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TECHNICAL MEMORANDUM #6 (DRAFT)

DATE: December 10, 2024

TO: Project Management Team

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SUBJECT: Task 4.2 Sweet Home TSP Future Alternatives and Funding Opportunities

Project #20020-015

INTRODUCTION

The purpose of this memorandum is to identify transportation projects that address the deficiencies and needs for Sweet Home's transportation network outlined in TM #5. These projects are intended to help Sweet Home manage its transportation system by moving towards the community's goals while accommodating future growth.

The following sections describe Sweet Home's transportation needs with respect to motor vehicles, active transportation modes, freight, and safety, along with recommended alternatives to address each need. The projects are categorized accordingly:

- Motor Vehicle Capacity (C)
- Active Transportation (A)
- Railroad (R)
- Safety (S)
- Smart Mobility (E)

The memorandum also summarizes existing and potential transportation revenue sources for the City to consider.

PROJECT CONSIDERATIONS

Projects that propose changing an intersection's traffic control on ODOT's system would require additional study as part of an Intersection Control Evaluation (ICE) to be conducted prior to design in accordance with ODOT standards to determine the appropriate control treatment.

In addition, it should be noted that Main Street (US 20) is an ODOT-designated reduction review route. Any proposed projects on Main Street must be planned, designed, and constructed in coordination with the Mobility Advisory Committee (MAC).

PROJECT EVALUATION PROCESS

The following sections identify potential solutions to address the various transportation needs. Each project was evaluated using ten criteria to determine alignment with the transportation goals. These goals and criteria include:

- Goal 1: Mobility, Accessibility, Connectivity
  - Improves vehicle capacity and/or network connectivity
  - Improves active transportation network
- Goal 2: Safety
  - Improves safety for all modes
  - Mitigate crash risk at existing high-crash locations
- Goal 3: Quality of Life
  - Connect the City through bicycle and pedestrian paths
  - Minimize impacts on existing land uses
- Goal 4: Economic Development
  - Provide facilities to connect the public to downtown and recreational opportunities
  - Manage arterials
- Goal 5: System Management and Maintenance
  - Streets should operate with their intended purpose
  - Support growth and/or maximize travel options

Each criterion was evaluated on a score of 1 to 5 based on how well each criteria was addressed. A maximum score of 50 would indicate a project that aligned well with all transportation criteria. The project scoring matrix and additional information about the criteria are included in the appendix. The project scoring does not directly infer project priority, but may be used to develop prioritization strategies with the preferred project list.

MOTOR VEHICLE ALTERNATIVES

VEHICLE CAPACITY NEEDS

FUTURE VEHICLE CAPACITY NEEDS

Future traffic operations and needs were identified for year 2045 at study intersections using HCM 6th Edition methodology. The results were then compared with the minimum acceptable operating standards, as shown in Table 1. Four intersections would not meet mobility standards in year 2045. Per Table 1, the intersections of Main Street (US 20)/Pleasant Valley Road, Main Street (US 20)/22nd Avenue, Main Street (US 20)/Clark Mill Road, and Main Street (US 20)/47th Avenue are expected to have operational deficiencies in the future baseline 2045 scenario.

TABLE 1. EXISTING (2021) AND FUTURE BASELINE (2045) OPERATIONS AT STUDY INTERSECTIONS THAT EXCEED MOBILITY STANDARD

INTERSECTION	CONTROL TYPE[A]	MOBILITY STANDARD	EXISTING			FUTURE 2045		
			LOS	DELAY[B] (SEC)	V/C[C]	LOS	DELAY (SEC)	V/C
1. MAIN STREET (US 20) AND PLEASANT VALLEY ROAD	TWSC	v/c ≤ 0.85	A/F	10/97	0.23/ **0.91**	A/F	10/>100	0.25/ **1.05**
6. MAIN STREET (US 20) AND 22ND AVENUE	TWSC	v/c ≤ 0.90	A/E	10/35	0.20/ 0.34	B/F	12/>100	0.32/ **1.58**
8. MAIN STREET (US 20) AND CLARK MILL ROAD	TWSC	v/c ≤ 0.85	A/C	9/19	0.17/ 0.16	B/F	13/>100	0.36/ **3.06**
10. MAIN STREET (US 20) AND 47TH AVENUE	TWSC	v/c ≤ 0.85	A/C	9/19	0.14/ 0.16	A/F	10/>100	0.26/ **1.67**

A. AWSC: All Way Stop Control, TWSC: Two Way Stop Control
B. Overall intersection measures reported for signal and AWSC intersections. The worst approach for major/minor approaches is reported for TWSC intersections.
C. Values in **Bold/Highlighted** exceed mobility standards.

Note: Projects that propose changing an intersection's traffic control on ODOT's system would require additional study as part of an Intersection Control Evaluation (ICE) to be conducted prior to design in accordance with ODOT standards to determine the appropriate control treatment, including consideration for traffic signal warrants.

In addition, it should be noted that Main Street (US 20) is an ODOT-designated reduction review route. Any proposed projects on Main Street must be planned, designed, and constructed in coordination with the Mobility Advisory Committee (MAC).

The intersection of Main Street (US 20)/Pleasant Valley Road is currently a two-way stop-controlled intersection that does not meet mobility standards under existing conditions and is projected to further degrade with additional traffic growth. This location provides access to a river crossing on the west side of Sweet Home. This location may be a good candidate for a roundabout to serve as a gateway treatment on the west side of town, improve awareness of travelers entering the urban area, and reduce vehicle speeds entering the downtown area. A roundabout concept would likely require additional right of way to accommodate design vehicles and freight movements along the highway. A traffic signal at this location would also improve mobility, however it would not provide the other benefits that a roundabout could provide at this location.

The other three intersections on Main Street (US 20) (22nd Avenue, Clark Mill Road, and 47th Avenue) are currently two-way stop controlled intersections that are not expected to meet mobility standards under future baseline conditions in 2045. These intersections would all likely serve future

growth in the North Sweet Home Area (NSHA) and the timing of the improvements would likely coincide with development. The specific needs for when these locations would meet signal warrants would likely depend on the degree of development and connectivity within the NSHA. Constructing a traffic signal at these locations would increase the intersection's capacity to accommodate future volumes and growth in the NSHA.

VEHICLE CAPACITY PROJECTS

Vehicle capacity projects were identified based on expected vehicle capacity deficiencies in 2045. Table 2 lists vehicle capacity projects.

TABLE 2. PRELIMINARY VEHICLE CAPACITY PROJECTS

Project ID	Project Name	Description
C1	Main Street/Pleasant Valley Road Roundabout	Construct a traffic control upgrade at Main Street (US 20)/Pleasant Valley Road. Location may be candidate for a roundabout.
C2	Main Street/22nd Avenue Signal	Construct a traffic control upgrade at Main Street (US 20)/22nd Avenue. Location may be candidate for a traffic signal.
C3	Main Street/Clark Mill Road Signal	Construct a traffic control upgrade at Main Street (US 20)/Clark Mill Road. Location may be candidate for a traffic signal.
C4	Main Street/47th Avenue	Construct a traffic control upgrade at Main Street (US 20)/47th Avenue. Location may be candidate for a traffic signal.

ACCESS MANAGEMENT

State law (OAR 734-051) authorizes ODOT and local governments to regulate new access from state and local roads when new development is proposed. In some cases where safety is a concern, ODOT and local governments may require modifications to existing driveways or private roads. Access management refers to the application of these regulations as well as various strategies intended to maintain or improve safety and mobility along a corridor or other planning area.

Access management strategies include:

- Consolidating driveways to reduce the number of turning movements, which are potential points of conflict
- Relocating driveways to increase the spacing between them
- Providing turn lanes to allow vehicles to move out of the travel lane when turning

- Widening driveways to allow for a larger radius and higher-speed travel path into and out of the driveway
- Restricting turning movements to right-in-right-out to eliminate hazardous left-turn movements

Implementing access management strategies is complicated because property owners have certain legal rights. Public agencies may be required to compensate property owners if an access is closed as part of a consolidation strategy. Small, constrained properties are especially challenging because there may not be an alternate access location.

Although there are no proposed projects to address access management in Sweet Home, the project team identified locations that may be considered for access management strategies in the future due to the high density of existing access:

- Main Street (US 20) from 4th Avenue to 11th Avenue,
- Long Street from 10th Avenue to 18th Avenue, and
- Main Street (US 20) from 53rd to 57th Avenue.

