TRANSPORTATION SYSTEM PLAN POLICY ADVISORY AGENDA
Wednesday, September 09, 2020 - 6:00 PM
Council Chambers, Newport City Hall, 169 SW Coast Highway

This meeting will be held electronically. The public can live-stream this meeting at https://newportoregon.gov. To access the livestream, visit the Transportation System Plan Policy Advisory Committee page at https://www.newportoregon.gov/citygov/comm/tsp.asp. Once there, an "in progress" note will appear if the meeting is underway; click on the "in progress" link to watch the livestream. It is not possible to get into a meeting that will be livestreamed before the meeting starts. The meeting will also be broadcast on Charter Channel 190.

Public comment may be made, via e-mail, up to four hours before the meeting start time at publiccomment@newportoregon.gov. To make a "real time" comment during a meeting, a request to speak must be received four hours prior to a scheduled meeting. The request to speak should include the agenda item on which the requestor wishes to speak. If the comments are not related to a particular agenda item, the request to speak should include a notation that the request is for general public comment, and the general topic. The request should be e-mailed to publiccomment@newportoregon.gov. Once a request to speak has been received, staff will send the requestor the Zoom meeting link. This link will allow a requestor to participate via video or telephone.

The agenda may be amended during the meeting to add or delete items, change the order of agenda items, or discuss any other business deemed necessary at the time of the meeting.

---

1. CALL TO ORDER AND ROLL CALL

1.A Meeting Agenda.
TSP PAC Meeting #3 Agenda

2. APPROVAL OF MINUTES

2.A Draft Transportation System Plan Policy Advisory Committee Meeting Minutes of March 12, 2020.

Draft_TSP_Policy_Advisory_Comm_Mtg_Minutes_03-12-2020.pdf

3. REVIEW WHAT WE HAVE LEARNED TO DATE

4. DRAFT APPROACH FOR COMMUNITY WORKSHOPS

5. PUBLIC COMMENT

6. NEXT MEETING – WINTER 2021

7. HANDOUTS

7.A Handout Files:
Project Schedule- Updated September 2020
Existing Conditions – Tech Memo #5
Forecasted Trip Growth Map
Future Transportation Conditions and Needs - Tech Memo #7
Draft Public Online Events Plan, September 1, 2020
Storyboard for Public Online Events
NewportTSP-Map-N-FutureNeeds_r2
NewportTSP-Map-NW-FutureNeeds_r2
NewportTSP-Map-SE-FutureNeeds_r2
NewportTSP-Map-SW-FutureNeeds_r2

8. ADJOURNMENT

Newport Transportation System Plan
Project Advisory Committee Meeting #3

September 9, 2020 | 6 PM to 8:00 PM
Online Zoom Meeting

Meeting Objectives

- Review what we have learned to date – citywide
- Review growth trends and impacts
- Provide feedback on draft approach for the Community Workshop series set for November

1. Review What We Have Learned To Date

- Review composite needs map of key transportation issues (to be distributed separately)
- Growth forecasted around the city (see Trip Growth Maps)
- Growth impacts to the system and what new issues are expected (see Tech Memo #7)

2. Draft Approach for Community Workshops

- Review draft online workshops events (see draft Event Plan)
    - Live design event to allow conversations with the community
    - Online open house drop-in style that allows the public to learn and comment on Newport's transportation priorities
- Storyboard and illustrations of online website organization and sample graphics

3. Public Comment

Next Meeting – Winter 2021

- Review results from November Community Workshops
- Confirm package of initial solutions and recommendations considering public feedback
- Identify any additional transportation system solutions needed prior to second round of Public Workshops

Handouts

- Project Schedule- Updated September 2020
- Existing Conditions – Tech Memo #5 (provided for reference)
- Forecasted Trip Growth Map (identifies high growth areas around the city)
- Future Transportation Conditions and Needs - Tech Memo #7
- Composite Needs Map (to be distributed separately)
- Draft Public Online Events Plan, September 1, 2020
- Storyboard for Public Online Events

Other Resources

Project website: https://sites.jla.us.com/newport-tsp

***Draft* MINUTES**
Transportation System Plan Policy Advisory Committee
Meeting #2
Newport City Hall Council Chambers
March 12, 2020

Committee Members Present: Dean Sawyer, Bob Berman, Lyle Mattson, Ralph Breitenstein, Linda Niegebauer, Tomas Follett, Jeff Hollen, and Jacob Osborne.

