40	30	690	10
Conflicting Peds, #/hr	0	0	0	0	0	0	12	0	1	1	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	11	11	57	11	69	11	1080	46	34	793	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1989	2030	811	1995	2013	1104	817	0	0	1127	0	0
Stage 1	880	880	-	1127	1127	-	-	-	-	-	-	-
Stage 2	1109	1150	-	868	886	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	45	57	378	~ 45	58	255	807	-	-	616	-	-
Stage 1	340	364	-	247	278	-	-	-	-	-	-	-
Stage 2	253	271	-	346	361	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	24	52	374	~ 32	54	255	798	-	-	615	-	-
Mov Cap-2 Maneuver	24	52	-	~ 32	54	-	-	-	-	-	-	-
Stage 1	318	339	-	243	274	-	-	-	-	-	-	-
Stage 2	174	267	-	306	337	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	188.2		\$ 735.1			0.1			0.46			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	798	-	-	47	60	615	-	-				
HCM Lane V/C Ratio	0.014	-	-	0.726	2.286	0.056	-	-				
HCM Ctrl Dly (s/v)	9.6	-	-	188.2	\$ 735.1	11.2	-	-				
HCM Lane LOS	A	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	0	-	-	2.9	13.5	0.2	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s										
+: Computation Not Defined		*: All major volume in platoon										

HCM 7th TWSC

9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	19.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	40	30	920	710	40
Future Vol, veh/h	70	40	30	920	710	40
Conflicting Peds, #/hr	0	1	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	80	45	34	1045	807	45
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1950	838	859	0	-	0
Stage 1	837	-	-	-	-	-
Stage 2	1114	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	~ 70	365	778	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 62	362	772	-	-	-
Mov Cap-2 Maneuver	~ 62	-	-	-	-	-
Stage 1	376	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	\$ 321.82	0.31		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	57	-	89	-	-	
HCM Lane V/C Ratio	0.044	-	1.407	-	-	
HCM Ctrl Dly (s/v)	9.9	0\$ 321.8		-	-	
HCM Lane LOS	A	A	F	-	-	
HCM 95th %tile Q(veh)	0.1	-	9.5	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

Fehr & Peers

Synchro 12 Report

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

10: Main St & Madrona Ave/Fulton Ln Cumulative Plus Project Weekday PM Oak Charter Oak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	50	14	20	50	180	24	590	20	80	550	120
Future Volume (veh/h)	180	50	14	20	50	180	24	590	20	80	550	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	191	53	13	21	53	100	26	628	20	85	585	119
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	274	59	14	69	143	230	119	734	23	203	613	125
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.58	0.58	0.58	0.58	0.58	0.58
Sat Flow, veh/h	886	251	61	114	611	979	737	1270	40	777	1062	216
Grp Volume(v), veh/h	257	0	0	174	0	0	26	0	648	85	0	704
Grp Sat Flow(s),veh/h/ln	1197	0	0	1704	0	0	737	0	1311	777	0	1278
Q Serve(g_s), s	11.6	0.0	0.0	0.0	0.0	0.0	3.3	0.0	39.3	9.8	0.0	49.3
Cycle Q Clear(g_c), s	20.2	0.0	0.0	8.6	0.0	0.0	52.6	0.0	39.3	49.1	0.0	49.3
Prop In Lane	0.74		0.05	0.12		0.57	1.00		0.03	1.00		0.17
Lane Grp Cap(c), veh/h	347	0	0	442	0	0	119	0	757	203	0	738
V/C Ratio(X)	0.74	0.00	0.00	0.39	0.00	0.00	0.22	0.00	0.86	0.42	0.00	0.95
Avail Cap(c_a), veh/h	387	0	0	490	0	0	135	0	784	219	0	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.3	0.0	0.0	31.2	0.0	0.0	43.7	0.0	16.8	37.3	0.0	18.9
Incr Delay (d2), s/veh	5.4	0.0	0.0	0.2	0.0	0.0	0.3	0.0	8.5	0.5	0.0	21.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	0.0	0.0	3.4	0.0	0.0	0.6	0.0	12.7	1.9	0.0	17.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.7	0.0	0.0	31.4	0.0	0.0	44.0	0.0	25.3	37.8	0.0	40.2
LnGrp LOS	D			C			D		C	D		D
Approach Vol, veh/h		257			174			674			789	
Approach Delay, s/veh		41.7			31.4			26.0			40.0	
Approach LOS		D			C			C			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		63.6		31.5		63.6		31.5				
Change Period (Y+Rc), s		8.7		9.2		8.7		9.2				
Max Green Setting (Gmax), s		56.9		25.2		56.9		25.2				
Max Q Clear Time (g_c+I1), s		51.3		10.6		54.6		22.2				
Green Ext Time (p_c), s		0.8		0.2		0.3		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh				34.5								
HCM 7th LOS				C								

HCM 7th TWSC

11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	6.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	110	10	30	210	10
Future Vol, veh/h	30	110	10	30	210	10
Conflicting Peds, #/hr	0	5	5	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	124	11	34	236	11
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	162	0	159	101
Stage 1	-	-	-	-	101	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1410	-	830	952
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	962	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1404	-	818	948
Mov Cap-2 Maneuver	-	-	-	-	818	-
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	952	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		1.9		11.24	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	823	-	-	450	-	
HCM Lane V/C Ratio	0.3	-	-	0.008	-	
HCM Ctrl Dly (s/v)	11.2	-	-	7.6	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.3	-	-	0	-	

HCM 7th Signalized Intersection Summary
12: Main St & Adams St

Saint Helena Streets Master Plan
Cumulative Plus Project Weekday PM Oak Charter Oak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	100	30	70	80	70	40	484	40	80	464	40
Future Volume (veh/h)	80	100	30	70	80	70	40	484	40	80	464	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.92		0.85	0.92		0.85	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1856
Adj Flow Rate, veh/h	85	106	26	74	85	55	43	515	40	85	494	40
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	149	156	33	136	133	73	120	535	42	164	563	46
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.07	0.44	0.44	0.09	0.47	0.47
Sat Flow, veh/h	451	791	169	395	676	370	1767	1205	94	1767	1199	97
Grp Volume(v), veh/h	217	0	0	214	0	0	43	0	555	85	0	534
Grp Sat Flow(s),veh/h/ln	1412	0	0	1441	0	0	1767	0	1298	1767	0	1296
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	1.9	0.0	34.5	3.8	0.0	30.9
Cycle Q Clear(g_c), s	12.2	0.0	0.0	11.5	0.0	0.0	1.9	0.0	34.5	3.8	0.0	30.9
Prop In Lane	0.39		0.12	0.35		0.26	1.00		0.07	1.00		0.07
Lane Grp Cap(c), veh/h	338	0	0	342	0	0	120	0	577	164	0	608
V/C Ratio(X)	0.64	0.00	0.00	0.63	0.00	0.00	0.36	0.00	0.96	0.52	0.00	0.88
Avail Cap(c_a), veh/h	354	0	0	358	0	0	193	0	648	193	0	647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.4	0.0	0.0	31.2	0.0	0.0	37.0	0.0	22.4	35.9	0.0	19.9
Incr Delay (d2), s/veh	2.7	0.0	0.0	2.3	0.0	0.0	0.7	0.0	24.1	0.9	0.0	11.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	0.0	4.2	0.0	0.0	0.9	0.0	13.7	1.7	0.0	10.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.1	0.0	0.0	33.5	0.0	0.0	37.6	0.0	46.5	36.8	0.0	31.8
LnGrp LOS	C			C			D		D	D		C
Approach Vol, veh/h	217			214			598			619		
Approach Delay, s/veh	34.1			33.5			45.9			32.5		
Approach LOS	C			C			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.4	47.7		25.0	12.4	45.6		25.0				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	9.1	41.5		17.3	9.1	41.5		17.3				
Max Q Clear Time (g_c+I1), s	3.9	32.9		13.5	5.8	36.5		14.2				
Green Ext Time (p_c), s	0.0	0.6		0.1	0.0	0.5		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh	37.7											
HCM 7th LOS	D											

HCM 7th AWSC

13: Railroad Ave & Adams St

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection												
Intersection Delay, s/veh 12.8												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	130	90	60	150	100	60	90	30	60	80	30
Future Vol, veh/h	20	130	90	60	150	100	60	90	30	60	80	30
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	144	100	67	167	111	67	100	33	67	89	33
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	2.3	14.2	12	11.8
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	8%	19%	35%
Vol Thru, %	50%	54%	48%	47%
Vol Right, %	17%	38%	32%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	180	240	310	170
LT Vol	60	20	60	60
Through Vol	90	130	150	80
RT Vol	30	90	100	30
Lane Flow Rate	200	267	344	189
Geometry Grp	1	1	1	1
Degree of Util (X)	0.331	0.406	0.518	0.314
Departure Headway (Hd)	5.957	5.487	5.412	5.977
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	600	651	661	597
Service Time	4.035	3.561	3.48	4.058
HCM Lane V/C Ratio	0.333	0.41	0.52	0.317
HCM Control Delay, s/veh	12	12.3	14.2	11.8
HCM Lane LOS	B	B	B	B
HCM 95th-ile Q	1.4	2	3	1.3

HCM 7th TWSC

14: Library Ln & Adams St

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	70	50	10	0	90	0	40	0	10	10	10	50
Future Vol, veh/h	70	50	10	0	90	0	40	0	10	10	10	50
Conflicting Peds, #/hr	4	0	5	5	0	4	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	74	53	11	0	95	0	42	0	11	11	11	53
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	99	0	0	68	0	0	310	309	67	303	314	99
Stage 1	-	-	-	-	-	-	210	210	-	99	99	-
Stage 2	-	-	-	-	-	-	100	99	-	204	216	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1488	-	-	1527	-	-	640	604	994	648	600	954
Stage 1	-	-	-	-	-	-	790	726	-	905	811	-
Stage 2	-	-	-	-	-	-	904	811	-	796	723	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1482	-	-	1519	-	-	561	568	985	603	564	951
Mov Cap-2 Maneuver	-	-	-	-	-	-	561	568	-	603	564	-
Stage 1	-	-	-	-	-	-	745	686	-	902	808	-
Stage 2	-	-	-	-	-	-	843	808	-	744	682	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	4.07			0			11.42			9.92		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	614	938	-	-	1519	-	-	805				
HCM Lane V/C Ratio	0.086	0.05	-	-	-	-	-	0.091				
HCM Ctrl Dly (s/v)	11.4	7.6	0	-	0	-	-	9.9				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0	-	-	0.3				

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	30	534	80	30	534
Future Vol, veh/h	60	30	534	80	30	534
Conflicting Peds, #/hr	53	0	0	72	72	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	66	33	587	88	33	587
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1409	703	0	0	747	0
Stage 1	703	-	-	-	-	-
Stage 2	706	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	152	436	-	-	857	-
Stage 1	489	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	129	406	-	-	798	-
Mov Cap-2 Maneuver	264	-	-	-	-	-
Stage 1	456	-	-	-	-	-
Stage 2	444	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	22.88	0		0.52		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	299	798	-	
HCM Lane V/C Ratio	-	-	0.331	0.041	-	
HCM Ctrl Dly (s/v)	-	-	22.9	9.7	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	1.4	0.1	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

16: Church St/Railroad Ave & Hunt Ave Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	80	10	10	50	140	10	10	10	190	10	20
Future Vol, veh/h	30	80	10	10	50	140	10	10	10	190	10	20
Conflicting Peds, #/hr	20	0	22	20	0	22	12	0	20	0	0	12
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	33	89	11	11	56	156	11	11	11	211	11	22
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	233	0	0	122	0	0	278	438	136	359	366	167
Stage 1	-	-	-	-	-	-	183	183	-	178	178	-
Stage 2	-	-	-	-	-	-	95	255	-	181	189	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1329	-	-	1459	-	-	672	511	909	595	561	874
Stage 1	-	-	-	-	-	-	816	746	-	822	750	-
Stage 2	-	-	-	-	-	-	909	694	-	818	742	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1301	-	-	1429	-	-	598	472	873	531	518	846
Mov Cap-2 Maneuver	-	-	-	-	-	-	598	472	-	531	518	-
Stage 1	-	-	-	-	-	-	777	711	-	797	728	-
Stage 2	-	-	-	-	-	-	854	674	-	759	707	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.96			0.38			11.27			16.7		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	608	440	-	-	78	-	-	549				
HCM Lane V/C Ratio	0.055	0.026	-	-	0.008	-	-	0.445				
HCM Ctrl Dly (s/v)	11.3	7.8	0	-	7.5	0	-	16.7				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	2.3				

HCM 7th TWSC

17: Oak Ave & Mitchell Dr

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection												
Int Delay, s/veh	9.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	30	10	10	50	70	10	80	10	150	80	20
Future Vol, veh/h	20	30	10	10	50	70	10	80	10	150	80	20
Conflicting Peds, #/hr	8	0	0	0	0	8	0	0	0	0	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	92	92	91	91	92	92	92	91	92	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	33	11	11	55	77	11	87	11	165	87	22
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	140	0	0	44	0	0	209	244	38	244	211	107
Stage 1	-	-	-	-	-	-	82	82	-	123	123	-
Stage 2	-	-	-	-	-	-	126	162	-	120	88	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1437	-	-	1558	-	-	747	656	1031	708	685	944
Stage 1	-	-	-	-	-	-	923	825	-	879	792	-
Stage 2	-	-	-	-	-	-	875	762	-	881	820	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1426	-	-	1558	-	-	617	636	1031	588	663	931
Mov Cap-2 Maneuver	-	-	-	-	-	-	617	636	-	588	663	-
Stage 1	-	-	-	-	-	-	909	812	-	865	780	-
Stage 2	-	-	-	-	-	-	749	751	-	766	807	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	2.53			0.56			11.54			15.05		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	659	573	-	-	123	-	-	630				
HCM Lane V/C Ratio	0.165	0.015	-	-	0.007	-	-	0.435				
HCM Ctrl Dly (s/v)	11.5	7.6	0	-	7.3	0	-	15				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	2.2				

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

18: Main St & Mitchell Dr/Pope St

Cumulative Plus Project Weekday PM Oak Charter Oak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	210	160	30	120	100	564	70	110	504	10
Future Volume (veh/h)	0	0	210	160	30	120	100	564	70	110	504	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.89	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	0	0	226	172	32	23	108	606	75	118	542	11
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	31	145	213	40	198	133	619	77	143	702	14
Arrive On Green	0.00	0.00	0.02	0.14	0.14	0.14	0.08	0.54	0.54	0.08	0.55	0.55
Sat Flow, veh/h	0	1856	1572	1501	279	1395	1767	1147	142	1767	1287	26
Grp Volume(v), veh/h	0	0	226	204	0	23	108	0	681	118	0	553
Grp Sat Flow(s),veh/h/ln	0	1856	1572	1780	0	1395	1767	0	1289	1767	0	1313
Q Serve(g_s), s	0.0	0.0	2.0	13.2	0.0	1.7	7.1	0.0	61.1	7.8	0.0	39.2
Cycle Q Clear(g_c), s	0.0	0.0	2.0	13.2	0.0	1.7	7.1	0.0	61.1	7.8	0.0	39.2
Prop In Lane	0.00		1.00	0.84		1.00	1.00		0.11	1.00		0.02
Lane Grp Cap(c), veh/h	0	31	145	253	0	198	133	0	696	143	0	717
V/C Ratio(X)	0.00	0.00	1.56	0.81	0.00	0.12	0.81	0.00	0.98	0.82	0.00	0.77
Avail Cap(c_a), veh/h	0	31	145	354	0	278	350	0	839	210	0	718
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	53.8	49.3	0.0	44.4	54.0	0.0	26.6	53.6	0.0	21.1
Incr Delay (d2), s/veh	0.0	0.0	284.5	6.1	0.0	0.1	4.5	0.0	22.9	10.1	0.0	4.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	15.8	6.3	0.0	0.6	3.4	0.0	22.5	3.9	0.0	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	338.3	55.3	0.0	44.5	58.5	0.0	49.5	63.7	0.0	25.8
LnGrp LOS			F	E		D	E		D	E		C
Approach Vol, veh/h	226			227			789			671		
Approach Delay, s/veh	338.3			54.2			50.7			32.5		
Approach LOS	F			D			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.6	72.4		26.6	14.3	71.7		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	23.5	64.8		23.6	14.1	* 77		2.0				
Max Q Clear Time (g_c+I1), s	9.1	41.2		15.2	9.8	63.1		4.0				
Green Ext Time (p_c), s	0.0	0.7		0.2	0.0	0.9		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh

78.7

HCM 7th LOS

E

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 7th Signalized Intersection Summary
 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan
 Cumulative Plus Project Weekday PM Oak Charter Oak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	70	70	834	934	60
Future Volume (veh/h)	70	70	70	834	934	60
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1318	1318	1318
Adj Flow Rate, veh/h	75	51	75	897	1004	63
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	73	50	102	1100	913	57
Arrive On Green	0.07	0.07	0.06	0.83	0.75	0.75
Sat Flow, veh/h	995	676	1767	1318	1226	77
Grp Volume(v), veh/h	127	0	75	897	0	1067
Grp Sat Flow(s), veh/h/ln	1684	0	1767	1318	0	1302
Q Serve(g_s), s	11.0	0.0	6.2	52.8	0.0	111.5
Cycle Q Clear(g_c), s	11.0	0.0	6.2	52.8	0.0	111.5
Prop In Lane	0.59	0.40	1.00			0.06
Lane Grp Cap(c), veh/h	124	0	102	1100	0	971
V/C Ratio(X)	1.03	0.00	0.74	0.82	0.00	1.10
Avail Cap(c_a), veh/h	124	0	106	1139	0	971
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	69.3	0.0	69.4	6.4	0.0	19.1
Incr Delay (d2), s/veh	87.9	0.0	19.6	4.2	0.0	59.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	7.8	0.0	3.4	11.9	0.0	44.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	157.2	0.0	89.0	10.6	0.0	79.0
LnGrp LOS	F		F	B		F
Approach Vol, veh/h	127			972	1067	
Approach Delay, s/veh	157.2			16.7	79.0	
Approach LOS	F			B	E	
Timer - Assigned Phs	1	2		6	8	
Phs Duration (G+Y+Rc), s	33.3	120.6		133.9	15.7	
Change Period (Y+Rc), s	4.7	9.1		* 9.1	4.7	
Max Green Setting (Gmax), s	91.5	111.5		* 1.3E+02	11.0	
Max Q Clear Time (g_c+I), s	10.2	113.5		54.8	13.0	
Green Ext Time (p_c), s	0.0	0.0		1.0	0.0	
Intersection Summary						
HCM 7th Control Delay, s/veh			55.6			
HCM 7th LOS			E			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC

Saint Helena Streets Master Plan

20: Main St & Sulphur Springs Ave

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	126	126	874	954	50
Future Vol, veh/h	30	126	126	874	954	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	32	135	135	940	1026	54
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2263	1053	1080	0	-	0
Stage 1	1053	-	-	-	-	-
Stage 2	1211	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	45	274	642	-	-	-
Stage 1	334	-	-	-	-	-
Stage 2	281	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	35	274	642	-	-	-
Mov Cap-2 Maneuver	140	-	-	-	-	-
Stage 1	264	-	-	-	-	-
Stage 2	281	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	31.88	1.52		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	642	-	140	274	-	-
HCM Lane V/C Ratio	0.211	-	0.23	0.495	-	-
HCM Ctrl Dly (s/v)	12.1	-	38.2	30.4	-	-
HCM Lane LOS	B	-	E	D	-	-
HCM 95th %tile Q(veh)	0.8	-	0.8	2.6	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	100	10	20	90	10
Future Vol, veh/h	20	100	10	20	90	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	22	108	11	22	97	11
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7.3	7.6	8.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	90%	0%	33%
Vol Thru, %	0%	17%	67%
Vol Right, %	10%	83%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	100	120	30
LT Vol	90	0	10
Through Vol	0	20	20
RT Vol	10	100	0
Lane Flow Rate	108	129	32
Geometry Grp	1	1	1
Degree of Util (X)	0.13	0.131	0.039
Departure Headway (Hd)	4.35	3.665	4.308
Convergence, Y/N	Yes	Yes	Yes
Cap	819	964	820
Service Time	2.4	1.741	2.391
HCM Lane V/C Ratio	0.132	0.134	0.039
HCM Control Delay, s/veh	8.1	7.3	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.5	0.1

HCM 7th TWSC

22: Pope Street & Starr Ave

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	260	300	80	110	20
Future Vol, veh/h	30	260	300	80	110	20
Conflicting Peds, #/hr	2	0	0	2	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	295	341	91	125	23
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	434	0	-	0	752	390
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	364	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1121	-	-	-	377	656
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	701	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1118	-	-	-	361	653
Mov Cap-2 Maneuver	-	-	-	-	361	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	700	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.86	0		19.87		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	186	-	-	-	388	
HCM Lane V/C Ratio	0.03	-	-	-	0.381	
HCM Ctrl Dly (s/v)	8.3	0	-	-	19.9	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	1.7	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Popocatepete Plus Project Weekday PM Oak Charter Oak

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	300	40	20	300	10	40	0	30	10	0	20
Future Vol, veh/h	40	300	40	20	300	10	40	0	30	10	0	20
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	47	353	47	24	353	12	47	0	35	12	0	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	365	0	0	401	0	0	874	883	377	853	901	361
Stage 1	-	-	-	-	-	-	472	472	-	406	406	-
Stage 2	-	-	-	-	-	-	402	412	-	447	495	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1188	-	-	1152	-	-	269	283	667	278	277	681
Stage 1	-	-	-	-	-	-	571	557	-	620	596	-
Stage 2	-	-	-	-	-	-	623	593	-	589	544	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1188	-	-	1151	-	-	244	266	666	248	260	680
Mov Cap-2 Maneuver	-	-	-	-	-	-	244	266	-	248	260	-
Stage 1	-	-	-	-	-	-	548	535	-	607	584	-
Stage 2	-	-	-	-	-	-	588	581	-	535	522	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.86			0.5			17.88			14.12		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	244	666	1188	-	-	1151	-	-	430
HCM Lane V/C Ratio	0.193	0.053	0.04	-	-	0.02	-	-	0.082
HCM Ctrl Dly (s/v)	23.3	10.7	8.2	-	-	8.2	-	-	14.1
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0.2	0.1	-	-	0.1	-	-	0.3

HCM 7th TWSC

24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	30	620	780	30
Future Vol, veh/h	30	30	30	620	780	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	34	34	34	697	876	34
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1657	893	910	0	-	0
Stage 1	893	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	107	339	744	-	-	-
Stage 1	398	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	99	339	744	-	-	-
Mov Cap-2 Maneuver	99	-	-	-	-	-
Stage 1	369	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	45.74	0.46		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	83	-	153	-	-	
HCM Lane V/C Ratio	0.045	-	0.44	-	-	
HCM Ctrl Dly (s/v)	10.1	0	45.7	-	-	
HCM Lane LOS	B	A	E	-	-	
HCM 95th %tile Q(veh)	0.1	-	2	-	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

25: Silverado Trail & Howell Mountain Rd Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	10	640	20	10	800
Future Vol, veh/h	50	10	640	20	10	800
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	57	11	736	23	11	920
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1690	747	0	0	759	0
Stage 1	747	-	-	-	-	-
Stage 2	943	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	102	411	-	-	848	-
Stage 1	466	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	101	411	-	-	848	-
Mov Cap-2 Maneuver	234	-	-	-	-	-
Stage 1	466	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	24.55	0		0.11		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	252	848	-	
HCM Lane V/C Ratio	-	-	0.273	0.014	-	
HCM Ctrl Dly (s/v)	-	-	24.6	9.3	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	1.1	0	-	

HCM 7th TWSC

26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	25.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	130	200	130	530	620	230
Future Vol, veh/h	130	200	130	530	620	230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	146	225	146	596	697	258
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1584	697	955	0	-	0
Stage 1	697	-	-	-	-	-
Stage 2	888	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	~ 119	440	716	-	-	-
Stage 1	492	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 94	440	716	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	138.36	2.23		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	716	-	319	-	-	
HCM Lane V/C Ratio	0.204	-	1.164	-	-	
HCM Ctrl Dly (s/v)	11.3	-	138.4	-	-	
HCM Lane LOS	B	-	F	-	-	
HCM 95th %tile Q(veh)	0.8	-	15.5	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s				
+: Computation Not Defined		*: All major volume in platoon				

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↗	↖	
Traffic Vol, veh/h	0	0	0	10	10	20	10	894	0	10	984	20
Future Vol, veh/h	0	0	0	10	10	20	10	894	0	10	984	20
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	0	11	11	22	11	961	0	11	1058	22
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2083	2078	1074	2062	2089	961	1085	0	0	961	0	0
Stage 1	1095	1095	-	983	983	-	-	-	-	-	-	-
Stage 2	988	983	-	1080	1106	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	39	53	266	40	52	309	639	-	-	712	-	-
Stage 1	258	288	-	298	326	-	-	-	-	-	-	-
Stage 2	296	326	-	263	285	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	27	50	265	38	49	309	636	-	-	712	-	-
Mov Cap-2 Maneuver	27	50	-	38	49	-	-	-	-	-	-	-
Stage 1	253	283	-	287	314	-	-	-	-	-	-	-
Stage 2	256	314	-	259	279	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0			103			0.12			0.1		
HCM LOS	A			F								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	20	-	-	-	75	712	-	-				
HCM Lane V/C Ratio	0.017	-	-	-	0.57	0.015	-	-				
HCM Ctrl Dly (s/v)	10.8	0	-	0	103	10.1	-	-				
HCM Lane LOS	B	A	-	A	F	B	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	-	2.5	0	-	-				

HCM 7th Signalized Intersection Summary

Saint Helena Streets Master Plan

28: Main St & Charter Oak Ave

Cumulative Plus Project Weekday PM Oak Charter Oak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	110	70	0	20	100	694	120	30	834	10
Future Volume (veh/h)	20	10	110	70	0	20	100	694	120	30	834	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1484	1484	1484	1484	1484	1484	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	22	11	13	76	0	0	109	754	126	33	907	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	54	27	32	144	0	0	137	899	150	55	980	12
Arrive On Green	0.08	0.08	0.08	0.10	0.00	0.00	0.08	0.58	0.58	0.03	0.54	0.54
Sat Flow, veh/h	661	330	390	1414	0	0	1767	1542	258	1767	1829	22
Grp Volume(v), veh/h	46	0	0	76	0	0	109	0	880	33	0	918
Grp Sat Flow(s),veh/h/ln	1381	0	0	1414	0	0	1767	0	1800	1767	0	1851
Q Serve(g_s), s	2.9	0.0	0.0	4.7	0.0	0.0	5.6	0.0	37.1	1.7	0.0	42.4
Cycle Q Clear(g_c), s	2.9	0.0	0.0	4.7	0.0	0.0	5.6	0.0	37.1	1.7	0.0	42.4
Prop In Lane	0.48		0.28	1.00		0.00	1.00		0.14	1.00		0.01
Lane Grp Cap(c), veh/h	114	0	0	144	0	0	137	0	1049	55	0	992
V/C Ratio(X)	0.40	0.00	0.00	0.53	0.00	0.00	0.80	0.00	0.84	0.61	0.00	0.93
Avail Cap(c_a), veh/h	269	0	0	275	0	0	158	0	1161	97	0	1130
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.5	0.0	0.0	39.6	0.0	0.0	42.1	0.0	15.8	44.5	0.0	19.8
Incr Delay (d2), s/veh	2.3	0.0	0.0	3.0	0.0	0.0	21.5	0.0	5.2	10.3	0.0	11.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.8	0.0	0.0	3.3	0.0	15.5	0.9	0.0	19.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.8	0.0	0.0	42.6	0.0	0.0	63.6	0.0	21.0	54.8	0.0	31.6
LnGrp LOS	D			D			E		C	D		C
Approach Vol, veh/h		46			76			989			951	
Approach Delay, s/veh		42.8			42.6			25.7			32.4	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	58.8		12.3	11.9	54.5		14.2				
Change Period (Y+Rc), s	4.7	4.7		4.7	4.7	4.7		4.7				
Max Green Setting (Gmax), s	5.1	59.9		18.1	8.3	56.7		18.1				
Max Q Clear Time (g_c+l1), s	3.7	39.1		4.9	7.6	44.4		6.7				
Green Ext Time (p_c), s	0.0	7.5		0.1	0.0	5.4		0.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			29.8									
HCM 7th LOS			C									

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	10	30	10	10	10	170	30	10	170	10
Future Vol, veh/h	10	10	10	30	10	10	10	170	30	10	170	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	12	12	12	35	12	12	12	200	35	12	200	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.2	8.5	9.2	9.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	33%	60%	5%
Vol Thru, %	81%	33%	20%	89%
Vol Right, %	14%	33%	20%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	210	30	50	190
LT Vol	10	10	30	10
Through Vol	170	10	10	170
RT Vol	30	10	10	10
Lane Flow Rate	247	35	59	224
Geometry Grp	1	1	1	1
Degree of Util (X)	0.299	0.048	0.082	0.275
Departure Headway (Hd)	4.352	4.941	5.039	4.428
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	828	724	710	811
Service Time	2.372	2.98	3.076	2.449
HCM Lane V/C Ratio	0.298	0.048	0.083	0.276
HCM Control Delay, s/veh	9.2	8.2	8.5	9.1
HCM Lane LOS	A	A	A	A
HCM 95th-ile Q	1.3	0.2	0.3	1.1

HCM 7th AWSC

30: Oak Ave & Adams St

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection												
Intersection Delay, s/veh10.9												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	40	40	60	40	20	20	170	130	30	190	10
Future Vol, veh/h	10	40	40	60	40	20	20	170	130	30	190	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	44	44	66	44	22	22	187	143	33	209	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay, s/veh	9.4			10.1			11.6			10.9		
HCM LOS	A			B			B			B		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	11%	50%	13%
Vol Thru, %	53%	44%	33%	83%
Vol Right, %	41%	44%	17%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	320	90	120	230
LT Vol	20	10	60	30
Through Vol	170	40	40	190
RT Vol	130	40	20	10
Lane Flow Rate	352	99	132	253
Geometry Grp	1	1	1	1
Degree of Util (X)	0.454	0.149	0.206	0.357
Departure Headway (Hd)	4.756	5.436	5.611	5.088
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	763	661	641	710
Service Time	2.756	3.458	3.629	3.088
HCM Lane V/C Ratio	0.461	0.15	0.206	0.356
HCM Control Delay, s/veh	11.6	9.4	10.1	10.9
HCM Lane LOS	B	A	B	B
HCM 95th-tile Q	2.4	0.5	0.8	1.6

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection												
Intersection Delay, s/veh 11.8												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	70	40	60	20	80	50	40	190	20	40	180	50
Future Vol, veh/h	70	40	60	20	80	50	40	190	20	40	180	50
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	77	44	66	22	88	55	44	209	22	44	198	55
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB		WB		NB		SB					
Opposing Approach	WB		EB		SB		NB					
Opposing Lanes	1		1		1		1					
Conflicting Approach Left	SB		NB		EB		WB					
Conflicting Lanes Left	1		1		1		1					
Conflicting Approach Right	NB		SB		WB		EB					
Conflicting Lanes Right	1		1		1		1					
HCM Control Delay, s/veh	11.1		10.7		12.3		12.5					
HCM LOS	B		B		B		B					

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	41%	13%	15%
Vol Thru, %	76%	24%	53%	67%
Vol Right, %	8%	35%	33%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	250	170	150	270
LT Vol	40	70	20	40
Through Vol	190	40	80	180
RT Vol	20	60	50	50
Lane Flow Rate	275	187	165	297
Geometry Grp	1	1	1	1
Degree of Util (X)	0.414	0.294	0.259	0.439
Departure Headway (Hd)	5.42	5.666	5.667	5.327
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	662	631	631	674
Service Time	3.47	3.724	3.727	3.375
HCM Lane V/C Ratio	0.415	0.296	0.261	0.441
HCM Control Delay, s/veh	12.3	11.1	10.7	12.5
HCM Lane LOS	B	B	B	B
HCM 95th-ile Q	2	1.2	1	2.2

HCM 7th TWSC

32: Main St & Spring St

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	70	100	584	554	40
Future Vol, veh/h	30	70	100	584	554	40
Conflicting Peds, #/hr	0	59	47	0	0	47
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	32	75	108	628	596	43
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1507	723	686	0	-	0
Stage 1	664	-	-	-	-	-
Stage 2	843	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	132	424	903	-	-	-
Stage 1	510	-	-	-	-	-
Stage 2	420	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	98	383	863	-	-	-
Mov Cap-2 Maneuver	226	-	-	-	-	-
Stage 1	394	-	-	-	-	-
Stage 2	402	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	22.09	1.43		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	263	-	317	-	-	
HCM Lane V/C Ratio	0.125	-	0.339	-	-	
HCM Ctrl Dly (s/v)	9.8	0	22.1	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.4	-	1.5	-	-	

HCM 7th TWSC

33: Pope St & Church St

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	50	150	0	0	270	70	0	0	0	60	0	110
Future Vol, veh/h	50	150	0	0	270	70	0	0	0	60	0	110
Conflicting Peds, #/hr	15	0	6	6	0	15	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	54	163	0	0	293	76	0	0	0	65	0	120
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	385	0	0	169	0	0	572	662	170	619	624	348
Stage 1	-	-	-	-	-	-	278	278	-	347	347	-
Stage 2	-	-	-	-	-	-	294	385	-	273	278	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1168	-	-	1402	-	-	429	381	871	399	400	693
Stage 1	-	-	-	-	-	-	727	679	-	667	633	-
Stage 2	-	-	-	-	-	-	712	609	-	731	679	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1152	-	-	1394	-	-	334	354	865	373	372	683
Mov Cap-2 Maneuver	-	-	-	-	-	-	334	354	-	373	372	-
Stage 1	-	-	-	-	-	-	685	640	-	658	624	-
Stage 2	-	-	-	-	-	-	586	601	-	692	640	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	2.07			0			0			15.45		
HCM LOS							A			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	450	-	-	1394	-	-	528				
HCM Lane V/C Ratio	-	0.047	-	-	-	-	-	0.35				
HCM Ctrl Dly (s/v)	0	8.3	0	-	0	-	-	15.4				
HCM Lane LOS	A	A	A	-	A	-	-	C				
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	1.6				

HCM 7th TWSC

36: Charter Oak Ave & Oak Ave

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	60	30	80	80	10
Future Vol, veh/h	10	60	30	80	80	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	65	33	87	87	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	120	0	-	0	163	76
Stage 1	-	-	-	-	76	-
Stage 2	-	-	-	-	87	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1462	-	-	-	825	982
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	934	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1462	-	-	-	819	982
Mov Cap-2 Maneuver	-	-	-	-	819	-
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	934	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	1.07	0		9.89		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	257	-	-	-	834	
HCM Lane V/C Ratio	0.007	-	-	-	0.117	
HCM Ctrl Dly (s/v)	7.5	0	-	-	9.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

HCM 7th AWSC

37: Oak Ave & Madrona Ave

Saint Helena Streets Master Plan

Cumulative Plus Project Weekday PM Oak Charter Oak

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	134	50	90	84	10	35	5	100	10	10	0
Future Vol, veh/h	10	134	50	90	84	10	35	5	100	10	10	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	146	54	98	91	11	38	5	109	11	11	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9	9.3	8.7	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	5%	49%	50%
Vol Thru, %	4%	69%	46%	50%
Vol Right, %	71%	26%	5%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	194	184	20
LT Vol	35	10	90	10
Through Vol	5	134	84	10
RT Vol	100	50	10	0
Lane Flow Rate	152	211	200	22
Geometry Grp	1	1	1	1
Degree of Util (X)	0.192	0.26	0.259	0.031
Departure Headway (Hd)	4.537	4.445	4.657	5.189
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	790	806	770	687
Service Time	2.575	2.481	2.693	3.239
HCM Lane V/C Ratio	0.192	0.262	0.26	0.032
HCM Control Delay, s/veh	8.7	9	9.3	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	1	1	0.1

HCM 7th TWSC

1: Spring Mountain Rd & Elmhurst Ave

Saint Helena Streets Master Plan

Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	10	90	10	70	0	70	20	30	100	0
Future Vol, veh/h	0	0	10	90	10	70	0	70	20	30	100	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	14	127	14	99	0	99	28	42	141	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	331	352	141	338	338	113	141	0	0	127	0	0
Stage 1	225	225	-	113	113	-	-	-	-	-	-	-
Stage 2	106	127	-	225	225	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	620	571	904	614	582	938	1436	-	-	1453	-	-
Stage 1	775	715	-	890	800	-	-	-	-	-	-	-
Stage 2	898	789	-	775	715	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	525	553	904	585	563	938	1436	-	-	1453	-	-
Mov Cap-2 Maneuver	525	553	-	585	563	-	-	-	-	-	-	-
Stage 1	751	693	-	890	800	-	-	-	-	-	-	-
Stage 2	789	789	-	739	693	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	9.04			12.96			0			1.74		
HCM LOS	A			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1436	-	-	904	690	415	-	-				
HCM Lane V/C Ratio	-	-	-	0.016	0.347	0.029	-	-				
HCM Ctrl Dly (s/v)	0	-	-	9	13	7.6	0	-				
HCM Lane LOS	A	-	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	1.5	0.1	-	-				

HCM 7th TWSC

2: Hillview Pl & Spring Mountain Rd

Saint Helena Streets Master Plan

Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	160	10	0	70	20	10	10	10	20	10	10
Future Vol, veh/h	30	160	10	0	70	20	10	10	10	20	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	42	222	14	0	97	28	14	14	14	28	14	14
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	125	0	0	236	0	0	417	438	229	424	431	111
Stage 1	-	-	-	-	-	-	313	313	-	111	111	-
Stage 2	-	-	-	-	-	-	104	125	-	313	319	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1455	-	-	1325	-	-	545	511	808	539	516	939
Stage 1	-	-	-	-	-	-	696	655	-	892	802	-
Stage 2	-	-	-	-	-	-	899	791	-	696	651	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1455	-	-	1325	-	-	505	494	808	498	499	939
Mov Cap-2 Maneuver	-	-	-	-	-	-	505	494	-	498	499	-
Stage 1	-	-	-	-	-	-	673	634	-	892	802	-
Stage 2	-	-	-	-	-	-	871	791	-	647	629	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	1.13			0			11.78			12.07		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	572	267	-	-	1325	-	-	565				
HCM Lane V/C Ratio	0.073	0.029	-	-	-	-	-	0.098				
HCM Ctrl Dly (s/v)	11.8	7.5	0	-	0	-	-	12.1				
HCM Lane LOS	B	A	A	-	A	-	-	B				
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.3				

HCM 7th TWSC

3: Madrona Ave & Spring Mountain Rd

Saint Helena Streets Master Plan

Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	6.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	57	80	80	43	86	94
Future Vol, veh/h	57	80	80	43	86	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	83	116	116	62	125	136
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	178	0	-	0	428	147
Stage 1	-	-	-	-	147	-
Stage 2	-	-	-	-	281	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1392	-	-	-	582	897
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	764	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1392	-	-	-	545	897
Mov Cap-2 Maneuver	-	-	-	-	545	-
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	764	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.22	0		13.45		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	749	-	-	-	685	
HCM Lane V/C Ratio	0.059	-	-	-	0.381	
HCM Ctrl Dly (s/v)	7.8	0	-	-	13.4	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.2	-	-	-	1.8	

HCM 7th TWSC

4: Hudson Ave & Madrona Ave

Saint Helena Streets Master Plan

Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	2.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	10	14	20	10	7
Future Vol, veh/h	30	10	14	20	10	7
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	37	12	17	25	12	9
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	52	0	105	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	59	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1547	-	890	1020
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	961	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1543	-	877	1017
Mov Cap-2 Maneuver	-	-	-	-	877	-
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	950	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.03		8.96	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	930	-	-	741	-	
HCM Lane V/C Ratio	0.023	-	-	0.011	-	
HCM Ctrl Dly (s/v)	9	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

HCM 7th TWSC
5: Valley View St & Spring St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	5.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	40	34	40	30	87
Future Vol, veh/h	40	40	34	40	30	87
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	56	56	48	56	42	123
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	113	0	237	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	152	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1471	-	749	972
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	873	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1471	-	724	972
Mov Cap-2 Maneuver	-	-	-	-	724	-
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	844	-
Approach	EB		WB		NB	
HCM Ctrl Dly, s/v	0		3.46		9.94	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	893	-	-	827	-	
HCM Lane V/C Ratio	0.184	-	-	0.033	-	
HCM Ctrl Dly (s/v)	9.9	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-	

HCM 7th AWSC

Saint Helena Streets Master Plan

6: Crane Ave/Valley View St & Grayson Ave Cumulative MD Plus Project Oak Charter Oak Ave

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	30	87	30	20	64
Future Vol, veh/h	20	30	87	30	20	64
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	29	44	128	44	29	94
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	7.7	8.1	8.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	40%	24%
Vol Thru, %	74%	0%	76%
Vol Right, %	26%	60%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	117	50	84
LT Vol	0	20	20
Through Vol	87	0	64
RT Vol	30	30	0
Lane Flow Rate	172	74	124
Geometry Grp	1	1	1
Degree of Util (X)	0.192	0.088	0.146
Departure Headway (Hd)	4.02	4.311	4.259
Convergence, Y/N	Yes	Yes	Yes
Cap	881	836	831
Service Time	2.097	2.311	2.34
HCM Lane V/C Ratio	0.195	0.089	0.149
HCM Control Delay, s/veh	8.1	7.7	8.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0.3	0.5