ACTIVE TRANSPORTATION ALTERNATIVES

PEDESTRIAN NEEDS

Sidewalks

There are significant sidewalk gaps along many collector and arterial streets in Sweet Home (shown in Figure 1), including Clark Mill Road, Long Street, Mountain View Road, 47th Avenue, and 53rd Avenue.

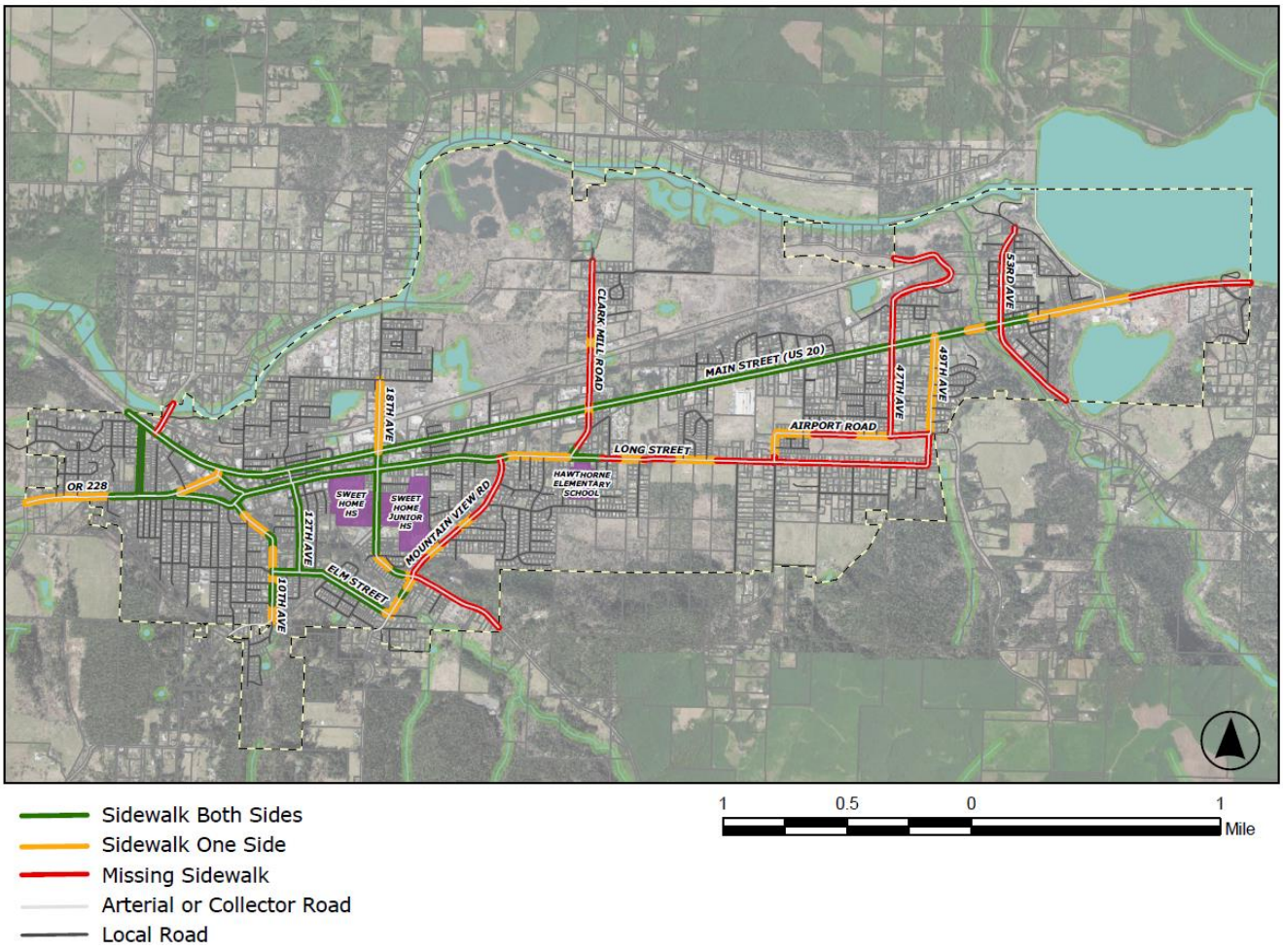


FIGURE 1. SIDEWALK CONDITIONS

PEDESTRIAN PROJECTS

Pedestrian projects were identified based on existing gaps in sidewalk facilities. Table 3 lists pedestrian-focused sidewalk infill projects.

TABLE 3. PRELIMINARY PEDESTRIAN-FOCUSED PROJECTS

Project ID	Project Name	Description
A1	Clark Mill Road Sidewalk Infill	Infill existing sidewalk gaps on Clark Mill Road
A2	Long Street Sidewalk Infill	Infill existing sidewalk gaps on Long Street
A3	Mountain View Road Sidewalk Infill	Infill existing sidewalk gaps on Mountain View Road
A4	47th Avenue Sidewalk Infill	Infill existing sidewalk gaps on 47th Avenue
A5	53rd Avenue Sidewalk Infill	Infill existing sidewalk gaps on 53rd Avenue

BICYCLE NEEDS

Bike Network Deficiencies

To identify bicycle facility needs in Sweet Home, bicycle level of traffic stress (bicycle LTS or BLTS) was evaluated for collector and arterial streets. Bicycle LTS is a measure used to assess the comfort and safety of bicycling conditions on different streets and routes, categorizing streets into four levels based on their traffic characteristics. For example, BLTS 1 represents very low stress conditions that are highly comfortable for cyclists, often having minimal traffic, low vehicle speeds, and dedicated bicycle facilities such as bike lanes or separated paths. BLTS 4 represents high stress conditions that are uncomfortable and potentially unsafe for bicyclists due to high traffic volumes, high vehicle speeds, and a lack of dedicated bicycle facilities.

As shown in Figure 2, several streets in Sweet Home maintain moderate or high-stress conditions for bicyclists, including Main Street, Long Street, Clark Mill Road, 10th Avenue, Elm Street and 1st Avenue.

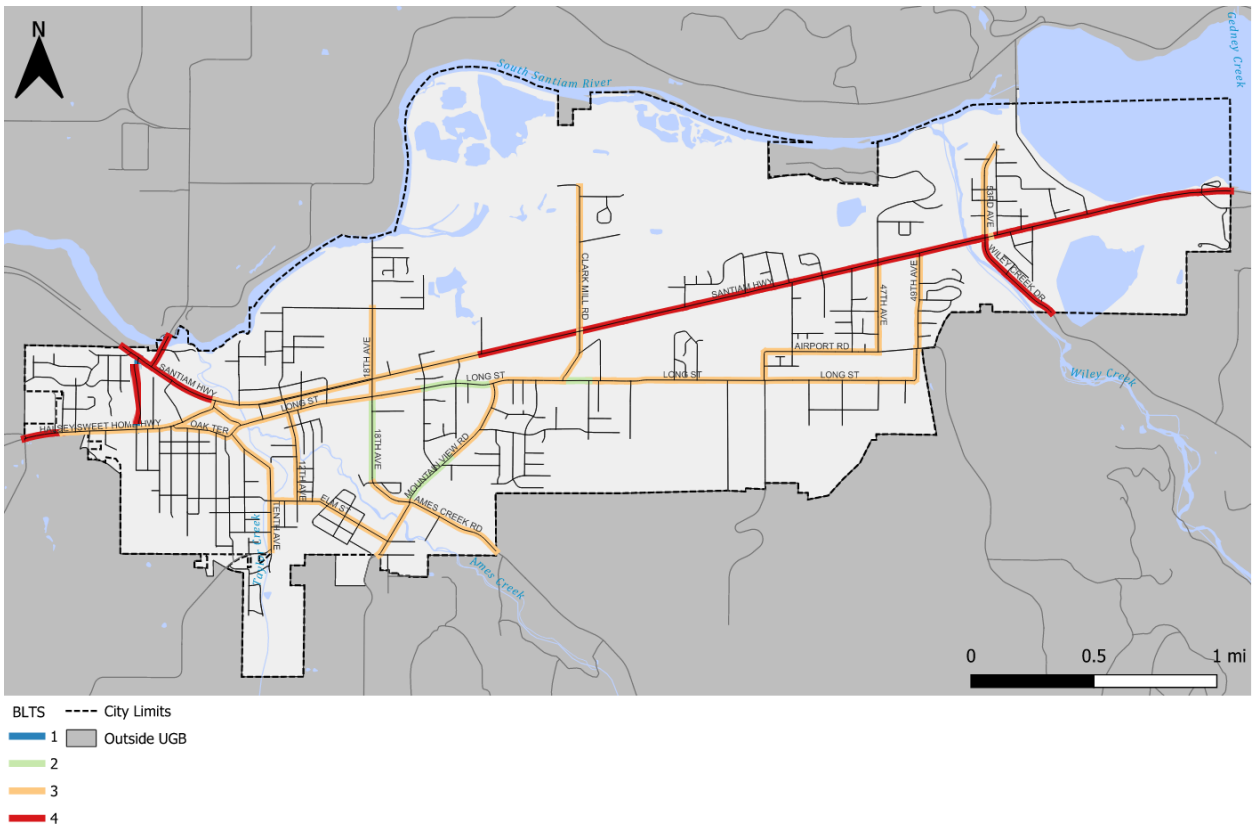


FIGURE 2. BIKE LEVEL OF TRAFFIC STRESS

BICYCLE PROJECTS

Bicycle projects were identified depending on a location's BLTS and existing bicycle facility, emphasizing lowering BLTS to provide greater comfort for bicyclists. Table 4 lists bicycle-focused projects.