Committee Members Present by Phone: James Feldman

Committee Members Absent: Rosa Coppola, Roland Woodcock, Bryn McCornack, Judy Kuhl, Roy Kinion, Rich Belloni, and Fran Matthews.

City Staff Present: Community Development Director, Derrick Tokos; and Executive Assistant, Sherri Marineau.

Consultants Present: Ben Weber, and Carl Springer.

Public Members Present: Nyla Jebousek, John Coppola, Lisa Phipps, and Ellen Bristow.

1. Call to Order & Roll Call. Meeting started at 6:05 p.m.

2. Approval of Minutes.

Motion made by Breitenstein, seconded by Follett to approve the October 16, 2019 Transportation System Plan Policy Advisory Committee meeting minutes as written. The motion carried unanimously in a voice vote.

3. Review Of What We Have Learned To Date. Springer reviewed the existing system issues and the map legend with the TSP Policy Advisory Committee (PAC). He explained how traffic congestion was measured. Berman noted that NW 60th Street would soon get additional traffic from the new apartment complex being built . He explained that when construction was completed traffic would be an issue. He expressed concerns for the safety of people crossing traffic on Highway 101 at this location.

Sawyer thought yellow should be added to 7th and Harney Streets, and Highway 20 and Harney Street on Map D. He noted that these were areas that had a tremendous amount of congestion due to schools. Jebousek asked why San-Bay-O Circle was left off Map B. Springer would look at adding it. Berman noted the fairgrounds (County Commons) will be redeveloped and would introduce another element of usage and traffic. Osborne said there were sections of Harney Street that would need sidewalk improvements. He thought that the City overall didn't accommodate bikes and pedestrians, especially on Highway 101. Sawyer pointed out that near the hospital, at Abbey Street and Highway 101, people were speeding from this location to the bridge. Mattson thought there needed to be a traffic control devise at this location.

Bristow noted that 9th and 10th Streets, by Oceana, people drove fast and there was a blind curve. She thought this location required street lights. Berman asked for an update on a comment at a previous meeting about installing a rapid flashing crosswalk at Eads Street and Highway 20. Tokos explained it wasn't a matter of just simply adding a beacon because there were other things that needed to be addressed, such as bringing sidewalks up to ADA standards.

Springer explained what "Intersection Congestion" was. A discussion ensued regarding the days of the week that congestion was recorded according to ODOT standards. Tokos noted that Harney Street and Highway 20 congestion wouldn't have been recorded because there wasn't school in session during the summer. He also thought the Moore Drive and Bay Blvd improvements were done to resolve issues. The hospital would be addressing issues at 9th and Abbey Street. Sawyer noted the Police Department had statistical data from a red light camera study to use. Tokos asked Springer if this data would be useful to

the consultants. Springer didn't think it would. John Coppola asked why they didn't have blinking yellow arrows on traffic lights to accommodate when traffic was low on Highway 101. Sawyer reported that the City met with ODOT and they said they were going to add these.

4. Group Discussion About Key Stakeholder Questions.

Tokos reviewed the public involvement progress update, and reviewed the key themes that came up from the interviews (see handout). He asked for the PAC's ideas on other stakeholders that should be added. Tokos requested that the PAC members who hadn't already given responses to the questions to do so.

Tokos asked the PAC for their thoughts on if anything was missing. Berman didn't see any input from the 60 plus community and thought they should be added. Tokos said this was already being coordinated and would happen. Coppola noted on the Bayfront there were a couple of accidents with the buses. Mixing retail and fishing was a problem. Tokos noted because there was slower traffic at the Bayfront, it was better for pedestrians. Berman suggested talking to Georgia Pacific. Tokos thought this could be picked up when talking to the logging community.