HCM 7th TWSC
7: Sulphur Spring Ave & Crane Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	10	47	64	10
Future Vol, veh/h	10	10	10	47	64	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	15	15	69	94	15
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	84	0	-	0	93	49
Stage 1	-	-	-	-	49	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1507	-	-	-	904	1016
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	976	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1507	-	-	-	895	1016
Mov Cap-2 Maneuver	-	-	-	-	895	-
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	976	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.71	0		9.49		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	900	-	-	-	910	
HCM Lane V/C Ratio	0.01	-	-	-	0.12	
HCM Ctrl Dly (s/v)	7.4	0	-	-	9.5	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

HCM 7th TWSC
8: Main St & Pratt Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↘		↙	↘	
Traffic Vol, veh/h	10	10	10	30	0	20	20	640	30	20	620	10
Future Vol, veh/h	10	10	10	30	0	20	20	640	30	20	620	10
Conflicting Peds, #/hr	1	0	2	2	0	1	6	0	1	1	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	70	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	10	10	10	31	0	21	21	667	31	21	646	10
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1408	1439	659	1420	1429	684	662	0	0	699	0	0
Stage 1	699	699	-	725	725	-	-	-	-	-	-	-
Stage 2	709	741	-	695	704	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	116	132	462	114	134	447	922	-	-	893	-	-
Stage 1	429	440	-	415	428	-	-	-	-	-	-	-
Stage 2	423	422	-	431	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	105	125	458	97	127	446	916	-	-	892	-	-
Mov Cap-2 Maneuver	105	125	-	97	127	-	-	-	-	-	-	-
Stage 1	417	428	-	405	418	-	-	-	-	-	-	-
Stage 2	394	412	-	401	425	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Ctrl Dly, s/v	34.68		44.56		0.26			0.28				
HCM LOS	D		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	916	-	-	152	141	892	-	-				
HCM Lane V/C Ratio	0.023	-	-	0.205	0.368	0.023	-	-				
HCM Ctrl Dly (s/v)	9	-	-	34.7	44.6	9.1	-	-				
HCM Lane LOS	A	-	-	D	E	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.7	1.5	0.1	-	-				

HCM 7th TWSC
9: Main St & Elmhurst Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	30	30	650	630	30
Future Vol, veh/h	40	30	30	650	630	30
Conflicting Peds, #/hr	0	1	9	0	0	9
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	40	30	30	657	636	30
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1378	662	676	0	-	0
Stage 1	661	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	159	460	911	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	148	456	903	-	-	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	30.95	0.4		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	79	-	208	-	-	
HCM Lane V/C Ratio	0.034	-	0.34	-	-	
HCM Ctrl Dly (s/v)	9.1	0	30.9	-	-	
HCM Lane LOS	A	A	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	1.4	-	-	

HCM 7th Signalized Intersection Summary
10: Main St & Madrona Ave/Fulton Ln

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	20	26	10	20	80	13	460	10	50	500	110
Future Volume (veh/h)	140	20	26	10	20	80	13	460	10	50	500	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	15	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	151	22	22	11	22	17	14	495	10	54	538	108
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	276	27	26	98	150	93	144	732	15	376	640	93
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1138	172	167	183	970	594	778	1287	26	887	1065	214
Grp Volume(v), veh/h	195	0	0	50	0	0	14	0	505	54	0	646
Grp Sat Flow(s),veh/h/ln	1476	0	0	1746	0	0	778	0	1313	887	0	1278
Q Serve(g_s), s	6.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	17.0	2.9	0.0	27.7
Cycle Q Clear(g_c), s	7.4	0.0	0.0	1.5	0.0	0.0	28.7	0.0	17.0	19.8	0.0	27.7
Prop In Lane	0.77		0.11	0.22		0.34	1.00		0.02	1.00		0.17
Lane Grp Cap(c), veh/h	328	0	0	340	0	0	144	0	747	376	0	733
V/C Ratio(X)	0.59	0.00	0.00	0.15	0.00	0.00	0.10	0.00	0.68	0.14	0.00	0.88
Avail Cap(c_a), veh/h	550	0	0	588	0	0	476	0	1218	689	0	1186
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.4	0.0	0.0	24.6	0.0	0.0	31.5	0.0	9.9	17.0	0.0	13.6
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.4	0.1	0.0	2.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.5
%ile BackOfQ(50%),veh/ln	3.0	0.0	0.0	0.7	0.0	0.0	0.2	0.0	4.4	0.6	0.0	14.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.0	0.0	0.0	24.7	0.0	0.0	31.6	0.0	10.3	17.1	0.0	41.9
LnGrp LOS	C			C			C		B	B		D
Approach Vol, veh/h		195			50			519			700	
Approach Delay, s/veh		28.0			24.7			10.8			40.0	
Approach LOS		C			C			B			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.1		18.4		40.1		18.4				
Change Period (Y+Rc), s		8.7		9.2		8.7		9.2				
Max Green Setting (Gmax), s		54.3		17.8		54.3		17.8				
Max Q Clear Time (g_c+I1), s		30.7		9.4		29.7		3.5				
Green Ext Time (p_c), s		0.7		0.2		1.0		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh				27.5								
HCM 7th LOS				C								

HCM 7th TWSC
11: Railroad Ave & Fulton Ln

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	5.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	60	10	10	100	10
Future Vol, veh/h	10	60	10	10	100	10
Conflicting Peds, #/hr	0	3	3	0	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	76	13	13	127	13
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	92	0	96	54
Stage 1	-	-	-	-	54	-
Stage 2	-	-	-	-	42	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1497	-	901	1011
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	978	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1493	-	888	1008
Mov Cap-2 Maneuver	-	-	-	-	888	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	966	-
Approach	EB	WB		NB		
HCM Ctrl Dly, s/v	0	3.72		9.75		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	897	-	-	900	-	
HCM Lane V/C Ratio	0.155	-	-	0.008	-	
HCM Ctrl Dly (s/v)	9.7	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.5	-	-	0	-	

HCM 7th Signalized Intersection Summary
12: Main St & Adams St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	40	30	40	40	40	20	403	30	40	456	40
Future Volume (veh/h)	40	40	30	40	40	40	20	403	30	40	456	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	12	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.76		0.70	0.75		0.70	1.00		0.93	1.00		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1856
Adj Flow Rate, veh/h	41	41	15	41	41	19	21	415	28	41	470	38
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	168	151	46	160	144	55	75	508	34	121	544	31
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.04	0.39	0.39	0.07	0.42	0.42
Sat Flow, veh/h	457	689	210	427	660	252	1767	1214	82	1767	1187	96
Grp Volume(v), veh/h	97	0	0	101	0	0	21	0	443	41	0	508
Grp Sat Flow(s),veh/h/ln	1355	0	0	1338	0	0	1767	0	1296	1767	0	1283
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0	0.8	0.0	22.7	1.6	0.0	27.3
Cycle Q Clear(g_c), s	3.4	0.0	0.0	3.7	0.0	0.0	0.8	0.0	22.7	1.6	0.0	27.3
Prop In Lane	0.42		0.15	0.41		0.19	1.00		0.06	1.00		0.07
Lane Grp Cap(c), veh/h	364	0	0	360	0	0	75	0	542	121	0	575
V/C Ratio(X)	0.27	0.00	0.00	0.28	0.00	0.00	0.28	0.00	0.82	0.34	0.00	0.88
Avail Cap(c_a), veh/h	394	0	0	390	0	0	225	0	755	225	0	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.6	0.0	0.0	24.7	0.0	0.0	35.2	0.0	19.4	33.7	0.0	20.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.7	0.0	3.4	0.6	0.0	8.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.1
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	1.5	0.0	0.0	0.4	0.0	6.9	0.7	0.0	14.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.7	0.0	0.0	24.8	0.0	0.0	35.9	0.0	22.8	34.3	0.0	55.9
LnGrp LOS	C			C			D		C	C		E
Approach Vol, veh/h	97			101			464			549		
Approach Delay, s/veh	24.7			24.8			23.4			54.3		
Approach LOS	C			C			C			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.8	38.6		25.2	9.7	36.7		25.2				
Change Period (Y+Rc), s	4.7	8.7		8.7	4.7	8.7		8.7				
Max Green Setting (Gmax), s	9.1	41.7		17.1	9.1	41.7		17.1				
Max Q Clear Time (g_c+I1), s	2.8	29.3		5.4	3.6	24.7		5.7				
Green Ext Time (p_c), s	0.0	0.6		0.1	0.0	0.5		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh	37.6											
HCM 7th LOS	D											

HCM 7th AWSC
13: Railroad Ave & Adams St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Intersection Delay, s/veh	8.1											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	40	60	10	40	50	40	50	10	40	40	10
Future Vol, veh/h	10	40	60	10	40	50	40	50	10	40	40	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	43	65	11	43	54	43	54	11	43	43	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8	7.9	8.3	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	9%	10%	44%
Vol Thru, %	50%	36%	40%	44%
Vol Right, %	10%	55%	50%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	110	100	90
LT Vol	40	10	10	40
Through Vol	50	40	40	40
RT Vol	10	60	50	10
Lane Flow Rate	109	120	109	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.138	0.141	0.129	0.125
Departure Headway (Hd)	4.586	4.248	4.289	4.601
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	783	845	837	780
Service Time	2.609	2.268	2.309	2.624
HCM Lane V/C Ratio	0.139	0.142	0.13	0.126
HCM Control Delay, s/veh	8.3	8	7.9	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.5	0.4	0.4

HCM 7th TWSC
14: Library Ln & Adams St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	20	10	10	0	10	0	10	0	0	0	0	20
Future Vol, veh/h	20	10	10	0	10	0	10	0	0	0	0	20
Conflicting Peds, #/hr	1	0	6	6	0	1	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	28	14	14	0	14	0	14	0	0	0	0	28
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	15	0	0	34	0	0	96	97	31	88	104	15
Stage 1	-	-	-	-	-	-	82	82	-	15	15	-
Stage 2	-	-	-	-	-	-	14	15	-	73	89	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.16	6.56	6.26	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.254	-	-	3.554	4.054	3.354	3.554	4.054	3.354
Pot Cap-1 Maneuver	1577	-	-	1552	-	-	877	785	1032	887	778	1053
Stage 1	-	-	-	-	-	-	916	819	-	995	875	-
Stage 2	-	-	-	-	-	-	996	875	-	926	813	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1576	-	-	1543	-	-	834	766	1022	867	759	1052
Mov Cap-2 Maneuver	-	-	-	-	-	-	834	766	-	867	759	-
Stage 1	-	-	-	-	-	-	894	799	-	994	874	-
Stage 2	-	-	-	-	-	-	970	874	-	906	794	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.66			0			9.39			8.51		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	834	818	-	-	1543	-	-	1052				
HCM Lane V/C Ratio	0.017	0.018	-	-	-	-	-	0.026				
HCM Ctrl Dly (s/v)	9.4	7.3	0	-	0	-	-	8.5				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1				

HCM 7th TWSC
15: Main St & Hunt Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	20	433	70	30	496
Future Vol, veh/h	20	20	433	70	30	496
Conflicting Peds, #/hr	172	3	0	301	301	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	85	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	20	20	437	71	30	501
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1507	777	0	0	809	0
Stage 1	774	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	132	395	-	-	812	-
Stage 1	453	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	75	281	-	-	579	-
Mov Cap-2 Maneuver	192	-	-	-	-	-
Stage 1	323	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	24.11	0		0.66		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	228	579	-	
HCM Lane V/C Ratio	-	-	0.177	0.052	-	
HCM Ctrl Dly (s/v)	-	-	24.1	11.6	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	0.6	0.2	-	

HCM 7th TWSC

16: Church St/Railroad Ave & Hunt Ave

Saint Helena Streets Master Plan

Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	40	20	30	20	60	10	20	40	50	40	20
Future Vol, veh/h	40	40	20	30	20	60	10	20	40	50	40	20
Conflicting Peds, #/hr	17	0	49	17	0	49	5	0	17	3	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	43	43	21	32	21	64	11	21	43	53	43	21
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	134	0	0	113	0	0	299	385	119	321	364	107
Stage 1	-	-	-	-	-	-	187	187	-	166	166	-
Stage 2	-	-	-	-	-	-	111	198	-	155	198	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1444	-	-	1470	-	-	652	547	930	630	562	944
Stage 1	-	-	-	-	-	-	812	743	-	834	759	-
Stage 2	-	-	-	-	-	-	891	735	-	845	735	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1377	-	-	1402	-	-	522	470	872	508	483	896
Mov Cap-2 Maneuver	-	-	-	-	-	-	522	470	-	508	483	-
Stage 1	-	-	-	-	-	-	749	686	-	776	706	-
Stage 2	-	-	-	-	-	-	794	684	-	741	678	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.08			2.08			11.25			13.5		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	651	675	-	-	427	-	-	540				
HCM Lane V/C Ratio	0.114	0.031	-	-	0.023	-	-	0.217				
HCM Ctrl Dly (s/v)	11.2	7.7	0	-	7.6	0	-	13.5				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.1	-	-	0.8				

HCM 7th TWSC
17: Oak Ave & Mitchell Dr

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	10	10	10	30	70	10	70	10	90	80	10
Future Vol, veh/h	20	10	10	10	30	70	10	70	10	90	80	10
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	92	92	81	81	92	92	92	81	92	81
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	25	12	11	11	37	86	11	76	11	111	87	12
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	126	0	0	23	0	0	170	215	18	205	178	84
Stage 1	-	-	-	-	-	-	67	67	-	105	105	-
Stage 2	-	-	-	-	-	-	103	148	-	100	73	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1454	-	-	1585	-	-	791	681	1058	751	714	972
Stage 1	-	-	-	-	-	-	941	837	-	898	806	-
Stage 2	-	-	-	-	-	-	900	773	-	904	833	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1449	-	-	1585	-	-	668	662	1058	642	695	968
Mov Cap-2 Maneuver	-	-	-	-	-	-	668	662	-	642	695	-
Stage 1	-	-	-	-	-	-	924	823	-	889	798	-
Stage 2	-	-	-	-	-	-	785	765	-	798	818	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.88			0.59			11.06			12.71		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	691	848	-	-	128	-	-	676				
HCM Lane V/C Ratio	0.141	0.017	-	-	0.007	-	-	0.311				
HCM Ctrl Dly (s/v)	11.1	7.5	0	-	7.3	0	-	12.7				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	1.3				

HCM 7th Signalized Intersection Summary 18: Main St & Mitchell Dr/Pope St

Saint Helena Streets Master Plan Cumulative MD Plus Project Oak Charter Oak Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	140	110	30	70	90	483	50	60	466	10
Future Volume (veh/h)	0	0	140	110	30	70	90	483	50	60	466	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	12	0	0	6	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.89	1.00		0.94	1.00		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1318	1318	1856	1318	1318
Adj Flow Rate, veh/h	0	0	143	112	31	12	92	493	51	61	476	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	43	184	221	61	222	165	535	16	142	545	8
Arrive On Green	0.00	0.00	0.02	0.16	0.16	0.16	0.09	0.43	0.43	0.08	0.42	0.42
Sat Flow, veh/h	0	1856	1572	1399	387	1404	1767	1166	121	1767	1284	27
Grp Volume(v), veh/h	0	0	143	143	0	12	92	0	544	61	0	486
Grp Sat Flow(s),veh/h/ln	0	1856	1572	1786	0	1404	1767	0	1287	1767	0	1311
Q Serve(g_s), s	0.0	0.0	2.0	6.3	0.0	0.6	4.3	0.0	35.5	2.8	0.0	29.2
Cycle Q Clear(g_c), s	0.0	0.0	2.0	6.3	0.0	0.6	4.3	0.0	35.5	2.8	0.0	29.2
Prop In Lane	0.00		1.00	0.78		1.00	1.00		0.09	1.00		0.02
Lane Grp Cap(c), veh/h	0	43	184	283	0	222	165	0	566	142	0	550
V/C Ratio(X)	0.00	0.00	0.78	0.51	0.00	0.05	0.56	0.00	0.96	0.43	0.00	0.88
Avail Cap(c_a), veh/h	0	43	184	397	0	312	186	0	556	186	0	549
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	36.6	32.9	0.0	30.5	37.0	0.0	24.2	37.4	0.0	23.6
Incr Delay (d2), s/veh	0.0	0.0	17.3	0.5	0.0	0.0	1.1	0.0	28.8	0.8	0.0	15.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59.2	0.0	0.0	7.3
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.8	2.7	0.0	0.2	1.9	0.0	24.6	1.2	0.0	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	53.9	33.4	0.0	30.6	38.1	0.0	112.2	38.1	0.0	46.1
LnGrp LOS			D	C		C	D		F	D		D
Approach Vol, veh/h	143			155			636			547		
Approach Delay, s/veh	53.9			33.2			101.5			45.2		
Approach LOS	D			C			F			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.7	43.5		23.2	11.6	44.6		6.0				
Change Period (Y+Rc), s	4.7	7.7		9.7	4.7	* 7.7		4.0				
Max Green Setting (Gmax), s	9.0	33.9		19.0	9.0	* 37		2.0				
Max Q Clear Time (g_c+I1), s	6.3	31.2		8.3	4.8	37.5		4.0				
Green Ext Time (p_c), s	0.0	0.2		0.1	0.0	0.0		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh	68.9											
HCM 7th LOS	E											
Notes												
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 7th Signalized Intersection Summary 19: Main St & Grayson Avenue

Saint Helena Streets Master Plan Cumulative MD Plus Project Oak Charter Oak Ave

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	30	40	773	816	20
Future Volume (veh/h)	20	30	40	773	816	20
Initial Q (Qb), veh	0	0	0	30	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1318	1318	1318
Adj Flow Rate, veh/h	20	2	41	789	833	19
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	80	8	111	1053	879	20
Arrive On Green	0.05	0.05	0.07	0.78	0.66	0.66
Sat Flow, veh/h	1523	152	1767	1318	1283	29
Grp Volume(v), veh/h	23	0	41	789	0	852
Grp Sat Flow(s), veh/h/ln	1752	0	1767	1318	0	1312
Q Serve(g_s), s	1.1	0.0	1.9	27.4	0.0	53.1
Cycle Q Clear(g_c), s	1.1	0.0	1.9	27.4	0.0	53.1
Prop In Lane	0.87	0.09	1.00			0.02
Lane Grp Cap(c), veh/h	93	0	111	1053	0	899
V/C Ratio(X)	0.25	0.00	0.37	0.75	0.00	0.95
Avail Cap(c_a), veh/h	228	0	188	1390	0	1109
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.9	0.0	42.4	6.9	0.0	13.1
Incr Delay (d2), s/veh	0.5	0.0	0.8	1.0	0.0	13.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	23.3	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.9	15.1	0.0	15.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	43.4	0.0	43.2	31.2	0.0	26.4
LnGrp LOS	D		D	C		C
Approach Vol, veh/h	23			830	852	
Approach Delay, s/veh	43.4			31.8	26.4	
Approach LOS	D			C	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	60.3	65.0			75.3	9.3
Change Period (Y+Rc), s	4.7	9.1			* 9.1	4.7
Max Green Setting (Gmax), s	71.5				* 89	11.0
Max Q Clear Time (g_c+I), s	55.1				29.4	3.1
Green Ext Time (p_c), s	0.0	0.9			0.8	0.0
Intersection Summary						
HCM 7th Control Delay, s/veh			29.3			
HCM 7th LOS			C			
Notes						
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.						

HCM 7th TWSC
20: Main St & Sulphur Springs Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	44	37	803	826	20
Future Vol, veh/h	10	44	37	803	826	20
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	80	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	10	45	38	819	843	20
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1752	857	867	0	-	0
Stage 1	857	-	-	-	-	-
Stage 2	895	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	93	355	772	-	-	-
Stage 1	414	-	-	-	-	-
Stage 2	397	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	88	354	769	-	-	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	396	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	17.66	0.44		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	769	-	220	354	-	-
HCM Lane V/C Ratio	0.049	-	0.046	0.127	-	-
HCM Ctrl Dly (s/v)	9.9	-	22.1	16.6	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	0.4	-	-

HCM 7th AWSC
21: Starr Ave & Hunt Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	60	10	10	40	10
Future Vol, veh/h	10	60	10	10	40	10
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	78	13	13	52	13
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	7	7.4	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	80%	0%	50%
Vol Thru, %	0%	14%	50%
Vol Right, %	20%	86%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	50	70	20
LT Vol	40	0	10
Through Vol	0	10	10
RT Vol	10	60	0
Lane Flow Rate	65	91	26
Geometry Grp	1	1	1
Degree of Util (X)	0.076	0.09	0.031
Departure Headway (Hd)	4.193	3.57	4.235
Convergence, Y/N	Yes	Yes	Yes
Cap	853	998	842
Service Time	2.226	1.613	2.279
HCM Lane V/C Ratio	0.076	0.091	0.031
HCM Control Delay, s/veh	7.6	7	7.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.3	0.1

HCM 7th TWSC
22: Pope Street & Starr Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	190	220	50	40	20
Future Vol, veh/h	20	190	220	50	40	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	21	198	229	52	42	21
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	281	0	-	0	495	255
Stage 1	-	-	-	-	255	-
Stage 2	-	-	-	-	240	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1276	-	-	-	532	781
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	798	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1276	-	-	-	522	781
Mov Cap-2 Maneuver	-	-	-	-	522	-
Stage 1	-	-	-	-	771	-
Stage 2	-	-	-	-	798	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.75	0		11.86		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	171	-	-	-	587	
HCM Lane V/C Ratio	0.016	-	-	-	0.106	
HCM Ctrl Dly (s/v)	7.9	0	-	-	11.9	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

HCM 7th TWSC

Saint Helena Streets Master Plan

23: College Ave/Paseo Grand Dr & Pope Street Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	140	30	20	230	20	30	10	10	10	10	20
Future Vol, veh/h	30	140	30	20	230	20	30	10	10	10	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	85	-	-	90	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	34	157	34	22	258	22	34	11	11	11	11	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	281	0	0	191	0	0	551	567	174	545	573	270
Stage 1	-	-	-	-	-	-	242	242	-	315	315	-
Stage 2	-	-	-	-	-	-	309	326	-	230	258	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1276	-	-	1377	-	-	444	431	867	448	428	767
Stage 1	-	-	-	-	-	-	760	704	-	694	654	-
Stage 2	-	-	-	-	-	-	699	647	-	770	692	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1276	-	-	1377	-	-	402	413	867	412	410	767
Mov Cap-2 Maneuver	-	-	-	-	-	-	402	413	-	412	410	-
Stage 1	-	-	-	-	-	-	740	685	-	683	643	-
Stage 2	-	-	-	-	-	-	656	636	-	728	674	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.18	0.57	13.85	12.34
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	405	867	1276	-	-	1377	-	-	535
HCM Lane V/C Ratio	0.111	0.013	0.026	-	-	0.016	-	-	0.084
HCM Ctrl Dly (s/v)	15	9.2	7.9	-	-	7.7	-	-	12.3
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	0.1	-	-	0	-	-	0.3

HCM 7th TWSC
24: Silverado Trail & Pratt Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	30	20	520	540	20
Future Vol, veh/h	10	30	20	520	540	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	34	22	584	607	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1247	618	629	0	-	0
Stage 1	618	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	191	487	948	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	184	487	948	-	-	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	16.99	0.33		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	67	-	345	-	-	
HCM Lane V/C Ratio	0.024	-	0.13	-	-	
HCM Ctrl Dly (s/v)	8.9	0	17	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

HCM 7th TWSC

Saint Helena Streets Master Plan

25: Silverado Trail & Howell Mountain Rd

Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	20	520	40	10	560
Future Vol, veh/h	30	20	520	40	10	560
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	33	22	578	44	11	622
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1244	600	0	0	622	0
Stage 1	600	-	-	-	-	-
Stage 2	644	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	191	499	-	-	954	-
Stage 1	546	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	189	499	-	-	954	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	16.08	0		0.15		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	380	954	-	
HCM Lane V/C Ratio	-	-	0.146	0.012	-	
HCM Ctrl Dly (s/v)	-	-	16.1	8.8	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.5	0	-	

HCM 7th TWSC
26: Silverado Trail & Pope Street

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	60	100	480	430	160
Future Vol, veh/h	80	60	100	480	430	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	225
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	88	66	110	527	473	176
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1220	473	648	0	-	0
Stage 1	473	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	198	590	933	-	-	-
Stage 1	625	-	-	-	-	-
Stage 2	466	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	175	590	933	-	-	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	466	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	20.2	1.62		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	933	-	389	-	-	
HCM Lane V/C Ratio	0.118	-	0.396	-	-	
HCM Ctrl Dly (s/v)	9.4	-	20.2	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.4	-	1.8	-	-	

HCM 7th TWSC
27: Main St & Mills Ln

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↗	↖	
Traffic Vol, veh/h	0	0	10	0	0	10	0	783	10	10	826	10
Future Vol, veh/h	0	0	10	0	0	10	0	783	10	10	826	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	10	0	0	10	0	799	10	10	843	10
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1667	1678	848	1667	1678	804	853	0	0	809	0	0
Stage 1	868	868	-	804	804	-	-	-	-	-	-	-
Stage 2	799	809	-	863	873	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	76	94	360	76	94	381	782	-	-	812	-	-
Stage 1	346	368	-	375	394	-	-	-	-	-	-	-
Stage 2	378	392	-	348	366	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	73	93	360	73	93	381	782	-	-	812	-	-
Mov Cap-2 Maneuver	73	93	-	73	93	-	-	-	-	-	-	-
Stage 1	341	364	-	375	394	-	-	-	-	-	-	-
Stage 2	367	392	-	334	362	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	15.3		14.7		0		0.11					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	782	-	-	360	381	812	-	-				
HCM Lane V/C Ratio	-	-	-	0.028	0.027	0.013	-	-				
HCM Ctrl Dly (s/v)	0	-	-	15.3	14.7	9.5	-	-				
HCM Lane LOS	A	-	-	C	B	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

HCM 7th Signalized Intersection Summary
28: Main St & Charter Oak Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	120	60	10	30	90	573	130	40	666	10
Future Volume (veh/h)	20	10	120	60	10	30	90	573	130	40	666	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1484	1484	1484	1484	1484	1484	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	21	10	18	63	10	14	94	597	127	42	694	9
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	57	27	49	131	21	29	120	674	143	71	786	10
Arrive On Green	0.10	0.10	0.10	0.13	0.13	0.13	0.07	0.46	0.46	0.04	0.43	0.43
Sat Flow, veh/h	585	279	501	1009	160	224	1767	1471	313	1767	1826	24
Grp Volume(v), veh/h	49	0	0	87	0	0	94	0	724	42	0	703
Grp Sat Flow(s),veh/h/ln	1365	0	0	1394	0	0	1767	0	1784	1767	0	1850
Q Serve(g_s), s	2.3	0.0	0.0	4.0	0.0	0.0	3.6	0.0	25.4	1.6	0.0	23.9
Cycle Q Clear(g_c), s	2.3	0.0	0.0	4.0	0.0	0.0	3.6	0.0	25.4	1.6	0.0	23.9
Prop In Lane	0.43		0.37	0.72		0.16	1.00		0.18	1.00		0.01
Lane Grp Cap(c), veh/h	133	0	0	181	0	0	120	0	817	71	0	796
V/C Ratio(X)	0.37	0.00	0.00	0.48	0.00	0.00	0.78	0.00	0.89	0.59	0.00	0.88
Avail Cap(c_a), veh/h	341	0	0	226	0	0	157	0	987	132	0	997
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.9	0.0	0.0	27.7	0.0	0.0	31.4	0.0	16.9	32.3	0.0	17.9
Incr Delay (d2), s/veh	1.7	0.0	0.0	2.0	0.0	0.0	16.9	0.0	8.5	7.6	0.0	8.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	1.4	0.0	0.0	2.1	0.0	11.3	0.8	0.0	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.6	0.0	0.0	29.6	0.0	0.0	48.3	0.0	25.5	39.9	0.0	25.9
LnGrp LOS	C			C			D		C	D		C
Approach Vol, veh/h	49			87			818			745		
Approach Delay, s/veh	30.6			29.6			28.1			26.7		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	36.1		11.4	9.4	34.2		13.6				
Change Period (Y+Rc), s	4.7	4.7		4.7	4.7	4.7		4.7				
Max Green Setting (Gmax), s	5.1	37.9		17.1	6.1	36.9		11.1				
Max Q Clear Time (g_c+I1), s	3.6	27.4		4.3	5.6	25.9		6.0				
Green Ext Time (p_c), s	0.0	4.0		0.1	0.0	3.6		0.1				
Intersection Summary												
HCM 7th Control Delay, s/veh	27.6											
HCM 7th LOS	C											

HCM 7th AWSC
29: Oak Ave & Pine St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Intersection Delay, s/veh	8.4											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	10	0	20	10	10	10	160	20	10	150	0
Future Vol, veh/h	0	10	0	20	10	10	10	160	20	10	150	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	11	0	22	11	11	11	172	22	11	161	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.9	8	8.5	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	0%	50%	6%
Vol Thru, %	84%	100%	25%	94%
Vol Right, %	11%	0%	25%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	10	40	160
LT Vol	10	0	20	10
Through Vol	160	10	10	150
RT Vol	20	0	10	0
Lane Flow Rate	204	11	43	172
Geometry Grp	1	1	1	1
Degree of Util (X)	0.234	0.014	0.057	0.201
Departure Headway (Hd)	4.123	4.829	4.736	4.213
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	858	745	761	840
Service Time	2.211	2.832	2.736	2.305
HCM Lane V/C Ratio	0.238	0.015	0.057	0.205
HCM Control Delay, s/veh	8.5	7.9	8	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0	0.2	0.7

HCM 7th AWSC
30: Oak Ave & Adams St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Intersection Delay, s/veh	10											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	30	10	60	30	20	20	160	80	10	140	10
Future Vol, veh/h	10	30	10	60	30	20	20	160	80	10	140	10
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	12	37	12	74	37	25	25	198	99	12	173	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.9	9.6	10.7	9.6
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	20%	55%	6%
Vol Thru, %	62%	60%	27%	88%
Vol Right, %	31%	20%	18%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	260	50	110	160
LT Vol	20	10	60	10
Through Vol	160	30	30	140
RT Vol	80	10	20	10
Lane Flow Rate	321	62	136	198
Geometry Grp	1	1	1	1
Degree of Util (X)	0.404	0.09	0.197	0.264
Departure Headway (Hd)	4.535	5.261	5.222	4.809
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	790	674	682	743
Service Time	2.588	3.348	3.298	2.87
HCM Lane V/C Ratio	0.406	0.092	0.199	0.266
HCM Control Delay, s/veh	10.7	8.9	9.6	9.6
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	2	0.3	0.7	1.1

HCM 7th AWSC
31: Oak Ave & Spring St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Intersection Delay, s/veh10.3												
Intersection LOS B												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	40	40	40	30	40	40	30	160	20	30	150	20
Future Vol, veh/h	40	40	40	30	40	40	30	160	20	30	150	20
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	48	48	48	36	48	48	36	193	24	36	181	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh9.8		9.6	10.8	10.6
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	33%	27%	15%
Vol Thru, %	76%	33%	36%	75%
Vol Right, %	10%	33%	36%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	210	120	110	200
LT Vol	30	40	30	30
Through Vol	160	40	40	150
RT Vol	20	40	40	20
Lane Flow Rate	253	145	133	241
Geometry Grp	1	1	1	1
Degree of Util (X)	0.354	0.213	0.195	0.338
Departure Headway (Hd)	5.041	5.303	5.294	5.057
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	716	677	679	716
Service Time	3.049	3.334	3.326	3.064
HCM Lane V/C Ratio	0.353	0.214	0.196	0.337
HCM Control Delay, s/veh	10.8	9.8	9.6	10.6
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	1.6	0.8	0.7	1.5

HCM 7th TWSC
32: Main St & Spring St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	60	80	473	476	40
Future Vol, veh/h	30	60	80	473	476	40
Conflicting Peds, #/hr	0	155	202	0	0	202
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	31	63	83	493	496	42
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1378	874	740	0	-	0
Stage 1	719	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	159	348	862	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	513	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	86	239	696	-	-	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	324	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	31.66	1.57		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	260	-	227	-	-	
HCM Lane V/C Ratio	0.12	-	0.414	-	-	
HCM Ctrl Dly (s/v)	10.9	0	31.7	-	-	
HCM Lane LOS	B	A	D	-	-	
HCM 95th %tile Q(veh)	0.4	-	1.9	-	-	

HCM 7th TWSC
33: Pope St & Church St

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	110	0	10	230	40	10	0	0	30	0	70
Future Vol, veh/h	30	110	0	10	230	40	10	0	0	30	0	70
Conflicting Peds, #/hr	10	0	7	7	0	10	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	34	124	0	11	258	45	11	0	0	34	0	79
Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	313	0	0	131	0	0	481	534	131	504	511	293
Stage 1	-	-	-	-	-	-	198	198	-	313	313	-
Stage 2	-	-	-	-	-	-	283	336	-	191	198	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1241	-	-	1449	-	-	494	451	916	476	464	744
Stage 1	-	-	-	-	-	-	802	735	-	695	655	-
Stage 2	-	-	-	-	-	-	722	640	-	808	735	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1229	-	-	1439	-	-	420	426	910	454	439	736
Mov Cap-2 Maneuver	-	-	-	-	-	-	420	426	-	454	439	-
Stage 1	-	-	-	-	-	-	773	709	-	682	643	-
Stage 2	-	-	-	-	-	-	637	628	-	785	709	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	1.72		0.27		13.8		12.09					
HCM LOS					B		B					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	420	386	-	-	62	-	-	620				
HCM Lane V/C Ratio	0.027	0.027	-	-	0.008	-	-	0.181				
HCM Ctrl Dly (s/v)	13.8	8	0	-	7.5	0	-	12.1				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.7				

HCM 7th TWSC
36: Charter Oak Ave & Oak Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	70	40	70	80	10
Future Vol, veh/h	10	70	40	70	80	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	76	43	76	87	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	120	0	-	0	179	82
Stage 1	-	-	-	-	82	-
Stage 2	-	-	-	-	98	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1462	-	-	-	808	976
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	924	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1462	-	-	-	802	976
Mov Cap-2 Maneuver	-	-	-	-	802	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	924	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.94	0		10		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	225	-	-	-	818	
HCM Lane V/C Ratio	0.007	-	-	-	0.12	
HCM Ctrl Dly (s/v)	7.5	0	-	-	10	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

HCM 7th AWSC
37: Oak Ave & Madrona Ave

Saint Helena Streets Master Plan
Cumulative MD Plus Project Oak Charter Oak Ave

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	106	50	80	73	10	25	5	110	10	10	0
Future Vol, veh/h	10	106	50	80	73	10	25	5	110	10	10	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	115	54	87	79	11	27	5	120	11	11	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.7	9	8.4	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	18%	6%	49%	50%
Vol Thru, %	4%	64%	45%	50%
Vol Right, %	79%	30%	6%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	166	163	20
LT Vol	25	10	80	10
Through Vol	5	106	73	10
RT Vol	110	50	10	0
Lane Flow Rate	152	180	177	22
Geometry Grp	1	1	1	1
Degree of Util (X)	0.184	0.22	0.227	0.031
Departure Headway (Hd)	4.356	4.381	4.606	5.052
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	823	819	780	707
Service Time	2.387	2.411	2.635	3.092
HCM Lane V/C Ratio	0.185	0.22	0.227	0.031
HCM Control Delay, s/veh	8.4	8.7	9	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	0.8	0.9	0.1

Fehr & Peers

Major Street Silverado Trail
 Minor Street Pope Street/Howell Mountain Road

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Pope
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	240	10	140	30
Through	480	450	0	0
Right	40	220	110	10
Total	760	680	250	40

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	25.7
Approach with Worst Case Delay	EB
Total Vehicles on Approach	250

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Pope	1.8	250	1,730
Limiting Value	4	100	800
Condition Satisfied?	Not Met	Met	Met
Warrant Met	NO		

Fehr & Peers

Major Street **Silverado Trail**
Minor Street **Pope Street/Howell Mountain Road**

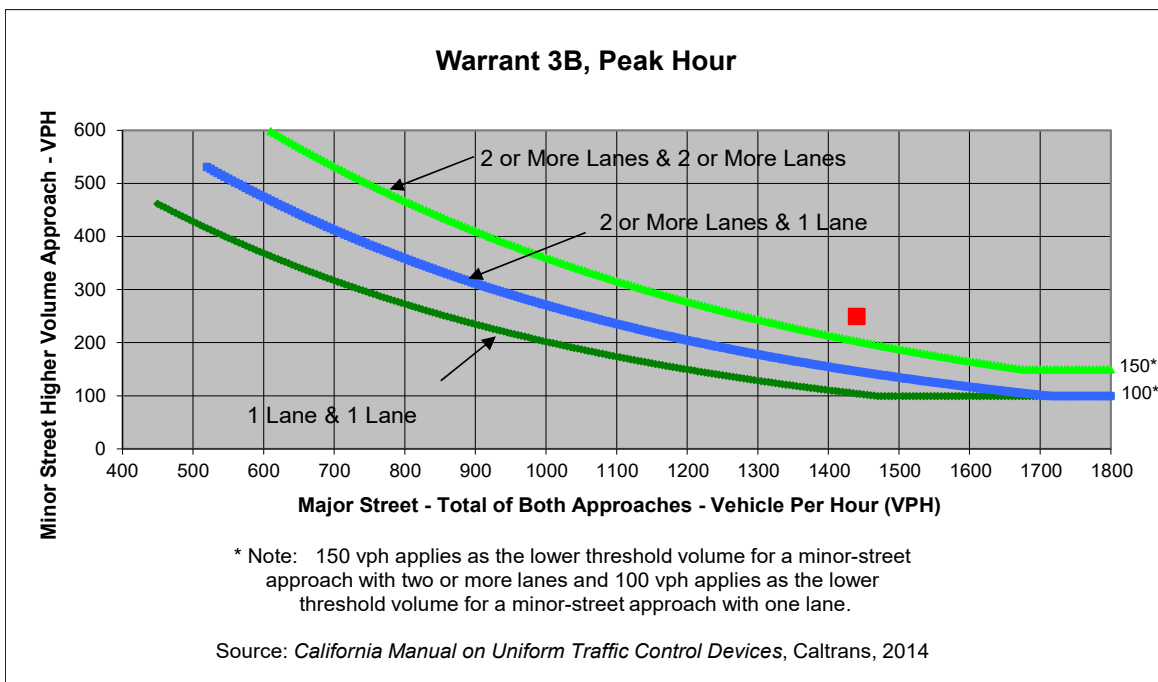
Project **Saint Helena SMP**
Scenario **Cumulative Conditions Plus Project Pope**
Peak Hour **AM**

Turn Movement Volumes

	NB	SB	EB	WB
Left	240	10	140	30
Through	480	450	0	0
Right	40	220	110	10
Total	760	680	250	40

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Silverado Trail	Pope Street/Howell Mountain Road	
Number of Approach Lanes	1	1	<u>YES</u>
Traffic Volume (VPH) *	1,440	250	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Fehr & Peers

Major Street Silverado Trail
 Minor Street Pope Street/Howell Mountain Road

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Pope
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	140	10	130	50
Through	530	620	0	0
Right	20	230	210	10
Total	690	860	340	60

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	41
Approach with Worst Case Delay	EB
Total Vehicles on Approach	340

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Pope	3.9	340	1,950
Limiting Value	4	100	800
Condition Satisfied?	Not Met	Met	Met
Warrant Met	NO		

Fehr & Peers

Major Street **Silverado Trail**
 Minor Street **Pope Street/Howell Mountain Road**

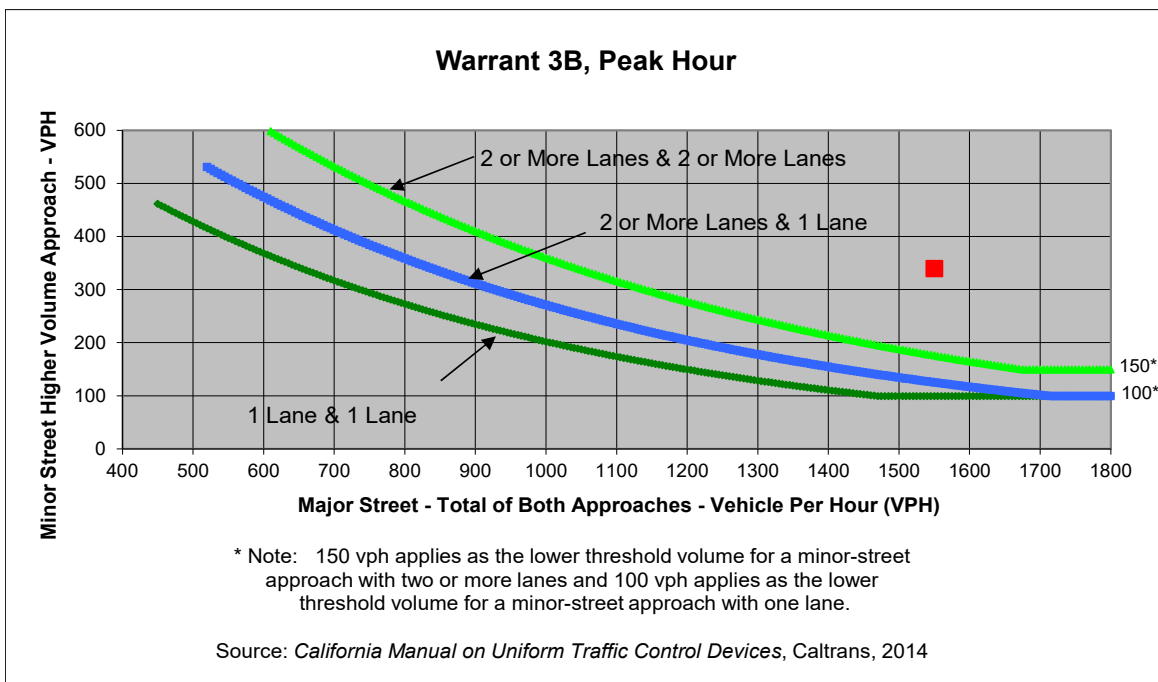
Project **Saint Helena SMP**
 Scenario **Cumulative Conditions Plus Project Pope**
 Peak Hour **PM**