TABLE 4. PRELIMINARY BICYCLE PROJECTS

Project ID	Project Name	Description
A6	Main Street Bike Lanes	Construct bike lanes on Main Street (US 20) east of 18th Avenue; consider buffered bike lanes on Main Street (US 20) west of 18th Avenue
A7	Holley Road Bike Lanes	Construct bike lanes on Holley Road
A8	Long Street Bike Lane Infill	Infill gaps in bike lanes on Long Street
A9	Airport Road Bike Lanes	Construct bike lanes on Airport Road
A10	47th Avenue Bike Lanes	Construct bike lanes on 47th Avenue
A11	49th Avenue Bike Lanes	Construct bike lanes on 49th Avenue
A12	53rd Avenue and Wiley Creek Drive Bike Lanes	Construct bike lanes on 53rd Avenue and Wiley Creek Drive
A13	18th Avenue/Ames Creek Road Bike Lanes	Construct bike lanes on 18th Avenue and Ames Creek Road
A14	Mountain View Road Bike Lanes	Construct bike lanes on Mountain View Road
A15	Elm Street Bike Lanes	Construct bike lanes on Elm Street

SAFE ROUTES TO SCHOOL

The City's adopted Safe Routes to School (SRTS) Plan[1] lists 23 recommended improvements near Sweet Home High School and Sweet Home Junior High School. The projects are focused on crossings and sidewalk improvements.

Figure 3 shows a map of projects recommended by the Sweet Home SRTS Plan. Table 5 lists the SRTS projects added to the TSP. All 23 projects are included in the TSP.

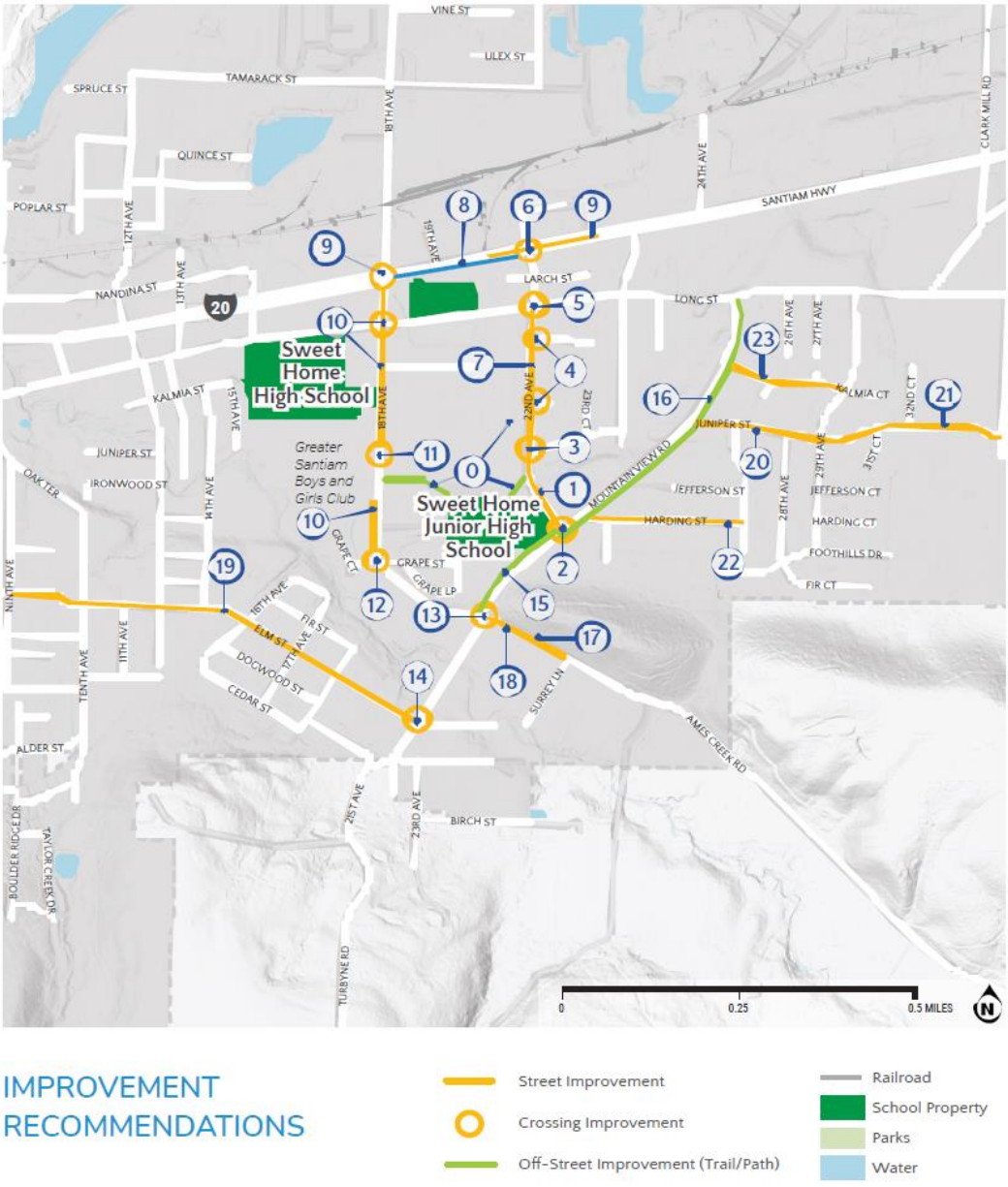


FIGURE 3. SWEET HOME SAFE ROUTES TO SCHOOL PLAN PROPOSED PROJECTS

[1] Sweet Home Safe Routes to School Plan, City of Sweet Home. June 2022.

TABLE 5. PRELIMINARY SAFE ROUTES TO SCHOOL PROJECTS

Project ID	Project Name	Description	Notes
A16	22nd Avenue Sidewalk	Improve sidewalks and install curb ramps along 22nd Avenue	SRTS Plan Rec #1
A17	22nd Avenue/Mountain View Road Crossings	Install striping upgrades and curb extensions at 22nd Avenue/Mountain View Road intersection	SRTS Plan Rec #2
A18	22nd Avenue/Ironwood Street Crossings	Install curb ramps, upgrade signage and striping, and install lighting at 22nd Avenue/Ironwood St intersection	SRTS Plan Rec #3
A19	22nd Avenue/Juniper Court and 22nd Avenue/Kalmia Street Crossings	Install curb ramps, upgrade striping, and install lighting at 22nd Avenue/Juniper Court and 22nd Avenue/Kalmia Street	SRTS Plan Rec #4
A20	22nd Avenue/Long Street Crossings	Install curb ramps, upgrade striping, and install lighting at 22nd Avenue/Long Street	SRTS Plan Rec #5
A21	22nd Avenue/Main Street Crossing	Upgrade striping, install RRFB, and install lighting at 22nd Avenue across Main Street (US 20)	SRTS Plan Rec #6 (ODOT Funded)
A22	22nd Avenue Multiuse Path	Remove parking and construct multimodal path on 22nd Avenue between Mountain View Road and Long Street	SRTS Plan Rec #7
A23	Main Street Sidewalk Enforcement	Enforce sidewalk clearance code on Main Street	SRTS Plan Rec #8
A24	Main Street Crossings	Upgrade striping on Main Street from 18th Avenue to 23rd Avenue; install curb ramps and lighting at Main Street/18th Avenue	SRTS Plan Rec #9
A25	18th Avenue Sidewalks	Improve sidewalks and install curb ramps on 18th Avenue between Main Street (US 20) and Ames Creek Road	SRTS Plan Rec #10
A26	High School Driveway Crossing	Install RRFB, upgrade signage and striping, and install lighting at the high school driveway on 18th Avenue	SRTS Plan Rec #11