5. Draft Approach For Community Workshops. Weber reviewed the workshop schedule and reminded the PAC that it was subject to change because of current global health events. Weber noted the schedule presented was a proposed schedule and subject to change. He asked for feedback on the workshop schedule. Jebousek noted the workshops would be held during work days and hard for everyone to attend. Weber explained they recognized this and was something they would take under consideration. There would be bigger community events that would happen during the evening from 6 p.m. to 8 p.m. Berman asked who would be attending. Weber didn't have exacts at that point but there could be a wide range of people invited. There would be portions of the schedule where key stakeholders would be involved through the whole process. Jebousek asked if all the meetings would be open to the public. Tokos explained that not all of them would be. There would be some internal meetings with staff, and then a mix of meetings with staff and public. Breitenstein thought they needed to make sure to get the invitations out reasonably soon to insure stakeholders could attend. He wanted there to be some slots for the public to attend as well. Tokos thought they should shift meetings out a couple of weeks because of the global situation. Berman thought if a big portion of the meetings were for public input, they should be held when the public was available. He suggested a Saturday, Sunday and Monday schedule. Berman wanted serious consideration for this. Mattson suggested possibly doing a Friday, Saturday and Sunday schedule. He also thought it was important to get invitations out early so people could attend. Mattson thought it was proper to move the dates off a bit because of current global problems. Hollen thought there needed to be specific times given so people could attend different time slots.

Weber reviewed the flow of the schedule with the PAC. He thought the highway options needed to be addressed first for resolution on the first day. There would be an open house and then a review of the first day during the evening session. Day two would delve into different sections of the city so smaller teams could work in the different areas in terms of design and building for roads. Then, the teams would come back at the end of the day to talk about technical efforts. They would also set up a big public event at the end of day two. Berman asked why there was a six hour discussion on Agate Beach. Tokos said this was about Urban Renewal and served as the targeted following up for investments. Weber noted that before the workshops there would be technical transportation analysis done to see if things were viable and if they should be brought to the workshops. Tokos explained that they would come in with existing conditions maps, and with opportunities and restraints diagrams informed by what was gathered already in the morning. Then in the afternoon they would work with key stakeholders and staff to see if things were done right and make refinements on the fly. Then in the evening there would be the same conversation with more refined work with the broader community to fill in existing conditions, opportunities and constraints in greater detail. The second day would be used to work on solutions based on what was heard and make decisions with key stakeholders and the broader public.

Mattson asked if there would be suggestions and visualizations of solutions done with the public. Tokos confirmed there would be. Bristow asked if there would be any other geographic changes being done, and if dollar and cents costs would be applied. Tokos explained that there would be but not at that particular

workshop. This would happen when there was a more refined list of projects. Jebousek asked if there would be an analysis on the affect different couplets would have on businesses in the area. Tokos expected this to be raised by stakeholders when talking about the impacts on their businesses. He noted that when they had a considerable amount of support for a solution it would most likely be included, even though there may be some people who didn't like the choice.

Berman thought a couplet analysis would be affected when looking at how the armory property was being utilized properly. Tokos explained their property was owned by the State. He thought any time there was a planning effort the City wouldn't have confidence on what property owners would want to do with their properties. The City wouldn't select a specific spot for certain plans because it could get them in trouble.

Weber explained that he would look at ways to hold the workshops on the weekends and carve out specific time to have invited stakeholder check-ins. Osbourne asked where workshops would be held. Tokos explained there were a lot of options and they could be moved around. This would need to be coordinated with the consultants. Weber noted that there would be a lot of exhibits illustrating what they would be doing. There would be tables that had active drawings for people to interact with. Hollen thought it was important to look at buildable sites.

6. **Sketch Concepts For Highway Improvements.** Springer reviewed the improvement maps with the PAC. He noted that the TSP had different solutions that weren't colored on the maps. He noted these would be added later and wasn't what they were looking at on these maps.