Turn Movement Volumes

	NB	SB	EB	WB
Left	140	10	130	50
Through	530	620	0	0
Right	20	230	210	10
Total	690	860	340	60

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Silverado Trail	Pope Street/Howell Mountain Road	
Number of Approach Lanes	1	1	<u>YES</u>
Traffic Volume (VPH) *	1,550	340	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Fehr & Peers

Major Street Silverado Trail
 Minor Street Pope Street/Howell Mountain Road

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Pope
 Peak Hour MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	110	10	80	30
Through	480	430	0	0
Right	40	160	70	20
Total	630	600	150	50

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street
 Total Approaches

1
4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)
 Approach with Worst Case Delay
 Total Vehicles on Approach

13.4
EB
150

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Pope	0.6	150	1,430
Limiting Value	4	100	800
Condition Satisfied?	Not Met	Met	Met
Warrant Met	<u>NO</u>		

Fehr & Peers

Major Street **Silverado Trail**
 Minor Street **Pope Street/Howell Mountain Road**

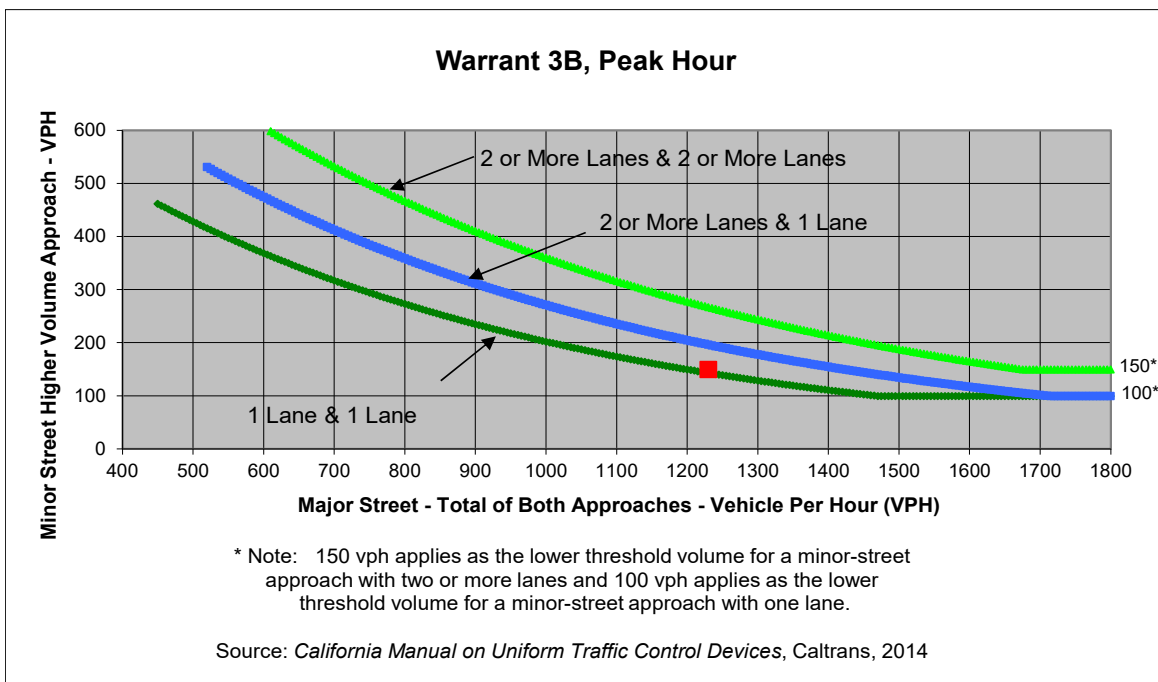
Project **Saint Helena SMP**
 Scenario **Cumulative Conditions Plus Project Pope**
 Peak Hour **MD**

Turn Movement Volumes

	NB	SB	EB	WB
Left	110	10	80	30
Through	480	430	0	0
Right	40	160	70	20
Total	630	600	150	50

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Silverado Trail	Pope Street/Howell Mountain Road	
Number of Approach Lanes	1	1	<u>YES</u>
Traffic Volume (VPH) *	1,230	150	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Fehr & Peers

Major Street Silverado Trail
 Minor Street Adams Street

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Adams
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	40	0
Through	0	0	190	180
Right	0	10	30	10
Total	10	10	260	190

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street
 Total Approaches

1
4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)
 Approach with Worst Case Delay
 Total Vehicles on Approach

19.9
EB
260

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Adams	1.4	260	470
Limiting Value	4	100	800
Condition Satisfied?	Not Met	Met	Not Met
Warrant Met	NO		

Fehr & Peers

Major Street Silverado Trail
 Minor Street Adams Street

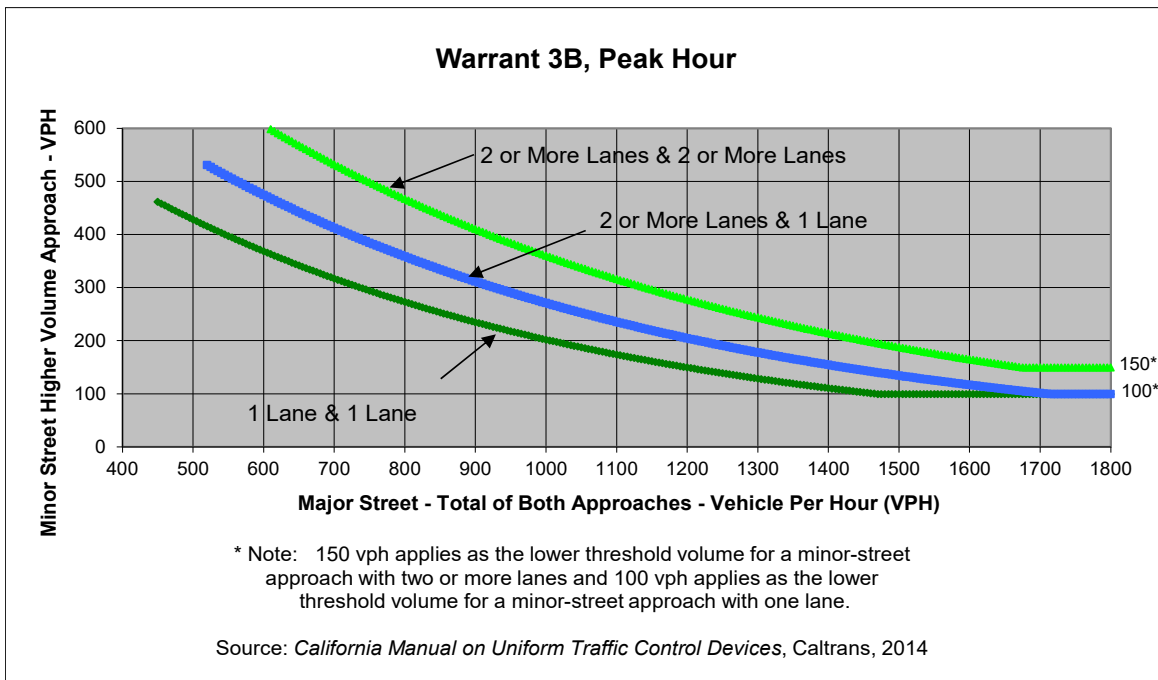
Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Adams
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	40	0
Through	0	0	190	180
Right	0	10	30	10
Total	10	10	260	190

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Silverado Trail	Adams Street	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	20	260	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Fehr & Peers

Major Street Silverado Trail
 Minor Street Adams Street

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Adams
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	110	0	0	0
Through	650	810	10	0
Right	0	0	90	0
Total	760	810	100	0

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street
 Total Approaches

1
3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)
 Approach with Worst Case Delay
 Total Vehicles on Approach

24.8
EB
100

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Adams	0.7	100	1,670
Limiting Value	4	100	650
Condition Satisfied?	Not Met	Met	Met
Warrant Met	<u>NO</u>		

Fehr & Peers

Major Street **Silverado Trail**
Minor Street **Adams Street**

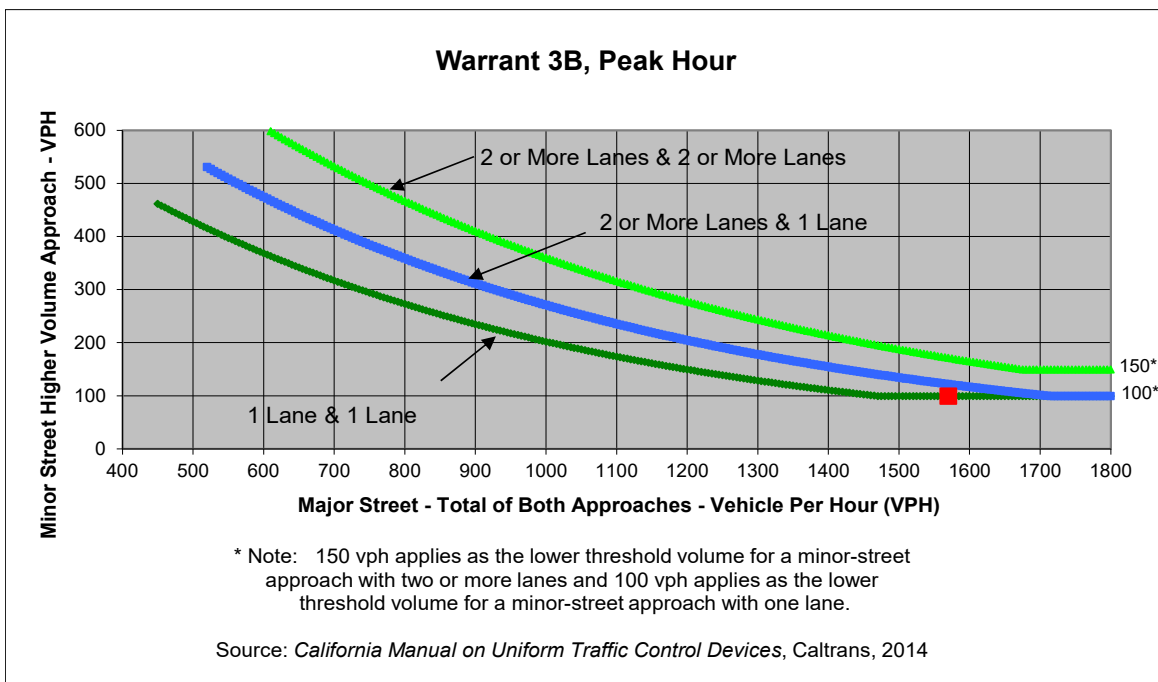
Project **Saint Helena SMP**
Scenario **Cumulative Conditions Plus Project Adams**
Peak Hour **PM**

Turn Movement Volumes

	NB	SB	EB	WB
Left	110	0	0	0
Through	650	810	10	0
Right	0	0	90	0
Total	760	810	100	0

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Silverado Trail	Adams Street	
Number of Approach Lanes	1	1	<u>YES</u>
Traffic Volume (VPH) *	1,570	100	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street Silverado Trail
 Minor Street Adams Street

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Adams
 Peak Hour MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	120	0	0	0
Through	540	570	10	0
Right	0	0	110	0
Total	660	570	120	0

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street
 Total Approaches

1
3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)
 Approach with Worst Case Delay
 Total Vehicles on Approach

17
EB
120

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Adams	0.6	120	1,350
Limiting Value	4	100	650
Condition Satisfied?	Not Met	Met	Met
Warrant Met	<u>NO</u>		

Fehr & Peers

Major Street **Silverado Trail**
Minor Street **Adams Street**

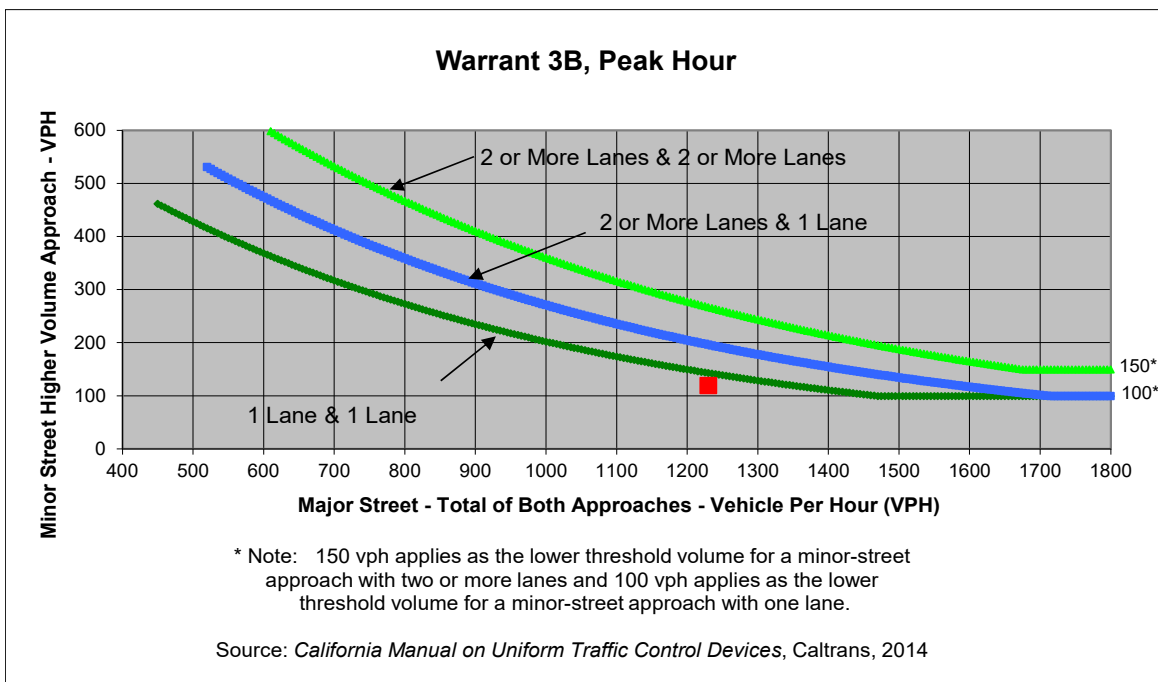
Project **Saint Helena SMP**
Scenario **Cumulative Conditions Plus Project Adams**
Peak Hour **MD**

Turn Movement Volumes

	NB	SB	EB	WB
Left	120	0	0	0
Through	540	570	10	0
Right	0	0	110	0
Total	660	570	120	0

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Silverado Trail	Adams Street	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	1,230	120	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street Oak Avenue
 Minor Street Charter Oak Avenue

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Oak
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	150	160	30	60
Right	0	0	0	0
Total	150	160	30	60

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	12
Approach with Worst Case Delay	WB
Total Vehicles on Approach	60

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Oak	0.2	60	400
Limiting Value	4	100	800
Condition Satisfied?	Not Met	Not Met	Not Met
Warrant Met	NO		

Fehr & Peers

Major Street **Oak Avenue**
 Minor Street **Charter Oak Avenue**

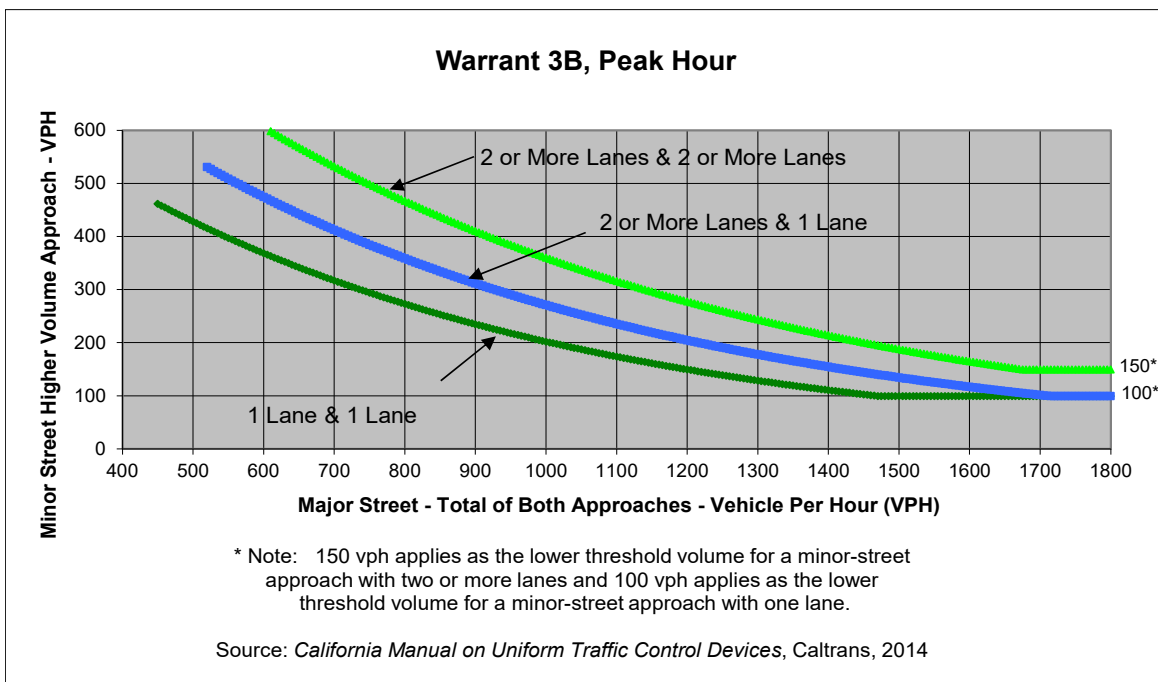
Project **Saint Helena SMP**
 Scenario **Cumulative Conditions Plus Project Oak**
 Peak Hour **AM**

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	150	160	30	60
Right	0	0	0	0
Total	150	160	30	60

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Oak Avenue	Charter Oak Avenue	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	310	60	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Fehr & Peers

Major Street Oak Avenue
 Minor Street Charter Oak Avenue

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Oak
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	130	120	60	30
Right	0	0	0	0
Total	130	120	60	30

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	11.3
Approach with Worst Case Delay	EB
Total Vehicles on Approach	60

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Oak	0.2	60	340
Limiting Value	4	100	800
Condition Satisfied?	Not Met	Not Met	Not Met
Warrant Met	NO		

Fehr & Peers

Major Street **Oak Avenue**
 Minor Street **Charter Oak Avenue**

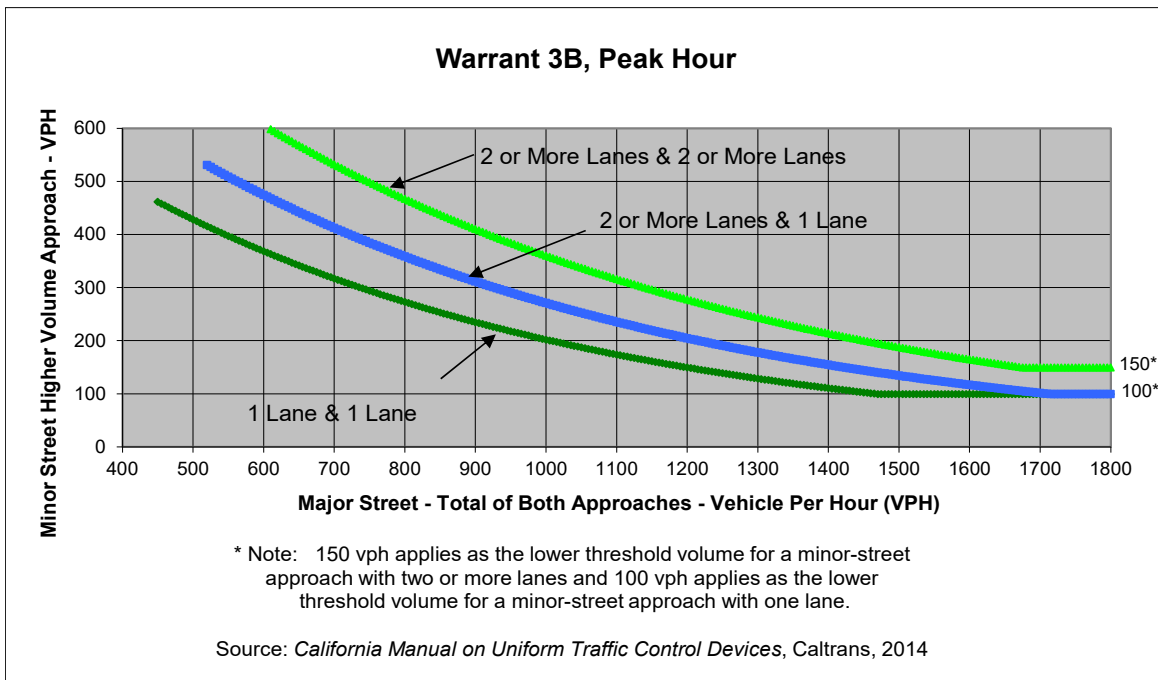
Project **Saint Helena SMP**
 Scenario **Cumulative Conditions Plus Project Oak**
 Peak Hour **PM**

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	130	120	60	30
Right	0	0	0	0
Total	130	120	60	30

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Oak Avenue	Charter Oak Avenue	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	250	60	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Fehr & Peers

Major Street Oak Avenue
 Minor Street Charter Oak Avenue

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Oak
 Peak Hour MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	80	90	70	40
Right	0	0	0	0
Total	80	90	70	40

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	10.7
Approach with Worst Case Delay	EB
Total Vehicles on Approach	70

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Oak	0.2	70	280
Limiting Value	4	100	800
Condition Satisfied?	Not Met	Not Met	Not Met
Warrant Met	NO		

Fehr & Peers

Major Street **Oak Avenue**
 Minor Street **Charter Oak Avenue**

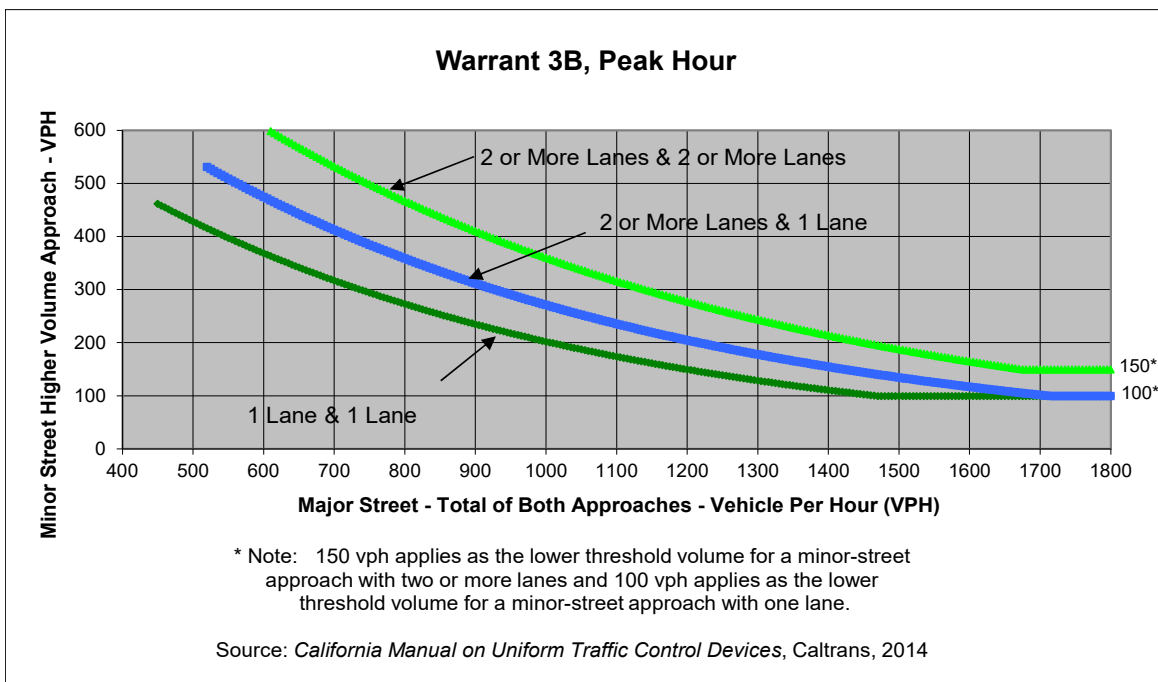
Project **Saint Helena SMP**
 Scenario **Cumulative Conditions Plus Project Oak**
 Peak Hour **MD**

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	80	90	70	40
Right	0	0	0	0
Total	80	90	70	40

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Oak Avenue	Charter Oak Avenue	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	170	70	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Fehr & Peers

Major Street Grayson Avenue
 Minor Street Oak Avenue

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Oak
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	120	60	0
Through	0	0	90	130
Right	0	40	0	90
Total	0	160	150	220

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	13.2
Approach with Worst Case Delay	SB
Total Vehicles on Approach	160

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Oak	0.6	160	530
Limiting Value	4	100	650
Condition Satisfied?	Not Met	Met	Not Met
Warrant Met	<u>NO</u>		

Fehr & Peers

Major Street **Grayson Avenue**
 Minor Street **Oak Avenue**

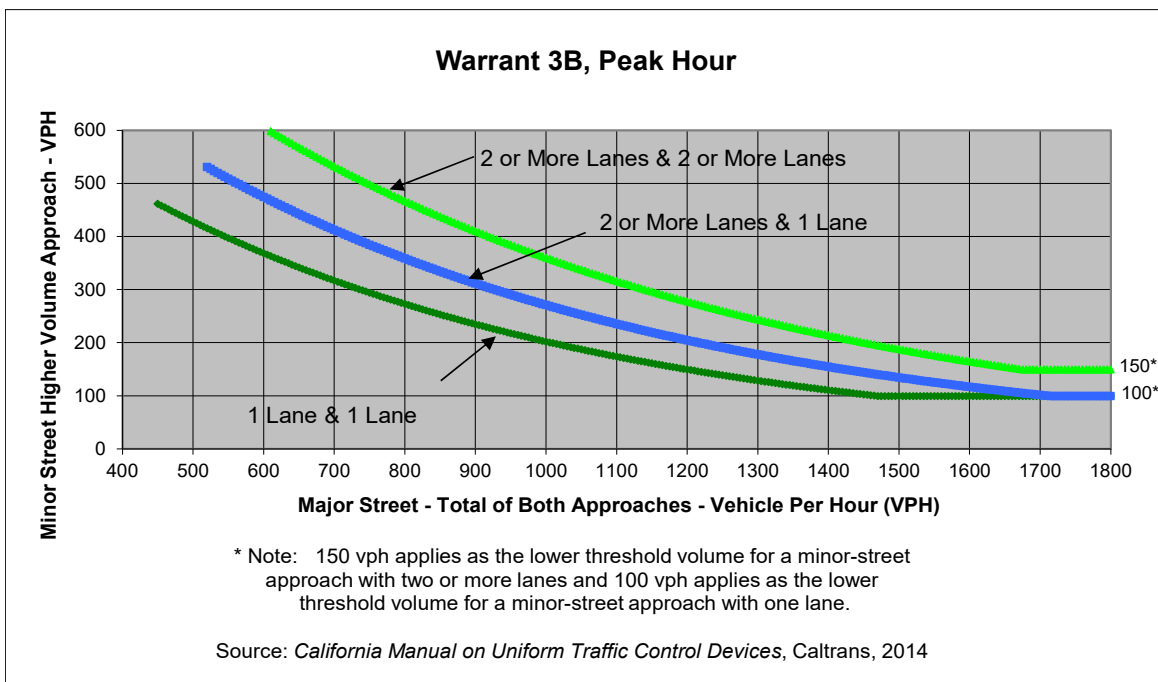
Project **Saint Helena SMP**
 Scenario **Cumulative Conditions Plus Project Oak**
 Peak Hour **AM**

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	120	60	0
Through	0	0	90	130
Right	0	40	0	90
Total	0	160	150	220

Major Street Direction

	North/South
x	East/West



	Major Street	Minor Street	Warrant Met
	Grayson Avenue	Oak Avenue	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	370	160	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Fehr & Peers

Major Street Grayson Avenue
 Minor Street Oak Avenue

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Oak
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	90	40	0
Through	0	0	100	100
Right	0	30	0	90
Total	0	120	140	190

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	11.7
Approach with Worst Case Delay	SB
Total Vehicles on Approach	120

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Oak	0.4	120	450
Limiting Value	4	100	650
Condition Satisfied?	Not Met	Met	Not Met
Warrant Met	NO		

Fehr & Peers

Major Street **Grayson Avenue**
 Minor Street **Oak Avenue**

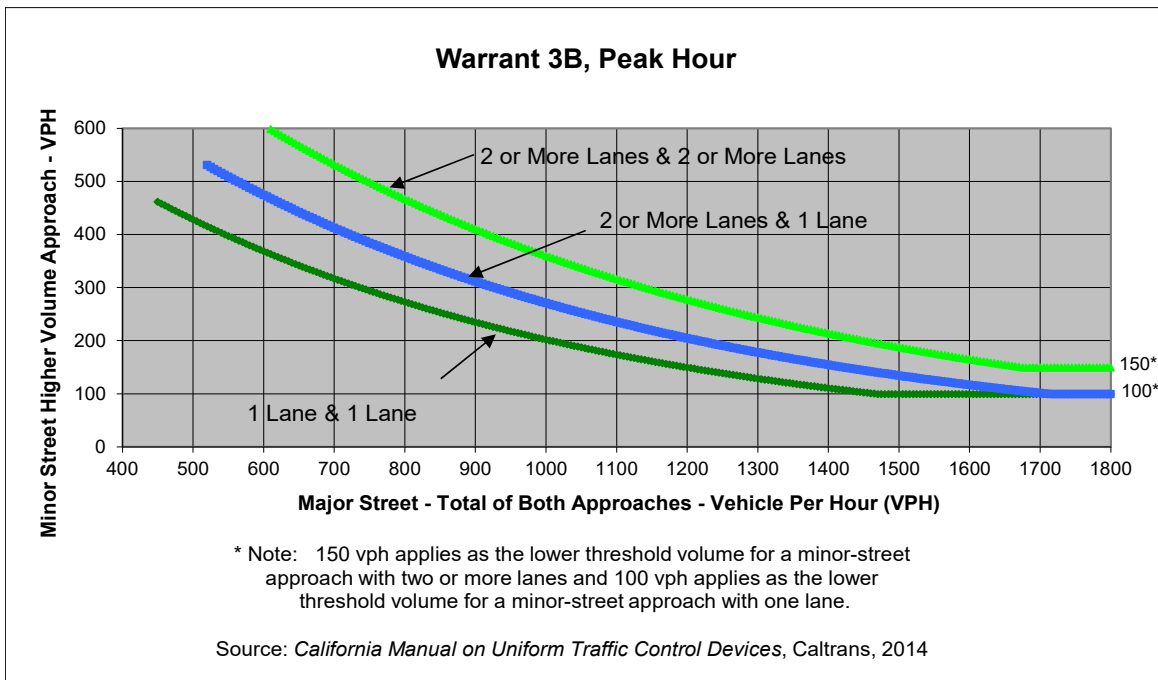
Project **Saint Helena SMP**
 Scenario **Cumulative Conditions Plus Project Oak**
 Peak Hour **PM**

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	90	40	0
Through	0	0	100	100
Right	0	30	0	90
Total	0	120	140	190

Major Street Direction

	North/South
x	East/West



	Major Street	Minor Street	Warrant Met
	Grayson Avenue	Oak Avenue	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	330	120	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Fehr & Peers

Major Street Grayson Avenue
 Minor Street Oak Avenue

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Oak
 Peak Hour MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	80	10	0
Through	0	0	40	50
Right	0	10	0	70
Total	0	90	50	120

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street
 Total Approaches

1
3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)
 Approach with Worst Case Delay
 Total Vehicles on Approach

9.9
SB
90

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Oak	0.2	90	260
Limiting Value	4	100	650
Condition Satisfied?	Not Met	Not Met	Not Met
Warrant Met	<u>NO</u>		

Fehr & Peers

Major Street **Grayson Avenue**
 Minor Street **Oak Avenue**

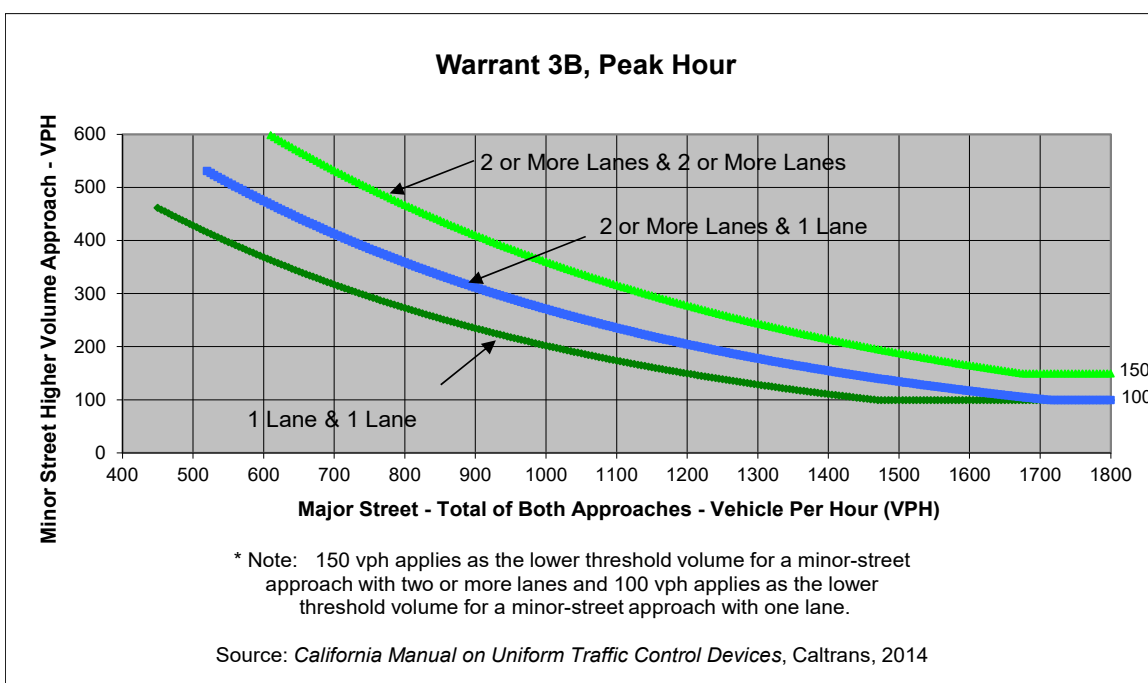
Project **Saint Helena SMP**
 Scenario **Cumulative Conditions Plus Project Oak**
 Peak Hour **MD**

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	80	10	0
Through	0	0	40	50
Right	0	10	0	70
Total	0	90	50	120

Major Street Direction

	North/South
x	East/West



	Major Street	Minor Street	Warrant Met
	Grayson Avenue	Oak Avenue	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	170	90	
* Note: Traffic Volume for Major Street is Total Volume of Both Approaches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Fehr & Peers

Major Street Oak Avenue
 Minor Street Mitchell Drive

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Oak
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	120	30	12
Through	150	92	30	40
Right	0	20	0	60
Total	150	232	60	112

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street
 Total Approaches

1
4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)
 Approach with Worst Case Delay
 Total Vehicles on Approach

17
SB
232

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Oak	1.1	112	554
Limiting Value	4	100	800
Condition Satisfied?	Not Met	Met	Not Met
Warrant Met	NO		

Fehr & Peers

Major Street **Oak Avenue**
 Minor Street **Mitchell Drive**

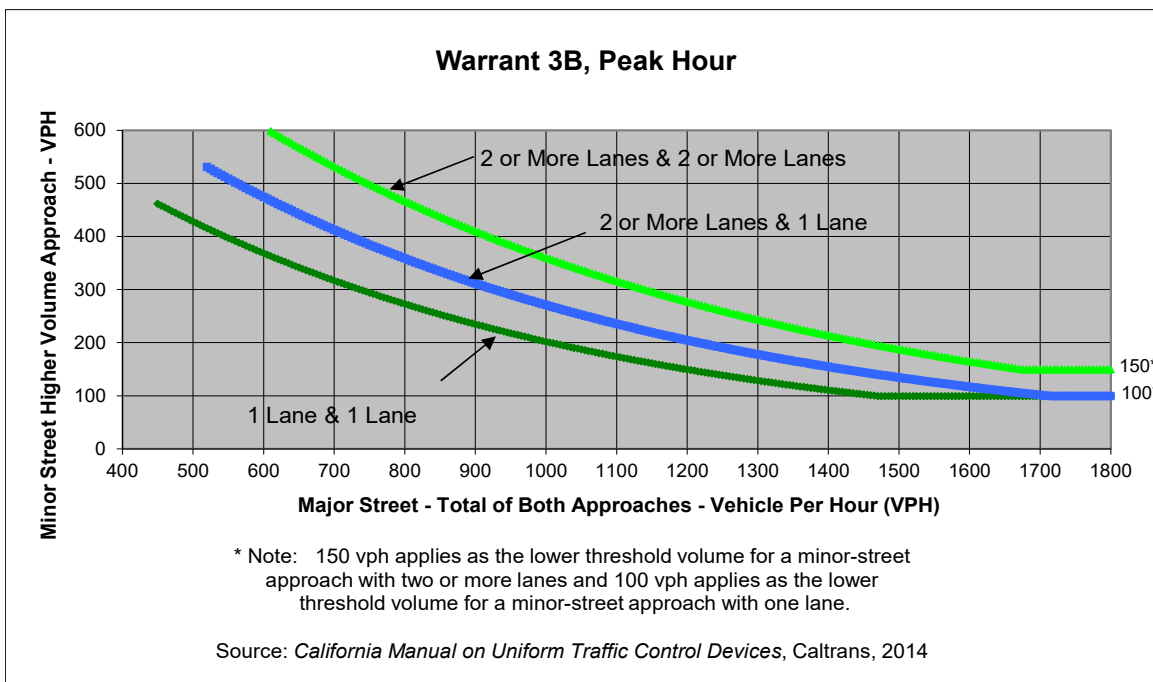
Project **Saint Helena SMP**
 Scenario **Cumulative Conditions Plus Project Oak**
 Peak Hour **AM**

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	120	30	12
Through	150	92	30	40
Right	0	20	0	60
Total	150	232	60	112

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Oak Avenue	Mitchell Drive	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	382	112	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street Oak Avenue
 Minor Street Mitchell Drive

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Oak
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	150	20	6
Through	130	66	30	50
Right	0	20	0	70
Total	130	236	50	126

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street
 Total Approaches

1
4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)
 Approach with Worst Case Delay
 Total Vehicles on Approach

15.9
SB
236

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Oak	1	126	542
Limiting Value	4	100	800
Condition Satisfied?	Not Met	Met	Not Met
Warrant Met	<u>NO</u>		

Fehr & Peers

Major Street **Oak Avenue**
 Minor Street **Mitchell Drive**

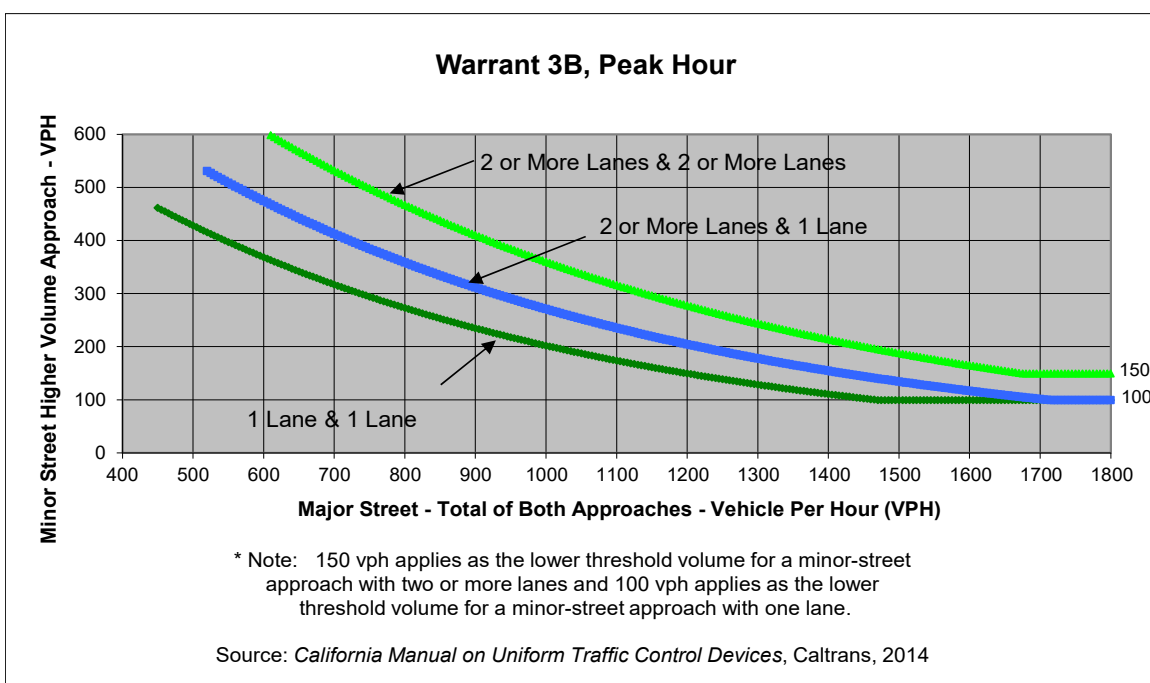
Project **Saint Helena SMP**
 Scenario **Cumulative Conditions Plus Project Oak**
 Peak Hour **PM**

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	150	20	6
Through	130	66	30	50
Right	0	20	0	70
Total	130	236	50	126

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Oak Avenue	Mitchell Drive	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	366	126	

* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street Oak Avenue
 Minor Street Mitchell Drive

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Oak
 Peak Hour MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	90	20	1
Through	80	71	0	30
Right	0	10	0	70
Total	80	171	20	101

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street
 Total Approaches

1
4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)
 Approach with Worst Case Delay
 Total Vehicles on Approach

7.5
EB
20

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Cumulative Conditions Plus Project Oak	0	101	372
Limiting Value	4	100	800
Condition Satisfied?	Not Met	Met	Not Met
Warrant Met	NO		

Fehr & Peers

Major Street **Oak Avenue**
Minor Street **Mitchell Drive**

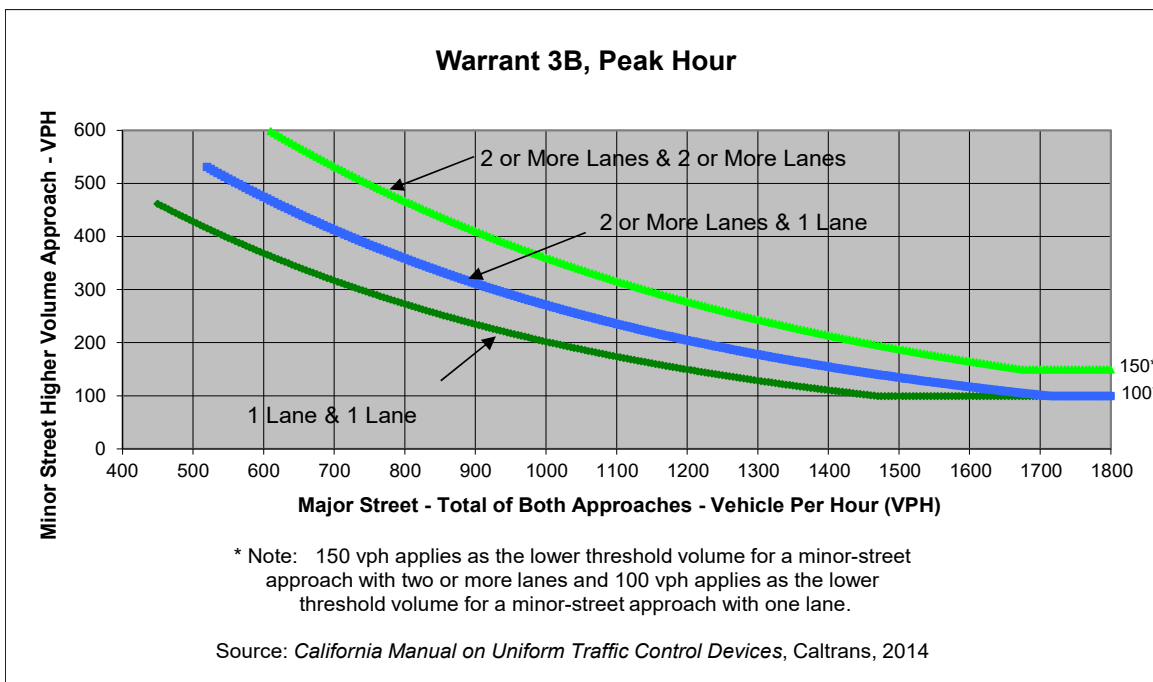
Project **Saint Helena SMP**
Scenario **Cumulative Conditions Plus Project Oak**
Peak Hour **MD**

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	90	20	1
Through	80	71	0	30
Right	0	10	0	70
Total	80	171	20	101

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Oak Avenue	Mitchell Drive	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	251	101	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Fehr & Peers

Major Street Main Street
 Minor Street Charter Oak Avenue

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Oak - Charter Oak Terminus
 Peak Hour AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	110	10	10	70
Through	769	802	10	10
Right	130	30	120	10
Total	1,009	842	140	90

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street
 Total Approaches

1
4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)
 Approach with Worst Case Delay
 Total Vehicles on Approach

1584.5
WB
90

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Served (vph)
Cumulative Conditions Plus Project Oak - Charter Oak Terminus	39.6	140	2,081
Limiting Value	4	100	800
Condition Satisfied?	Met	Met	Met
Warrant Met	<u>YES</u>		

Fehr & Peers

Major Street **Main Street**
Minor Street **Charter Oak Avenue**

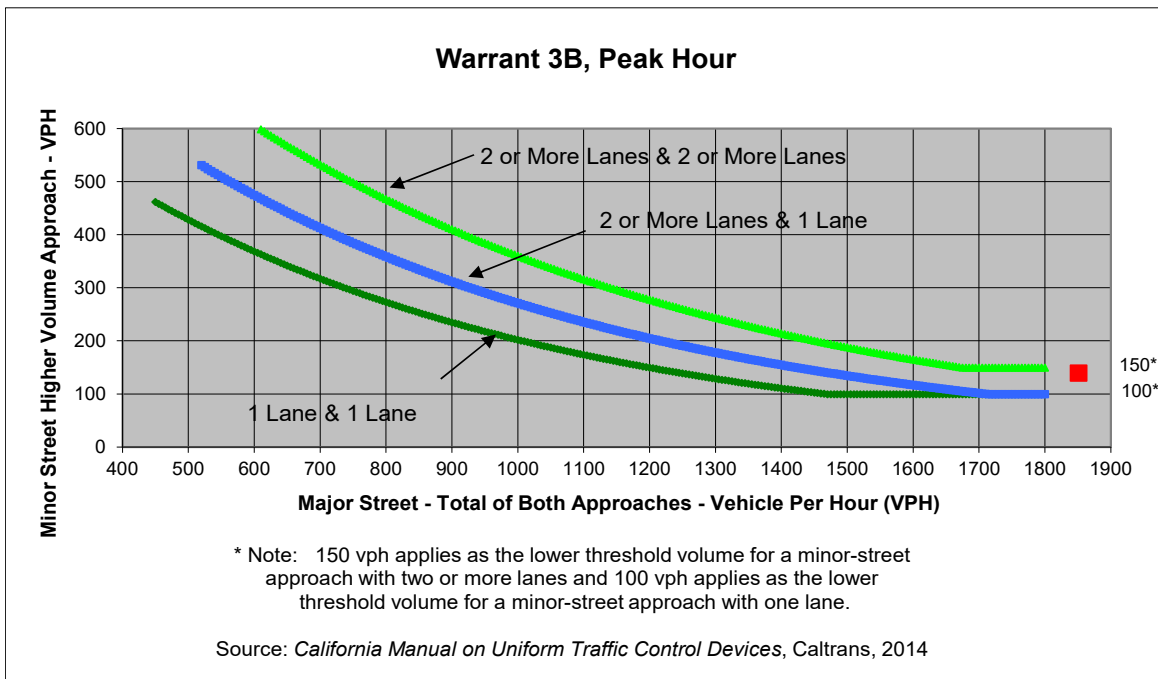
Project **Saint Helena SMP**
Scenario **Cumulative Conditions Plus Project Oak - Charter Oak Terminus**
Peak Hour **AM**

Turn Movement Volumes

	NB	SB	EB	WB
Left	110	10	10	70
Through	769	802	10	10
Right	130	30	120	10
Total	1,009	842	140	90

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Main Street	Charter Oak Avenue	
Number of Approach Lanes	2	1	<u>YES</u>
Traffic Volume (VPH) *	1,851	140	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Fehr & Peers

Major Street Main Street
 Minor Street Charter Oak Avenue

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Oak - Charter Oak Terminus
 Peak Hour PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	100	30	20	70
Through	694	834	10	0
Right	120	10	110	20
Total	914	874	140	90

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street
 Total Approaches

1
4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)
 Approach with Worst Case Delay
 Total Vehicles on Approach

1912
WB
90

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Served (vph)
Cumulative Conditions Plus Project Oak - Charter Oak Terminus	47.8	140	2,018
Limiting Value	4	100	800
Condition Satisfied?	Met	Met	Met
Warrant Met	<u>YES</u>		

Fehr & Peers

Major Street **Main Street**
 Minor Street **Charter Oak Avenue**

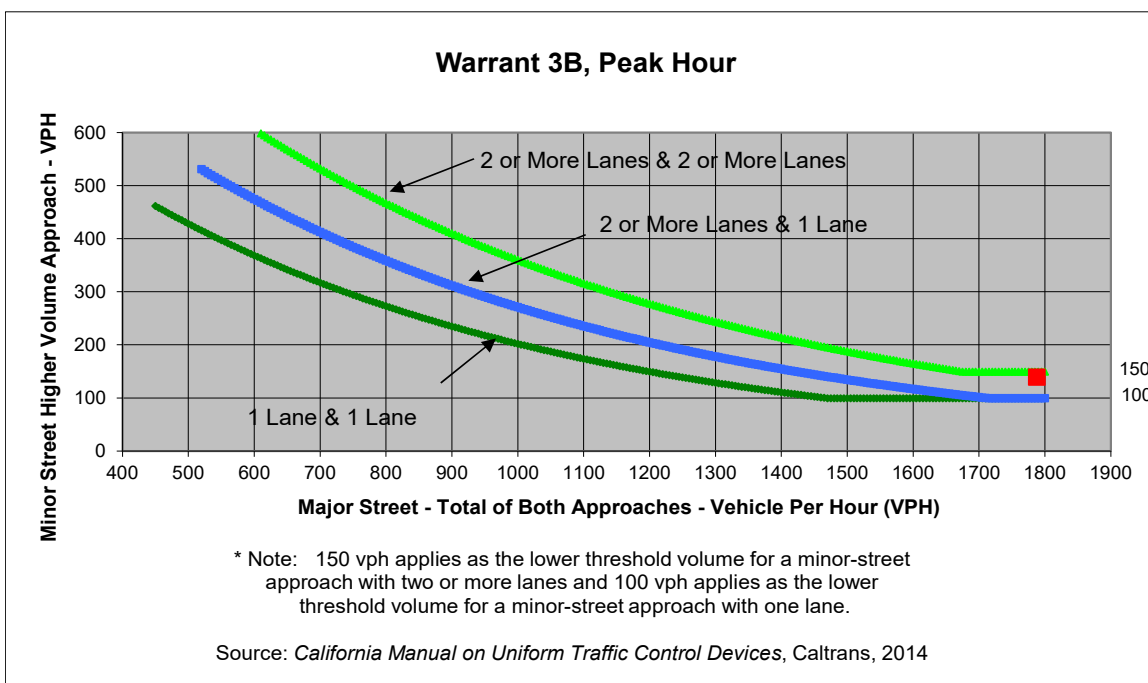
Project **Saint Helena SMP**
 Scenario **Cumulative Conditions Plus Project**
 Oak - Charter Oak Terminus
 Peak Hour **PM**

Turn Movement Volumes

	NB	SB	EB	WB
Left	100	30	20	70
Through	694	834	10	0
Right	120	10	110	20
Total	914	874	140	90

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Main Street	Charter Oak Avenue	
Number of Approach Lanes	2	1	<u>YES</u>
Traffic Volume (VPH) *	1,788	140	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Fehr & Peers

Major Street Main Street
 Minor Street Charter Oak Avenue

Project Saint Helena SMP
 Scenario Cumulative Conditions Plus Project Oak - Charter Oak Terminus
 Peak Hour MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	90	40	20	60
Through	573	666	10	10
Right	130	10	120	30
Total	793	716	150	100

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street
 Total Approaches

1
4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)
 Approach with Worst Case Delay
 Total Vehicles on Approach

480
WB
100

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Served (vph)
Cumulative Conditions Plus Project Oak - Charter Oak Terminus	13.3	150	1,759
Limiting Value	4	100	800
Condition Satisfied?	Met	Met	Met
Warrant Met	<u>YES</u>		

Fehr & Peers

Major Street **Main Street**
Minor Street **Charter Oak Avenue**

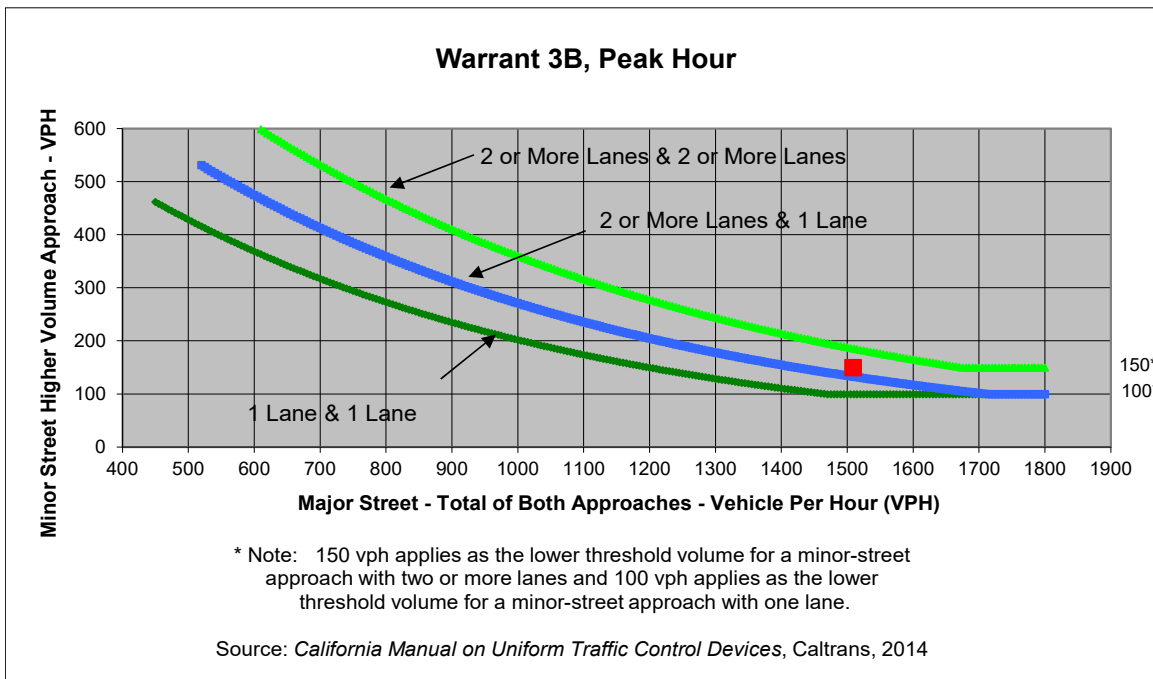
Project **Saint Helena SMP**
Scenario **Cumulative Conditions Plus Project Oak - Charter Oak Terminus**
Peak Hour **MD**

Turn Movement Volumes

	NB	SB	EB	WB
Left	90	40	20	60
Through	573	666	10	10
Right	130	10	120	30
Total	793	716	150	100

Major Street Direction

x	North/South
	East/West



	Major Street	Minor Street	Warrant Met
	Main Street	Charter Oak Avenue	
Number of Approach Lanes	2	1	<u>YES</u>
Traffic Volume (VPH) *	1,509	150	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

St Helena Streets Master Plan

Appendix G

Stormwater + Utilities Technical Memo



St. Helena Streets Master Plan

Existing Conditions: Stormwater Infrastructure + Utilities

December 2, 2024



TOOLE
DESIGN



ST. HELENA STREETS MASTER PLAN

STORMWATER AND UTILITIES TECHNICAL STUDY

Overview

The purpose of the Stormwater and Utilities Technical Study is to provide an overview of utility infrastructure within the City of St. Helena, as it relates to the St. Helena Streets Master Plan. This memorandum identifies opportunities and constraints for the Streets Master Plan presented by the existing utility infrastructure. Also included is a discussion of stormwater treatment measures and opportunities for incorporating green infrastructure into the Streets Master Plan.

In April 2021, Carollo Engineering prepared an “Integrated Utility Master Plan” for the City of St. Helena, which assessed existing city-wide water, storm drain, and sanitary sewer utilities. This memorandum builds upon the analyses conducted as part of that 2021 plan. All figures referenced in this Study are from the 2021 Plan.

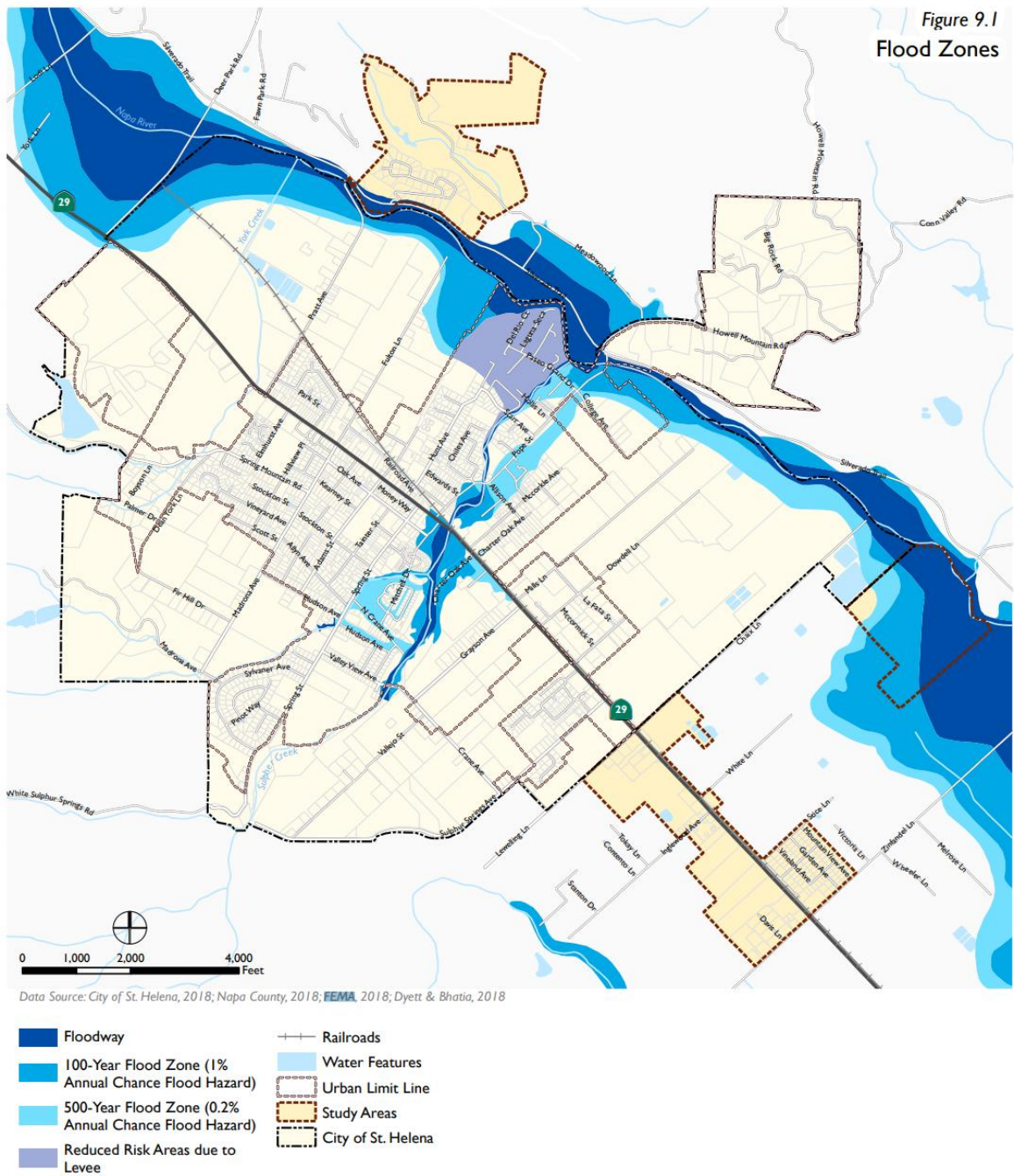
Storm Drain Infrastructure and Green Infrastructure

There are three main watersheds within St. Helena: Sulphur Creek, Napa River, and York Creek. York Creek and Sulphur Creek both drain to the Napa River, which eventually flows to the San Pablo Bay. Figure 5.8 in the appendix document illustrates the existing storm drain infrastructure within the city, which drains to various outfalls to the streams and rivers within the City.

The Integrated Utility Master Plan also identified existing storm drain lines that have capacity deficiencies and associated recommended capital improvement projects (CIP) to address deficiencies. These are shown in the appendix document on Figures 6.8, *Existing Storm Drainage System Capacity Deficiencies* and 6.11, *Storm Drainage System Improvements*. Several existing mains are proposed to be replaced with larger pipes.

Portions of the city are mapped within the FEMA 1% annual chance special flood hazard zone. This includes areas adjacent to Sulphur Creek and the Napa River. Portions of the City are within FEMA zones X and AE.

Caltrans recently completed improvements to the storm drainage system along State Route 29, between Adams Street and Madrona Avenue. These improvements included installation of new storm drain pipes, inlets, and manholes.



2040 General Plan Update: Figure 9.1 Flood Zones



Regulatory Requirements

The City of St. Helena storm drain system is operated under the State Water Board 2013 Phase II Small Municipal Separate Storm Sewer System (MS4) General Permit (Permit). Under this permit, the City is required to regulate all projects that create and/or replace 5,000 square feet or more of impervious surface (Regulated Projects). Section E.12.c. of the Permit includes requirements for road and linear underground projects such as utility pipeline capital improvement projects. An excerpt of the permit requirements is provided below. As noted in the requirements, road projects are subject to stormwater treatment requirements and implementation of green infrastructure. However, there are exceptions for certain types of road projects.

- (c) Road Projects and LUPs - Any of the following types of road projects and LUPs that create 5,000 square feet or more of newly constructed contiguous impervious surface and that are public road projects and/or fall under the building and planning authority of a Permittee shall comply with Section E.12.e. Low Impact Development Standards except that treatment of runoff of the 85th percentile that cannot be infiltrated onsite shall follow U.S. EPA guidance regarding green infrastructure to the extent feasible. Types of projects include:
 - 1) Construction of new streets or roads, including sidewalks and bicycle lanes built as part of the new streets or roads.
 - 2) Widening of existing streets or roads with additional traffic lanes.
 - a) Where the addition of traffic lanes results in an alteration of more than 50 percent of the impervious surface of an existing street or road, runoff from the entire project, consisting of all existing, new, and/or replaced impervious surfaces, must be included in the treatment system design.
 - b) Where the addition of traffic lanes results in an alteration of less than 50 percent (but 5,000 square feet or more) of the impervious surface of an existing street or road, only the runoff from new and/or replaced impervious surface of the project must be included in the treatment system design.
 - 3) Construction of linear underground/overhead projects (LUPs)
 - 4) Specific exclusions are:
 - a) Sidewalks built as part of new streets or roads and built to direct storm water runoff to adjacent vegetated areas.
 - b) Bicycle lanes that are built as part of new streets or roads that direct storm water runoff to adjacent vegetated areas.
 - c) Impervious trails built to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas, preferably away from creeks or towards the outboard side of levees.
 - d) Sidewalks, bicycle lanes, or trails constructed with permeable surfaces.
 - e) Trenching, excavation and resurfacing associated with LUPs; pavement grinding and resurfacing of existing roadways and parking lots; construction of new sidewalks, pedestrian ramps, or bike lanes on existing roadways; or routine replacement of damaged pavement such as pothole repair or replacement of short, non-contiguous sections of roadway.

Excerpt from the State Water Board Phase II Small Municipal Separate Storm Sewer System (MS4) General Permit (Permit)





There is currently a draft updated Phase II Small MS4 Permit anticipated in 2025. It is expected most of the work associated with this Streets Master Plan will fall under this new permit. Attachment D6 of the new permit contains guidance on post-construction stormwater management. Some key changes to the new permit include:

- Exemptions for road or LUP projects updated as follows:
 - c. The following road and linear utility projects are excluded from the above requirements and are not considered new development or redevelopment projects unless they are associated with non-excluded new or redevelopment projects:
 - 1) Trenching, excavation, and resurfacing associated with linear utility projects;
 - 2) Full-depth reclamation that does not change pre-project drainage patterns;
 - d. The following road and linear utility projects are excluded from the above requirements and are not considered new or redevelopment projects:
 - 1) Pavement grinding and resurfacing of existing roadways and parking lots that does not expose the underlying soil or pervious subgrade; and
 - 2) Routine replacement of damaged pavement such as pothole repair or replacement of short, non-contiguous sections of roadway.

Excerpt of draft update to the Phase II Small MS4 Permit

- Stormwater Control Measure Prioritization
- Interceptor Tree Credits

Stormwater Toolkit Measures

As previously noted, St. Helena is under the regulatory requirements of the Phase II Small MS4 Permit (Permit). Future street improvements are expected to follow the requirements of the 2024 draft permit and 2025 updates, with stormwater treatment measures aligned to meet these standards. To minimize the need for extensive stormwater treatments, the use of impervious paving should be reduced wherever possible. Regulated projects must also meet retention and peak flow control standards with the support of stormwater treatment measures.

To aid in the planning and design of improvements proposed by the Streets Master Plan, the section below provides a list of green infrastructure tools—also known as stormwater treatment measures—that can be incorporated into street design to meet regulatory requirements. Also included in this section is a discussion of the opportunities and constraints associated with each of the relevant green infrastructure tools.

The City should use the following green infrastructure tools to treat stormwater, prioritized in the order listed below and the guidelines in the Permit. Each applicable measure is described in further detail below.

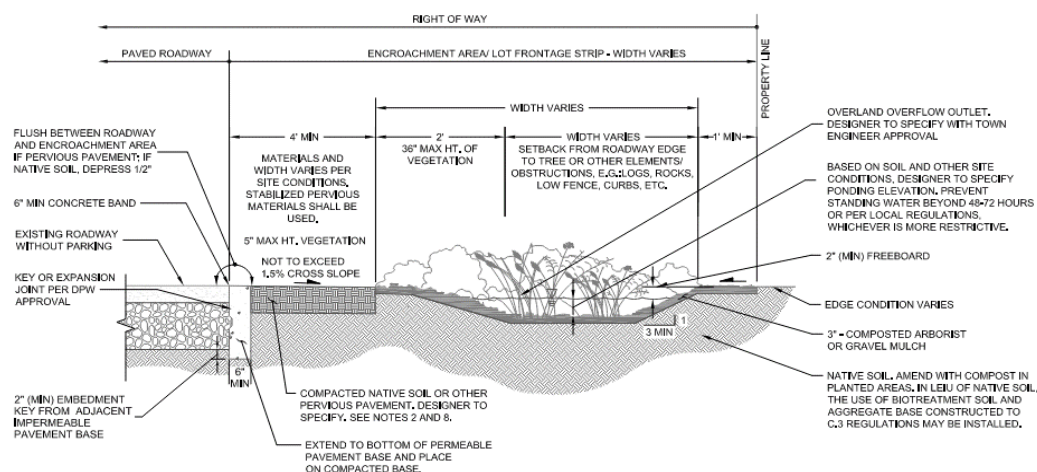
- Impervious Connection to Vegetated Areas (Self-retaining Areas)
- Interceptor Tree Planting and Preservation
- Pervious Pavement Systems
- Bioretention Facilities
- Flow-Through Stormwater Control Measures
 - Biofiltration (lined bioretention with perf pipe)
 - Landscape-based Flow-Through (tree-box media filter, etc.)
 - Physical structured (media filters, hydrodynamic separators, etc.)





- Subsurface Infiltration Stormwater Control Measures (infiltration trenches, dry wells, infiltration galleries, etc.)

Impervious Connection to Vegetated Areas: This green infrastructure measure manages and treats stormwater by sloping impervious areas to drain into adjacent vegetated (pervious) areas. This is the simplest measure with runoff sheet flowing directly to landscaped areas. The ratio of impervious to pervious area is limited to 2:1 maximum. There are limits to the slope and ponding depth of the vegetated areas that should be reviewed during design. Vegetated areas are typically located within medians, in landscape strips adjacent to the roadway, or behind the sidewalk. If space and right-of-way is constrained and limit the size of pervious area, a bioretention system can accept and treat significantly more impervious area than a standard vegetated area.



Town of Atherton Green Infrastructure Landscaped Shoulder Typical Detail

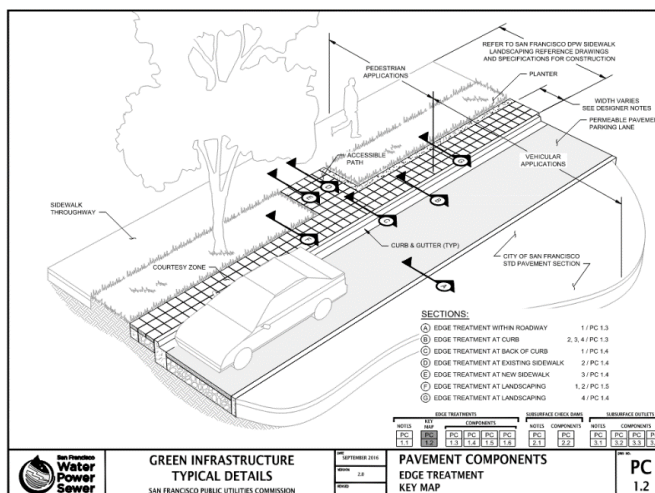


Interceptor Tree Planting and Preservation: Street Trees can reduce run-off from impervious areas by intercepting rainwater. Utilizing interceptor trees is a good strategy for reducing the amount of impervious area within the street that requires treatment, and thus reducing the size of other green infrastructure measures. Depending on the size of the mature tree canopy, the total impervious area requiring treatment can be reduced. Any trees (existing and proposed) within the right-of-way should be considered for this credit. The City of St. Helena should incorporate street trees and get credit to help reduce the size of other treatment measures and free up space within the right-of-way.





Pervious Pavement Systems: If site constraints limit the amount of landscaping, another solution is pervious pavement. Types of pervious pavement include pavers set in gravel, decomposed granite, pervious concrete, and pervious asphalt pavements. These pavement types can either be self-treating or self-retaining and be designed to accept runoff from impervious surfaces via sheet flow. Stormwater is stored in the gravel base and infiltrated into subgrade, if soil conditions allow. pervious pavement is recommended for parking strips where a crowned road could send runoff towards the parking lane from a typical impervious travel lane.



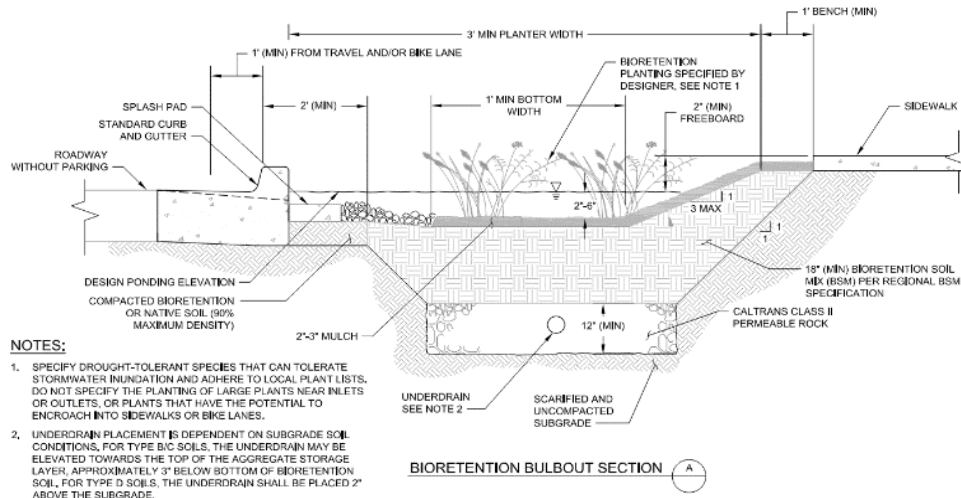
Anticipated use and traffic volumes should be considered when implementing pervious pavement systems. For example, parking areas, which have less vehicle traffic vehicular travel lanes, are often more suitable considering the long-term performance and maintenance of the pervious pavement. Additionally, pervious pavements must incorporate geotechnical recommendations and proper edge treatments, such as deepened curbs, to preserve integrity of the pervious pavement and adjacent surfaces.

Bioretention Facilities: A bioretention facility is a landscaped area designed to capture and treat stormwater runoff by filtering it through soil and plants, removing pollutants before the water infiltrates into the ground or is discharged.

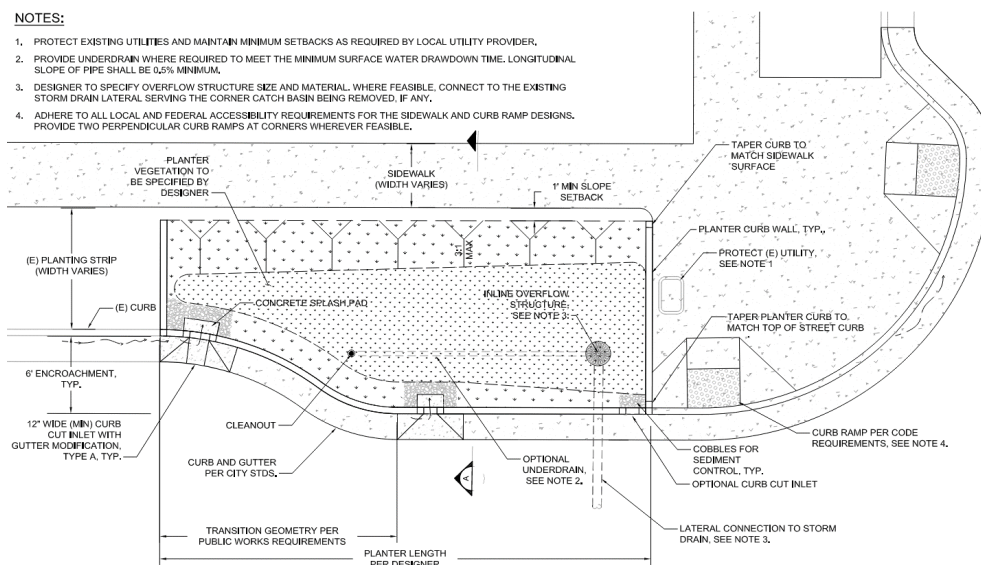
Bioretention facilities should be used when right-of-way is constrained limiting the use of vegetated areas or pervious pavements. Vegetated areas used for stormwater treatment must 50% of the tributary impervious area. Bioretention is typically only 4% of the tributary impervious area, so the required footprint is much smaller. However, bioretention areas require a deeper basin and soil section, as well as 3:1 side slopes or structural curbs.

Bioretention areas should be located downstream of the roadway with stormwater sheet flowing from the roadway into a gutter or swale, then eventually routed to the bioretention area. The soil section includes a 6"-12" ponding depth, minimum of 18" bioretention soil mix, and minimum 12" gravel layer. Where soil conditions allow for infiltration, bioretention should be designed without any horizontal liners and may include an elevated perforated pipe where the retention volume is achieved below the pipe elevation within the gravel section. Bioretention is commonly placed in landscape strips, bulb-outs, or behind the sidewalk. If space limits the ability to have sloped sides to create a ponding and freeboard depth, a concrete wall or structural curb can be used to create the basin. Where bioretention basins are located directly adjacent to roadway and sidewalk sections, the curbs around the basin will need to be structurally designed as retaining walls, since bioretention soil media does not provide lateral support for adjacent improvements.





BASMAA Green Infrastructure Bioretention Section Detail



BASMAA Green Infrastructure Bioretention Bulbout Detail

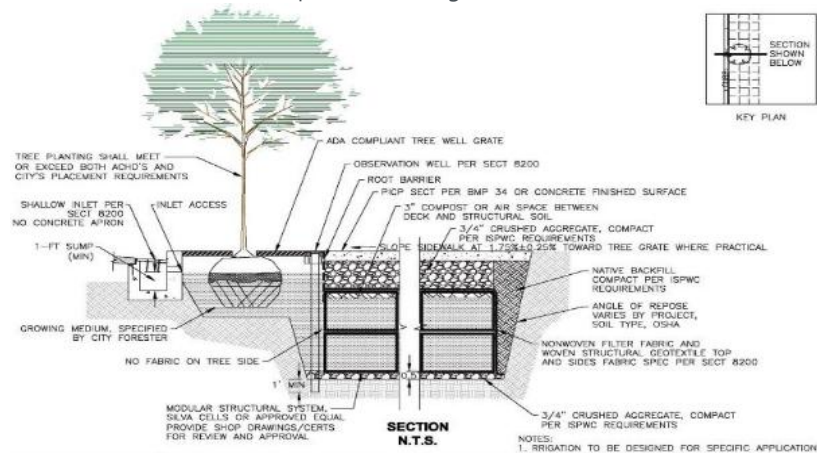
Flow-Through Stormwater Control Measures:

1. **Biofiltration:** A biofiltration system is a bioretention facility with an impermeable liner. These systems should be used when infiltration is not feasible due to soil conditions or proximity to elements such as building foundations. Biofiltration measures can be installed in any landscaped area in the right-of-way that is downstream of an impervious area.





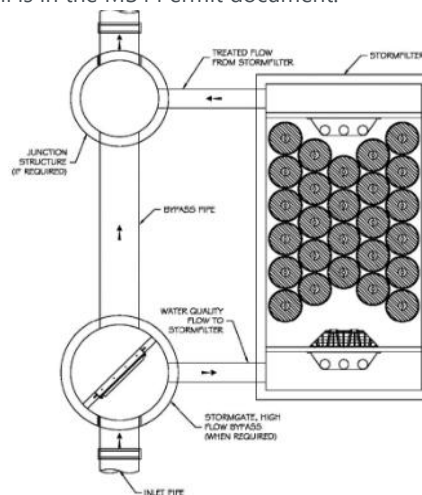
2. *Landscape-based Flow-through Stormwater Control Measures:* A tree-box media filter is often used in urban areas where space is limited. These can be located next to trees in landscape strips where there is not enough area for a bioretention. The depth of the section is deeper than bioretention, so outlet pipe elevations need to be studied to confirm positive drainage to storm drain can be achieved.



San Mateo County: Tree Stormwater Cells Typical Detail

Tree-box media filters are only allowed to be used when very specific conditions are met, such as historic structures or landscapes limiting available space for other green infrastructure measures. Additional detail is in the MS4 Permit document.

3. *Physical Structured Stormwater Control Measures:* These measures are not landscape-based and can be placed below hardscape. Examples include media filter vaults and hydrodynamic separators. Similar to tree-box media filters, the MS4 Permit restricts use of media filter vaults and hydrodynamic separators to certain special cases. Additional detail is in the MS4 Permit document.



San Mateo County: Media Filter Vault Typical Detail



CONSTRUCTION NOTES:

- REFER TO APPLICATION SAN FRANCISCO DRD CODES AND PUBLIC WORKS REQUIREMENTS FOR CONVEYANCE CONNECTION REQUIREMENTS.
- AVOID CORROSION AND DISTURBANCE OF EXISTING SOIL ADJACENT TO AND BELOW INFILTRATION FACILITIES DURING CONSTRUCTION.
- SCAFFRY SUBGRADE TO A DEPTH OF 4 INCHES (BRI) IMMEDIATELY PRIOR TO PLACEMENT OF AGGREGATE STORAGE.
- SIGNALS AND TOP OF AGGREGATE STORAGE SHALL BE LINED WITH A GEOTEXTILE TO PREVENT MIGRATION OF ADJACENT SOILS INTO SUBGRADE WITH INFILTRATION SYSTEM.
- SUBGRADE DISTRIBUTION COPIES SHALL BE 4 INCHES (BRI) IN DIAMETER.
- PROVIDE UTILITY TRENCH DAM OR EQUIVALENT MEASURE OUTSIDE OF THE INFILTRATION FACILITY AT PIPE PENETRATIONS TO PREVENT PREFERENTIAL FLOW FROM INFILTRATION GALLERY INTO UTILITY TRENCH. MEASUREMENTS WITH ENGINEER.



Reliance on Infiltration: For streets without existing storm drain infrastructure, all proposed green infrastructure measures will need to be completely infiltration-based. With the absence of storm drain connection points, a subdrain based bio-retention planter or pervious pavement system will not have a means of discharging drainage flows without additional storm drainage infrastructure improvements.

Infiltration-based green infrastructure measures should be located where soil types are conducive to infiltration. Where infiltration-based green infrastructure measures are proposed, proximity to adjacent improvements, such as building foundations or roadway aggregate base sections, should be considered to prevent damage from infiltration. Examples of infiltration-based treatment measures include self-retaining areas, pervious pavements, and bioretention areas. Assuming soils support infiltration, bioretention and pervious pavement systems can also be installed without a perforated pipe or existing storm drain infrastructure.

Clearances to Existing Utilities: Existing utilities may prevent locating green infrastructure measures directly adjacent to street improvements. Further discussion of required separation between green infrastructure measures and existing utilities is included in the sections that follow. In the event that existing utility locations preclude installation of green infrastructure, opportunities for "in-lieu" treatment areas on City-owned land could be explored to avoid the need to relocate existing utilities.

Sanitary Sewer Infrastructure

There is a single wastewater treatment plant located in the city. All sanitary sewer infrastructure is routed to this facility in the eastern corner of the city. The Integrated Utility Master Plan identifies numerous pipelines with projected capacity deficiencies given projected growth through 2040, as shown in figure 6.7.

Existing sanitary sewer lines could pose constrain the use of street trees or green infrastructure. New green infrastructure measures, specifically bio-retention, and street trees must keep clear of existing sanitary sewer lines. Typical separation distances between street trees and sanitary sewer lines is 5 – 10', or as determined by City Engineering staff. If a planned sewer CIP is proposed, the new location of sanitary sewer lines should be coordinated to avoid areas suitable for bio-retention planters or street trees. Locations of planned sewer CIPs could be an opportunity to implement a streetscape improvement project following trenching and installation of the new sewer pipe. Funding green infrastructure, alongside planned sewer CIPs, can be supported through creative grants at both the state and federal levels. For example, the Urban Greening Grant Program (CA) and Integrated Regional Water Management (IRWM) Grants fund green infrastructure projects that reduce greenhouse gas emissions, manage stormwater, and improve water quality. Federally, the Clean Water State Revolving Fund (CWSRF) – Green Project Reserve and FEMA's Building Resilient Infrastructure and Communities (BRIC) Program provide low-interest loans and grants to incorporate green infrastructure in projects.