A27	18th Avenue/Grape Court Crossing	Upgrade striping and install curb ramps at 18th Avenue/Grape Court	SRTS Plan Rec #12
A28	Mountain View Road/Ames Creek Road Crossings	Upgrade striping, install curb ramps, and install lighting at Mountain View Road/Ames Creek Road	SRTS Plan Rec #13
A29	Mountain View Road/Elm Street Crossing	Upgrade striping and install lighting at Mountain View Road/Elm Street	SRTS Plan Rec #14
A30	Mountain View Road Multiuse Path (South)	Construct a 10-foot wide shared use path and northbound shared roadway bicycle markings between Ames Creek Road and school property	SRTS Plan Rec #15
A31	Mountain View Road Multiuse Path (North)	Construct a 10-foot wide shared use path and curb ramps at intersections between 22nd Avenue and Long Street	SRTS Plan Rec #16
A32	Ames Creek Road Restriping	Restripe Ames Creek Road to narrow travel lanes, shift centerline, and provide more pedestrian space between Mountain View Road and Surrey Lane; explore 25 mph speed limit	SRTS Plan Rec #17
A33	Ames Creek Road Sidewalk	Install 6-foot wide sidewalk on the south side of Ames Creek Road from Mountain View Road to Surrey Lane	SRTS Plan Rec #18
A34	Elm Street Greenway	Designate a neighborhood greenway on Elm Street from 5th Avenue to Mountain View Road; install speed humps, signage, and striping	SRTS Plan Rec #19
A35	Juniper Street Sidewalk	Install 6-foot wide sidewalk on the north side of Juniper Street from Mountain View Road to Ashbrook Park	SRTS Plan Rec #20
A36	Juniper Street Greenway	Designate a neighborhood greenway on Juniper Street from Mountain View Road to 35th Avenue; install speed humps, signage, and striping	SRTS Plan Rec #21
A37	Harding Street Sidewalk	Install sidewalk on the south side of Harding Street from Mountain View Road to 27th Avenue	SRTS Plan Rec #22
A38	Kalmia Street Sidewalk	Install sidewalk on the south side of Kalmia Street from Mountain View Road to 29th Avenue	SRTS Plan Rec #23

TRANSIT

As noted in Technical Memo #3, transit service is provided in Sweet Home through three main routes: the Linn Shuttle, the Sweet Home Shopper, and the Dial-A-Bus Service. In the future, there may be needs for expanded transit service and improved access to transit to support areas with high projected employment growth or housing growth, such as the North Sweet Home Area (NSHA). Although there are no transit-specific projects, providing sidewalks and bike facilities leading to transit stops and installing enhanced crossings around transit stops are key improvement strategies.

FREIGHT ALTERNATIVES

RAILROAD NEEDS

One rail line serves Sweet Home from the west terminating at the Foster Mill site on the east side of the City. The line is operated by Albany and Eastern Railroad Company and connects Sweet Home to Albany. Within City limits, the line travels roughly parallel to Main Street (US 20) approximately one block north. The nine existing rail crossings in Sweet Home listed below require significant safety and ADA-accessibility upgrades:

- Pleasant Valley Road
- 9th Avenue
- 12th Avenue
- 18th Avenue
- Clark Mill Road
- 47th Avenue (West)
- 47th Avenue (East)
- 53rd Avenue
- 54th Avenue

The planned future extension of 24th Avenue per the North Sweet Home Area (NSHA) Plan will require a new rail crossing. The proposed crossing has received a rail crossing order and must be constructed within five years of the order.

Lastly, the existing trestle bridge crossing Main Street between 57th Avenue and 60th Avenue is damaged from vehicle crashes such that it is no longer structurally sound and requires complete replacement.

RAILROAD PROJECTS

Table 6 lists the preliminary railroad projects.

TABLE 6. PRELIMINARY RAILROAD PROJECTS

Project ID	Project Name	Description
R1	Pleasant Valley Road Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines

R2	9th Avenue Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines
R3	12th Avenue Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines
R4	18th Avenue Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines
R5	24th Avenue Rail Crossing	Construct new railroad crossing across future extension of 24th Avenue
R6	Clark Mill Road Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines
R7	47th Avenue (West) Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines
R8	47th Avenue (East) Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines
R9	53rd Avenue Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines
R10	54th Avenue Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines
R11	Main Street Railroad Bridge	Replace damaged trestle bridge

SAFETY ALTERNATIVES

SAFETY NEEDS

A review of recent crash data identified two locations within the City that exceed the critical crash rate. One location, Main Street (US 20) and 22nd Avenue recently was reconfigured to add an enhanced pedestrian crossing. The other location, Long /18th Street is an all way stop controlled intersection.

The intersection of Long / 18th Street is located near the high school. While all approaches are required to stop at the AWSC, the degree of activity and distractions near the intersection approaches, including parking and utility poles, may contribute to the crash frequency. Improvements to driver focus at the intersection may reduce crash frequency.

SAFETY PROJECTS

Table 7 lists projects addressing safety needs in Sweet Home.

TABLE 7. SWEET HOME TSP SAFETY PROJECTS

Project ID	Project Name	Description
S1	Long/18th Signing Improvements	Monitor intersection to determine if additional improvements are needed to reduce crash frequency. Improvements may include adding signing upgrades and potential on-street parking reduction to improve visibility and alert drivers of pedestrian activity and traffic control.
S2	Main Street / Shea Viewpoint / Riggs Hill Road	Safety enhancements to the eastern gateway that may include signing, striping, lighting, and/or traffic control to decrease speed of traffic entering urban area and allow safe pedestrian crossings. Install a pedestrian crossing near the Foster Reservoir
S3	Long St/ Holley Rd Right in Right Out	Restrict left turn movements at the intersection to reduce vehicle conflicts that occur in close proximity to Main Street. These improvements would also improve traffic flow from Main Street to Holley Road to make the route more attractive rather than traffic cutting through on 1st Avenue to avoid the intersection.

EMERGING TRANSPORTATION TECHNOLOGIES

Emerging transportation technologies will shape our roads, communities, and daily lives for generations. Vehicles are becoming more connected, automated, shared, and electric. Although this future is highly uncertain, it will have significant impacts for how we plan, design, build, and use our transportation system, especially along state facilities such as US 20.

SMART MOBILITY

Below are some important definitions that provide the basis for the impacts, policies, and action items discussed in the following sections.

- Connected vehicles (CVs) will enable communications between vehicles, infrastructure, and other road users.
- Automated vehicles (AVs) will, to varying degrees, take over driving functions and allow travelers to focus their attention on other matters. Already today we have vehicles with combined automated functions like lane keeping and adaptive cruise control. However, these still require constant driver oversight. In the future, more sophisticated sensing and programming technology will allow vehicles to operate with little to no operator oversight.
- Shared vehicles (SVs) allow ride-hailing companies to offer customers access to vehicles through cell phone applications. Ride-hailing applications allow for on-demand transportation with comparable convenience to car ownership without the hassle of maintenance and parking. Ride-hailing applications can enable customers to choose whether to share a trip with another person along their route, or travel alone.
- Electric vehicles (EVs) have been on the road for decades and are becoming more economically feasible as the production costs of batteries decline. To accommodate a future where electric vehicles will come to dominate our vehicle fleet, charging stations must be constructed in cooperation with local and regional governments and electric utilities.

Many of these vehicles will not be exclusive of the others, and it is important to consider the implications that arise from the combination of these technologies. When discussing these vehicles as a whole, they can be referred to as connected, automated, shared, and electric (CASE) vehicles.

PREPARING FOR SMART MOBILITY IN SWEET HOME

Because Sweet Home is located along rural US 20 between central Oregon and the I-5 corridor, the presence of electric vehicles from tourist traffic is most likely to impact Sweet Home's transportation network in the near future. One strategy to accommodate this impact is adding electric vehicle charging stations at key locations near recreation areas or convenient rest stops. For example, shared electric vehicle chargers at the Foster Reservoir viewpoint or in the downtown area can encourage travelers with electric vehicles to spend time in Sweet Home rather than passing through.