Springer reviewed the couplet alternative maps. He noted that when adding couplets all streets would be redesigned to look like the highway. Jebousek asked what the speed on the couplets would be. Springer said they didn't have those details now but it wouldn't be faster than current speed. Mattson asked if the bulk of traffic would be going north or south on Hwy 101 from Hwy 20. Springer said most would be going south. Hollen asked if the long couplet could be used to turn south. Springer said they shouldn't concentrate on turn arounds but ask if the maps captured the types of couplets they wanted to consider going forward. Breitenstein reported that the health community didn't like the long couplet by the hospital. Tokos thought they would be better served by putting options on the table and rejecting certain options through the public process for cause, rather than trying to whittle them down as a small group. Breitenstein asked what the biggest problem was. Tokos said it wasn't just the intersection of Highway 20 and Highway 101, it was also the large traffic flow. The concept would be to reroute traffic. Tokos explained how along Highway 20 and 101 commercial properties were struggling because the built public space where the highways were didn't serve them well. The was an opportunity with substantial investments to reshape the public space in a manner that would serve them well. Bristow thought that creating couplets would put more traffic on Highway 101 than there was before.

Springer reviewed the alternative parallel route maps and noted that these routes would be two way collector streets. Berman asked if there were any serious land acquisitions at Harney Street near Forest Park. Tokos said there were only a couple of property owners with large land holdings in that area. This would make things easier and the property owners would benefit because a good portion of those properties were within the urban growth boundary and were developable. He noted that based off of stakeholder meetings, we should have maps for a full bypass of Newport. They needed to capture this and frame how it could be done further than Harney Street.

Tokos asked the PAC if they thought this was a reasonable palette of options. Berman asked that they present three different maps to show each of the couplet alternatives. A request was given to ask if the consultants could bring in examples from other communities. Tokos said they could and Ashland could be used as an example. Mattson asked if it would be reasonable to assume a collector street could be a designated bike route. Tokos thought they could. Follett asked if there was a way to submit a more visionary idea for this. Tokos asked Follett to submit what he had to him and he would share this with Springer.

7. **Next Meeting – Fall 2020.**

8. **Public Comment.** Jebousek addressed the PAC and reported that she seconded Wendy Engler's concerns that she shared with the Planning Commission to include public member involvement. She expressed concerns about the street conditions of San-Bay-O Circle, which she lived on, and thought that a signal should be placed there. She noted the Harney Street bypass would not help her street. Jebousek reported that she saw no evidence that she had been heard.

Ellen Bristow addressed the PAC and asked if a couplet would be enough when it was only two blocks long. Springer said what they were concerned about was if they had enough queue distance. The other option would be to have two signals close together to work as one. There would be a signal installed wherever the couplet crossed Highway 20.

John Coppola asked if there was any way to change to speed limit by 73rd Street. Springer said ODOT made the decision on the speed limit there but we could give them input.