Domestic Water Infrastructure

There are several pipeline improvement projects recommended to address capacity deficiencies, as shown in Figure 6.9. There are also fire hydrant flow deficiencies that correspond to improvements upsizing smaller 6" water mains to 8". There are two transmission line improvement projects proposed: Napa Connection and Bell Canyon Reservoir.

Like sanitary sewer, domestic water pipes will be a constraint for locating new green infrastructure. For example, bioretention areas should not be constructed above or around existing water mains. Locations of water service lines should also be avoided when locating bioretention areas. Planned CIP to the domestic water system should be coordinated with proposed streetscape projects.





Dry Utility Infrastructure

Existing electric, gas, and telecommunication lines exist within the city. PG&E has standards for clearances between underground facilities and any wet utility –three feet from outside of electrical or gas trench to outside of the utility. Bioretention areas are considered wet utilities and need to be designed to accommodate these clearances. The separation requirements are applied to all PG&E underground gas and electrical whether it's a distribution system or a customer service lateral. If three feet of horizontal separation cannot be attained, a variance may be approved by PG&E. However, all options to locate a proposed bioretention area with standard separation from PG&E facilities should be exhausted prior to pursuing a variance with PG&E. Separations of one foot or less are not allowed.

Select Projects Review

This section presents a high-level review of the opportunities and challenges associated with utilities and stormwater management for specific proposed streetscape projects identified by the City for further evaluation as part of the Streets Master Plan effort including:

- Realignment of Pope Street/Silverado Trail Bridge
- Realignment of Pratt Avenue/Silverado Trail Bridge
- Extension of Adams Street to Silverado Trail
- Extension of Oak Avenue to Grayson Avenue

For additional information, please review Technical Study 2: Select Projects Review alongside the following information.

Pope Realignment at Silverado Trail

There is an existing bridge on Pope Street which crosses the Napa River, just south of the intersection with Silverado Trail. The City is currently considering the construction of a new bridge to accommodate wider lanes for vehicles and convert the existing bridge to a bicycle and pedestrian only crossing. The City's utility maps show an existing 2" domestic water line that crosses the Napa River at Pope Street. The existing water line can remain in place, or a new one can be installed along the new bridge. This is an opportunity to upsize or replace the water line if the existing pipe is reaching the end of its useful life.

Existing overhead electrical and telecommunications lines are present along the Silverado Trail at Pope Street, in the vicinity of the existing bridge and the area that has been studied for the new vehicular bridge. Some of the overhead lines cross the Napa River adjacent to the bridge. Depending on the exact layout for existing bridge improvements and/or location of a new vehicular bridge, the existing overhead lines may need to be relocated. Overhead lines may also constrain new bridge construction or existing bridge improvements.

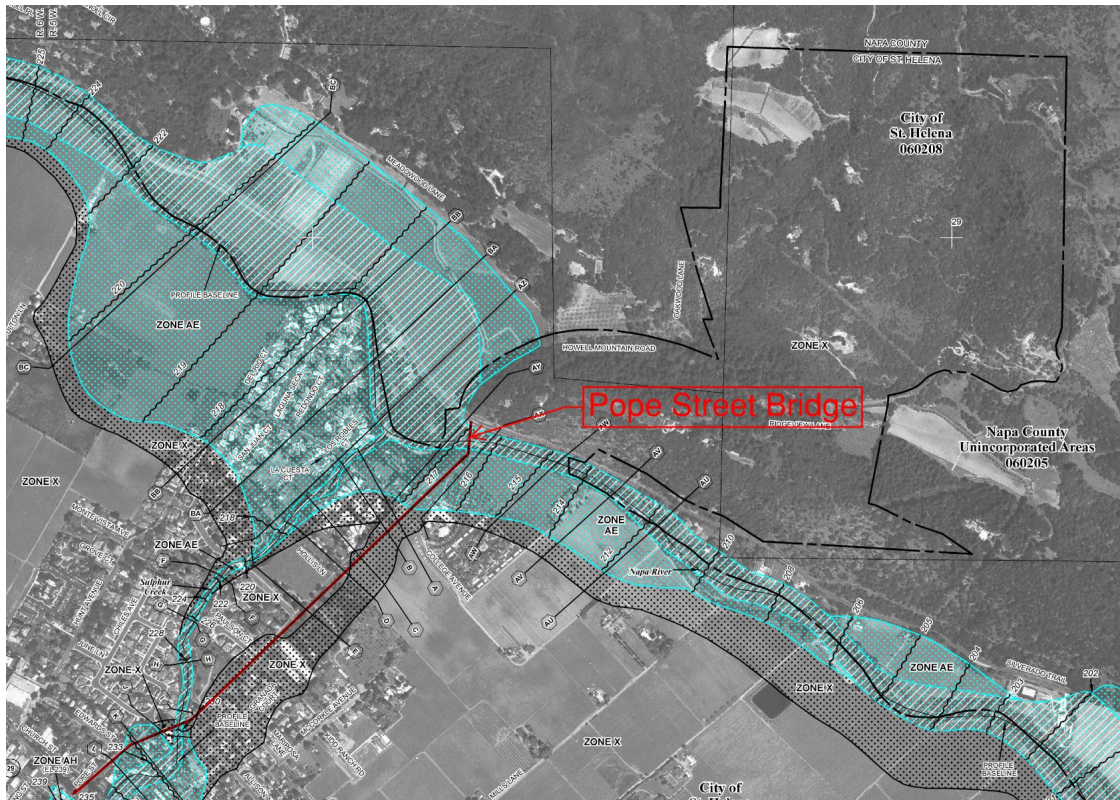
A new bridge would need to provide clearance from the underside of the bridge to the 100-year water surface elevations within Napa Creek, based on the current FEMA Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS). The FEMA Flood Insurance Study shows the 100-year flood elevation at approximately 217 for Napa River at Pope Street, so the bridge should be designed with a minimum soffit elevation of 219. Exact elevations for the 100-year water surface elevation would need to be confirmed through more detailed study and final bridge location. The exact freeboard requirement would also need to be confirmed with FEMA.

There are two bridge alignments that are being considered, one north of the existing bridge and one south. As outlined in the HBP Application Packet, the alignment north of the bridge is the city's preferred alignment. Since the abutments need to be clear of the floodway, the upstream option would need significantly longer spans given the extent of the floodway shown on the FIRM. Silverado Trail is within the floodway upstream of the existing bridge,





presenting challenges to keep the abutments completely out of the floodway. However, if the new bridge is constructed upstream, there is an opportunity to align Pope Street with the Howell Mountain Road- Silverado Trail intersection. A proposed bridge downstream of the existing bridge can be shorter and locate the intersection with Silverado Trail outside of the floodway.



FIRM Pope Street Bridge Markup

It is assumed stormwater treatment measures would not be able to be located on the bridge structure. Stormwater landing on the bridge would need to be collected and routed off of the bridge for treatment. Please refer to the stormwater toolkit measures for applicable treatment options. Potential treatment locations are noted on the preliminary alignment options below.





Pope Street Bridge Alignment Options: Preferred Option, North of Bridge (left) & South of Bridge (right)
Concept Plan HBP Application Packet, 2023

Pratt Realignment at Silverado Trail

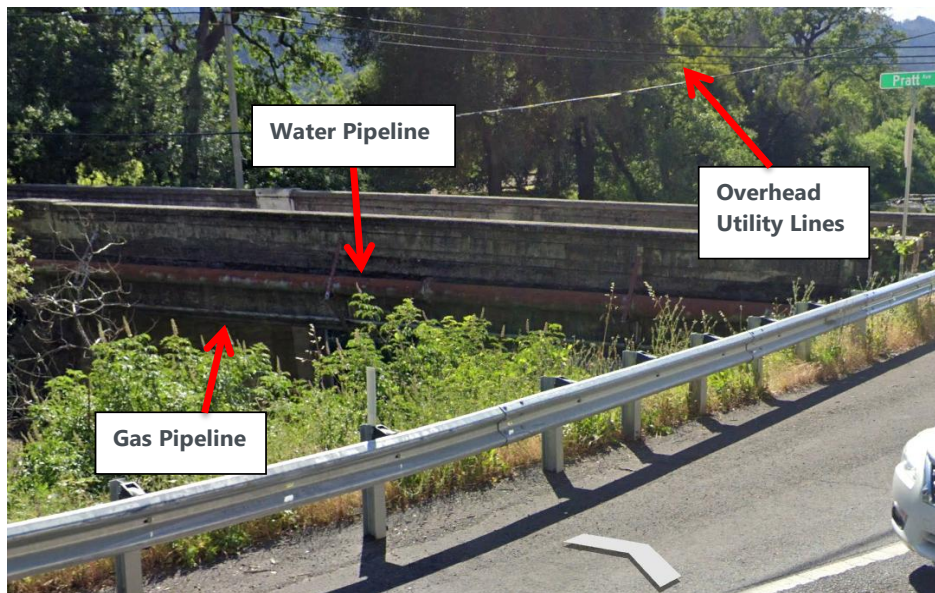
The City is also considering a realignment and/or widening of the existing bridge at Pratt Avenue and Silverado Trail to accommodate wider lanes for vehicles as well as other transportation modes such as bicycles and pedestrians.

There is an existing 18" water line that crosses the Napa River at the Pratt Ave bridge, attached to the east side of the existing bridge, as shown in the photos below.





Pratt Bridge Looking North



Pratt Bridge Looking Southwest from Silverado Trail

The 2021 Integrated Utility Master Plan includes a proposed CIP ("PWTM-2") which would replace the existing water line with a new water transmission main. If the Pratt bridge is widened or replaced, the new structure would need to accommodate the existing water line. Additionally, any improvement to the Pratt bridge should consider the proposed water transmission main CIP.





There is also a natural gas pipe below the water line, attached to the bridge. This utility would also need to be accommodated or relocated if alongside any bridge improvements.

Existing overhead electrical and telecommunications lines are present along the south side of the Silverado Trail at Pratt Avenue. There are also overhead lines which cross the Napa River adjacent to the bridge. Depending on the location and layout for the bridge improvements, the existing overhead lines may need to be relocated. They may also need to be accommodated during construction of any bridge improvements.

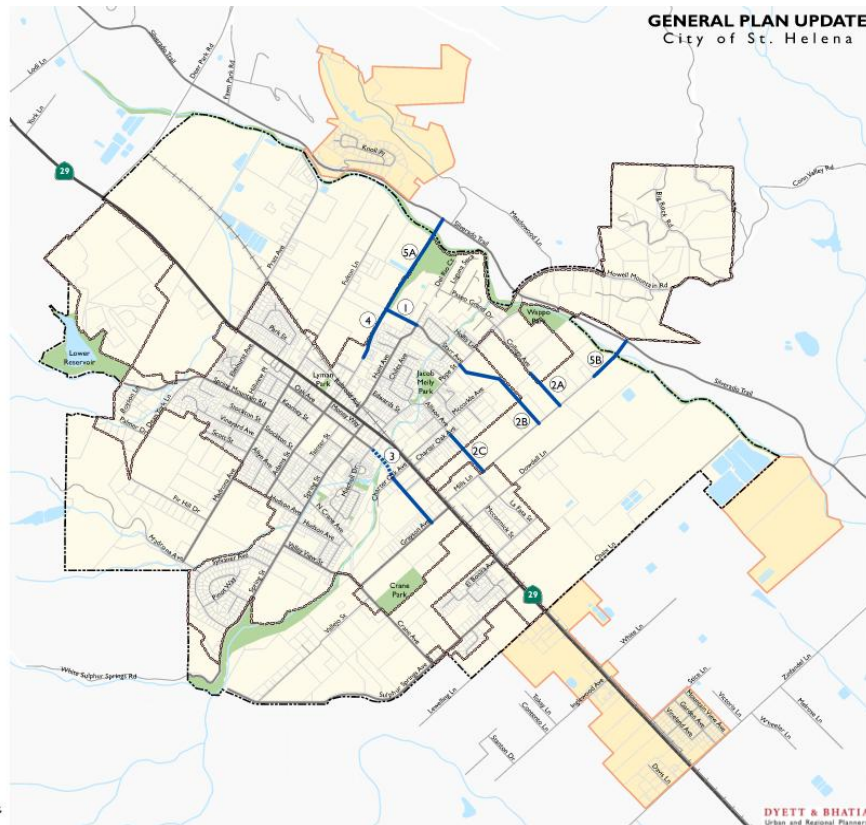
Bridge improvements would also be required to provide clearance from the underside of the bridge to the 100-year water surface elevations within Napa Creek based on the current FEMA maps and Flood Insurance Study. The FEMA Flood Insurance Study shows the 100-year flood elevation at approximately 231 feet for Napa River at Pratt Street, so the bridge should be designed with a minimum soffit elevation of 233 feet. Exact elevations for the 100-year water surface elevation would need to be confirmed through more detailed study. The exact freeboard requirement would also need to be confirmed with FEMA.

Figure 3.13-5
Future Roadway Extensions

- Potential Future Roadway for 2035 Plan
- Potential Future Bicycle/ Pedestrian Path for 2035 Plan (with access controls)
- Parks and Open Space
- Urban Limit Line
- Study Areas
- City of St. Helena

- ① Starr Avenue extension north to Adams Street
- ②A College Avenue, Starr Avenue or
- ②B Allison Avenue extension to
- ②C Mills Lane
- ③ Oak Avenue from Charter Oak Avenue to Grayson Avenue with limited access from Mitchell Drive to Charter Oak Avenue
- ④ Adams Street from its current eastern terminus to Starr Avenue
- ⑤A Extension to Silverado Trail, by extending Adams Street or Mills Lane.
- ⑤B

0 1,000 2,000 4,000 Feet
Data Source: City of St. Helena, 2018; Napa County, 2018; Dyett & Bhatia, 2018



2040 General Plan Update: Figure 5.3 Future Roadway Extensions

General Plan Roadway Extensions 1 and 4: Starr Avenue and Adams Street Extensions

There is currently a draft map prepared for the Hunter Subdivision which proposes to extend Adams Street from its current terminus, approximately 1,000 feet north, to provide access to the proposed subdivision. The tentative map





proposes extension of storm drain, sanitary sewer, and domestic water within the extension of Adams Street. The existing public right-of-way is proposed to be expanded from 50' to 60' width. The street section would include two vehicular travel lanes, parking on both sides, and a sidewalk. North of the Hunter Subdivision on Adams there is an existing 36" storm drain within the existing unpaved road that eventually discharges into a drainage ditch. This existing storm drain can be utilized to incorporate green infrastructure in the new extended Adams Street.

The Starr Avenue extension is part of the Hunter Subdivision project. The proposed 60' width roadway section is similar to Adams Street with two travel lanes, parking, and sidewalks and landscape strip on both sides. Any trees in the planter strip can utilize interceptor tree credit to reduce the amount of impervious area that needs to be treated.

Per the tentative map, drainage paths and post-construction BMPs have already been planned in the design. The south portion of the Hunter Subdivision project discharges into the existing storm drain system (directly to the Napa River). Drainage will be treated by hydrodynamic separators prior to entering the existing system. The rest of the site will drain into the detention pond with a proposed headwall on the north side of the project. The detention pond will treat the runoff prior to being discharged into the Napa River.

General Plan Roadway Extensions 5A: Extension of Adams Street to Silverado Trail

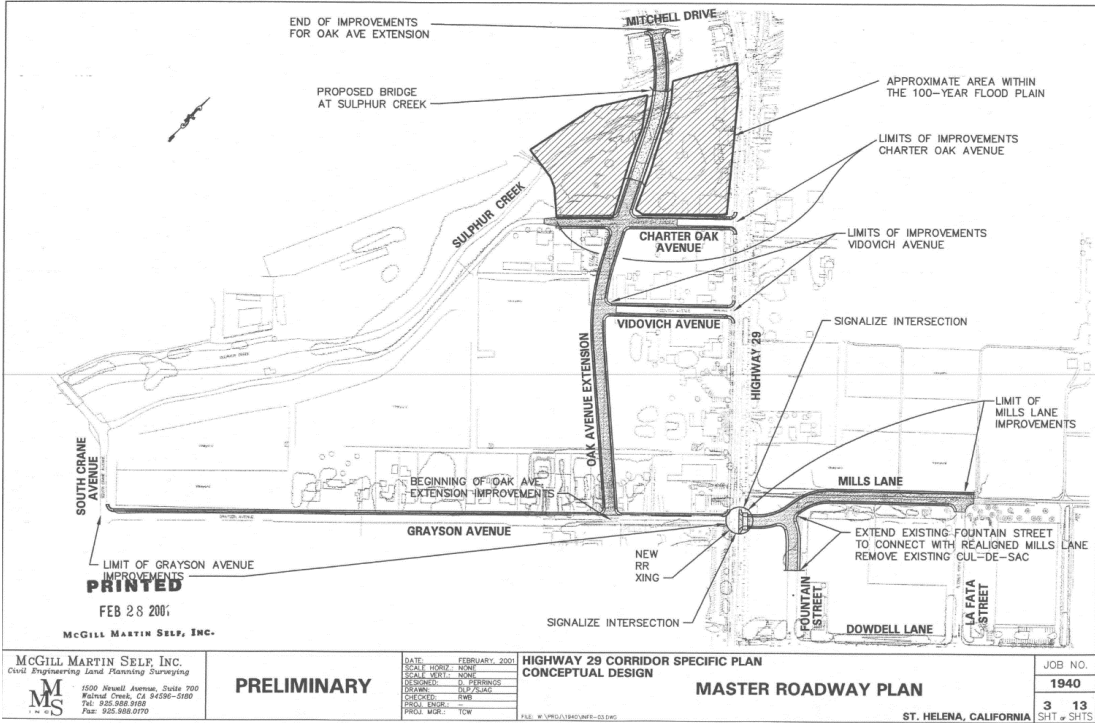
The existing Adams Street right-of-way terminates approximately 1,400 feet north of Main Street (Highway 128). An existing unpaved road branches off Adams Street near its northern terminus and extends north to a point just south of the Napa River. In order to extend Adams Street to Silverado Trail, the existing gravel road would need to be widened and paved. It is expected that stormwater treatment will be required for the new roadway section. This could be accommodated in the form of self-retaining areas if there is adequate space within the right-of-way, or the roadway could drain into a bioretention basin. There is an opportunity to line up Adams Street with Meadowood Lane to create a 4-way intersection with Silverado Trail.

Extending Adams Street to Silverado Trail will require a new bridge over the Napa River. The proposed bridge would need to be constructed to provide clearance from the underside of the bridge to the 100-year water surface elevations within Napa Creek based on the current FEMA maps and Flood Insurance Study.

General Plan Roadway Extensions 3: Extension of Oak to Grayson

An extension of Oak Avenue is being considered between Mitchell Drive and Grayson Avenue. The Highway 29 Corridor Specific Plan dated February 2001, shows the street associated work. The overall scope of street improvement is included in the image below. A bridge for pedestrian and bike traffic is proposed over Sulphur Creek with a vehicular roadway proposed from Charter Oak Avenue to Grayson Avenue. The bridge over Sulphur Creek shall be designed to be above the 100-year FEMA flood plain with the abutments outside the creek bank. The Oak Avenue extension would require crossing several existing parcels and acquisition of right-of-way. There are existing overhead electrical lines along the proposed street extension. While green infrastructure was not a requirement when the preliminary plans were prepared, portions of the proposed landscape areas could be utilized to implement green infrastructure, namely bioretention areas. Low points created by vertical curves along the proposed Oak Avenue profile suggest locations for green infrastructure either in the landscape strip or behind the sidewalk. Any BMPs used should be size appropriately for the tributary area draining to it.





Highway 29 Specific Plan, 2001 Drawing Set: Master Roadway Plan

The project also proposes a realignment of Mills Lane to match the Grayson Avenue – Highway 29 intersection. The Highway 29 Corridor Specific Plan includes new roadway improvements along Mills Lane from Highway 29 to La Fata Street. The improvements at the La Fata Street and Mills Lane intersection would be an opportunity for the Allison Avenue extension (extension 2C from Figure 3.13). There is a housing project proposed at the corner of Fountain Street and Mills Lane. The Mills Lane realignment project will likely need stormwater treatment under the new Phase II MS4 permit. Treatment facilities can be located in the landscape strip adjacent to the roadway or behind the sidewalk. Any treatment required outside of the roadway should be coordinated with the Fountain Street housing project.





Fountain Street Workforce Housing: Site Plan



Appendix

The following figures have been excerpted from the 2021 City of St. Helena Integrated Utility Master Plan by Carollo Engineers

- 1) Figure 3.4 Hydrologic Soil Groups
- 2) Figure 5.8 Existing Storm Drainage System, by Diameter
- 3) Figure 5.10 Existing Storm Drainage System Drainage Areas
- 4) Figure 6.8 Existing Storm Drainage System Capacity Deficiencies
- 5) Figure 6.11 Storm Drainage System Improvements
- 6) Figure 5.6 Existing Wastewater Collection System
- 7) Figure 6.7 Existing Wastewater Collection System Capacity Deficiencies
- 8) Figure 6.10 Wastewater Collection System Improvements
- 9) Figure 5.4 Existing Water Distribution System by Diameter
- 10) Figure 6.9 Water Distribution System Improvements