SMART MOBILITY PROJECTS

Projects focusing on smart mobility were selected based on the potential for electric vehicle presence from tourist traffic. Table 8 shows the smart mobility project list.

TABLE 8. PRELIMINARY SMART MOBILITY PROJECTS

Project ID	Project Name	Description
E1	EV Charging Stations	Install electric vehicle charging stations at key locations along Main Street

LOCAL STREET CONNECTIVITY

Local street connectivity is required by the Transportation Planning Rule (OAR 660-012) and is important for Sweet Home's continued development. Providing adequate connectivity can reduce the need for wider roads, traffic signals, and turn lanes. Increased connectivity can reduce a city's overall vehicle-miles traveled, balance the traffic load on major facilities, encourage citizens to seek out other travel modes, and reduce emergency vehicle response times. While improving local street connectivity is easier to implement in newly developed areas, retrofitting existing areas to provide great connectivity should also be attempted.

The design and construction of new connecting streets must evaluate whether neighborhood traffic management strategies are necessary to protect existing neighborhoods from potential traffic impacts caused by extending stub end streets. Furthermore, to establish appropriate expectations, the City encourages signage indicating the potential for future connectivity when development constructs stub streets.

TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is the general term used to describe actions that remove single-occupant vehicle trips from the roadway network during peak travel demand periods. As growth in Sweet Home continues, the number of vehicle trips and travel demand in the area will also increase. Changing people's travel behavior and providing alternative mode choices will help accommodate this growth by reducing the need to build new or expanded roadways. Potential projects such as sidewalks, bicycle routes, and transit enhancements which support TDM are detailed as part of the active transportation and transit system project sections. However, other TDM strategies described below will be pursued as well.

- Education and Outreach – Sweet Home will support the creation of education programs or community groups to help promote and encourage walking, biking, and transit use.
- Trip Reduction Strategies – Sweet Home will work with larger employers (e.g., 50 employees or more) to provide incentives for reducing single-occupancy vehicle trips. For example, a vanpool between employment centers in the Albany-Lebanon area and Sweet Home residents could be explored.
- Transit Improvements – Advancing transit improvements could encourage less single-occupancy vehicle use. Improvements may include increasing the frequency of existing routes, adding new routes, improving transit stop facilities, and providing first/last-mile solutions that connect transit with destinations or other accessible modes of travel.
- Supporting Travel by Walking and Biking – Nearly all of Sweet Home's transportation goals can be partially addressed through the promotion of active transportation. Increasing the accessibility and comfort of travel by walking and biking in and around Sweet Home will provide mobility options for all users, support healthy living, minimize impacts to the environment, and help Sweet Home grow sustainably.
- Land Use Planning – Sweet Home will encourage development that effectively mixes land uses to reduce vehicle trip generation.

FUNDING OPPORTUNITIES

Understanding the sources of transportation funding and the amount that may be available helps set reasonable expectations for what improvements can be made by 2045. It also informs the prioritization of projects and allows the project team to identify whether new or expanded funding sources will be needed to accomplish Sweet Home's transportation goals.

CURRENT FUNDING SOURCES

Sweet Home currently has two primary sources for transportation funding, the State Gas Tax and the Transportation System Development Charge (SDC).

State Gas Tax

The State Gas Tax is allocated to Sweet Home from the state based on the collection of State fuel taxes. The revenue can be used for a variety of transportation needs and is currently the primary source of revenue for the City's Transportation Fund (Fund 206). The fund is used to cover various transportation maintenance and operating expenses. Recently, the City's share of State Gas Tax has ranged between approximately $734,000 and $780,000 per year and is estimated in the budget to be approximately $777,000 per year. The combined expenditures for Personal Services and Materials and Services generally is budged to be approximately $740,000 per year, which limits remaining funds that can be used on capital projects.

System Development Charges

System Development Charges (SDCs) from new developments are intended to offset the burden of development on the transportation system. The funds collected would be kept in a dedicated SDC fund, apart from the City's general-purpose street operations, maintenance, and capital improvements fund. State law restricts the use of SDC funds to capacity-adding projects, generally for constructing or improving portions of roadways impacted by applicable development. SDCs cannot be used to fund improvements for existing deficiencies. The transportation SDC is a one-time fee.

The City of Sweet Home currently charges SDCs for water, sewer, storm water, parks, and transportation. The transportation SDC rate is $3,906 for a single-family dwelling unit. While the amount of fees collected by the City is entirely dependent on development activity, the City's budget currently estimates approximately $120,000 per year in transportation SDC revenue.

ADDITIONAL FUNDING SOURCE CONSIDERATIONS

New transportation funding options include local taxes, assessments and charges, and state and federal appropriations, grants, and loans. All of these resources can be constrained based on a variety of factors, including the willingness of local leadership and the electorate to entertain new fees; the availability of local funds to be dedicated or diverted to transportation issues from other competing City programs; and the availability of state and federal funds. Nonetheless, it is important for the City to consider available opportunities for enhanced funding for the

transportation improvements that will be identified in the TSP as the current sources will not be sufficient to meet the identified need.

POTENTIAL LOCAL FUNDING SOURCES

Two other local funding sources that are used by a variety of cities in Oregon include a local gas tax and street utility fee.

Local Gas Tax

A local gas tax is separate from the State gas tax and requires voter approval. Currently over 30 cities and counties in Oregon have a local fuel tax that ranges from $0.01 to $0.10 per gallon. The amount of revenue collected by a potential local fuel tax would depend on the amount of fuel sold locally, and the tax rate. The Cities of Canby and Hood River each have a $0.03 per gallon rate and collect[2] approximately $400,000 annually.

Street Utility Fee

A Transportation Utility Fee (sometimes known as a Street Maintenance Fee, Road User Fee, or Street Utility Fee) is a monthly fee based on use of the transportation system that is collected from residences the city limits. The fee is collected through the City's regular utility bill. It is often designated for use in the maintenance and repair of the City's transportation system, which can then free up other funds (e.g., state fuel tax) for capital improvements. The fee may be structured as a flat fee, or vary based on the trip generation profile of the land use. The fees typically range from $5 to $10 per month for a single-family home. A rate of $5 per month per single-family home, could generate approximately $240,000 per year.

OTHER POTENTIAL FUNDING SOURCES

The following section summarizes other funding sources that could be considered for specific project needs, but do not typically create a sustainable stream of annual funding for a city to consider.

Surface Transportation Block Grant Program (STBG)

The STBG provides flexible funding that may be used by States and local agencies for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals. Formerly called Surface Transportation Program (STP).

ODOT All Road Transportation Safety (ARTS) Funding

ODOT All Roads Transportation Safety Program (ARTS) is used to address safety challenges on all public roads. Safety funding is distributed to each ODOT region, which collaborates with local governments to select projects that can reduce fatalities and serious injuries, regardless of whether they lie on a local road or a state highway. An application must be submitted by the local

[2] Oregon Department of Transportation : Taxable Distribution Reports : Fuels Tax : State of Oregon

jurisdiction to obtain ARTS funding for local roads. Projects are built into the four-year STIP timeframe (the current STIP is 2024-2027). The funds must make use of ODOT-approved countermeasures directed towards decreasing fatal and serious injury crashes.

Federal Competitive Grant and Loan Programs

The FAST Act authorizes a number of competitive grant and loan programs, the most prominent of which is the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant program, formerly known as BUILD and TIGER. Competitive grant and loan programs would require the City to complete an application that makes a compelling case for a specific project, often multi-jurisdictional. Some of these programs focus on a particular outcome or mode of transportation.

ODOT Statewide Transportation Improvement Program (STIP) Enhance Funding

ODOT has modified the process for selecting projects that receive STIP funding to allow local agencies to receive funding for projects off the state system. Projects that enhance system connectivity and improve multi-modal travel options are the focus. The updated TSP prepares the City to apply for STIP funding.

Safe Routes to School

The Oregon Safe Routes to School (SRTS) Program has money allocated for projects that improve connectivity for children to walk, bike and roll to and from school. Potential grant funds are distributed as a reimbursement program through an open and competitive process. Funding is available through this program for pedestrian and bicycle infrastructure projects within two miles of schools. These funds should be pursued to implement key pedestrian and bicycle projects identified through the SRTS process.