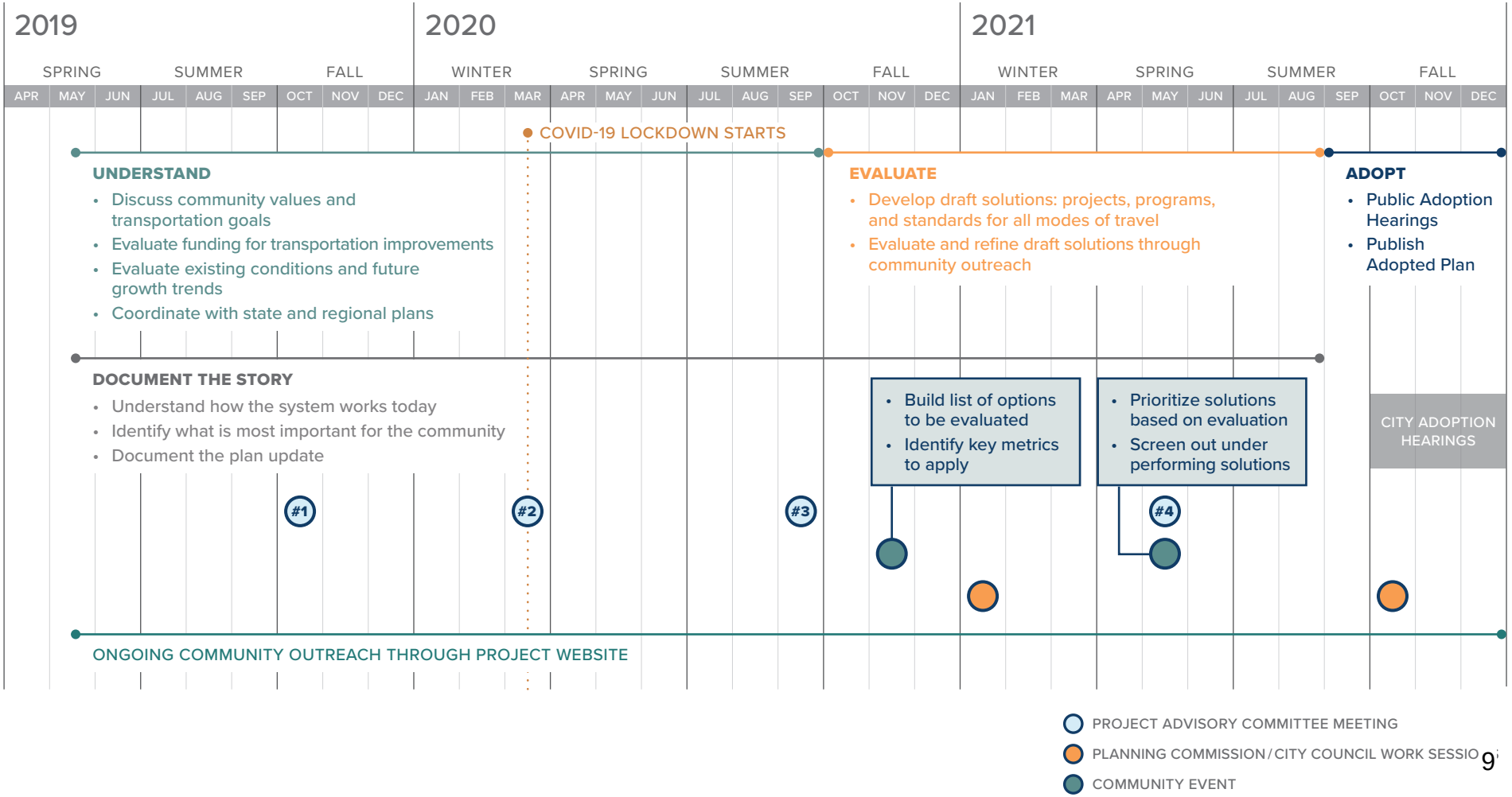
Tokos noted they would distribute materials for workshops and they would be made available online.

9. **Adjournment.** Having no further business, the meeting adjourned at 8:05 p.m.

Respectfully submitted,

_____

Sherri Marineau
Executive Assistant


2019
2020
2021
SPRING
SUMMER
FALL
WINTER
SPRING
SUMMER
FALL
WINTER
SPRING
SUMMER
FALL
APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
COVID-19 LOCKDOWN STARTS
UNDERSTAND
Discuss community values and transportation goals
Evaluate funding for transportation improvements
Evaluate existing conditions and future growth trends
Coordinate with state and regional plans
EVALUATE
Develop draft solutions: projects, programs, and standards for all modes of travel
Evaluate and refine draft solutions through community outreach
ADOPT
Public Adoption Hearings
Publish Adopted Plan
DOCUMENT THE STORY
Understand how the system works today
Identify what is most important for the community
Document the plan update
#1
#2
#3
#4
Build list of options to be evaluated
Identify key metrics to apply
Prioritize solutions based on evaluation
Screen out under performing solutions
CITY ADOPTION HEARINGS
ONGOING COMMUNITY OUTREACH THROUGH PROJECT WEBSITE
PROJECT ADVISORY COMMITTEE MEETING
PLANNING COMMISSION / CITY COUNCIL WORK SESSIO
COMMUNITY EVENT

MEMORANDUM

720 SW Washington St.
Suite 500
Portland, OR 97205
503.243.3500
www.dksassociates.com

DATE: September 2, 2020

TO: Newport TSP Project Management Team

FROM: Carl Springer, DKS
Kevin Chewuk, DKS
Rochelle Starrett, DKS

SUBJECT: Newport Transportation System Plan Update
Technical Memo 5 – Existing Conditions