STORM DRAIN

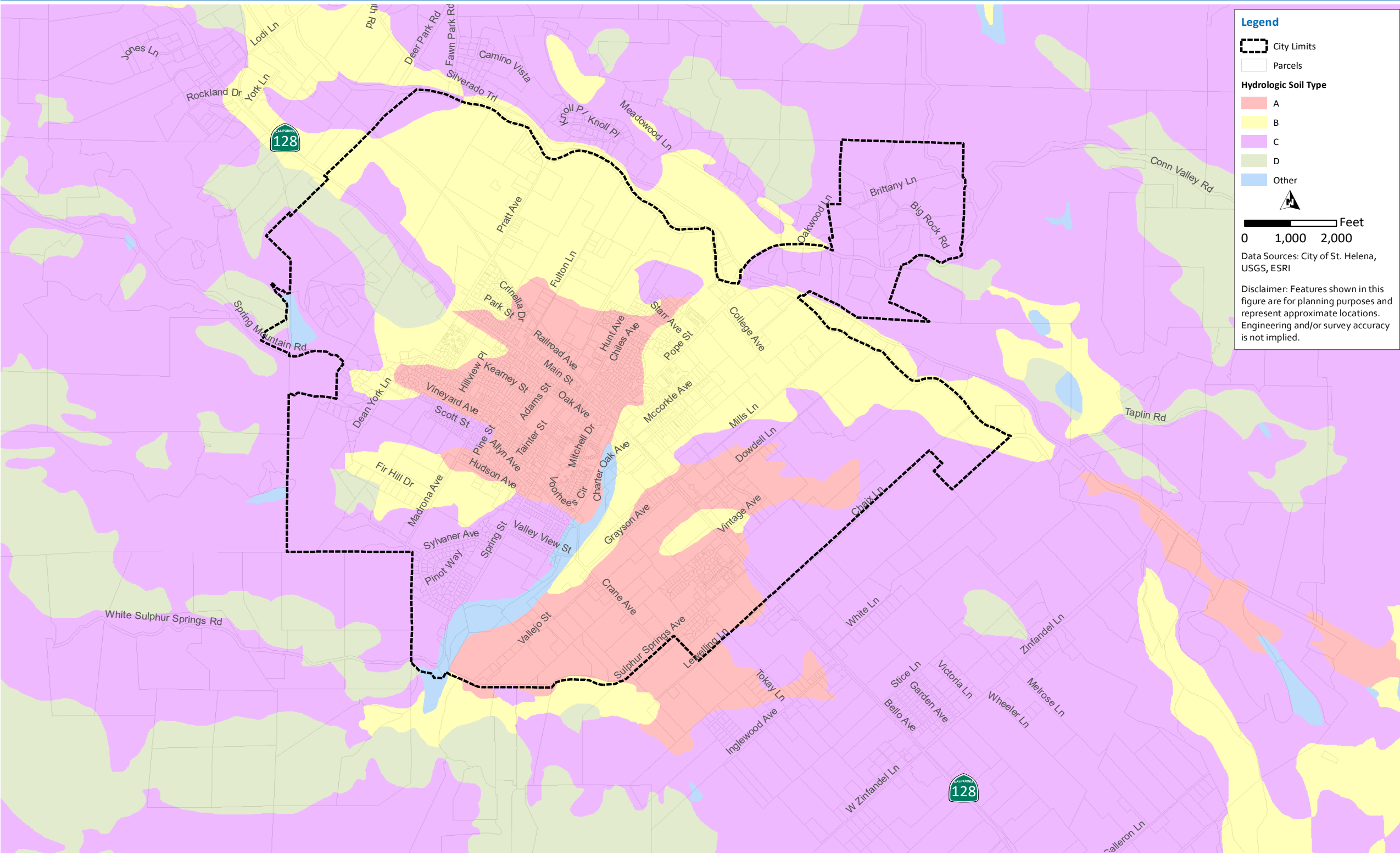


Figure 3.4 Hydrologic Soil Groups

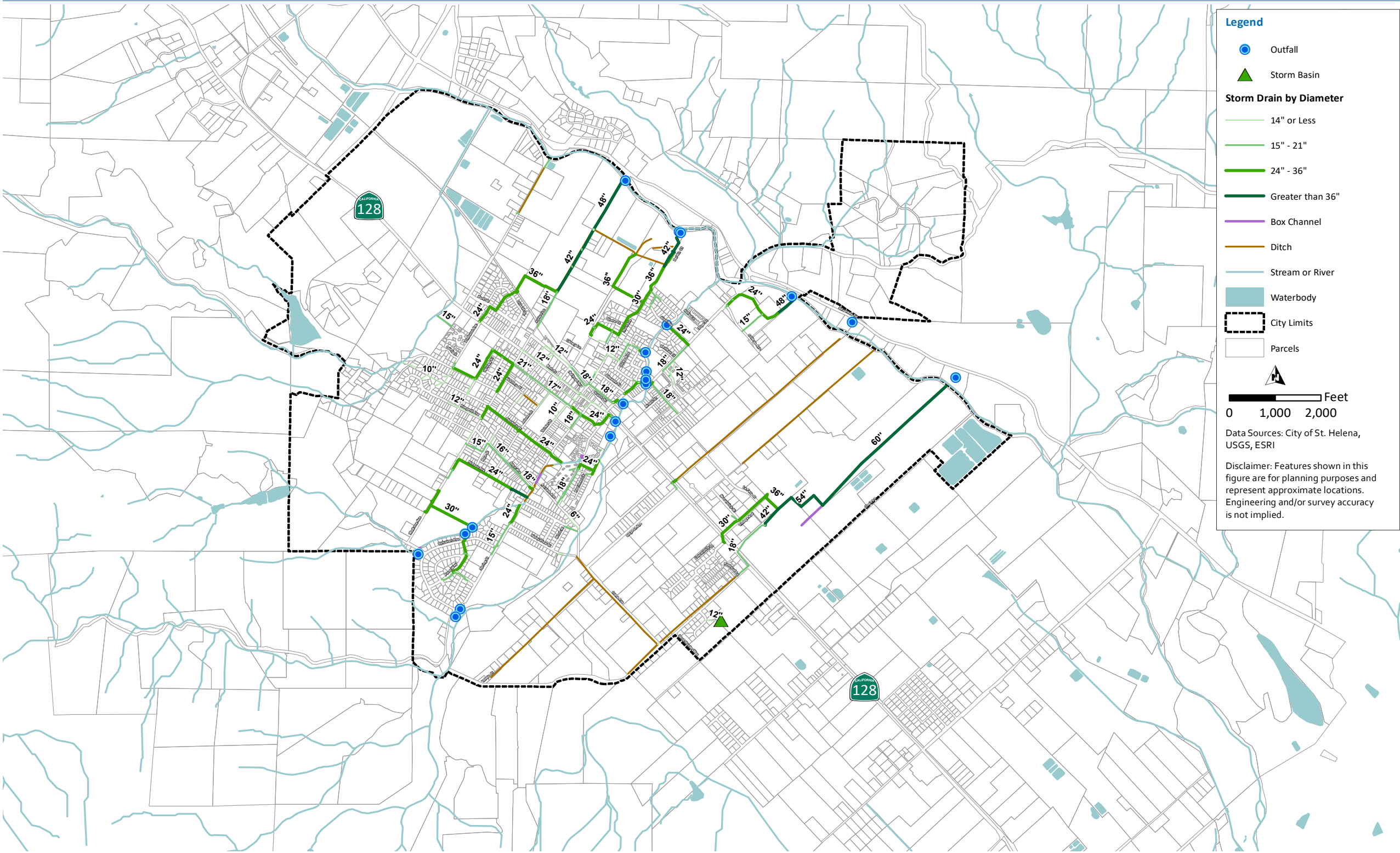


Figure 5.8 Existing Storm Drainage System, by Diameter

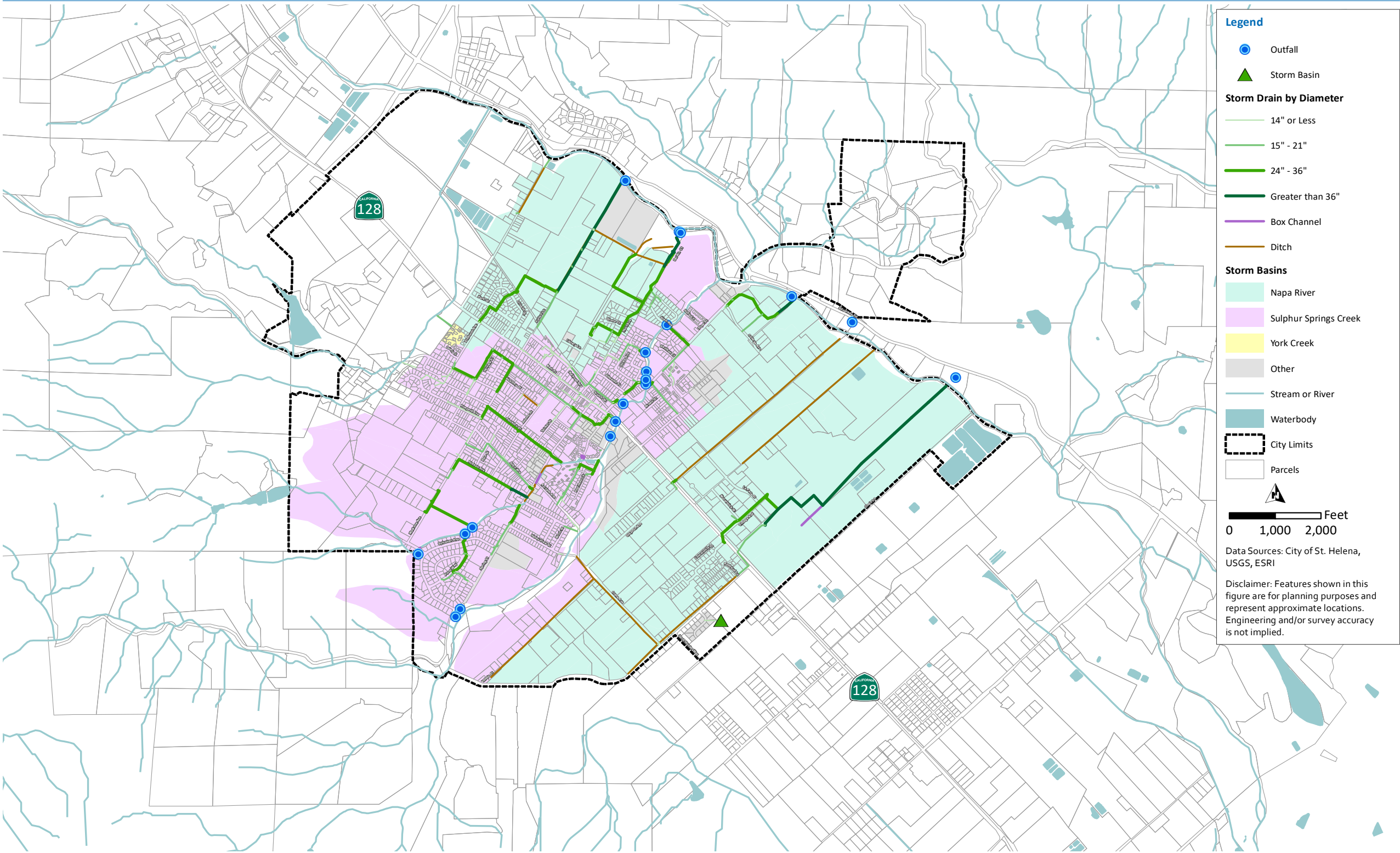


Figure 5.10 Existing Storm Drainage System Drainage Areas

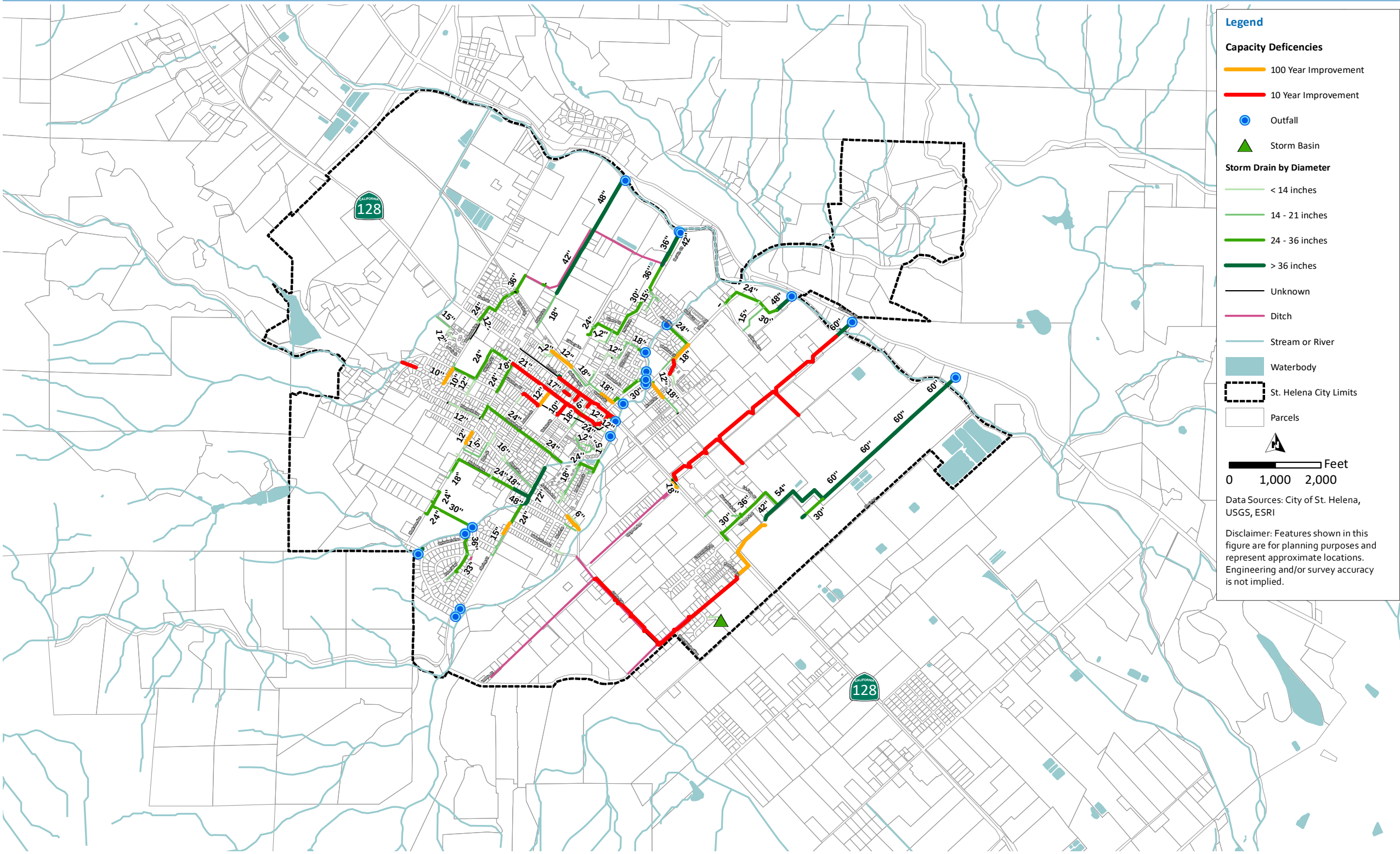


Figure 6.8 Existing Storm Drainage System Capacity Deficiencies

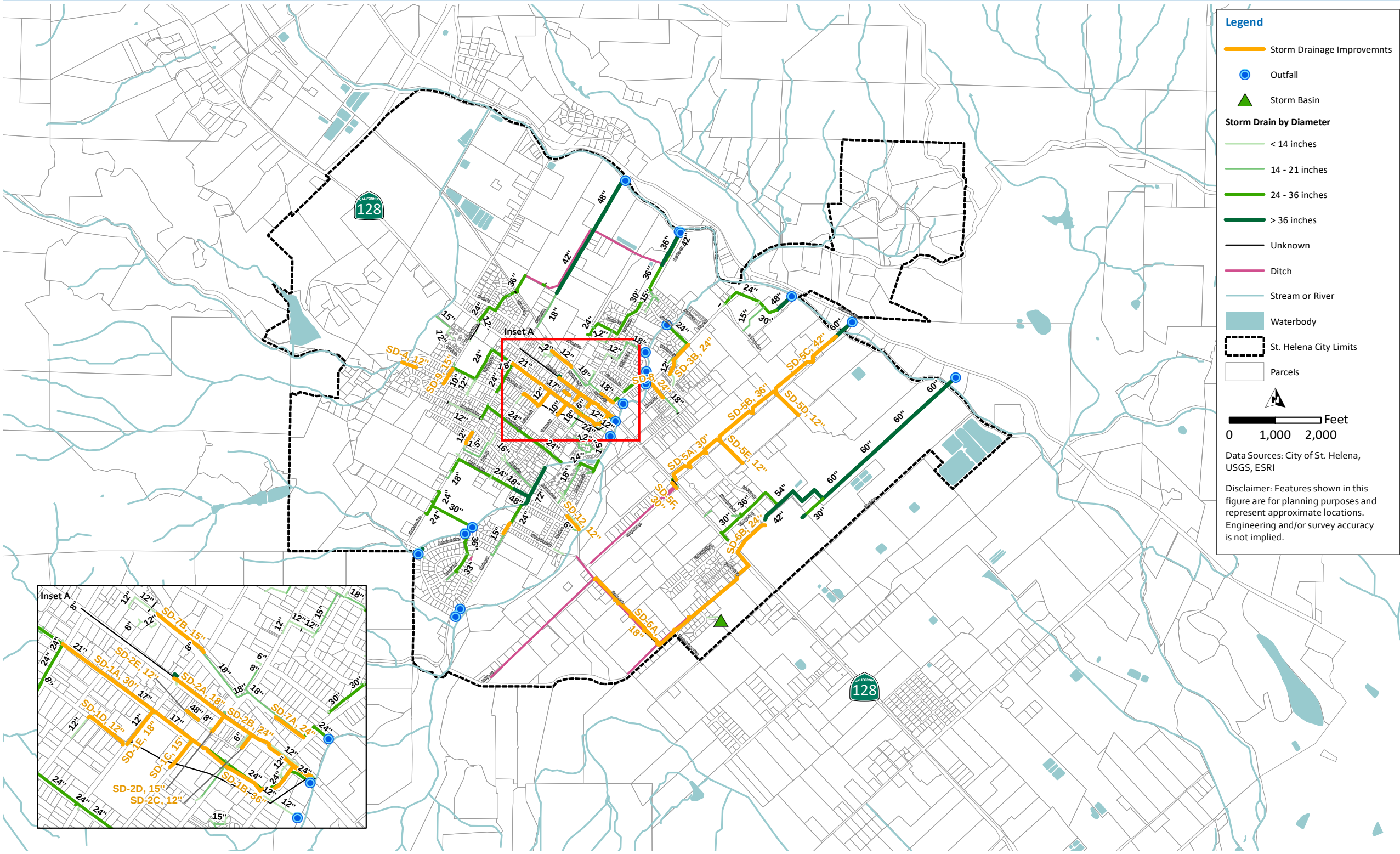


Figure 6.11 Storm Drainage System Improvements

SANITARY SEWER

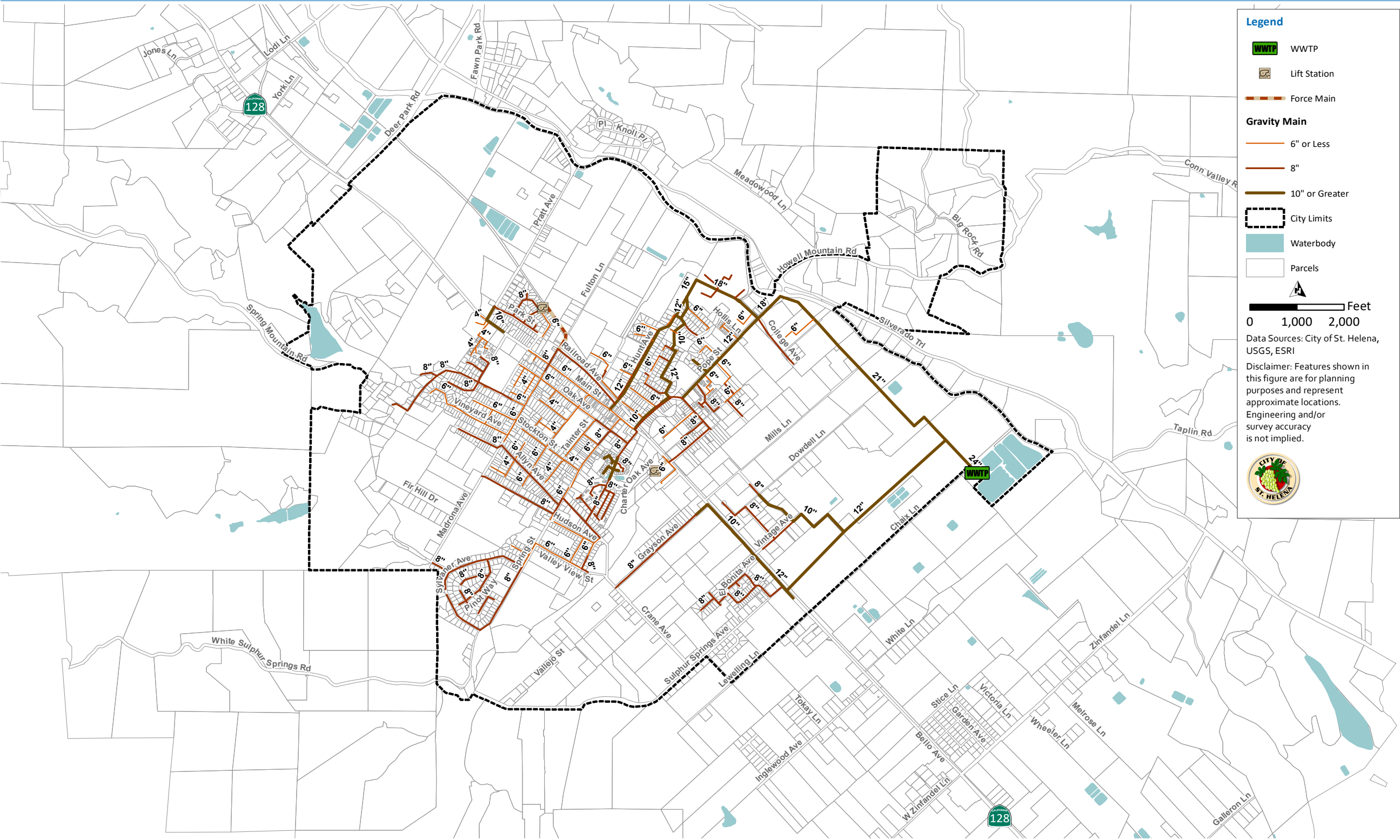


Figure 5.6 Existing Wastewater Collection System

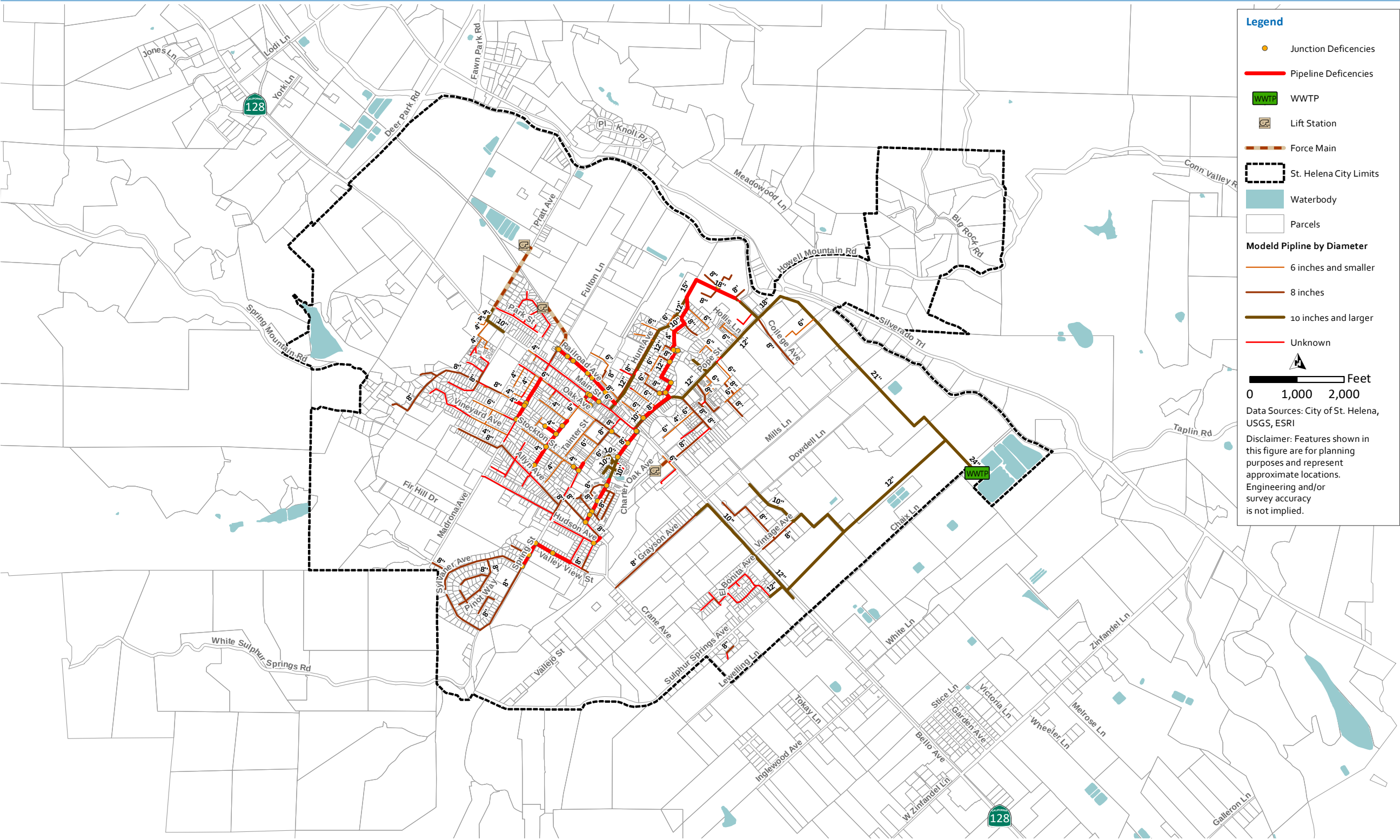


Figure 6.7 Existing Wastewater Collection System Capacity Deficiencies

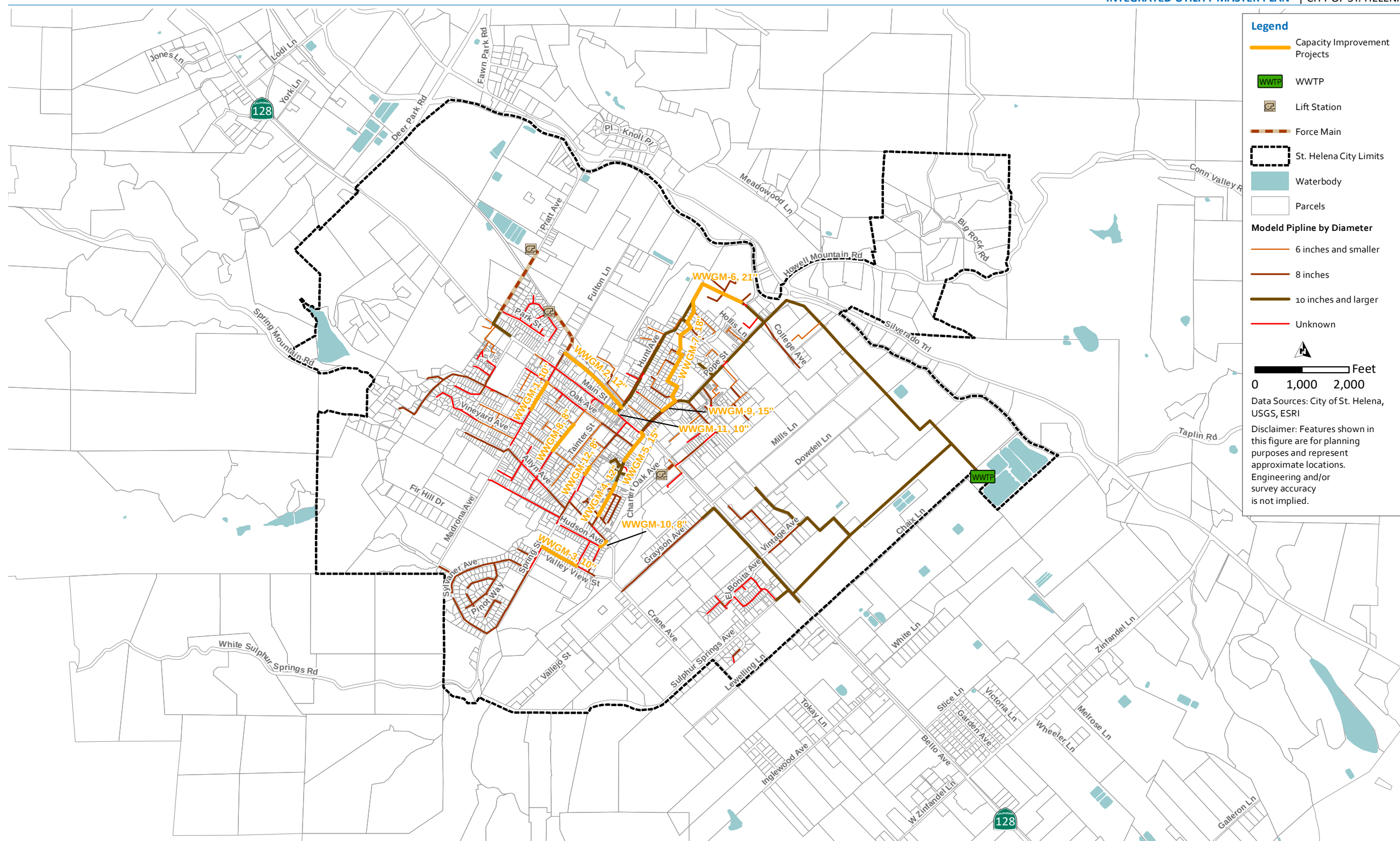


Figure 6.10 Wastewater Collection System Improvements

WATER

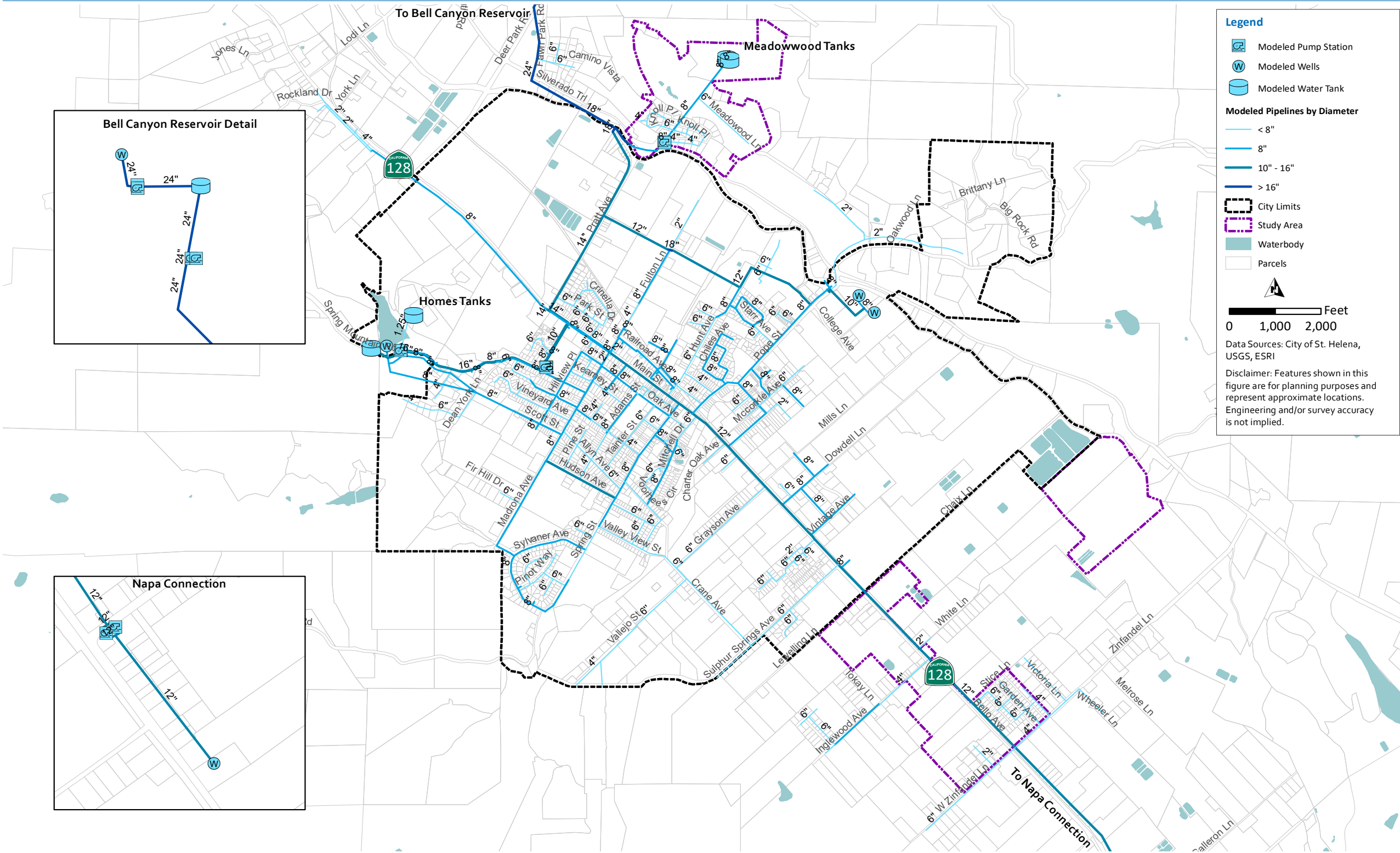


Figure 5.4 Existing Water Distribution System by Diameter

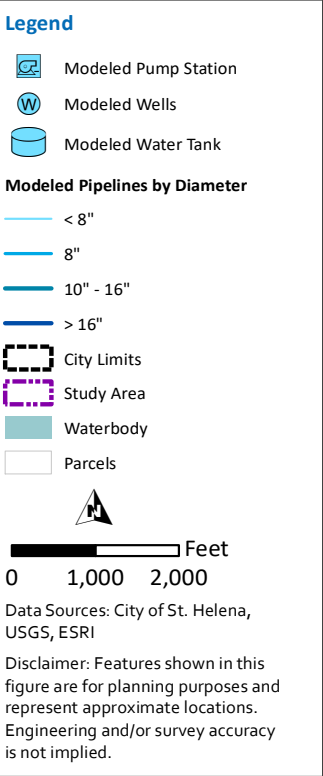


Figure 6.9 Water Distribution System Improvements

St Helena Streets Master Plan

Appendix H

Funding Strategies Memo





**Economic & Planning
Systems, Inc.**
The Economics of Land Use

OAKLAND
SACRAMENTO
LOS ANGELES
DENVER

Memorandum

To: Anjulie Palta, Toole Design Group and Joe Leach, City of St. Helena

From: Jason Moody and Rosanna Ren, Economic & Planning Systems

Subject: Financing Plan for City of St. Helena Streets Master Plan
EPS #231109

Date: March 18, 2026

Dear Anjulie and Joe,

Attached please find EPS' financing plan and strategy for the St. Helena Streets Master Plan.

Financing Options and Strategy

This memorandum describes potential funding tools and resources that the City may seek to support public and private sector investment in the Streets Master Plan (SMP). Given the scope of the types of infrastructure and their associated costs, it is likely that a combination of financing strategies will be necessary to deliver these projects.

Summary of Improvement Costs

Table 1 summarizes the total costs of the recommended SMP improvements across three categories. The range of proposed street infrastructure improvements that can be organized into three major infrastructure categories: Bikeways, Pedestrian Intersections, and Roadway Extensions/Bridges. In total, these costs range from \$33 million to \$62 million for bikeways (presented in 2026 dollars), \$1 million for pedestrian intersection improvements (2026 dollars), and \$112 million for key roadway extension projects (2025 dollars). Costs include soft costs (engineering, permitting, and project management) and contingency.

Table 1 Total Costs for Recommended Streets Master Plan Improvements

Infrastructure Category	Description	Estimated Cost	Total Cost ¹
Bikeways ^{1,2}	* Class II Bike Lanes * Class III Bike Boulevards * Class III Rural Bike Routes * Class I Shared-Use Paths	Varies by facility type, ranging from \$300,000 to \$7,220,000 per mile	\$33,373,800 (low) to \$61,850,000 (high)
Pedestrian Intersection Improvements ^{1,3}	* High-visibility crosswalks * Signage * Curb ramp upgrades for ADA compliance * Curb extensions (could include green infrastructure) * RRFBs (Rectangular Rapid Flashing Beacon)	Varies by location, ranging from \$3,000 to \$22,000	\$1,058,900
Roadway Extensions and Bridges ^{4,5}	* All extensions will require full roadway construction * All extensions are through greenfield, except for the Oak Street extension * Two new vehicular bridges are proposed over the Napa River at Pratt Avenue and Pope Street: (1) Bridge over the Napa River to Silverado Trail; (2) New bridge over Sulphur Creek	- Adams St Extension to Silverado Trail: \$59,140,117 - Oak Ave Extension to Grayson Ave: \$52,594,353 • Mitchell Dr to Charter Oak Ave: \$37,211,724 • Charter Oak Ave to Grayson Ave: \$15,382,629	\$111,734,470

[1] Presented in 2026 dollars.

[2] Includes 35% soft costs and 35% contingency.

[3] Includes 20% contingency.

[4] Includes 35% soft costs and 35% contingency.

[5] Presented in 2025 dollars.

Source: Toole Design

Overview of Financing Mechanisms and Funding Sources

This section provides an overview of potential financing mechanisms and funding sources that the City may use for the proposed projects in the Streets Master Plan. The proposed street infrastructure improvements are described below in **Table 2** with the types of sources that may be used to fund these projects. Each resource varies by establishment process, cost burdens, and feasibility and should be considered against the cost and scope of the projects.

Table 2 Matrix of Funding Sources and Proposed Projects

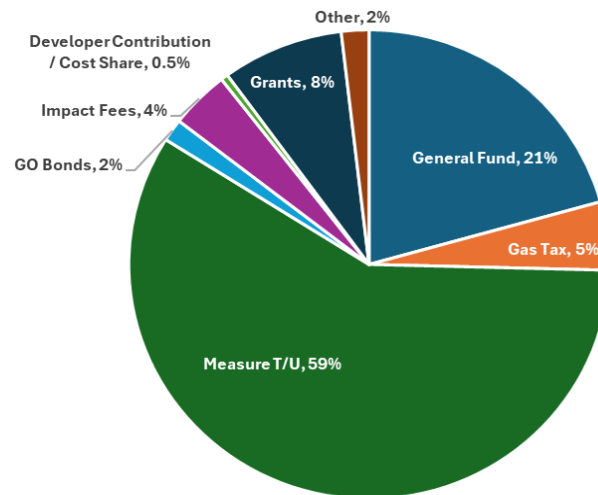
Funding Source	Existing in St. Helena	Most Applicable Project Types		
		Bikeways	Pedestrian Intersections	Roadways and Bridges
Measure U Sales Tax	Yes	X	X	X
Transportation Impact Fee	Yes	X	X	X
Parks Impact Fee	Yes	X	X	
External Grants & Funding	Yes	X	X	X
Community Facilities District	No	X	X	
Enhanced Infrastructure Financing District	No	X	X	X
Community Fundraising & Private Contributions	Yes	X	X	
Development Dedications / Contributions *	Yes	X	X	X
Regulatory Requirements for Right-of-Way Improvements	Yes	X	X	X
General Fund	Yes	X	X	X

* Often formalized in Development Agreement or Community Benefits Agreement policies.

Source: Economic & Planning Systems

The City's current 5-Year Capital Improvement Plan (CIP) identifies planned streets and roadway projects through 2030, with a total cost of \$21,445,000. This includes several of improvements identified in the Streets Master Plan. **Figure 1** shows the funding sources that have been designated for these capital improvements.

Figure 1 FY 2025-2030 5-Year Capital Improvement Plan Funding Sources for Streets



Source: City of St. Helena

Description of Funding Tools and Sources

This section provides a more detailed description of the funding tools and resources that should be considered to fund the proposed Streets Master Plan facilities and improvements.

General Fund

The City's 5-Year Capital Improvement Plan budget reflects funding from myriad sources, including the General Fund. The CIP is approved by City Council and published with the Adopted Budget. CIP projects are recommended based on approved budgets, policies, guidelines, public safety and/or economic development urgency, approved master plans, and external regulatory agencies.

To successfully implement the Streets Master Plan it will be important to seek to include identified projects in the City's CIP at the appropriate time. Inclusion in the CIP is a signal that the improvements are a community priority. For Streets projects in the 5-Year CIP, the General Fund supplies \$4.4 million in funding, or 21 percent of total funds.

Measure U

Measure U is a countywide half-cent sales tax to fund streets and roadway improvements throughout Napa County. The tax, which was passed by voters in November 2024, replaces Measure T, a previous half-cent sales tax for transportation

that was scheduled to sunset. Measure U expands the eligible types of projects that may receive funding and allows for bonding to fund costlier projects.

The measure is administered by the Napa Valley Transportation Authority, which has a set of regional capital improvement projects that will be funded by Measure U. However, jurisdictions will also receive funding distributions from the measure. St. Helena is projected to receive \$73,533,000 under the 30-year lifetime of Measure U, or 7 percent of the total distribution. In other words, this source is expected to generate 40 to 50 percent of the Streets Master Plan improvement costs over its lifetime, recognizing that other City transportation projects may also be eligible. The distribution is based on each jurisdiction's proportionate sales tax generation. This is a 21 percent increase in the estimated total funding available from Measure T.

As a condition of receiving Measure T/U funds, the City commits a match of 7 percent, which comes from their General Fund. This funding is committed to constructing Class I bike facilities identified in the Countywide Bicycle Master Plan. Projects in the Countywide Bicycle Master Plan are included under the Bikeways category of the SMP.

Under Measure U's ordinance language, the funds must be used for maintenance, reconstruction, or rehabilitation of local streets, roads, and infrastructure within the public right-of-way. However, up to 5 percent of the allocations may also be used for projects outside of maintenance, including new road extensions. This makes most projects in the SMP eligible for the funding.

Using the prior Measure T funding, St. Helena had funded approximately 40 local streets and roads projects with costs ranging from \$18,000 to \$1.2 million. In the CIP, most streets projects use some amount of Measure T or U funding. The current 5-Year CIP anticipates around \$12.6 million in Measure T and U distributions to fund planned improvements, making it the largest funding source for streets.

Development Impact Fees

Development impact fees are a one-time fee applied to new development to cover the proportional share of expanding public infrastructure and facilities to mitigate the impacts of new development. The current St. Helena impact fee categories are listed below:

- Public Safety
- Civic Improvement
- Parks
- Water
- Sewer
- Storm Drainage
- Traffic
- Housing Impact

While fee levels are automatically adjusted for inflation annually, new or updated fees require completing and adopting a nexus study. St. Helena last revised its impact fees in 2023.

Development impact fees can be advantageous in that they do not require voter approval to be applied. However, it is less suitable for infrastructure projects with high upfront costs, as fee revenue is collected as development occurs. Furthermore, revenue from this source would be limited if development activity in St. Helena slows. **Table 3** describes several advantages and disadvantages.

For the infrastructure discussed in the Streets Master Plan, two types of impact fees are most applicable: the Traffic Impact Fee and the Parks Impact Fee.

Table 3 Development Impact Fee Advantages and Disadvantages

Advantages	Disadvantages
- Nexus-based fee on developers to pay their “fair share” for infrastructure - Establishes a “pay-as-you-go” approach - Can be set up to reimburse developers for “oversizing” infrastructure - No voter approval required - No on-going tax burden	- Typically does not provide full funding for infrastructure when needed “Bridge” funding measures required to fund infrastructure needed prior to development (water, sewer) - Reimbursements may take years for other new developments to pay fees - Requires an updated “nexus study” and City Council approval - Dependent on development activity - Adds additional cost burden on development

Traffic Impact Fees

St. Helena’s Traffic Impact Fees are charged on most types of development to mitigate the impact of new growth on the City’s transportation infrastructure and facilities. Fees accrue to the City’s Traffic Mitigation Impact Fund (Fund 740). Per the December 9, 2025 City Council report, this fund currently has a \$2.95 million balance.

In the CIP, traffic impact fees will fund several pedestrian and safety improvements, with \$857,000 in planned spending from this revenue source. The fee as currently structured may also be used for bikeway and roadway improvements described the SMP as well as several road extensions.

Parks Impact Fees

For the Park Impact Fee, as of 2025, St. Helena charges \$3.89 per square foot for all residential developments and conversions. The proceeds go to the City’s Park Impact Fund (Fund 734). Per the Council report cited above, the fund has \$974,860 in balance and collects around \$25,000 per year. In the Streets Master Plan, this source is primarily applicable to trails, bike paths, and shared-use paths that are part of the parks system.

This may include some of the Bikeways and Pedestrian Intersections described in the Plan.

Community Facilities District

Community Facilities Districts (CFDs) are a special tax district to finance public infrastructure or services, which can include (but is not limited to) streetscape and related transportation improvements. Other infrastructure (stormwater systems, beautification or landscaping) can also be funded in this way, or the CFD may be used to pay debt service on issued bonds. Revenue is collected on a property assessment of property owners within the district. The revenues and spending for these districts appear in separate funds in the budget and funding is only spent within those districts and not available citywide.

CFDs are advantageous in that their revenue is levied in addition to the base 1 percent property tax and are therefore not tied to the City's share of General Fund revenues. However, some tradeoffs, such as the tax burden on the property owners and the impacts on development feasibility, should also be considered in whether a vote to create a CFD is likely to pass. In areas where multiple or costly complete streets improvements are planned, a CFD may be beneficial to bridge feasibility gaps in funding. The advantages and disadvantages of CFDs are discussed in **Table 4**.

St. Helena does not currently have any CFDs. To establish a CFD, a two-thirds approval vote of affected property owners is required, as described in the Mello-Roos Community Facilities Act of 1982. The formal process involves proposing the CFD boundaries and policies, adopting a Rate and Method of Apportionment, holding a public hearing, adopting a resolution of formation, and taking a vote.

Table 4 Community Facilities District Advantages and Disadvantages

Advantages	Disadvantages
- Structured and approved by residents or property owners - Provides a secure source of tax-exempt funding for public infrastructure - Can be used to fund/reimburse costs of initial infrastructure improvements - Can fund debt service for bond issuances or used on a "pay-as-you-go" basis - Does not impact City General Fund	- Requires 2/3rd approval by affected voters or property owners (by acreage) - Adds additional tax burden to property owners - Can only be used for publicly owned infrastructure - Exposure to developer for initial payment of the special assessments/taxes - Requires costs to be advanced for formation and bond sale

Enhanced Infrastructure Financing District (EIFD)

EIFDs are a mechanism of tax-increment financing for local public entities in California that have replaced role of Redevelopment Agencies that were eliminated in 2012. Local agencies may establish an EIFD for a given project or geographic area to capture incremental increases in property tax revenue from increased assessed value (due to new development and/or generalized appreciation). In the absence of the EIFD, this revenue would accrue to the City's General Fund (or other property-taxing entity revenue fund). EIFD funds can be used for project-related infrastructure, including streets and roads, but also utilities, parks, and housing. Unlike prior TIF/Redevelopment law in California, EIFDs require separate approval from all participating jurisdictions (e.g., County Board of Supervisors, special districts, etc.).

Revenues generated by an EIFD may be used to provide funding and financing for a broad range of infrastructure projects. Capital improvements do not have to be located within the boundaries of the district but must have a connection to the district.

St. Helena does not currently have any formed EIFDs, although it has been previously considered to enhance the downtown area. The establishment of an EIFD requires approval by every local taxing entity that will contribute to its property tax increment. To establish an EIFD, a Public Financing Authority (PFA) overseeing the activities and finances of the EIFD must prepare an Infrastructure Financing Plan (IFP), which is publicly shared, including at two public hearings for review and approval. **Table 5** below demonstrates these advantages and disadvantages.

Table 5 Enhanced Infrastructure Financing District Advantages and Disadvantages

Advantages	Disadvantages
- Does not impose a new tax on properties - Allows for the use of property tax increment to fund infrastructure without increasing overall tax burden for property owners - Can be leveraged to secure bond revenue through the issuance of debt - Geographic boundaries can be flexible and non-contiguous	- EIFDs requires 55% approval by owners or residents within district to issue debt - Must negotiate with all local taxing jurisdictions that will relinquish their tax increment - Relatively small amounts of revenue available during early development - Larger district boundary required for significant revenue benefit - May re-allocate revenues from public agencies for critical services funding (e.g., City, police, fire)

Developer Contributions

The City may seek to require some developers, as a condition of approval, to make or fund necessary improvements for street frontage and utilities adjacent to and serving their projects. Additionally, developers may elect to provide dedications or one-time payments for other project infrastructure requirements, improvements, or mitigations in lieu of participating in one or several of the financing mechanisms identified herein. For example, developers may want to “buy their way out” of required participation in an area CFD. Cities often formalize the terms and conditions associated with such dedications or contributions in a negotiated Development Agreement (DA) approved by the City Council. To the extent that developers overbuild such improvements (e.g., for economies of scale or to facilitate a continuous street design) an area-wide reimbursement mechanism could be implemented.

Requiring developers to make desired infrastructure improvements or community benefit contributions on a project-by-project basis is usually most applicable for very large projects that involve discretionary approvals (e.g., because they do not conform with existing zoning). For example, in the current CIP, the DA for Long Meadow Ranch (LMR) indicates that LMR is to complete several necessary storm drain improvements, to be partially reimbursed by the City. Several pedestrian crossing improvements, for which the City will cost-share with the developer, are also included as a condition of approval for the LMR development.

Table 6 below shows the advantages and disadvantages.

Table 6 Developer Contributions Advantages and Disadvantages

Advantages	Disadvantages
- Can be approved by City Council (voter approval not necessary) - Does not impose new tax on residents / businesses - Supports “value capture” and leverages public sectors land use authority - Allows for flexibility in use of funds with a wide range of potential investments and programs	- Pre-empts existing local planning and other regulations - Requires time and resources to execute, especially amongst multiple landowners - Imposes economic burden on private developer - Most appropriate for discrete, one-time investments - Developer project delays may slow down supplying the infrastructure

Regulatory Requirements for Public Right-of-Way

Developers are often required to construct or improve the sidewalk and roads required to directly access their project, in adherence with the development and design regulations from the City and other public agencies such as CalTrans. This can also apply

to infill development on major roads or existing streets serving citywide traffic where improvements may be needed to ensure thorough site circulation and access.

The St. Helena Municipal Code has several sections that guide the construction and maintenance of right-of-way improvements, including the duty of property owners to repair adjoining sidewalks (St. Helena Municipal Code Section 12.08.010) and rights-of-way (12.08.150), dedication requirements of streets or transit facilities (16.28.010), and design standards to ensure thorough circulation of streets (16.32.060). There may be opportunities to update these requirements to better align with the Streets Master Plan, especially in certain locations and types of projects.

External Grants

Regional, state, and federal funding sources may supply one-time or ongoing grants towards improvements like those identified in the Streets Master Plan. Grants are a beneficial tool to fund projects because they do not impact City budgets or owner/developer cost burdens. However, they require staff time and effort to evaluate suitable grant opportunities, track and submit applications, manage funding, and complete any reporting requirements. Other considerations also include the availability of program funding over time and whether the projects in the Streets Master Plan are eligible.

The current CIP identifies several grants for street improvements from a variety of funders, including:

- **One Bay Area Grant (OBAG):** The City plans to use \$603,000 in OBAG funds for downtown sidewalk improvements. OBAG is a grant of federal transportation funding that is administered and distributed by the Metropolitan Transportation Commission (MTC).
- **Transportation Development Act Article 3 (TDA 3):** Distributions from MTC's TDA 3 program, which allocates funds to counties for bicycle and pedestrian projects. In the CIP, \$50,000 in TDA 3 funding is designated for crosswalk improvements on Main Street/Highway 29.
- **Priority Legislative Budget Projects (PLBP):** CalTrans issues State funding for projects authorized by state legislation. Under AB 102 (2023), St. Helena received \$500,000 for pedestrian safety improvements for the Spring Street/Highway 29 intersection.

In addition to these, projects in the SMP may qualify for other funding sources organized by state or federal agencies.

- **Active Transportation Program (ATP):** CalTrans administers the Active Transportation Program, which consolidates funding from state and federal transportation programs. Eligible projects include those that encourage increasing the proportion of trips by biking and walking, while increasing safety and mobility for non-motorized users.

- **Strategic Growth Council Affordable Housing and Sustainable Communities (AHSC):** The Strategic Growth Council (SGC) funds land use, housing, transportation, and land use preservation projects that support infill development and reduce greenhouse gas emissions.

See **Appendix A** for an expanded list of potential funding programs for streets and transportation infrastructure.

Community Fundraising and Private Donations

Community contributions and fundraising may provide another funding source to consider for some street improvements. This strategy is less likely to fund basic infrastructure improvements but could be a resource to support more visible community features such as park benches or trail segments, with recognition given to the benefactors (e.g., naming rights on trails or plaques).

An example of this is the public fundraising effort organized by the St. Helena Little League to repair grandstands and dugouts at local park fields. The SHLL received contributions from local businesses, philanthropists, and individuals, with top donors listed on a plaque in the renovated stand. While it may not be appropriate for every type of infrastructure, some creativity and organizational willpower by interested parties may make such campaigns effective.

Appendix A: Transportation Grant Opportunities

Funding Source Name	Applicability	Justification	Active Source? (as of Dec 2025)	Administrator	Geographical Level	Description of Funding	Funding Application Eligibility	Applicant Lead	Timeline
Active Transportation Program (ATP)	High	Funds pedestrian and bicycle infrastructure, planning, and safety education.	Yes	CalTrans	State and Regional/Other	Created by SB 99 to boost active transportation. Over 85% of funds support disadvantaged communities. Local funding administered via MTC.	- Local, regional, or state agencies - Transit agencies or Caltrans nominees - Partnerships must show documentation - Projects must meet ATP goals (infra, plans, quick-build, non-infra) - Minimum request: \$250,000 - Aligns with Justice40 (40% of federal funds benefit DACs)	Local, Regional, or State Agencies	Cycle 8: Opened August 2025; application submittal in June 2026
Safe Streets and Roads for All (SS4A)	High	Large-scale federal support for roadway safety aligned with Vision Zero and Complete Streets.	No	USDOT	Federal	Grants for planning and implementing roadway safety improvements. Supports Action Plans, design, demonstration projects, and implementation of safety strategies.	- Metropolitan planning organizations (MPOs) - Cities/townships - Counties - Tribes - School districts - Public/state higher education institutions - Special district governments - Multijurisdictional groups of the above	MPOs, local and regional governments, tribal entities, education institutions	FY 2026 Notice of Funding Opportunity forthcoming.
Transportation Development Act 3	High	Focused on bicycle and pedestrian projects, with an emphasis on Quick Build projects	Yes	Napa Valley Transportation Authority	Regional/Other	Construction or engineering of bicycle or pedestrian capital project; capital purchases for maintaining Class I or Class IV facilities; Enhancement of Class II bicycle lanes; bicycle safety education programs; bicycle or pedestrian facilities plan; Quick Build projects	Napa County jurisdictions	Local jurisdictions	Recent call for projects closed July 2025
One Bay Area Grant (OBAG 4)	High	Broad federal transportation funding aligned with local plans, equity, and climate. Strong tie-in with Complete Streets.	Yes	MTC	Regional/Other	Distributes FHWA funding to projects that improve safety, reduce emissions, support housing, and enhance multimodal and equity outcomes. Includes support for Complete Streets, transit ridership, and open space access.	Jurisdictions must: - Have certified Housing Element - Comply with State Housing Law - Maintain a Local Roadway Safety Plan - Update a certified Pavement Management Program biennially - Participate in statewide streets/roads needs survey - Provide traffic counts to MTC - Comply with MTC's Complete Streets policy - Submit Complete Streets Checklists - Follow regional Project Delivery requirements	County Transportation Agencies	OBAG 4 call for projects expected 2026.
Caltrans Highway Safety Improvement Program (HSIP)	Medium	Supports safety infrastructure like signals and roundabouts that contribute to Complete Streets.	Yes	CalTrans	State	Infrastructure projects to reduce vehicle crashes based on nationally recognized crash reduction factors. Must be consistent with CA's Strategic Highway Safety Plan (SHSP).	- Must identify a specific safety problem - Proposed countermeasures must substantially address the issue - Projects must lead to construction of safety improvements - Eligible for any public road, pedestrian/bike path, or tribal lands open to the public	Local governments or tribal entities with federal-aid highway fund responsibility	Varies by cycle

Funding Source Name	Applicability	Justification	Active Source? (as of Dec 2025)	Administrator	Geographical Level	Description of Funding	Funding Application Eligibility	Applicant Lead	Timeline
State Office of Traffic Safety Grant (OTS)	Medium	Supports education and enforcement aligned with roadway safety goals; complements Complete Streets but not infrastructure.	Yes	CA Office of Traffic Safety	State	Grants for high-visibility traffic enforcement and public education in NHTSA priority areas. Must be supported by local crash data.	- Local governments - Nonprofits (501(c)(3)) must have a public agency grant host - Must address NHTSA priorities: – Impaired/Distracted Driving – EMS, Motorcycle Safety, Occupant Protection – Pedestrian & Bike Safety, Roadway Safety, Communications	Local governments or nonprofits with public sponsors	FY 2027 cycle opened Dec 2025 and closes Jan 31, 2026
Transformative Climate Communities (TCC)	Medium	Funds GHG-reducing infrastructure, planning, and anti-displacement efforts with overlap in pedestrian and transit areas.	Yes	CA Strategic Growth Council	State	Funds multi-benefit, community-led infrastructure projects in Disadvantaged Communities with major climate, health, and equity outcomes.	- Community-based organizations - Local governments - Nonprofits, faith-based orgs - Philanthropic orgs - JPAs, CDFIs, CDCs - Tribes and tribal partnerships - Coalitions and associations of nonprofits	Local governments, CBOs, multi-sector coalitions	FY 2026 round expected Spring 2025, pending state budget
State/Regional Transportation Improvement Program (STIP/RTIP)	Medium	Primarily for highway and rail projects, but can support local road and safety upgrades with strategic planning.	Yes	California Transportation Commission	State and Regional/Other	Allocates funds on a five-year cycle for state highways, intercity rail, and regional transit. Bicycle and pedestrian improvements may be eligible if aligned with broader goals.	- Local or regional governments - Must support eligible facility types (e.g., rail, active transportation) - Projects evaluated on VMT impact, intermodal shifts, public health, safety, community engagement, emergency preparedness, GHG and equity outcomes - Projects may leverage SHOPP or other funds	Local or regional governments	Biennial cycle; current cycle active
Community Traffic Safety Grants	Medium	Supports local safety education and enforcement; limited infrastructure funding for redesigns.	Yes	Road to Zero Coalition	Regional/Other	Grants focused on reducing roadway fatalities through tools, education, and pilot projects.	- Must be a Road to Zero Coalition member - Nonprofits - Local government agencies	Nonprofit or local government entities	Annual; varies by cycle
Lifeline Transportation Program (Bay Area)	Medium	Funds mobility and access projects in Equity Priority Communities; transit-focused with some walk/bike overlap.	No	MTC	Regional/Other	Supports transit service, pedestrian/bike access, community shuttles, auto loan programs, and means-based fare pilots.	- Must serve an Equity Priority Community - Must address needs from community-based transportation plans or other local planning in low-income neighborhoods - Transit operator or sponsor required	Bay Area transit operators	Aligned with MTC's funding cycles
AARP Community Challenge	Low	Provides quick-action grants for small-scale walkability and public realm improvements, often through tactical urbanism.	Yes	AARP	Regional/Other	Small grants for permanent or temporary projects improving public space, engagement, and age-friendly design.	501(c)(3), (4), or (6) nonprofits - Government entities (any level) - Other org types considered case-by-case	Nonprofits or government agencies	FY 2025 round closed March 5, 2025; expected to return 2026

Funding Source Name	Applicability	Justification	Active Source? (as of Dec 2025)	Administrator	Geographical Level	Description of Funding	Funding Application Eligibility	Applicant Lead	Timeline
Pavement Management Technical Assistance Program (P-TAP)	Low	Technical support for pavement and asset management in Bay Area jurisdictions.	Yes (call for projects annually)	MTC	Regional/Other	Provides federal funds for data collection, pavement condition reporting, and pilot asset management tools.	- Bay Area cities and counties - Eligible activities include: - Pavement condition data collection - Pavement management system support - Pilot studies for storm drains, signals, signage, etc.	Bay Area local governments	Annual; call for projects typically in Spring
Community Sparks Program	Low	Supports placemaking and bike-friendly quick-builds; ideal for smaller-scale, community-led interventions.	Yes	League of American Bicyclists	Regional/Other	\$2,000 microgrants for tactical urbanism, placemaking, and bike education/planning.	- Based in the U.S. 501(c)(3), (4), or (6) nonprofit - Public or government agency/organization - Must complete the project by end of calendar year	Nonprofit or public entities	Annual; applications open early each year
Smart Cities Collaborative – Year Low Three	Low	Not a grant; provides peer exchange and technical assistance on mobility/curb management innovation.	No	Transportation for America	Regional/Other	Offers workshops and peer learning for cities on curb and mobility strategies.	- U.S.-based city government - Program currently limited to selected cities (e.g., SF, LA, Portland, West Sac, DC, etc.)	City governments (by invite/selection)	Current cohort underway
AARP Community Challenge	Low	Funds tactical urbanism and walkability/public realm improvements with an age-friendly and DEI lens.	Yes	AARP	Regional/Other	Small, quick-turnaround grants for public space, placemaking, and age-friendly community improvements.	501(c)(3), (4), or (6) nonprofits - Government entities - Other orgs considered case-by-case	Nonprofit or government entities	Annual; typically spring cycle
FTA 5310 (Enhanced Mobility of Seniors and Individuals with Disabilities)	Low	Primarily funds senior and disabled transit; some overlap with Complete Streets via access improvements.	Yes	CalTrans	Federal	Funds ADA-accessible vehicles, mobility management programs, and operations to improve senior/disabled access.	- Private nonprofits (all projects) - Public agencies (if no nonprofits available) - CTSA-approved public agencies (Capital/Mobility Mgmt) - Public agencies (for Operating and Mobility Mgmt projects)	Nonprofit, state/local government, or tribal entities	Varies by MPO; CalTrans cycle posted annually
Outride Fund	Low	Bike education and wellness-oriented youth programs; not intended for infrastructure delivery.	Yes (reopens Fall 2025)	Outride Fund	Regional/Other	Matching grant of up to \$15,000 for bike education, trail development, and youth wellness projects.	- Based in the U.S. 501(c)(3), (4), or (6) nonprofit - Public or government agency/organization	Nonprofits or government entities	Riding for Focus Program grant application open through February 2026