Debt Financing

While not a direct funding source, debt financing can be used to mitigate the immediate impacts of significant capital improvement projects and spread costs over the useful life of a project. This has been successful recently in Oregon communities such as Bend and McMinnville, where general obligation (GO) bond measures were passed. Key to the measures' success was that the increased property taxes were earmarked toward a defined set of projects with strong public support.

Though interest costs are incurred, the use of debt financing can serve not only as a practical means of funding major improvements, but is also viewed as an equitable funding strategy, spreading the burden of repayment over existing and future customers who will benefit from the projects. The obvious caution in relying on debt service is that a funding source must still be identified to fulfill annual repayment obligations.

The Oregon Transportation Infrastructure Bank (OTIB) is a potential source for cities to borrow funds for transportation improvement projects. The OTIB is a statewide revolving loan fund. Projects eligible to receive funding include roadway improvements, bicycle and pedestrian access, and transit capital projects.

Oregon Community Paths (OCP) Program

The OCP grant program is dedicated to helping communities create and maintain connections through multiuse paths. The Oregon Department of Transportation will use monies from the state Multimodal Active Transportation fund and federal Transportation Alternatives Program fund for this program. OCP will fund grants for project development, construction, reconstruction, major resurfacing or other improvements of multiuse paths that improve access and safety for people walking and bicycling.

APPENDIX

The following items are included in the appendix:

1) Project Evaluation Summary
2) Mitigated Intersection Operations Summary for potential traffic signals
3) Mitigated HCM Worksheets for potential traffic signals

Sweet Home TSP Update
Future Project List

Evaluation Criteria

				Goal 1 Mobility, Accessibility, Connectivity		Goal 2 Safety		Goal 3 Quality of Life		Goal 4 Economic Development		Goal 5 System Management and Maintenance		Total Points	Rank
Project ID	Category	Project Name	Description	Goal 1 #1	Goal 1 #2	Goal 2 #1	Goal 2 #2	Goal 3 #1	Goal 3 #2	Goal 4 #1	Goal 4 #2	Goal 5 #1	Goal 5 #2		
C1	Vehicle Capacity	Main Street/Pleasant Valley Road Roundabout	Construct a roundabout at Main Street (US 20)/Pleasant Valley Road	5	3	5	0	4	1	5	5	5	5	38	17
C2	Vehicle Capacity	Main Street/22nd Avenue Signal	Construct a traffic signal at Main Street (US 20)/22nd Avenue	5	4	4	5	4	4	5	5	3	5	44	1
C3	Vehicle Capacity	Main Street/Clark Mill Road Signal	Construct a traffic signal at Main Street (US 20)/Clark Mill Road	5	4	4	0	4	4	5	5	5	5	41	5
C4	Vehicle Capacity	Main Street/47th Avenue	Construct a traffic signal at Main Street (US 20)/47th Avenue	5	4	4	0	4	4	5	5	5	5	41	5
A1	Ped	Clark Mill Road Sidewalk Infill	Infill existing sidewalk gaps on Clark Mill Road	5	5	5	0	5	5	5	1	4	4	39	12
A2	Ped	Long Street Sidewalk Infill	Infill existing sidewalk gaps on Long Street	5	5	5	0	5	5	3	5	5	4	42	4
A3	Ped	Mountain View Road Sidewalk Infill	Infill existing sidewalk gaps on Mountain View Road	5	5	5	0	5	5	5	1	4	4	39	12
A4	Ped	47th Avenue Sidewalk Infill	Infill existing sidewalk gaps on 47th Avenue	5	5	5	0	5	5	5	5	5	4	44	1
A5	Ped	53rd Avenue Sidewalk Infill	Infill existing sidewalk gaps on 53rd Avenue	5	5	5	0	5	5	5	1	4	4	39	12
A6	Bike	Main Street Bike Lanes	Construct bike lanes on Main Street (US 20) east of 18th Avenue; consider buffered bike lanes on Main Street (US 20) west of 18th Avenue	1	5	5	0	5	5	5	5	5	4	40	7
A7	Bike	Holley Road Bike Lanes	Construct bike lanes on Holley Road	1	5	5	0	5	5	5	5	5	4	40	7
A8	Bike	Long Street Bike Lane Infill	Infill gaps in bike lanes on Long Street	5	5	5	0	5	5	5	5	5	4	44	1
A9	Bike	Airport Road Bike Lanes	Construct bike lanes on Airport Road	1	5	5	0	5	5	5	5	5	4	40	7
A10	Bike	47th Avenue Bike Lanes	Construct bike lanes on 47th Avenue	1	5	5	0	5	5	5	5	5	4	40	7
A11	Bike	49th Avenue Bike Lanes	Construct bike lanes on 49th Avenue	1	5	5	0	5	5	5	1	4	4	35	23
A12	Bike	53rd Avenue and Wiley Creek Drive Bike Lanes	Construct bike lanes on 53rd Avenue and Wiley Creek Drive	1	5	5	0	5	5	5	1	4	4	35	23

Sweet Home TSP Update
Future Project List

Evaluation Criteria

				Goal 1 Mobility, Accessibility, Connectivity		Goal 2 Safety		Goal 3 Quality of Life		Goal 4 Economic Development		Goal 5 System Management and Maintenance		Total Points	Rank
Project ID	Category	Project Name	Description	Goal 1 #1	Goal 1 #2	Goal 2 #1	Goal 2 #2	Goal 3 #1	Goal 3 #2	Goal 4 #1	Goal 4 #2	Goal 5 #1	Goal 5 #2		
A13	**Bike**	18th Avenue/Ames Creek Road Bike Lanes	Construct bike lanes on 18th Avenue and Ames Creek Road	1	5	5	0	5	5	5	1	4	4	35	**23**
A14	**Bike**	Mountain View Road Bike Lanes	Construct bike lanes on Mountain View Road	1	5	5	0	5	5	5	1	4	4	35	**23**
A15	**Bike**	Elm Street Bike Lanes	Construct bike lanes on Elm Street	1	5	5	0	5	5	5	1	4	4	35	**23**
A16	**Ped**	22nd Avenue Sidewalk	Improve sidewalks and install curb ramps along 22nd Avenue	1	5	5	0	5	5	5	1	3	4	34	**31**
A17	**Ped**	22nd Avenue/Mountain View Road Crossings	Install striping upgrades and curb extensions at 22nd Avenue/Mountain View Road intersection	1	5	5	0	5	5	5	1	4	3	34	**31**
A18	**Ped**	22nd Avenue/Ironwood Street Crossings	Install curb ramps, upgrade signage and striping, and install lighting at 22nd Avenue/Ironwood St intersection	1	5	5	0	5	5	5	1	3	3	33	**42**
A19	**Ped**	22nd Avenue/Juniper Court and 22nd Avenue/Kalmia Street Crossings	Install curb ramps, upgrade striping, and install lighting at 22nd Avenue/Juniper Court and 22nd Avenue/Kalmia Street	1	5	5	0	5	5	5	1	3	3	33	**42**
A20	**Ped**	22nd Avenue/Long Street Crossings	Install curb ramps, upgrade striping, and install lighting at 22nd Avenue/Long Street	1	5	5	0	5	5	5	1	3	3	33	**42**
A21	**Ped**	22nd Avenue/Main Street Crossing	Upgrade striping, install RRFB, and install lighting at 22nd Avenue across Main Street (US 20)	1	5	5	0	5	5	5	5	3	3	37	**18**
A22	**Ped/Bike**	22nd Avenue Multiuse Path	Remove parking and construct multimodal path on 22nd Avenue between Mountain View Road and Long Street	1	5	5	0	5	3	5	3	3	4	34	**31**
A23	**Ped**	Main Street Sidewalk Enforcement	Enforce sidewalk clearance code on Main Street	1	5	5	0	5	5	5	5	5	4	40	**7**
A24	**Ped**	Main Street Crossings	Upgrade striping on Main Street from 18th Avenue to 23rd Avenue; install curb ramps and lighting at Main Street/18th Avenue	1	5	5	0	5	5	5	5	5	3	39	**12**
A25	**Ped**	18th Avenue Sidewalks	Improve sidewalks and install curb ramps on 18th Avenue between Main Street (US 20) and Ames Creek Road	1	5	5	0	5	5	5	3	4	3	36	**20**
A26	**Ped**	High School Driveway Crossing	Install RRFB, upgrade signage and striping, and install lighting at the high school driveway on 18th Avenue	1	5	5	0	5	5	5	1	4	3	34	**31**
A27	**Ped**	18th Avenue/Grape Court Crossing	Upgrade striping and install curb ramps at 18th Avenue/Grape Court	1	5	5	0	5	5	5	1	4	3	34	**31**
A28	**Ped**	Mountain View Road/Ames Creek Road Crossings	Upgrade striping, install curb ramps, and install lighting at Mountain View Road/Ames Creek Road	1	5	5	0	5	5	5	1	4	3	34	**31**