Last Updated: December 2025

St Helena Streets Master Plan

Council Meeting
Plan Adoption
March 24, 2026

Joseph Leach, PE
Assistant City Manager
Director of Public Works
City Engineer

Anjolie Palta | Toole Design
Ian Barnes, PE | Fehr & Peers



TOOLE
DESIGN



AGENDA

- Project Overview + Final Plan Structure
- Public Comments
- Key Plan Components
- Funding and Implementation
- Next Steps



TOOLE
DESIGN



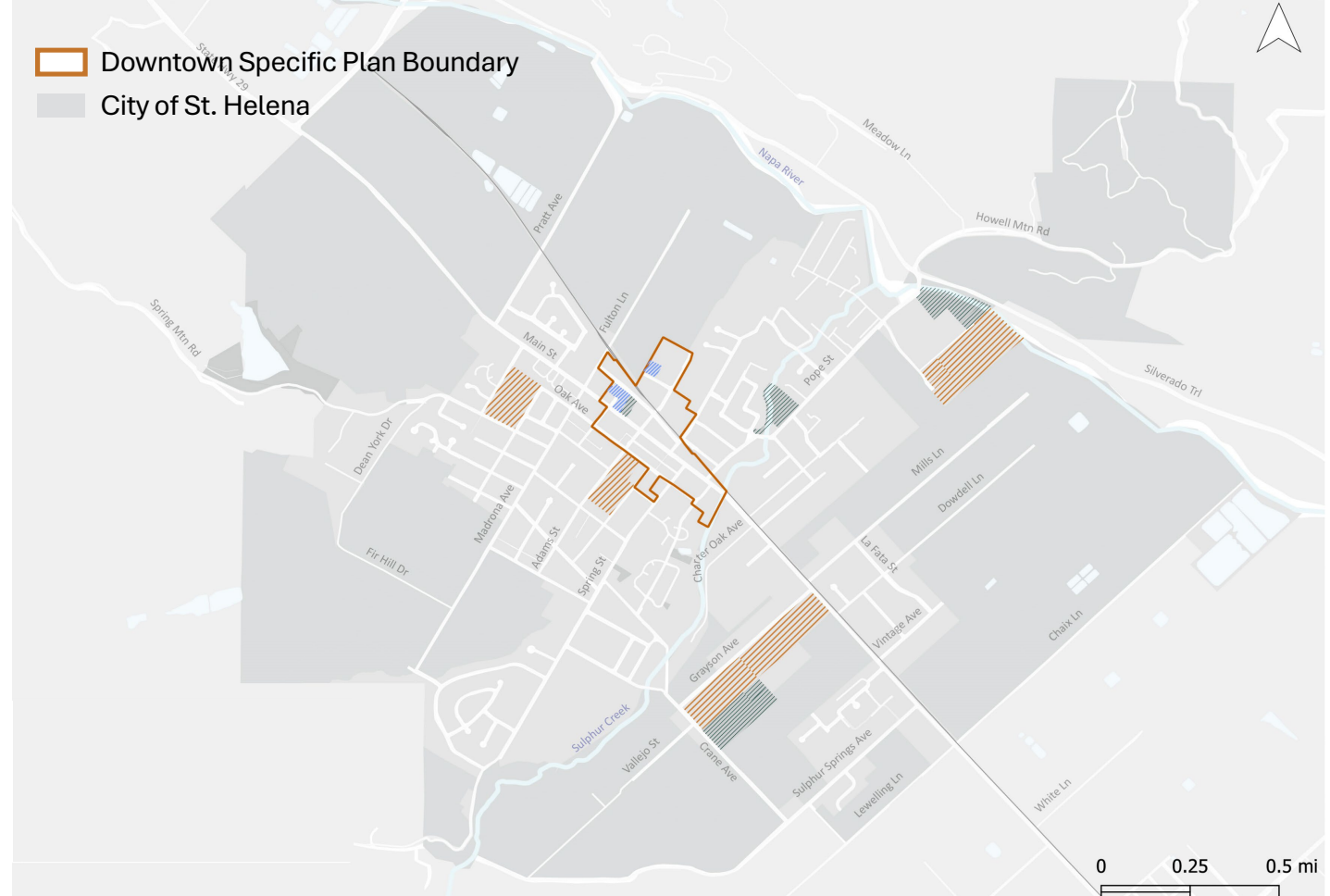
Project Overview + Final Plan Structure

PROJECT AREA

TOOLE
DESIGN



- City-Wide Initiative
- Excludes DSP Area



| PURPOSE

TOOLE
DESIGN



- Bring together transportation recommendations from multiple plans, reports, studies into one coordinated framework
- Improve safety and mobility for all users
- Expand walking and biking connections citywide
- Support emergency access and evacuation routes
- Guide future transportation investments

CITY OF ST. HELENA STREETS MASTER PLAN

PROCESS

TOOLE
DESIGN



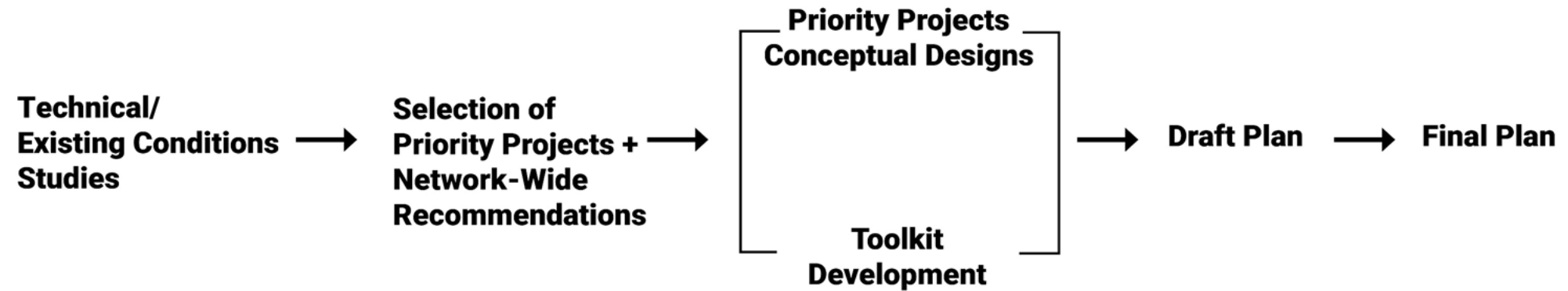
Spring – Summer 2024

Fall – Winter 2024

Winter - Spring 2025

Summer - Fall 2025

Fall - Spring 2026



CITY OF ST. HELENA STREETS MASTER PLAN

PROCESS

TOOLE
DESIGN



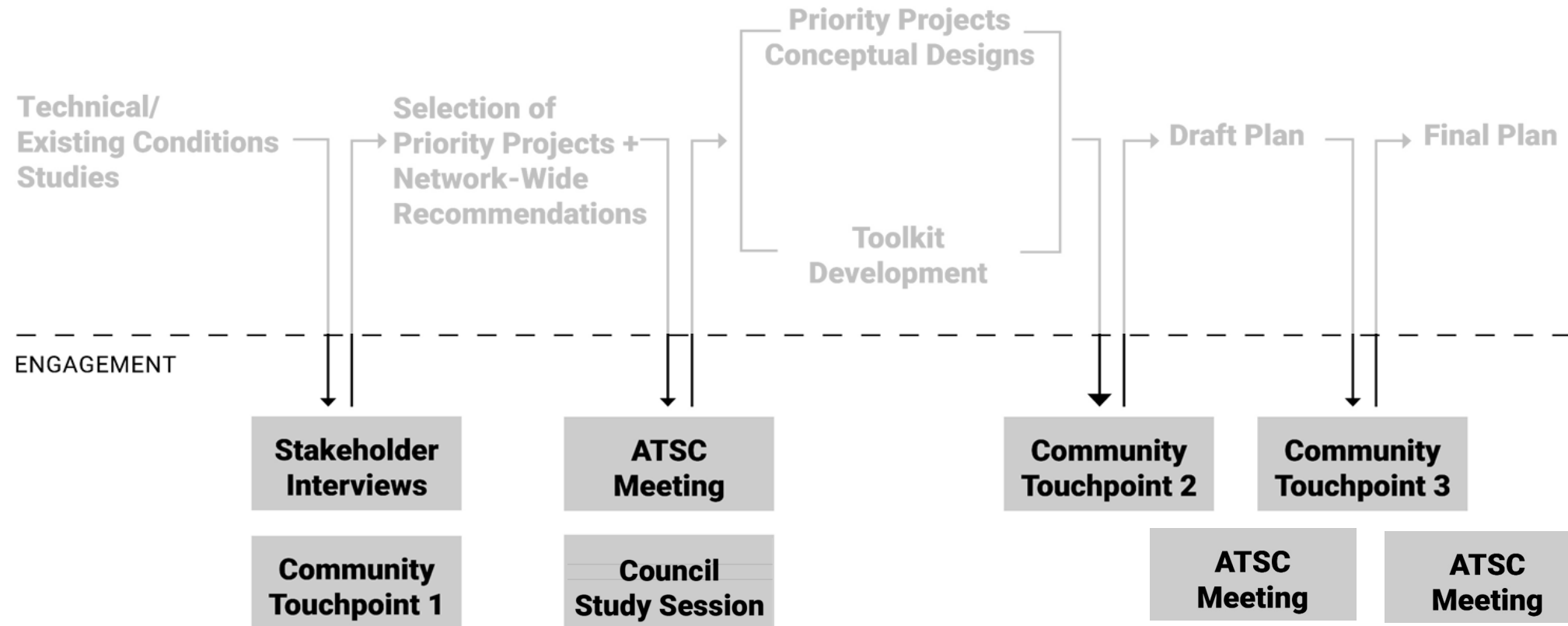
Spring – Summer 2024

Fall – Winter 2024

Winter - Spring 2025

Summer - Fall 2025

Fall - Spring 2026



CITY OF ST. HELENA STREETS MASTER PLAN

PROCESS

TOOLE
DESIGN



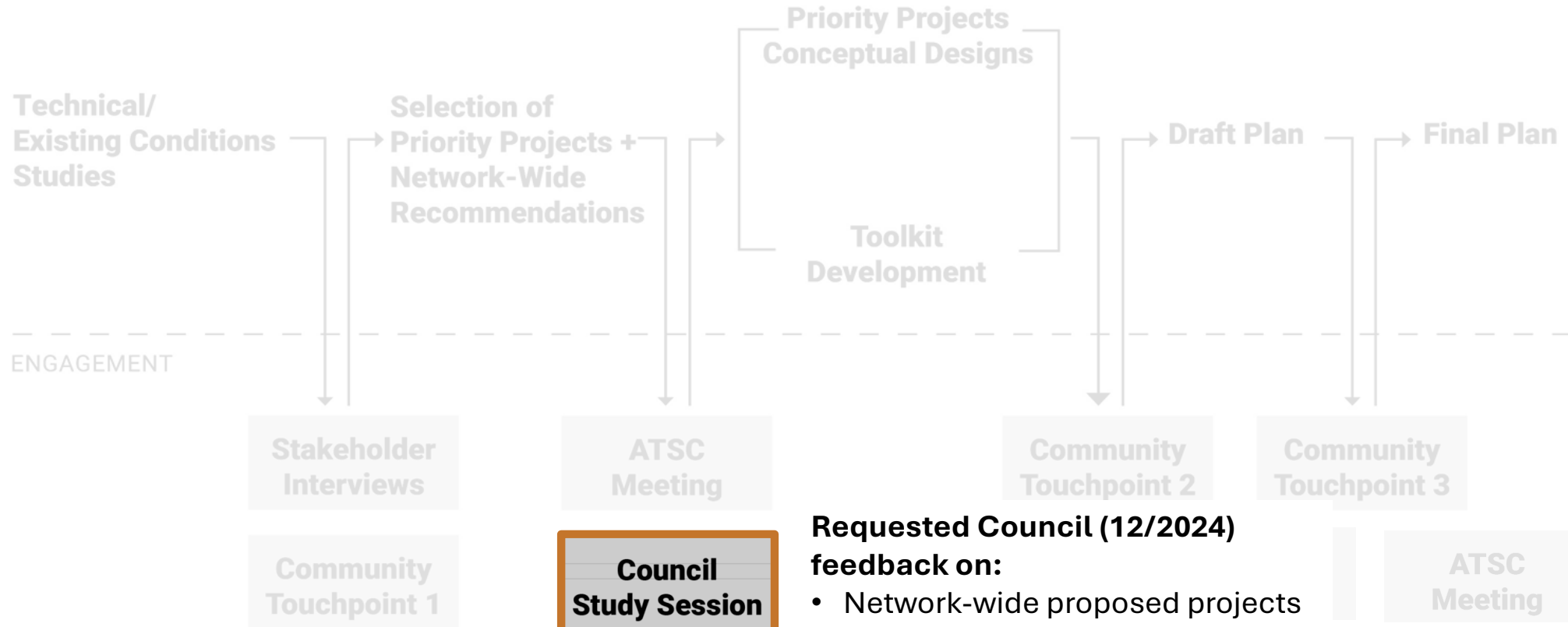
Spring – Summer 2024

Fall – Winter 2024

Winter - Spring 2025

Summer - Fall 2025

Fall - Spring 2026



IA STREETS MASTER PLAN

- 
- # St. Helena Streets Master Plan
- January 2026
- | Page # | Street/Topic Number |
|--------|---------------------|
| 25 | McClintock Ave. |
| 27 | McClintock Ave. |
| 31 | McClintock Ave. |
| 32 | McClintock Ave. |
| 33 | McClintock Ave. |
| 34 | McClintock Ave. |
| 35 | McClintock Ave. |
| 36 | McClintock Ave. |
| 37 | McClintock Ave. |
| 38 | McClintock Ave. |
| 39 | McClintock Ave. |
| 40 | McClintock Ave. |
| 41 | McClintock Ave. |
| 42 | McClintock Ave. |
| 43 | McClintock Ave. |
| 44 | McClintock Ave. |
| 45 | McClintock Ave. |
| 46 | McClintock Ave. |
| 47 | McClintock Ave. |
| 48 | McClintock Ave. |
| 49 | McClintock Ave. |
| 50 | McClintock Ave. |
| 51 | McClintock Ave. |
| 52 | McClintock Ave. |
| 53 | McClintock Ave. |
| 54 | McClintock Ave. |
| 55 | McClintock Ave. |
| 56 | McClintock Ave. |
| 57 | McClintock Ave. |
| 58 | McClintock Ave. |
| 59 | McClintock Ave. |
| 60 | McClintock Ave. |
| 61 | McClintock Ave. |
| 62 | McClintock Ave. |
| 63 | McClintock Ave. |
| 64 | McClintock Ave. |
| 65 | McClintock Ave. |
| 66 | McClintock Ave. |
| 67 | McClintock Ave. |
| 68 | McClintock Ave. |
| 69 | McClintock Ave. |
| 70 | McClintock Ave. |
| 71 | McClintock Ave. |
| 72 | McClintock Ave. |
| 73 | McClintock Ave. |
| 74 | McClintock Ave. |
| 75 | McClintock Ave. |
| 76 | McClintock Ave. |
| 77 | McClintock Ave. |
| 78 | McClintock Ave. |
| 79 | McClintock Ave. |
| 80 | McClintock Ave. |
| 81 | McClintock Ave. |
| 82 | McClintock Ave. |
| 83 | McClintock Ave. |
| 84 | McClintock Ave. |
| 85 | McClintock Ave. |
| 86 | McClintock Ave. |
| 87 | McClintock Ave. |
| 88 | McClintock Ave. |
| 89 | McClintock Ave. |
| 90 | McClintock Ave. |
| 91 | McClintock Ave. |
| 92 | McClintock Ave. |
| 93 | McClintock Ave. |
| 94 | McClintock Ave. |
| 95 | McClintock Ave. |
| 96 | McClintock Ave. |
| 97 | McClintock Ave. |
| 98 | McClintock Ave. |
| 99 | McClintock Ave. |
| 100 | McClintock Ave. |

[illegible]

Public Comments

REVIEW PERIOD

TOOLE
DESIGN



- Open January 22nd – February 16th
- Advertised through
 - City Newsletter
 - City homepage
 - Public Works homepage
 - Streets Master Plan page
 - City social media channels
- **68 Comments total**
 - 46 comments (~68%) were submitted by one individual
 - All others submitted between 1–6 comments

COMMUNITYBUSINESSSERVICESEXPERIENCE ST. HELENAI WANT TO...

Home › City Hall › Public Works › Construction & Projects › Streets Master Plan

Streets Master Plan

The Streets Master Plan aims to revolutionize our City's transportation network, boosting connectivity and synergy to enhance circulation, public safety, and mobility for everyone. It's a game-changing approach to creating vibrant, sustainable streets that will shape the future of our community.

UPDATE: Streets Master Plan Ready for Public Review – January 22, 2026

The City of St. Helena is pleased to announce the release of the [Draft Streets Master Plan \(PDF\)](#) for public review and comment. Building on previously adopted plans, studies, and community input, the Draft Plan provides vetted, implementable recommendations to improve St. Helena's streets for safety, mobility, and accessibility for all users, including people walking, biking, driving, and using mobility devices.

The Draft Streets Master Plan synthesizes past planning efforts with updated technical analysis to create a coordinated framework for future street improvements that enhance connectivity, support local travel needs, and reflect the city's unique character.

Community members are invited to review the Draft Plan and share feedback through an interactive PDF document, which allows readers to explore the plan and submit comments directly online.

[Review the Draft Streets Master Plan and leave a comment \(PDF\).](#)

Public input will help refine the plan before it is finalized and presented for City Council adoption.
Comments can be made now through February 16.

St. Helena Streets Master Plan
January 2026

Presentation and Materials from April 30th Meeting

Presentation

- [April 30, 2025 Community Meeting Presentation \(PDF\)](#)
- [Priority Projects \(PDF\)](#)
- [Adams Street Draft Design Concept \(PDF\)](#)
- [Spring Street Draft Design Concept \(PDF\)](#)

CITY OF ST. HELENA STREETS MASTER PLAN

| PUBLIC COMMENTS

TOOLE
DESIGN



Themes + Key Comments:

- Bike Network and facility selection (Class I / II / III)
- Interest in daylighting enforcement
- Requests for bulb-outs and curb extensions at key intersections
- Sidewalk condition and ADA surfaces
- Class I and II project costs
- Concern about parking loss along Spring Street

CITY OF ST. HELENA STREETS MASTER PLAN

ACTION TAKEN

TOOLE
DESIGN



- **Bike Network and facility selection (Class I / II / III)**

Facility types were retained based on roadway context, speed, functional classification, and NVTa coordination, apart from Madrona Avenue, which was updated from a Class II to a Class III bike facility following ATSC recommendations.

- **Interest in daylighting enforcement**

Plan updated to reference AB 413 and include a systemwide recommendation for red curb daylighting at intersections.

- **Requests for bulb-outs and curb extensions at key intersections**

Plan updated to recommend bulb-outs at Hillview near the middle school entrance and at Hillview at Kearney.

- **Sidewalk condition and ADA surfaces**

Plan added language acknowledging sidewalk maintenance needs; tactile surface design remains governed by ADA standards.

- **Class I and II low end project costs**

Low-end cost estimates were updated to address inconsistencies.

- **Concern about parking loss along Spring Street**

No changes to proposed; curb extensions reflect compliance with AB 413 where parking is already restricted.

CITY OF ST. HELENA STREETS MASTER PLAN

Key Plan Components

FINAL PLAN STRUCTURE

TOOLE
DESIGN



- Project Overview
- Existing Conditions
- Engagement Summary
- **Network-Wide Recommendations**
- **Implementation Plan**
- Key Projects

Appendices

- Cost Opinions
- Streetscape Toolkits
- Prioritization Methodology Memo and Full Scoring
- Community Engagement Summary Memo
- **Synchro Analysis Memo**
- Stormwater and Utilities Technical Study

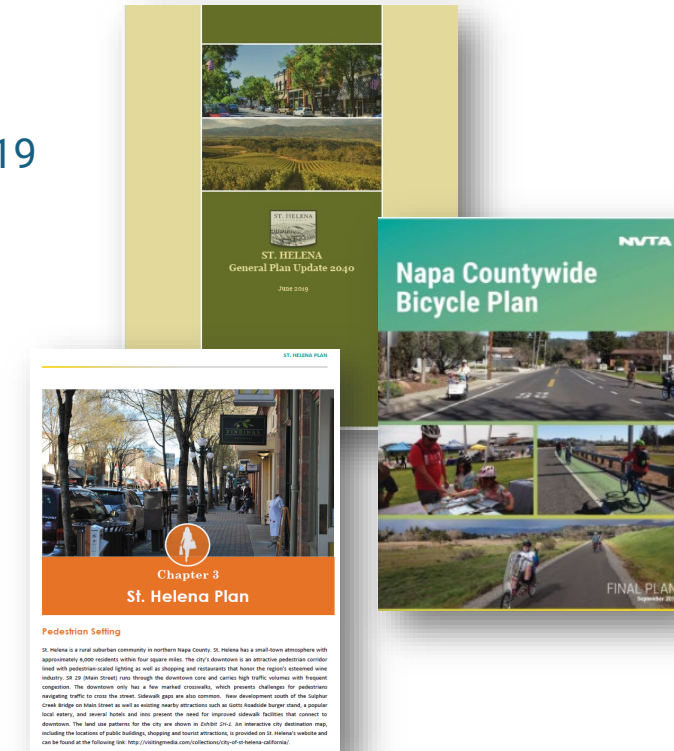
CITY OF ST. HELENA STREETS MASTER PLAN

NETWORK-WIDE RECOMMENDATIONS

TOOLE
DESIGN



- The Napa Countywide Bicycle Plan, 2019
- St. Helena General Plan Update 2040 (Street Extension Projects), 2019
- Active Transportation + SRTS Plan, 2021
- Safe Routes Napa County Walk Audit Reports, 2019
- ADA Transition Plan , 2017
- St. Helena Pedestrian Plan (Part of Napa County Master Plan), 2016
- City-Identified Bridge Realignment Projects
- Project Team-Identified Intersection Improvement Projects
- NVTa Vision Zero Plan, 2023



CITY OF ST. HELENA STREETS MASTER PLAN

NETWORK-WIDE RECOMMENDATIONS

TOOLE
DESIGN



- **46 Bikeway Projects**
- **39 Crossing Improvements (i.e. Ped/Bike)**
- **9 Roadway Extension and Bridge Projects**
 - **Includes 2 bridge replacements**
 - **Includes 7 roadway extensions, 3 w/ new bridges**

CITY OF ST. HELENA STREETS MASTER PLAN

| PRIORITIZATION

TOOLE
DESIGN



COMMUNITY SUPPORT

+

ACCESS

+

SAFETY

+

CONNECTIVITY

+

FEASIBILITY

CITY OF ST. HELENA STREETS MASTER PLAN

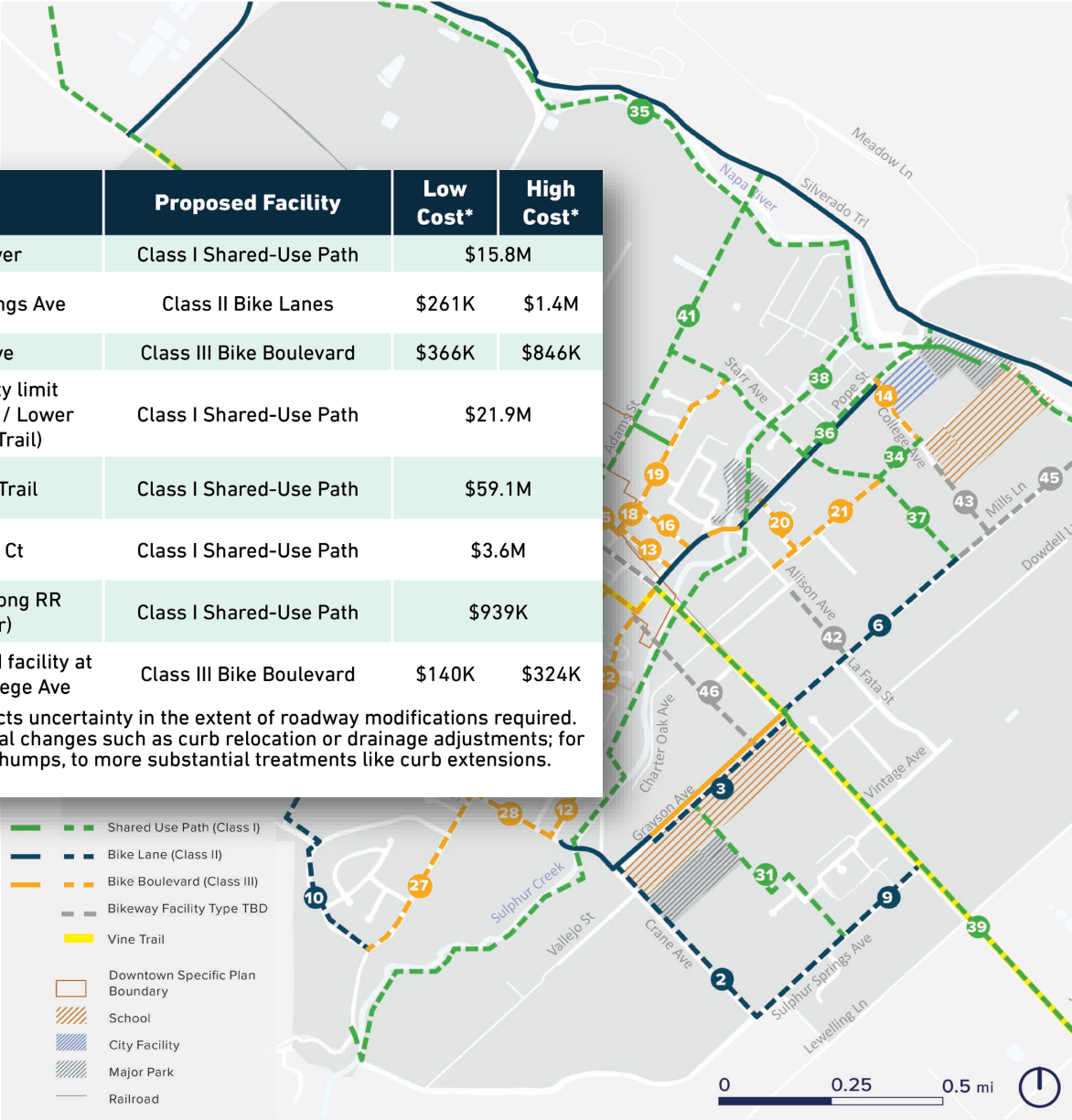
BIKEWAYS

Score	Street/Trail Name	Begins	Ends	Proposed Facility
7	Sulphur Creek Trail	Sulphur Springs Ave	Napa River	Class I Shared-Use Path
6	S Crane Ave	Grayson Ave	Sulphur Springs Ave	Class II Bike Lanes
6	Adams St	Railroad Ave	Allyn Ave	Class III Bike Boulevard

	Score	Street/Trail Name	Begins	Ends	Proposed Facility	Low Cost*	High Cost*
6	Adams St (pending extension)						
5	Crane Park Path (to La Quinta Way)	7	Sulphur Creek Trail	Sulphur Springs Ave	Napa River	Class I Shared-Use Path	\$15.8M
5	Library Lane Path						
5	College Ave	6	S Crane Ave	Grayson Ave	Sulphur Springs Ave	Class II Bike Lanes	\$261K \$1.4M
4	Grayson Ave						
4	Madrona Ave- Riesl	6	Adams St	Railroad Ave	Allyn Ave	Class III Bike Boulevard	\$366K \$846K
4	Elmhurst Ave						
4	Edwards St						
4	Hillview Pl						
4	Spring St	6	Napa River Trail	St Helena city limit near wastewater treatment plant	St Helena city limit (Deer Park Rd / Lower Reservoir Trail)	Class I Shared-Use Path	\$21.9M
4	Spring Mtn Rd						
4	Hunt Ave						
4	Mitchell Dr						
4	McCorkle Ave F	6	Adams St (pending future extension)	Railroad Ave	Silverado Trail	Class I Shared-Use Path	\$59.1M
4	Pope St						
4	Starr Ave Path (pending extension)						
4	York Creek Path	5	Crane Park Path (to La Quinta Way)	Grayson Ave	Kennedy Ct	Class I Shared-Use Path	\$3.6M
4	Valley View St						
4	Spring St						
4	Oak Ave (pending extension)						
3	Allyn Ave	5	Library Lane Path	Adams St	Vine Trail (along RR corridor)	Class I Shared-Use Path	\$939K
3	Hudson Ave						
3	Mills Ln						
3	Birch Ave	5	College Ave	Pope St	Proposed class I facility at SE end of College Ave	Class III Bike Boulevard	\$140K \$324K
3	Church St						
3	Hunt Ave						
3	Mariposa Ln						
3	McCorkle Ave						
3	N Crane Ave						
3	Oak Ave						
3	Railroad Ave						
3	Railroad Ave						
3	College Ave (pending future extension)						
3	Mills Ln (pending future extension)						
3	Lower Reservoir Loop Trail						
2	Chalk Ln						
2	Pratt Ave						
2	Spring Mountain Rd						
2	Sulphur Springs Ave						
2	Sulphur Springs Ave						
2	Pratt Ave						
2	Sulphur Springs Rd						
2	Sylvan Ave						
2	Allison Avenue (pending future extension)						

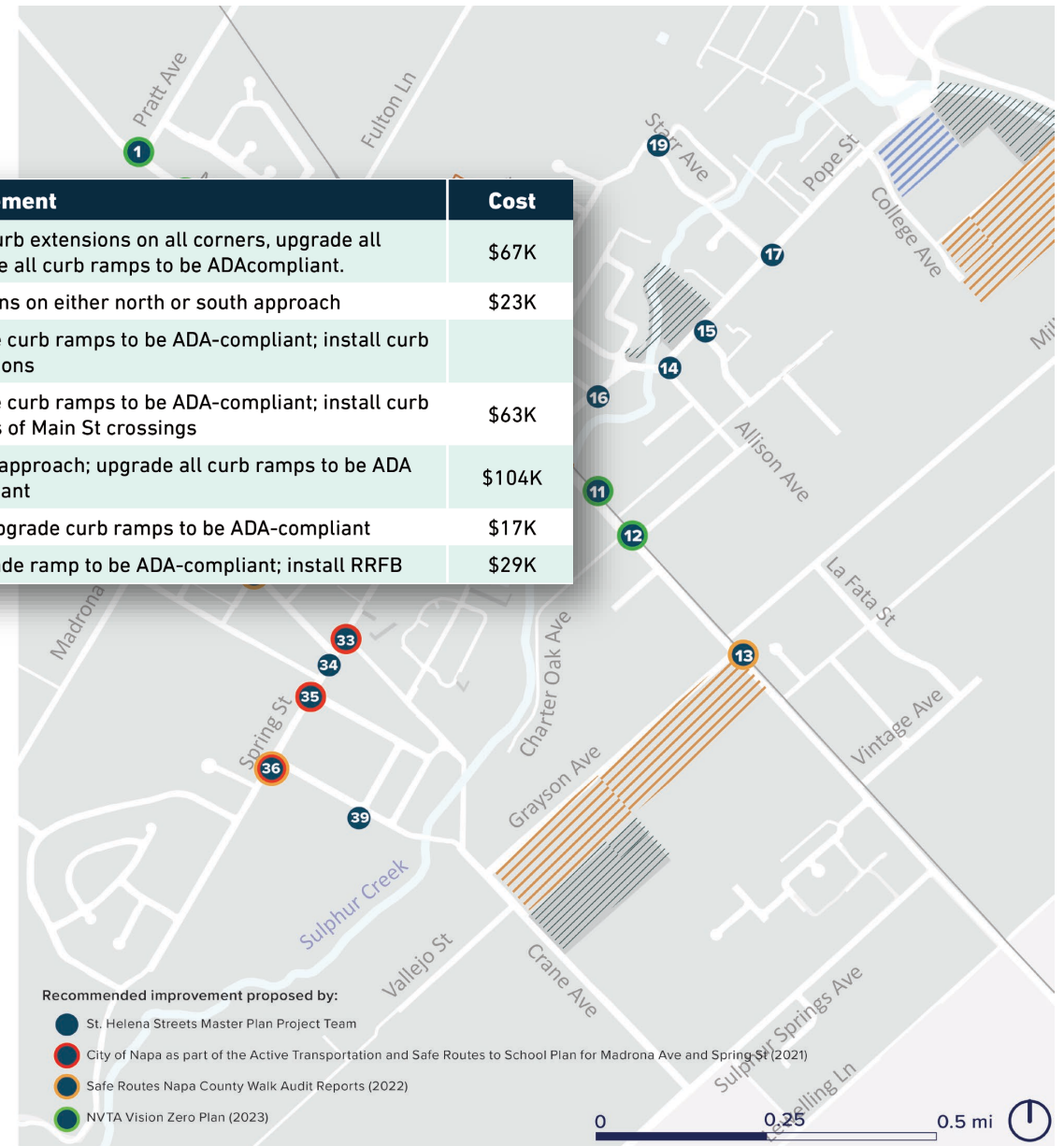
The low and high cost range for Class II bike lanes and Class III bike boulevards reflects uncertainty in the extent of roadway modifications required. For bike lanes, improvements may range from striping and signage to more substantial changes such as curb relocation or drainage adjustments; for bike boulevards, costs may vary from minor traffic calming measures, such as speed humps, to more substantial treatments like curb extensions.

3	Railroad Ave	Adams St	Hunt Ave	Class III Bike Boulevard
3	Railroad Ave	Fulton Ln	Hunt Ave	Class III Bike Boulevard
3	College Ave (pending future extension)	McCorkle Ave Path	Mills Ln	TBD
3	Mills Ln (pending future extension)	Starr Ave	Silverado Trail	TBD
3	Lower Reservoir Loop Trail	NW city limit	Loop around Lower Reservoir to connect to Spring Mountain Rd	Class I Shared-Use Path
2	Chalk Ln	Main St/SR 29	Napa River Trail (proposed)	Class III Rural Bike Route
2	Pratt Ave	RR track/Vine Trail at Pratt Ave	Napa River Trail (proposed)	Class III Rural Bike Route
2	Spring Mountain Rd	St Helena city limit (West)	Dean York Ln	Class III Rural Bike Route
2	Sulphur Springs Ave	St Helena city limit	Spring St	Class III Rural Bike Route
2	Sulphur Springs Ave	Sulphur Creek	Crane Ave	Class III Rural Bike Route
2	Pratt Ave	Vine Trail	Main St/SR 29	Class II Bike Lanes
2	Sulphur Springs Rd	S Crane Ave	Main St/SR 29	Class II Bike Lanes
2	Sylvan Ave	Riesling Way	Spring St	Class II Bike Lanes
2	Allison Avenue (pending future extension)	Charter Oak Ave	Mills Ln	TBD



Score	Intersection
6	Main St at Grayson Ave
5	Pope St at Allison Ave
5	Score
4	Intersection
4	5
4	Hillview Pl and Spring Mountain Rd
4	4
4	Main St at Crinella Ct
4	4
4	Main St at Madrona Ave
4	4
3	4
3	Main St at Adams St
3	4
3	Main St at Spring St
3	4
3	Pope St at Starr Ave
3	4
3	Hillview Pl at Middle St
3	Madrona Ave at Allyn Ave*
3	Spring St at Oak Ave*
3	Spring St at Crane Ave*
3	Spring St and Valley View Ave
3	Spring Mountain Rd at Spring Mountain Ct
3	Spring Mountain Rd at Elmhurst Ave^
3	Valley View Ave at Olive Ave
2	Pope St at Edwards St
2	Hunt Ave at Church St
2	Main St at Pratt Ave+
2	Main St at Hunt Ave^+
2	Main St at Pope St+
2	Main St at Mitchell Dr+
2	Pine St and Oak Ave
2	Adams St at Stockton St
2	Adams St at Allyn Ave
2	Spring St at Kearney St*
2	Spring St at Stockton St
2	Main St at 1000 Main+
1	Hunt Ave and Starr Ave
1	Spring St at Allyn Ave

Score	Intersection	Improvement	Cost
5	Hillview Pl and Spring Mountain Rd	Install stop-control on all approaches and curb extensions on all corners, upgrade all crosswalks to high visibility, and upgrade all curb ramps to be ADA-compliant.	\$67K
4	Main St at Crinella Ct	Install RRFB with advanced warning signs on either north or south approach	\$23K
4	Main St at Madrona Ave	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant; install curb extensions	
4	Main St at Adams St	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant; install curb extensions on both sides of Main St crossings	\$63K
4	Main St at Spring St	Install curb extensions and RRFB on southeast approach; upgrade all curb ramps to be ADA compliant	\$104K
4	Pope St at Starr Ave	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant	\$17K
4	Hillview Pl at Middle School	Upgrade to high-visibility crosswalk and upgrade ramp to be ADA-compliant; install RRFB	\$29K



ROADWAY EXTENSIONS + BRIDGE PROJECTS

Score	Roadway Extension or Bridge Project	Cost
5	Adams St Extension to Silverado Trail	\$59.1M
4	Oak Ave Extension to Grayson Ave*	Mitchell Dr to Charter Oak Ave: \$37.2M Charter Oak Ave to Grayson Ave: \$15.4M
4	Pope Street Bridge Realignment	n/a
3	Starr Ave extension north to Adams St	n/a
3	Mills Ln extension to Silverado Trail	n/a
3	Pratt Ave Bridge Realignment	n/a

* Inclusive of both phases of the Oak Avenue extension (Mitchell Drive to Charter Oak Avenue and Charter Oak Avenue to Grayson Avenue)



TOOLE
DESIGN

SYNCHRO FINDINGS

TOOLE
DESIGN



- **Purpose**

- Compare how key extension and bridge projects change intersection operations and congestion; with an aim to ease Main St traffic and improve emergency routing

- **Projects studied:**

- Adams St Extension
- Oak Ave Extension (Phase 1+2)
- Pope St Bridge

- **Key takeaways**

- All alternatives improve intersection operations and congestion
- Oak Ave Extension to Grayson provides the largest systemwide benefit
- Adams St and Oak Ave (Charter Oak) provide moderate improvements
- Pope St Bridge improvements provide localized benefits

CITY OF ST. HELENA STREETS MASTER PLAN

COMPARATIVE TRADEOFFS

TOOLE
DESIGN



Alternative	Key Benefits	Key Constraints
Oak Ave Extension (Phase 2 to Grayson)	• New north–south route parallel to Main St • Expands local street network • Reduces reliance on Main St • Could help distribute traffic during an emergency	• Increased traffic along Oak Ave corridor • Property acquisition will be required • Requires new bridge across Sulphur Creek
Adams St Extension	• New east–west connection between Main St and Silverado Trail • Alignment through largely undeveloped, unencumbered land • Could serve as an additional regional emergency access route	• Requires construction on existing levee • Requires new bridge crossing Napa River
Oak Ave Extension (Phase 1 to Charter Oak)	• New north–south route parallel to Main St • Strengthens local street connectivity • Improves neighborhood circulation • Reduces reliance on Main St for local trips • Improves internal circulation that could help residents reach emergency access route	• Increased traffic along Oak Ave corridor • Property acquisition will be required • Requires new bridge across Sulphur Creek • Shorter extension means some delays before diverting from Main Street
Pope St Bridge	• Improves bridge operations and driving comfort • Improved access to the regional roadway network • Enhances existing emergency access route	• More modest congestion relief since travel still relies on Main St

CITY OF ST. HELENA STREETS MASTER PLAN

| ATSC MOTIONS

TOOLE
DESIGN

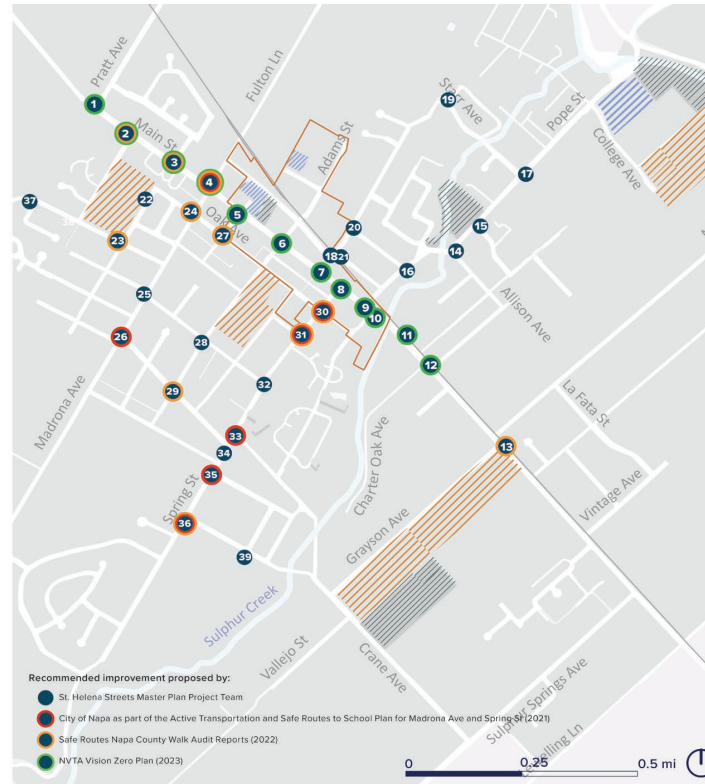


- Motion approved to recommend the Adams Street Extension project rank highest as a priority.
- Motion approved to recommend the Oak Avenue Extension project rank lowest as a priority.