Sweet Home TSP Update
Future Project List

Evaluation Criteria

				Goal 1 Mobility, Accessibility, Connectivity		Goal 2 Safety		Goal 3 Quality of Life		Goal 4 Economic Development		Goal 5 System Management and Maintenance		Total Points	Rank
Project ID	Category	Project Name	Description	Goal 1 #1	Goal 1 #2	Goal 2 #1	Goal 2 #2	Goal 3 #1	Goal 3 #2	Goal 4 #1	Goal 4 #2	Goal 5 #1	Goal 5 #2		
A29	**Ped**	Mountain View Road/Elm Street Crossing	Upgrade striping and install lighting at Mountain View Road/Elm Street	1	5	5	0	5	5	5	1	4	3	34	**31**
A30	**Ped**	Mountain View Road Multiuse Path (South)	Construct a 10-foot wide shared use path and northbound shared roadway bicycle markings between Ames Creek Road and school property	1	5	5	0	5	4	5	1	4	5	35	**23**
A31	**Ped**	Mountain View Road Multiuse Path (North)	Construct a 10-foot wide shared use path and curb ramps at intersections between 22nd Avenue and Long Street	1	5	5	0	5	4	5	3	4	5	37	**18**
A32	**Ped**	Ames Creek Road Restriping	Restripe Ames Creek Road to narrow travel lanes, shift centerline, and provide more pedestrian space between Mountain View Road and Surrey Lane; explore 25 mph speed limit	1	5	5	0	5	4	5	1	4	4	34	**31**
A33	**Ped**	Ames Creek Road Sidewalk	Install 6-foot wide sidewalk on the south side of Ames Creek Road from Mountain View Road to Surrey Lane	1	5	5	0	5	5	5	1	4	4	35	**23**
A34	**Ped**	Elm Street Greenway	Designate a neighborhood greenway on Elm Street from 5th Avenue to Mountain View Road; install speed humps, signage, and striping	1	5	5	0	5	5	5	1	4	4	35	**23**
A35	**Ped**	Juniper Street Sidewalk	Install 6-foot wide sidewalk on the north side of Juniper Street from Mountain View Road to Ashbrook Park	1	5	5	0	5	5	5	1	3	4	34	**31**
A36	**Ped**	Juniper Street Greenway	Designate a neighborhood greenway on Juniper Street from Mountain View Road to 35th Avenue; install speed humps, signage, and striping	1	5	3	0	5	5	5	1	3	4	32	**45**
A37	**Ped**	Harding Street Sidewalk	Install sidewalk on the south side of Harding Street from Mountain View Road to 27th Avenue	1	5	5	0	5	5	5	1	3	4	34	**31**
A38	**Ped**	Kalmia Street Sidewalk	Install sidewalk on the south side of Kalmia Street from Mountain View Road to 29th Avenue	1	5	5	0	5	5	5	1	3	4	34	**31**
R1	**Rail**	Pleasant Valley Road Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines	1	3	5	0	5	5	3	1	4	5	32	**45**
R2	**Rail**	9th Avenue Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines	1	3	5	0	5	5	3	1	2	5	30	**51**
R3	**Rail**	12th Avenue Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines	1	3	5	0	5	5	3	1	2	5	30	**51**
R4	**Rail**	18th Avenue Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines	1	3	5	0	5	5	3	1	4	5	32	**45**
R5	**Rail**	24th Avenue Rail Crossing	Construct new railroad crossing across future extension of 24th Avenue	1	1	5	0	1	5	3	1	2	5	24	**54**
R6	**Rail**	Clark Mill Road Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines	1	3	5	0	5	5	3	1	4	5	32	**45**

Sweet Home TSP Update
Future Project List

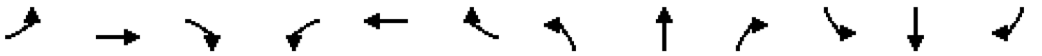
Evaluation Criteria

Project ID	Category	Project Name	Description	Goal 1 Mobility, Accessibility, Connectivity		Goal 2 Safety		Goal 3 Quality of Life		Goal 4 Economic Development		Goal 5 System Management and Maintenance		Total Points	Rank
				Goal 1 #1	Goal 1 #2	Goal 2 #1	Goal 2 #2	Goal 3 #1	Goal 3 #2	Goal 4 #1	Goal 4 #2	Goal 5 #1	Goal 5 #2		
R7	**Rail**	47th Avenue (West) Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines	1	3	5	0	5	5	3	5	4	5	36	**20**
R8	**Rail**	47th Avenue (East) Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines	1	3	5	0	5	5	3	5	4	5	36	**20**
R9	**Rail**	53rd Avenue Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines	1	3	5	0	5	5	3	1	4	5	32	**45**
R10	**Rail**	54th Avenue Rail Crossing	Upgrade signing and striping, install railroad crossing gates, and install ADA-accessible improvements to align with current railroad safety guidelines	1	3	5	0	5	5	3	1	2	5	30	**51**
R11	**Rail**	Main Street Railroad Bridge	Replace damaged trestle bridge	1	0	1	0	1	5	1	5	1	5	20	**55**
S1	**Safety**	Main Street Reservoir Crossing	Install a pedestrian crossing near the Foster Reservoir	1	5	5	0	5	5	5	5	4	4	39	**12**
E1	**Smart Mobility**	EV Charging Stations	Install electric vehicle charging stations at key locations along Main Street	3	1	1	0	1	5	5	5	5	5	31	**50**

Sweet Home TSP
Future Vehicle Capacity Projects

Summary Table

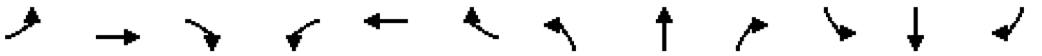
Software/Method	Intersection	Control Type	Mobility Target	LOS	Delay	V/C Ratio
Synchro HCM 6th Signal	Pleasant Valley Rd & Main St (US 20)	Signal	v/c ≤ 0.85	A	6.4	0.45
Synchro HCM 6th Signal	22nd Ave & Main St (US 20)	Signal	v/c ≤ 0.90	A	6.7	0.50
Synchro HCM 6th Signal	Clark Mill Rd & Main St (US 20)	Signal	v/c ≤ 0.85	B	12.7	0.79
Synchro HCM 6th Signal	47th Ave & Main St (US 20)	Signal	v/c ≤ 0.85	B	12.9	0.83



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	755	0	0	565	110	0	0	5	100	0	50
Future Volume (veh/h)	75	755	0	0	565	110	0	0	5	100	0	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Adj Flow Rate, veh/h	83	839	0	0	628	122	0	0	6	111	0	56
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	492	1903	0	499	1017	197	0	0	223	349	0	71
Arrive On Green	0.07	0.57	0.00	0.00	0.37	0.37	0.00	0.00	0.15	0.15	0.00	0.15
Sat Flow, veh/h	1667	3413	0	1667	2777	539	0	0	1483	941	0	475
Grp Volume(v), veh/h	83	839	0	0	376	374	0	0	6	167	0	0
Grp Sat Flow(s),veh/h/ln	1667	1663	0	1667	1663	1653	0	0	1483	1416	0	0
Q Serve(g_s), s	0.8	4.2	0.0	0.0	5.3	5.4	0.0	0.0	0.1	3.2	0.0	0.0
Cycle Q Clear(g_c), s	0.8	4.2	0.0	0.0	5.3	5.4	0.0	0.0	0.1	3.3	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.33	0.00		1.00	0.66		0.34
Lane Grp Cap(c), veh/h	492	1903	0	499	609	605	0	0	223	421	0	0
V/C Ratio(X)	0.17	0.44	0.00	0.00	0.62	0.62	0.00	0.00	0.03	0.40	0.00	0.00
Avail Cap(c_a), veh/h	900	2420	0	1013	1210	1203	0	0	925	1106	0	0
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	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.8	3.5	0.0	0.0	7.5	7.5	0.0	0.0	10.5	11.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	0.8	0.8	0.0	0.0	0.0	0.5	0.0	0.0
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	0.1	0.2	0.0	0.0	1.1	1.1	0.0	0.0	0.0	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.9	3.7	0.0	0.0	8.2	8.3	0.0	0.0	10.5	12.3	0.0	0.0
LnGrp LOS	A	A			A	A			B	B		
Approach Vol, veh/h		922			750			6			167	
Approach Delay, s/veh		3.8			8.3			10.5			12.3	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		8.3	0.0	20.5		8.3	5.9	14.6				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		18.0	9.0	21.0		18.0	9.0	21.0				
Max Q Clear Time (g_c+I1), s		2.1	0.0	6.2		5.3	2.8	7.4				
Green Ext Time (p_c), s		0.0	0.0	4.2		0.5	0.1	3.2				

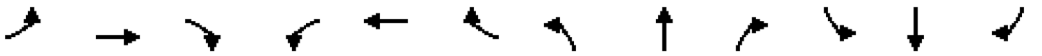
Intersection Summary	
HCM 6th Ctrl Delay, s/veh	6.4
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	1055	55	15	945	30	40	5	35	30	10	20
Future Volume (veh/h)	5	1055	55	15	945	30	40	5	35	30	10	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Adj Flow Rate, veh/h	6	1185	62	17	1062	34	45	6	39	34	11	22
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	394	1683	88	360	1758	56	237	10	63	240	25	49
Arrive On Green	0.01	0.52	0.52	0.02	0.53	0.53	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1667	3214	168	1667	3288	105	777	104	674	806	270	526
Grp Volume(v), veh/h	6	613	634	17	537	559	90	0	0	67	0	0
Grp Sat Flow(s),veh/h/ln	1667	1663	1720	1667	1663	1731	1554	0	0	1602	0	0
Q Serve(g_s), s	0.1	9.1	9.1	0.2	7.3	7.3	0.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	9.1	9.1	0.2	7.3	7.3	1.7	0.0	0.0	1.2	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.06	0.50		0.43	0.51		0.33
Lane Grp Cap(c), veh/h	394	871	901	360	889	926	309	0	0	315	0	0
V/C Ratio(X)	0.02	0.70	0.70	0.05	0.60	0.60	0.29	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	840	1317	1362	787	1317	1371	971	0	0	982	0	0
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.4	5.9	5.9	4.8	5.2	5.2	14.3	0.0	0.0	14.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.8	0.8	0.0	0.5	0.5	0.4	0.0	0.0	0.2	0.0	0.0
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	0.0	1.4	1.4	0.0	1.0	1.1	0.6	0.0	0.0	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.4	6.7	6.7	4.9	5.7	5.7	14.6	0.0	0.0	14.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B			B		
Approach Vol, veh/h		1253			1113			90			67	
Approach Delay, s/veh		6.7			5.7			14.6			14.3	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	7.1	4.6	21.2	7.1	4.2	21.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	18.0	9.0	26.0	18.0	9.0	26.0
Max Q Clear Time (g_c+I1), s	3.7	2.2	11.1	3.2	2.1	9.3
Green Ext Time (p_c), s	0.3	0.0	6.0	0.2	0.0	5.4

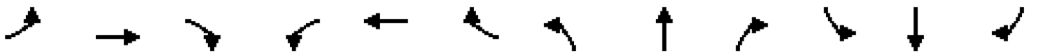
Intersection Summary	
HCM 6th Ctrl Delay, s/veh	6.7
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	760	115	65	850	50	15	0	30	45	5	170
Future Volume (veh/h)	230	760	115	65	850	50	15	0	30	45	5	170
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Adj Flow Rate, veh/h	253	835	126	71	934	55	16	0	33	49	5	187
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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	452	1299	196	394	1190	70	181	41	224	146	28	246
Arrive On Green	0.13	0.45	0.45	0.05	0.37	0.37	0.21	0.00	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1667	2897	437	1667	3191	188	315	195	1051	202	132	1157
Grp Volume(v), veh/h	253	479	482	71	487	502	49	0	0	241	0	0
Grp Sat Flow(s),veh/h/ln	1667	1663	1671	1667	1663	1716	1561	0	0	1491	0	0
Q Serve(g_s), s	3.5	9.4	9.4	1.1	10.9	10.9	0.0	0.0	0.0	3.5	0.0	0.0
Cycle Q Clear(g_c), s	3.5	9.4	9.4	1.1	10.9	10.9	1.1	0.0	0.0	6.3	0.0	0.0
Prop In Lane	1.00		0.26	1.00		0.11	0.33		0.67	0.20		0.78
Lane Grp Cap(c), veh/h	452	745	749	394	620	640	446	0	0	420	0	0
V/C Ratio(X)	0.56	0.64	0.64	0.18	0.78	0.78	0.11	0.00	0.00	0.57	0.00	0.00
Avail Cap(c_a), veh/h	594	791	795	661	791	816	776	0	0	771	0	0
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.2	9.0	9.0	7.7	11.7	11.7	13.5	0.0	0.0	15.5	0.0	0.0
Incr Delay (d2), s/veh	0.8	1.5	1.5	0.2	3.6	3.5	0.1	0.0	0.0	0.9	0.0	0.0
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	0.7	2.2	2.3	0.3	3.2	3.3	0.3	0.0	0.0	2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.1	10.5	10.4	7.9	15.3	15.2	13.5	0.0	0.0	16.4	0.0	0.0
LnGrp LOS	A	B	B	A	B	B	B			B		
Approach Vol, veh/h		1214			1060			49			241	
Approach Delay, s/veh		10.2			14.8			13.5			16.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		12.9	6.3	22.9		12.9	9.4	19.7				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	9.0	20.0		19.0	9.0	20.0				
Max Q Clear Time (g_c+I1), s		3.1	3.1	11.4		8.3	5.5	12.9				
Green Ext Time (p_c), s		0.1	0.0	3.1		0.9	0.2	2.8				

Intersection Summary	
HCM 6th Ctrl Delay, s/veh	12.7
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	495	5	5	460	50	15	10	5	65	5	260
Future Volume (veh/h)	210	495	5	5	460	50	15	10	5	65	5	260
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Adj Flow Rate, veh/h	253	596	6	6	554	60	18	12	6	78	6	313
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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	479	1325	13	391	777	84	289	174	68	166	36	378
Arrive On Green	0.14	0.39	0.39	0.01	0.26	0.26	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1667	3372	34	1667	3027	327	509	542	210	204	111	1175
Grp Volume(v), veh/h	253	294	308	6	304	310	36	0	0	397	0	0
Grp Sat Flow(s),veh/h/ln	1667	1663	1744	1667	1663	1691	1260	0	0	1490	0	0
Q Serve(g_s), s	4.3	5.6	5.6	0.1	7.2	7.2	0.0	0.0	0.0	6.5	0.0	0.0
Cycle Q Clear(g_c), s	4.3	5.6	5.6	0.1	7.2	7.2	0.6	0.0	0.0	10.5	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.19	0.50		0.17	0.20		0.79
Lane Grp Cap(c), veh/h	479	653	685	391	427	434	531	0	0	580	0	0
V/C Ratio(X)	0.53	0.45	0.45	0.02	0.71	0.71	0.07	0.00	0.00	0.68	0.00	0.00
Avail Cap(c_a), veh/h	628	734	770	729	695	707	717	0	0	790	0	0
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.2	9.6	9.6	11.7	14.5	14.6	10.1	0.0	0.0	13.4	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.4	0.3	0.0	1.6	1.6	0.0	0.0	0.0	1.1	0.0	0.0
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	1.0	1.4	1.4	0.0	2.2	2.2	0.2	0.0	0.0	3.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.9	10.0	10.0	11.7	16.2	16.2	10.2	0.0	0.0	14.5	0.0	0.0
LnGrp LOS	A	A	A	B	B	B	B			B		
Approach Vol, veh/h		855			620			36			397	
Approach Delay, s/veh		10.0			16.2			10.2			14.5	
Approach LOS		A			B			B			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		17.9	4.3	20.9		17.9	10.1	15.1				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		20.0	9.0	19.0		20.0	10.0	18.0				
Max Q Clear Time (g_c+I1), s		2.6	2.1	7.6		12.5	6.3	9.2				
Green Ext Time (p_c), s		0.1	0.0	2.0		1.4	0.2	1.9				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			12.9									
HCM 6th LOS			B									