Funding + Implementation

FUNDING + IMPLEMENTATION

TOOLE
DESIGN



CITY OF ST. HELENA STREETS MASTER PLAN

| FUNDING + IMPLEMENTATION

TOOLE
DESIGN

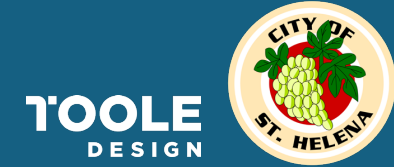


Crossing improvements → lower-cost, targeted safety upgrades

Bikeways → moderate-investment corridor improvements

Roadway extensions and bridges → complex infrastructure projects

FUNDING + IMPLEMENTATION



Crossing improvements → lower-cost, targeted safety upgrades

Crossing improvement costs vary widely, from approximately \$4,000 for high-visibility crosswalks to more than \$100,000 for treatments that include features such as Rectangular Rapid Flashing Beacons (RRFBs).

Score	Intersection	Improvement	Cost
5	Hillview Pl and Spring Mountain Rd	Install stop-control on all approaches and curb extensions on all corners, upgrade all crosswalks to high visibility, and upgrade all curb ramps to be ADAcompliant.	\$67K
4	Main St at Crinella Ct	Install RRFB with advanced warning signs on either north or south approach	\$23K
4	Main St at Madrona Ave	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant; install curb extensions	
4	Main St at Adams St	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant; install curb extensions on both sides of Main St crossings	\$63K
4	Main St at Spring St	Install curb extensions and RRFB on southeast approach; upgrade all curb ramps to be ADA compliant	\$104K
4	Pope St at Starr Ave	Upgrade all crosswalks to high-visibility; upgrade curb ramps to be ADA-compliant	\$17K
4	Hillview Pl at Middle School	Upgrade to high-visibility crosswalk and upgrade ramp to be ADA-compliant; install RRFB	\$29K

FUNDING + IMPLEMENTATION

TOOLE
DESIGN



Bikeways → moderate-investment corridor improvements

Bicycle facility costs were developed using a cost-per-mile approach based on facility type and a “low” and “high” range.

Facility Type	Low Cost (per mile)	High Cost (per mile)	Lower Cost Description	Higher Cost Description
Class I Bike Paths	\$7,220,000	\$7,220,000*	Replace existing 5' sidewalk to 12' shared use path + 5' physical barrier along curb line	Trail-like facility next to river or creek (requires full new construction)
Class II Bike Lanes	\$580,000	\$3,160,000	Eradicate existing markings and stripe bike lanes	Resurface street and stripe bike lanes
Class III Bike Boulevard	\$780,000	\$1,800,000	Shared lane pavement markings and signage. Only speed humps, signing and striping	Shared lane pavement markings and signage. Speed humps, signing, striping, and traffic circles every third intersection

Score	Street/Trail Name	Begins	Ends	Proposed Facility	Low Cost*	High Cost*
7	Sulphur Creek Trail	Sulphur Springs Ave	Napa River	Class I Shared-Use Path	\$15.8M	
6	S Crane Ave	Grayson Ave	Sulphur Springs Ave	Class II Bike Lanes	\$261K	\$1.4M
6	Adams St	Railroad Ave	Allyn Ave	Class III Bike Boulevard	\$366K	\$846K
6	Napa River Trail	St Helena city limit near wastewater treatment plant	St Helena city limit (Deer Park Rd / Lower Reservoir Trail)	Class I Shared-Use Path	\$21.9M	
6	Adams St (pending future extension)	Railroad Ave	Silverado Trail	Class I Shared-Use Path	\$59.1M	
5	Crane Park Path (to La Quinta Way)	Grayson Ave	Kennedy Ct	Class I Shared-Use Path	\$3.6M	
5	Library Lane Path	Adams St	Vine Trail (along RR corridor)	Class I Shared-Use Path	\$939K	
5	College Ave	Pope St	Proposed class I facility at SE end of College Ave	Class III Bike Boulevard	\$140K	\$324K

CITY OF ST. HELENA STREETS MASTER PLAN

FUNDING + IMPLEMENTATION

TOOLE
DESIGN

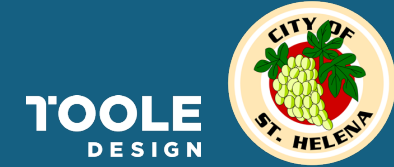


Roadway extensions and bridges → complex infrastructure projects

Roadway extensions and bridge projects are more complex and fall outside typical unit-cost ranges. These projects must account for right-of-way constraints, environmental permitting, grading challenges, and higher construction costs.

Score	Roadway Extension or Bridge Project	Cost
5	Adams St Extension to Silverado Trail	\$59.1M
4	Oak Ave Extension to Grayson Ave*	Mitchell Dr to Charter Oak Ave: \$37.2M Charter Oak Ave to Grayson Ave: \$15.4M
4	Pope Street Bridge Realignment	n/a
3	Starr Ave extension north to Adams St	n/a
3	Mills Ln extension to Silverado Trail	n/a
3	Pratt Ave Bridge Realignment	n/a
* Inclusive of both phases of the Oak Avenue extension (Mitchell Drive to Charter Oak Avenue and Charter Oak Avenue to Grayson Avenue)		

FUNDING + IMPLEMENTATION



- Multiple funding sources will be required to implement the Streets Master Plan over time
- Projects will typically advance through the City's Capital Improvement Program (CIP) as funding sources are identified and prioritized
- Measure U is expected to remain a major funding source for street and transportation improvements
- Additional funding may come from transportation impact fees, grants, developer contributions, and financing tools
- Projects will be implemented incrementally as funding becomes available.

Funding Source	Existing in St. Helena	Most Applicable Project Types		
		Bikeways	Pedestrian Intersections	Roadways and Bridges
Measure U Sales Tax	Yes	X	X	X
Transportation Impact Fee	Yes	X	X	X
Parks Impact Fee	Yes	X	X	
External Grants & Funding	Yes	X	X	X
Community Facilities District	No	X	X	
Enhanced Infrastructure Financing District	No	X	X	X
Community Fundraising & Private Contributions	Yes	X	X	
Development Dedications / Contributions *	Yes	X	X	X
Regulatory Requirements for Right-of-Way Improvements	Yes	X	X	X
General Fund	Yes	X	X	X

CITY OF ST. HELENA STREETS MASTER PLAN

Next Steps

| NEXT STEPS

T'OOLE
DESIGN



- Staff to provide recommended 20-year implementation strategy for Finance Committee & City Council review/consideration/adoption.
 - Includes recommended priorities and schedule to deliver/fund.
 - Update the impact fee program based on SMP project cost estimates.
 - Identify funding strategies for priority SMP projects.

Thank you

St. Helena Streets Master Plan				
January 2026 Draft Plan – Public Comment Summary				
02.20.2026				
	City Review / Direction Needed			
	Proposed Action by Toole			
	No Action Needed			
PDF page #	Section	Commenter	Comment	Toole Response/Action
1	Cover	Mary Stephenson	I think this is an excellent plan for St Helena. 1. On page 26, should the entitled Farmstead hotel project be included?	JL-Defer to St. Helena staff re: inclusiong of Farmstead hotel project. Toole to update legend of this map to say "Proposed Developments" instead of "Proposed subdivision and hotel" <i>Yes, Figure 9 should be updated to include the entitled Farmstead Hotel project</i>
1	Cover	P Scott	Please use the much needed extension of Adams Street to the Trail as an opportunity to design an aesthetically welcoming eastern entrance to St. Helena rather than simple street ingress/egress layout. Examples such as signage, decorative medium divider, and landscaping should be considered in the design development phase and budget. P. Scott	No action needed
1	Cover	Sandra Lowry	I am commenting on the yellow raised bumps which are not only irritating , but dangerous for handicapped people. Have you noticed how people avoid them. They are slippery when wet; impossible to navigate with a walker, wheel chair, cane or grocery cart.	No action needed
1	Cover	Mary Stephenson	2. The extension of Adams to the Trail is a definite priority and I hope the City's incremental cost to plan this project is included lin the long-range planning work the Finance Committee is doing. And a multi-year time frame is added to any strategic planning process.	No action needed
1	Cover	Mary Stephenson	3. It would be could to begin public awareness of any major changes now so people get use to the idea. Most won't read this document in detail so including segments of info early and often wherever possible could be beneficial.	No action needed
1	Cover	Richard Corsetti	Approved	No action needed
1	Cover	Anonymous	I realize these projects are intended to improve quality of life but what would really improve our lives is drinkable water. Our lives would be dramatically improved if we no longer had to drink and buy bottled water. Should we not prioritize a most basic human necessity like water over bike lanes and things of this nature?	No action needed - comment unrelated to project.
3	Executive Summary	Jeff Farmer	Remove the class II bike lanes on Spring from Valley View west to Sylvaner and stripe them to be consistent with the rest of Spring. Because of the narrow geometry vehicles traveling west are in the bike lane most of the time even if there is no on coming traffic. That bike lane is not safe for bikes. The map shows that this section of Spring should be a class III, the same as the rest of Spring to Oak.	No action needed - comment supports Plan recommendation.
4	Executive Summary	Jeff Farmer	Is the funding cost for Adams St. Class III paid for by the Vine trail folks and the city? Is Caltrans paying for the cross walk improvements on Main Street?	JL-Defer to St. Helena to follow-up directly with JF on this question <i>The full length of the proposed bike facility, RR to Allyn, is nearly 2500'; the section of the Vine Trail from RR to Oak is 700'. Timing/Delivery/Cost responsibility is TBD.</i>
4	Executive Summary	Jeff Farmer	Are walking paths included in the Master Plan? An example is the path at the end of Paulson Ct connecting to Chiles Avenue and Miely Park. Another is the unpaved path from the middle of Hunt to the Adams dead end.	No action needed - Unpaved paths are not part of this plan; only paths intended to be ADA-accessible are included
4	Executive Summary	Carlotta Sainato	Clarify that the cost listed for the Adams St Class I from Railroad to Silverado is the entire road extension project, not just the Class I. It makes it seem like the Class I alone costs \$59 million.	Toole to add footnote to clarify
5	Executive Summary	Anonymous	The dollar figures for some of these projects are ridiculous and indicate to me that some of these 'dreamscapes' will never be built. The same group of protesters will stop things in their tracks and insist the CM be ousted and blamed for these expensive efforts when we have water issues and sidewalks to fix.	No action needed

St. Helena Streets Master Plan				
January 2026 Draft Plan – Public Comment Summary				
02.20.2026				
	City Review / Direction Needed			
	Proposed Action by Toole			
	No Action Needed			
PDF page #	Section	Commenter	Comment	Toole Response/Action
8	Project Overview	Nathan	I support the Draft Streets Master Plan, especially its emphasis on safer walking and biking. Highway 29 currently divides the community, and improved crossings — including highly visible crosswalks, pedestrian signals, and refuge islands — are essential so residents, seniors, children (locals and visitors) can safely navigate our city. I also encourage the City to prioritize basic street maintenance. Neighborhood streets such as Sulfur Springs Avenue have deteriorated pavement that creates hazards for cyclists and pedestrians. Finally I support the long-term extension and bridge projects to create a better network and reduce congestion of Main Street.	No action needed
10	Project Overview	Richard Corsetti	The extra crosswalk proposed is only 30 feet from the existing crosswalk on the east side of Kerany at Spring Street. It is unnecessary. In addition, the curb extension to connect with the new crosswalk would eliminate a parking space. That parking space is heavily utilized daily, but especially during events from the churches and the Native Sons. Now that the Spring Grove project has been approved, parking on Spring Street will only increase, which is why the curb extension will exacerbate the problem. Richard Corsetti	No action needed - See above
10	Project Overview	Anonymous	I live at the intersection of Spring Street and Kearny. The extra crosswalk is unnecessary as proposed. The curb extension on the south side of Spring removes a parking spot. As it is Spring Street at that intersection is highly used for the churches and the Native Sons events. It will only intensify further if the hated Spring Grove project is built.	No action needed - The curb extension would be located where it is currently illegal to park per AB413.
24	Existing Conditions	Carlotta Sainato	Street diagram shows bike lanes, not bike boulevards, so the option of including bike lanes should be included in the description.	Toole to add bike lanes to description (this complies with General Plan)
24	Existing Conditions	Carlotta Sainato	The description for Regional Collector is limiting by stating that this street “supports cars, transit, and truck traffic,” and excludes any active transportation, given that these are the most direct routes and sometimes unavoidable, as identified by the plan itself. These should have more separated, higher quality bike facilities if anything.	Toole to replace text with longer description of Regional Collector from the General Plan : "Supports all modes, but is primarily designed to provide citywide and regional access for cars, transit and trucks trips. As Main Street/State Route 29 is the key commercial center for St. Helena, specific design features that foster livable streets and multimodal access may be applied, including wide sidewalks with regular street crossings, high-quality pedestrian amenities, and enhanced bus transit facilities."
25	Existing Conditions	Thomas Carpenter	Please delete the “proposed path” through my private property at the end of Fulton In. It is NOT proposed and encourages trespassing through my property. I went through a great deal of trouble the last time this was falsely published and passed around at bike shops.	No action needed - unclear what this comment is referring to - there is no proposed path at the end of Fulton Lane.
26	Existing Conditions	Carlotta Sainato	Include Class IV separated bikeways in Bike Facility Classifications. Though they aren’t proposed for any streets in this plan, important to keep the tool in your toolbox. Should be included so people know they are an option and they aren’t kept off the table in future discussions/studies, especially for streets and road extensions that don’t have a bike facility designation yet.	Toole to include Class IV Separated Bikeways
28	Existing Conditions	Carlotta Sainato	Existing conditions on Sidewalk Network should include information about the poor quality and displacement of existing sidewalks throughout the City, as that is a commonly cited concern for pedestrians	Toole to insert text about sidewalk condition/need for maintenance
30	Existing Conditions	Carlotta Sainato	Grocery stores should also be considered in key destinations	Toole to add DSP boundary to map (it's listed in key destinations) and note in text that grocery stores are another key destination of note.

St. Helena Streets Master Plan				
January 2026 Draft Plan – Public Comment Summary				
02.20.2026				
	City Review / Direction Needed			
	Proposed Action by Toole			
	No Action Needed			
PDF page #	Section	Commenter	Comment	Toole Response/Action
33	Existing Conditions	Richard Seiferheld	Spring Street going west beyond City limit on to White Sulphur Springs needs to be evaluated and included.	No action needed. This Plan only applies to streets within City limits.
34	Existing Conditions	Carlotta Sainato	Crossing Assessment should include need for and recently passed state law regarding daylighting.	Toole to add text about AB413 and its implications.
36	Existing Conditions	Carlotta Sainato	Key for Bicycle LTS labels roads as “arterial & collector” instead of Low or High LTS	Toole to update map legend from "Traffic stress" to "Roads with high traffic stress"
38	Existing Conditions	Carlotta Sainato	When space gets constrained, the first solution tends to be to downgrade the bike facilities to shared-road facilities, even if that is not the lowest-stress or what is planned for the street – see Oak Avenue Vine Trail alignment, Spring Street discussions, and the Class III portions of South Crane and Grayson for examples. How can the City be better equipped to shift space away from vehicles and to appropriate bicycle facilities when the need calls for it?	No action needed - Shared road facilities in themselves are not a downgrade if appropriate traffic calming treatments are used. The facilities proposed were selected to match the varying road types.
38	Existing Conditions	Carlotta Sainato	Connectivity Needs Assessment should include gaps in bicycle network in its key challenges	No revision needed. Yes, there are gaps in the network but that isn't really a planning challenge; we have proposed a connected network of bike facilities to theoretically address this. The challenging part is balanacing limited ROW between bikes and vehicles, which is noted in the challenges.
39	Existing Conditions	Carlotta Sainato	Shared micromobility services should be integrated with accompanying education to avoid increasing unsafe road user behavior. Should also follow infrastructure improvements so that there are safe and comfortable facilities for these users to use to avoid unintentionally increasing road user conflicts (for example, e-scooters on sidewalks because road does not feel safe)	Toole to append to this sentence to "Once the proposed bikeway network is substantially built out, there is potential to..."
43	Network-wide Recommendations	Jeff Farmer	Madrona from Hudson to Riesling is narrow. Suggest class III instead of bike lanes (class II)	No action needed. Class III would not be appropriate for a 30 MPH connector. Installing a Class II is more appropriate given roadway type and assumes installation of additional pavement to expand roadway width.
43	Network-wide Recommendations	Carlotta Sainato	Include application of bike lane buffers and rumble strips on Silverado Trail for any Silverado Trail segment that falls under City jurisdiction where this is feasible	No action needed. There are no proposed facility upgrades for Silverado Trail in this Plan.
43	Network-wide Recommendations	Carlotta Sainato	Update College Ave to proposed Class I by widening existing sidewalk – the Montessori School has expressed interest in better, more separated bike facilities from Pope to the school and many kids & parents are not going to feel safe/comfortable bike on a Class III to the Montessori during drop-off period	No action needed. Toole to retain existing recommendation. This comment may be a misread of the recommendations table. The proposed facility for College Ave is Class III. "Proposed Class I" refers to the SE extent of the facility.
43	Network-wide Recommendations	Carlotta Sainato	Are Class IIs realistic on Allyn & Hudson? With residences, unlikely that parking will be removable to make space. Might be better to make a Class III bike boulevard with traffic-calming. These are neighborhood streets that should be slowed down, especially as both motorists use them as cut-throughs and bicyclists use them to get to quieter side street routes.	No action needed. Toole to retain existing recommendations as these have been closely coordinated with concurrent NVTa Plan. When it comes time to design and install bike facilities on these streets, public engagement can help determine what facility is right for the residents/parking needs.
43	Network-wide Recommendations	Carlotta Sainato	Elmhurst – Consider a Class II/Class III combo given steep incline, which could benefit from a separated space for bicyclists, especially given connection to Vine Trail	Toole to retain existing facility recommendation, which was closely coordinated with concurrent NVTa Plan. Whether to partially modify the facility would be determined when it comes time to design and implement the specific faility (beyond SMP scope).
43	Network-wide Recommendations	Carlotta Sainato	Pratt Avenue along the Vine Trail alignment should be Class I, not Class II.	Toole to update map to match proposed facility type listed in table (Class I).
44	Network-wide Recommendations	Carlotta Sainato	Show proposed Class I path on Spring Street on the map and in the list of projects. Do not remove existing Class II bike lanes on Spring Street. If there are verified issues coming up around those bike lanes, try to adjust and problem solve before just removing bike lanes.	No action needed. Toole to retain existing recommendations as these have been closely coordinated between St. Helena staff and concurrent NVTa Plan.

St. Helena Streets Master Plan				
January 2026 Draft Plan – Public Comment Summary				
02.20.2026				
	City Review / Direction Needed			
	Proposed Action by Toole			
	No Action Needed			
PDF page #	Section	Commenter	Comment	Toole Response/Action
44	Network-wide Recommendations	Carlotta Sainato	Entire Pope Street corridor needs improvement, but it is only listed for a Class I from Starr to Silverado Trail and no other upgrades. This plan mentions earlier that bike facilities would be upgraded to Class I for entire corridor, but it isn't shown in proposed bike facilities. Also, existing facilities map shows Class II bike lanes where there are Class IIIs.	Toole to update relevant parts of existing Pope St facility to be Class III. In terms of recommendations, Class I is not feasible SW of where it is proposed in this Plan.
45	Network-wide Recommendations	Jeff Farmer	General comment on ADA requirements at crosswalks. The yellow raised bumps are very irritating to those in wheel chairs. There needs to be a smoother alternative to this while keeping it's purpose intact, presumably to help blind folks.	No action needed - comment is outside scope of project.
45	Network-wide Recommendations	Carlotta Sainato	Fill Oak Ave Class III gap for continuous access to middle school	No action needed. Project is within Downtown Specific Plan project boundary.
45	Network-wide Recommendations	Carlotta Sainato	Fill bicycle facilities gap between where Class IIs are shown to end on Madrona and Vine Trail access on Fulton	Toole to adjust linework on #5 so that it doesn't appear as if there's a gap.
45	Network-wide Recommendations	Carlotta Sainato	There should also be a proposed Class I on Mills according to other plans.	Toole to update map to include TBD facility on Mills to match project list in table.
45	Network-wide Recommendations	Carlotta Sainato	Existing Class IIs on Starr Ave are not shown	Toole to update map to include this.
46	Network-wide Recommendations	Carlotta Sainato	No mention in plan of the realignment of Mills Lane with Grayson Ave to create a new four-way intersection, which has significant implications given the high school and proposed housing	JL-Defer to City staff on guidance. <u>The Mills Realignment is already in the CIP (i.e. CIP No. R26-06). Uncertain if additional note/commentary is necessary. None of the projects in Table 4 or Figure 16 are in the CIP.</u>
46	Network-wide Recommendations	Carlotta Sainato	Main at Vintage Ave needs crossing improvements with future Vine Trail installation given walkability from high school and location of pediatrician and orthodontist	No action needed. Project is within Downtown Specific Plan project boundary.
46	Network-wide Recommendations	Carlotta Sainato	Main at Pratt needs bulb-outs and/or traffic-calming/gateway treatment for southbound traffic coming in at higher speeds	No action needed. Project is within Downtown Specific Plan project boundary.
47	Network-wide Recommendations	Carlotta Sainato	Hunt & Edwards – include bulb-outs to help improve crossing and traffic-calm Hunt	JL-Defer to St. Helena staff on whether to include this as a recommendation <u>References Map #20; City open to future detailed study to address travel lane and parking configuration.</u>
47	Network-wide Recommendations	Carlotta Sainato	Add bulb-outs at Hillview at the middle school entrance – painted curb extensions show desire for this improvement	JL-Defer to St. Helena staff on whether to include this as a recommendation <u>References Map #22; City agrees with comment to revise Table 3 description.</u>
47	Network-wide Recommendations	Carlotta Sainato	Pope & Starr needs vegetation management to improve RRFB visibility	JL-No update to plan. Elevating this to City staff as it is an immediate maintenance issue. <u>Should add this to Grapevine report a concern.</u>
47	Network-wide Recommendations	Jeff Farmer	#11 crossing at main/1000 main. Why needed. Close to Charter oak crossing	No action needed. Intention is to reduce long block lengths without pedestrian crossings.
47	Network-wide Recommendations	Carlotta Sainato	Crossing improvements needed at Main & Grayson with Mills realignment, given upcoming Farmstead hotel project and Our Town St Helena affordable housing project going in. Crosswalks needed on all four legs of intersection, as well as sidewalk connection to intersection on south side of realigned Mills (on north end of affordable housing project).	No action needed. Project is within Downtown Specific Plan project boundary.

St. Helena Streets Master Plan				
January 2026 Draft Plan – Public Comment Summary				
02.20.2026				
	City Review / Direction Needed			
	Proposed Action by Toole			
	No Action Needed			
PDF page #	Section	Commenter	Comment	Toole Response/Action
47	Network-wide Recommendations	Anonymous	I live on Chiles Ave. and the situation the potential for a severe crash is huge when trying to turn left from Chiles Avenue onto Pope Street if there cars parked on Pope Street anywhere near the intersection. I couldn't find any reference to extending the red curbs along this stretch of road adjacent to the intersection even with the 20 feet of it as per the new law. But, quite frankly, 20 feet is not enough given the situation and likelihood of being struck by a car when trying to inch one's way safely from Chiles Avenue onto Pope Street.	Toole to update text to reference AB413 and include systemic recommendation to paint curbs red for daylighting.
48	Network-wide Recommendations	Carlotta Sainato	Supportive of bulb-outs at Spring & Kearney for traffic-calming and improved pedestrian visibility at uncontrolled crosswalk	JL-Defer to St. Helena staff on whether to include this as a recommendation <u>References Map #31; City is open to additional study of travel lane/parking configuration and pedestrian volume</u>
48	Network-wide Recommendations	Carlotta Sainato	Spring & Valley View – add curb extensions	JL-Defer to St. Helena staff on whether to include this as a recommendation <u>References Map #36; City is open to additional study of travel lane/parking configuration and pedestrian volume</u>
48	Network-wide Recommendations	Carlotta Sainato	Curb extensions at Madrona and Kearney need to be extended	JL-Defer to St. Helena staff on whether to include this as a recommendation <u>No improvements are recommended at this time; Bulbouts were constructed in 2024.</u>
48	Network-wide Recommendations	Carlotta Sainato	Adams & Oak should not be listed as not needing any improvements. We hear a lot of concern about this intersection given how heavily travelled it is and its vicinity to elementary school & downtown. Will also be a key intersection in Vine Trail alignment. Frequently hear and see people not stopping at stop signs. Should receive treatment like curb extensions or a raised intersection.	JL-Defer to St. Helena staff on whether to include this as a recommendation. If not, should we remove list of intersections that were reviewed and do not need improvements? It's more that they don't have immediate need for improvements; don't want this intention to be misconstrued by those reading the plan. <u>Upgraded curb ramps/striping were completed in 2024. Any additional improvements to the intersection to facilitate bicycle safety/movement would be borne by the Vine Trail.</u>
49	Network-wide Recommendations	Carlotta Sainato	There is desire for Hillview and Kearney to have bulb-outs given the paint put down there. Should not be listed as no improvements needed.	JL-Defer to St. Helena staff on whether to include this as a recommendation <u>City agrees; table will be updated to include bulb outs subject to configuration study.</u>
49	Network-wide Recommendations	Carlotta Sainato	Adams and Kearney – need to improve sightlines at crosswalks across Adams. Right now cars can park in loading zone or curbside too close to crosswalks especially in an elementary school zone. Need to add red curb or bulb-out.	Toole to update project list to include systemic recommendation to install red paint daylighting at all crossings and intersections re: AB 413.
49	Network-wide Recommendations	Carlotta Sainato	Fill bicycle facilities gap between where Class IIs are shown to end on Madrona and Vine Trail access on Fulton	Toole to update project list to include systemic recommendation to install red paint daylighting at all crossings and intersections re: AB 413.
50	Network-wide Recommendations	Carlotta Sainato	More bike traffic should be expected and accommodated crossing Silverado Trail at Pope with Howell Mountain Road segment being converted to bike/ped trail. Especially with plans discussed in Appendix to realign Pope Street to be a single intersection with Silverado Trail and Howell Mountain Road. The trail will not be adding parking so bicyclists will be directly accessing.	No action needed.
57	Implementation	Carlotta Sainato	Surprised at how low Main at Pratt is on prioritization – maybe this should be re-evaluated given NVTa Michelin Mobility Intelligence Road Safety Risk Report (2025) results, which identify this area as high-risk for vulnerable road users and motorists due to high traffic volumes, unsignalized crossings, and aggressive driving behaviors. They recorded frequent high-speed and severe braking events in this area.	No action needed.

St. Helena Streets Master Plan				
January 2026 Draft Plan – Public Comment Summary				
02.20.2026				
	City Review / Direction Needed			
	Proposed Action by Toole			
	No Action Needed			
PDF page #	Section	Commenter	Comment	Toole Response/Action
58	Implementation	Carlotta Sainato	Address how roadway extension projects impact City General Plan goals around reducing VMT.	Toole to add sentence: In alignment with the General Plan’s VMT reduction goals, the roadway extensions would support necessary vehicular connectivity while being designed as multimodal corridors that integrate pedestrian, bicycle, and transit facilities to encourage alternatives to single-occupant vehicle travel and help manage overall VMT.
59	Implementation	Carlotta Sainato	Why are cost ranges only shown for bicycle facilities and not for other proposed projects in this plan? Show all cost ranges to provide complete context of what potential costs of projects.	No action needed. Cost ranges for crossing treatments are also addressed in text earlier on that page. All proposed project costs will be available in the appendix.
59	Implementation	Carlotta Sainato	Cost ranges for bike facilities way too high, particularly for Class I and Class II. There may be some exceptional projects that are higher than the average cost, but the lower end of the cost range should definitely be lower.	Toole to update Class I and Class II low end costs, an inconsistency was identified in the Class I and II low-end estimate cost sheets, and all affected costs will be updated accordingly.
68		Carlotta Sainato	Transitioning from a sidepath to slightly wider sidewalks closer to downtown will need to include a transition plan for bicyclists. Otherwise, bicyclists will continue on the sidewalk because it’s more comfortable and separated and they may not know that it has shifted to a sidewalk rather than a sidepath.	No action needed. This is a wayfinding-related concern to be addressed by Downtown Specific Plan.
69		Carlotta Sainato	Valley View to Hudson – narrow travel lanes to 10.5’ and give that extra foot to the shared-use path. As much space as possible on the sidepath is necessary for safe and comfortable sharing between pedestrians, kids on bikes, and less confident bicyclists.	No action needed. Concern to be addressed in further concept design stages.
69		Carlotta Sainato	Spring St shared-use sidepath is going to need to be identified as usable by bicyclists and pedestrians, given the unconventional street design of the corridor with the sidepath and two sidewalks	No action needed. Design concern to be addressed in further concept design stages.
70		Carlotta Sainato	We support the Kearney/Spring intersection improvements – will help calm Spring St traffic and improve pedestrian visibility and safety, as well as removing a parking space that shouldn’t be used due to its visibility obstruction.	No action needed - comment supports Plan recommendation.
70		Anonymous	I live on Spring Street at the Kearny intersection. I disagree with the need to add another crosswalk to the one already existing. I also disagree with the curb extension. That would eliminate a parking spot. Parking is already a	No action needed. The curb extension would be located where it is currently illegal to park per AB413.
71		Ann Nevero	The Adams St extension will place a new roadway on top of the city owned and operated levee. So, my questions are 1) If the Adams Extension Project costs \$60 million, and the levee fails, who will pay for the road to be replaced? And, who will be liable for the cost of the actual levee failure, levee replacement and property damage to the Hunter proposed project homes, Vineyard Valley and Hunt's Grove. (Presently, the City of St Helena took ALL financial liability for the levee in CA State Assembly Bill 1898). Question 2: The funding St Helena recieved to construct the levee required the City to not use any part of the project for municipal purposes, bc the the funding was granted on the basis of Flood Control Use only. How is the City going to get approval for using part of the levee for municipal purposes? Question 3: What is the process to get the private property owner on the east side of the river to grant right of way for the bridge and how much will that cost the City to purchase it or pay for eminent domain?	No action needed. City budget question outside of scope of plan.
77		Carlotta Sainato	Plan should make it very clear that the diagrams of the proposed Oak Ave extension project are outdated and should not be used as guidance – 4-foot bike lanes on a street with 12’ travel lanes would NOT be considered best practice today. Strongly oppose suggestions from previous, outdated plans that recommend a 40-mph speed limit; this extension should match the character of the existing Oak Avenue and neighborhoods around it. Plan should also recommend option of making extension a Class I shared-use path only if full road extension is not feasible.	Toole to add language that more clearly state that Specific Plan designs are outdated and will need to be revised based on current best practices.



For Item 13.1, March 24th Council meeting

From Jeff Farmer <jfarmer@seedgrain.com>

Date Fri 3/20/2026 3:40 PM

To Public Comment <publiccomment@cityofsthelena.gov>

Honorable Mayor and Council Members,

The Streets Master Plan (SMP) is encouraging us to unnecessarily implement Class II bike lanes on too many of our rural roads. We need to learn from our mistake adding Class II lanes to Spring Street. That section of Spring is just too narrow. With 9ft travel lanes, vehicles are always driving in the bike lanes. The SMP now asks us to repeat this mistake on more of our rural roads. Parts of Mills, Sulphur Springs, and Madrona are so designated. Madrona west of Hudson is the most egregious example. Adding bike lanes would require widening the road and eliminating the quirky path on the south side. Madrona's designation as a "connector" with a speed limit of 30 MPH qualifies it to be Class II. But it's only connecting the Sylvaner neighborhood to the downtown so the traffic level is very low. There have been no accidents reported between bikes and vehicles so It is safe to have them share the road. That's Class III.

These rural streets should remain Class III unless there is some overriding safety reason or change in their use.

Note: These are my opinions and not those of the Active Transportation and Sustainability Committee (ATSC).

Jeff Farmer
St. Helena



Agenda Report to the City Council

Agenda Section: NEW BUSINESS

Department: Finance

DATE:	March 24, 2026
FROM:	Mandy Kellogg, Administrative Services Director
SUBJECT:	Appropriate Funds from the Affordable Housing Trust Fund and Measure E Fund for the Fountain Street Affordable Housing Development.
RECOMMENDED ACTION:	1) Adopt a Resolution Appropriating \$1.5 Million from the Affordable Housing Trust Fund and Measure E Fund for the Fountain Street Affordable Housing Development; 2) Direct the City Manager to memorialize the commitment in a commitment letter to the developer for its application to the Tax Credit Allocation Committee; and 3) direct staff to return to Council at the appropriate time with a proposed loan agreement between the Fountain Street Developer and the City for expenditure of the \$1.5 million.
PREVIOUS COUNCIL ACTION:	October 22, 2024 - Authorized Resolution 2024-150 authorizing the waiver of permit fees in the amount of \$199,922 and payment of development impact fees and water neutrality in lieu fees in the amount of \$1,100,042 from Affordable Housing funds.
STATEMENT OF THE PURPOSE:	The purpose is to receive direction from City Council for the request from Our Town St. Helena to appropriate an additional \$2.2 million from the Affordable Housing Trust Fund and Measure E Fund for the Fountain Street Affordable Housing Development.
FINANCIAL IMPACT:	The total financial impact is \$1.5 million utilizing funds from the Affordable Housing Trust Fund (Fund 751) and the Measure E Fund (Fund 752), which is designated for affordable housing activities; provided, however, in the event that Council increases the commitment to the development pursuant to the request from the developer, the impact to the Affordable Housing Trust Fund and Measure E Fund will be the amount approved by the Council.

BACKGROUND:

The Fountain Street multifamily housing development (the "Housing Development") received City approval on October 31, 2025. The Housing Development is being developed through a partnership between Our Town St Helena and Burbank Housing (the "Partnership").

The proposed 100 percent affordable Housing Development will include 40 units (39 rentals and one on-site manager's unit) with a mix of one-, two- and three-bedroom apartments in three buildings. The 1.8-acre site will include surface parking (56 spaces), shared amenities including common usable open space with a play area, picnic area, outdoor seating, and indoor shared amenities including a laundry room, indoor bicycle storage, kitchen, and lounge. Part of the property will accommodate the realigned Mills Lane. Solar panels, EV chargers, indoor and outdoor bicycle storage, low-water use fixtures, drought-tolerant landscaping, and connection to future purple pipe will contribute to the Housing Development's sustainability features, as will its central location and proximity to public transit, the future Vine Trail, schools, and downtown St Helena. The bioretention area will double as a passive public recreation area and location for public art.

To help facilitate the Housing Development, on October 22, 2024, the City Council adopted a resolution (No. 2024-150) to approve the waiver of building and grading permit fees and certain development impact fees in an amount not to exceed \$199,922, and authorized the use of Affordable Housing Trust Funds and/or Measure E Funds in an amount not to exceed \$1,100,042 for the remaining fee balance. While the Partnership is appreciative of the Council's support of the Housing Development, the Partnership has declined the waiver of building and grading permit fees because a waiver would trigger prevailing wages, impacting construction costs by approximately 20 percent.

DISCUSSION:

The current estimated cost for the Housing Development is \$27 million including soft costs and excluding land. (The land is being donated by the Phelps family.) The Partnership is now preparing to apply for federal tax credit financing, with application deadlines in April and July 2026. Tax credits are provided by the federal government through the states and purchased by private investors to provide up-front equity for development in exchange for tax relief. This is a highly competitive process, and to score well on the application, the Partnership must demonstrate a strong local financial commitment to the Housing Development. In this case, local funding sources are limited to local government housing trust funds, private donations, and grants from local foundations. The Partnership is pursuing all options, and to date OTSH has received private cash donation pledges of \$4.25 million from three individuals, as well as the land donation. To pursue funds from the County, the Partnership must demonstrate a firm commitment from the City. However, even with a City commitment, the Partnership is not confident it would be successful with a County request because it has been told the County's trust fund dollars are nearly all pre-committed. (Please note: any financial commitment from the County will require proportional RHNA credit sharing between the City and County.)

For a strong tax credit application, the Partnership is requesting an allocation of \$2.2 million from the City's Affordable Housing Trust Fund. The Partnership has indicated that its request can be met over time as funding becomes available and can be provided

in the form of permanent financing toward the end of construction. Terms of such a loan can be negotiated and approved by Council later in the process. The important thing in the short term is to secure evidence of a City commitment in the form of a resolution (attached) and a letter from the City Manager.

The current balance of in the City's Affordable Housing Trust Fund is \$1,089,353, and the current balance in the Measure E Fund is \$1,521,236, for a total of \$2,610,589. The City has currently committed \$1,100,042 of that total amount, leaving an uncommitted fund balance of \$1,510,547. Given the limited current availability of funds, City staff is reluctant to commit the full amount of available funds plus future projected funds toward this Housing Development, as it would limit City staff's flexibility in meeting future housing goals. Staff supports making a significant additional contribution to the Housing Development and, accordingly, recommends that the City Council commit \$1.5 million. However, the Council retains the discretion to approve the full requested amount of \$2.2 million.

If approved, the City's total commitment of \$2.6 million from the Affordable Housing Trust Fund and Measure E Fund, including the 2024 adopted resolution, would comprise roughly 9.6 percent of the total funding for the Housing Development. By comparison, the City made a \$1 million loan to the 963 Pope Street project for acquisition and development of four new units, which was \$250,000 per door; the amount proposed by staff for Fountain Street is the equivalent of \$65,000 per door. If the Council were to grant the Partnership's full request, the City's total commitment to the Housing Development would be \$3.3 million, or 12 percent of total funding for the Housing Development, and the equivalent of \$82,500 per door.

If the partnership receives a tax credit award, it must begin construction within 180 days of funding, so the Housing Development must be building permit ready and all necessary funding assembled to begin construction within that timeframe (estimated spring/summer 2027). To that end, Burbank Housing is evaluating bids from general contractors and will soon make a selection so the Partnership can get started on preparing construction drawings.

ENVIRONMENTAL REVIEW:

None.

GOAL:

Goal 5: Enhance Quality of Life

DOCUMENTS ATTACHMENTS:

[Resolution Authorization for Allocating Affordable Housing Trust Funds](#)

CITY OF ST. HELENA

RESOLUTION NO. 2026 -

**Resolution of the City Council of the City of St. Helena
Allocating \$1.5 Million from the Affordable Housing Trust Fund
and/or Measure E Fund to the 0 Fountain Street Affordable
Housing Development at 0 Fountain Street in the City of St.
Helena, California.**

RECITALS

- A. Per SHMC Section 17.30.050, monies deposited in the housing fund along with any interest earnings on such monies shall be used solely to increase and improve the supply of housing affordable to households of moderate-, low- and very low- income households; and
- B. All revenues from Measure E are restricted to programs and services for affordable and workforce housing, including activities to increase, improve and preserve the City's supply of rental and for-sale housing for households earning up to 120% of area median income (AMI); and
- C. The proposed 0 Fountain Street Affordable Housing Development ("the Development"), which received development entitlements from the City on October 31, 2025, will provide 39 rental apartments for very low- and low-income households and one apartment for an on-site manager; and
- D. The Development will provide much-needed housing that is affordable to workers in the area who support local industries including agriculture, lodging and hospitality, retail and restaurants, education, health care, and others; and
- E. The Development will be located within close walking distance to public transit, bicycle facilities, downtown St. Helena, schools, parks, and businesses, further supporting the City's climate goals; and
- F. The City wishes to commit funding from its Affordable Housing Trust fund and Measure E fund to ensure the Development is able to meet its funding needs.

RESOLUTION

NOW, THEREFORE, the City Council of the City of St. Helena resolves as follows:

1. The City Council hereby commits funds in an amount not to exceed \$1.5 million from the Affordable Housing Trust fund and the Measure E fund. Funds will be allocated for the 0 Fountain Street Affordable Housing Fund as they become available, and formally appropriated through a future loan agreement between the City and developer – a partnership between Burbank Housing and Our Town St Helena -- at the initiation of the developer.

2. To memorialize the City's commitment, the City Manager is hereby directed to finalize a letter consistent with the terms set forth in this resolution that the developer may utilize for financing application purposes in the form as approved by the City Manager in consultation with the City Attorney.

Approved at a Regular Meeting of the St. Helena City Council on March 24, 2026, by the following vote:

Mayor Dohring:	_____
Vice Mayor Deasy:	_____
Councilmember Barak:	_____
Councilmember Spadarotto:	_____
Councilmember Summers:	_____

APPROVED:

ATTEST:

Paul Jamison Dohring, Mayor

Andrew Bradley, City Clerk