This memorandum provides a summary of the existing transportation conditions in Newport. Included is a summary of how the existing transportation system is operating for pedestrians, bicyclists, transit riders, and motor vehicles. The analysis focuses on areas of Newport within the Urban Growth Boundary (UGB) and north of the Yaquina Bay Bridge, including detailed analysis for the pedestrian, bicycle, transit, and motor vehicle system. The following intersections were analyzed:

1. US 101/NE 73rd Street
2. US 101/NE 52nd Street/NW Lighthouse Drive
3. US 101/NW Oceanview Drive
4. US 101/NE 36th Street
5. US 101/NE 31st Street
6. US 101/NE 20th Street
7. US 101/NE 11th Street
8. US 101/NE 6th Street
9. US 101/US 20
10. US 101/SW Angle Street
11. US 101/SW Hurbert Street
12. US 101/SW Bayley Street
13. US 20/SE Benton Street
14. US 20/SE Moore Drive
15. NW Oceanview Drive/NW 25th Street
16. NW 11th Street/NW Nye Street
17. NE Harney Street/NE 7th Street
18. SW Hurbert Street/SW 9th Street
19. SW Abbey Street/SW 9th Street
20. SE Bay Boulevard/Se Moore Drive

The entire Newport UGB (including the area to the south of the Yaquina Bay Bridge) was analyzed as part of the 2012 Newport TSP update with a special emphasis on the South Beach area of Newport. That analysis will be reviewed and incorporated as appropriate as part of the current TSP update.

Methods

This section describes the methods used to complete each portion of the existing conditions analysis and is consistent with the Newport Methodology and Assumptions Memorandum.

Safety

Safety analysis is covered in Chapter 4 of the ODOT Analysis and Procedures Manual (APM)[1] and includes the following components and their corresponding data sources:

Study Intersections

Raw crash data was provided by ODOT from 2013 to 2017 (the five most-recent years of complete crash data) for the Newport UGB. This data was processed to identify crashes occurring at study intersections and used to calculate:

- Critical crash rates (APM Section 4.3.4)
- Excess proportion of crash types (APM Section 4.3.5)

Roadway Segments

ODOT publishes two data sets which summarize crash rates on state highway roadway segments which were used for this analysis:

- State highway crash rate tables[2]
- Safety Priority Index System (SPIS) sites (APM Section 4.3.1)[3]

The raw crash data provided by ODOT was also used to summarize crash trends throughout Newport over the five-year analysis period.

---

[1] ODOT. *Analysis and Procedures Manual, V. 2, Ch. 4 Safety*. November, 2018.

[2] ODOT. *Crash Statistics & Reports.* https://www.oregon.gov/ODOT/Data/Pages/Crash.aspx. Accessed August 20, 2019.

[3] ODOT. *Safety Priority Index System Reports for On-State Highways.* https://www.oregon.gov/ODOT/Engineering/Pages/SPIS-Reports-On-State.aspx. Accessed August 20, 2019.

Level of Traffic Stress (LTS)

Multimodal analysis, including pedestrian and bicycle LTS, is covered in Chapter 14 of the APM[4]. Pedestrian and bicycle LTS evaluations provide a quantitative metric to understand a multimodal user's perception of the safety and comfort of the transportation network. This method can be used to understand key gaps and barriers to walking and bicycling which can then be addressed through targeted improvements. Segment analysis was completed for both pedestrians (APM Section 14.5.4) and bicyclists (APM Section 14.4.4) on all arterial and collector roadways within the Newport UGB. Intersection analysis was completed for all study intersections (Pedestrians, APM Section 14.5.9; Bicyclists, APM Section 14.4.5 and 14.4.6). The LTS evaluation generates a ranking between 1 and 4 of the relative safety and comfort of a segment or intersection for bicyclists or pedestrians based on roadway and intersection characteristics (*e.g.* number of lanes, travel speed and volume, intersection control, and the presence of any bicycle or pedestrian facilities). The LTS rating scale recognizes that as vehicle speeds and volumes increase, enhanced pedestrian and bicycle facilities are needed to maintain a system that is accessible for all users. ODOT uses the following definitions to define the LTS rankings[4]:

- Low Stress (LTS 1) – represents little traffic stress and requires less attention, so is suitable for all cyclists or pedestrians. Traffic speeds are low and there is no more than one lane in each direction. Intersections are easily crossed by children and adults. Typical locations include residential local streets, separated bike paths/cycle tracks, and sidewalks/shared use paths with a buffer between vehicles and cyclists or pedestrians.
- Moderate Stress (LTS 2) – represents little traffic stress, but requires more attention than young children would be expected to deal with, so is suitable for teen and adult cyclists or pedestrians with adequate bike handling skills. Traffic speeds are slightly higher but speed differentials are still low and roadways can be up to three lanes wide for both directions. Intersections are not difficult to cross for most teenagers and adults. Typical locations include collector-level streets with bike lanes or a central business district. Sidewalks should generally be in good condition with limited impediments for mobility device users.
- High Stress (LTS 3) – represents moderate stress and is suitable for most observant adult cyclists or pedestrians. Traffic speeds are moderate but can be on roadways up to five lanes wide in both directions, and there can be limited buffers between travel lanes and the

[4] ODOT. *Analysis and Procedures Manual, V. 2, Ch. 14 Multimodal Analysis*. November, 2018.

sidewalk. Intersections are still perceived to be safe by most adults. Typical locations include low-speed arterials with bike lanes or moderate speed non-multilane roadways. Select segments of these roadways may be impassable to pedestrians who require a mobility device.

- Extreme Stress (LTS 4) – represents high stress and suitable for experienced and skilled cyclists or able-bodied adult pedestrians. Traffic speeds are moderate to high and can be on roadways from two to over five lanes wide for both directions with limited or no pedestrian facilities. Intersections can be complex, wide, and or high volume/speed that can be perceived as unsafe by adults and are difficult to cross. Typical locations include high-speed or multilane roadways with narrow or no bike lanes and sidewalks. Roadways without sidewalks are also included in this category.

Data for this analysis relied on project team field reviews and publicly available data sets, including:

- Google Maps
- Google Streetview
- ODOT TransGIS[5]

Results of the LTS evaluation were mapped and modified to match conditions within Newport. These modifications include:

Bicycle LTS

- Improve LTS on road segments with marked centerlines and one lane in each direction on collector streets with residential character consistent with streets with unmarked centerlines (Exhibit 14-5)
- Worsen LTS for signalized study intersections with offset legs (*e.g.* US 101/6th Street)

Pedestrian LTS

- Improve LTS on road segments with heavy on-street parking utilization (*e.g.* Bay Boulevard and Nye Beach) consistent for streets with buffers (Exhibit 14-17 and 14-18)

Intersection Operations

Traffic operations at study intersections were reported using Synchro 10 and Highway Capacity Manual (HCM) 6th Edition Methodology based on traffic counts collected July 11, 2019. Collecting traffic counts during July captures typical traffic conditions during the summer peak which

[5] ODOT. *TransGIS.* https://gis.odot.state.or.us/transgis/.

represents the 30th highest annual hour for traffic volumes (30 HV). Intersection geometry was collected using Google Maps/Streetview and field verified, if necessary.

Signalized intersection volume to capacity (v/c) ratios were post-processed at signalized intersections based on HCM 6th Edition Chapter 19[6] (APM Section 4). If HCM 6th Edition results could not be reported for signals, v/c ratios were reported using HCM 2000. Mainline through movement v/c ratios were post-processed at unsignalized intersections consistent with Chapter 12 of the APM[7] (APM Section 12.3.1).

Planning mobility targets for all study intersections on highway segments (*i.e.* US 101 and US 20) are outlined in Table 6 of the Oregon Highway Plan (OHP)[8] based on the highway classification, posted speed, and type of area. Newport does not have adopted mobility targets for study intersections on local streets; the OHP standards for district/local interest roads were applied at these locations instead. Mobility targets for each study intersection are summarized below in Table 4.

Existing Transportation Conditions

Safety

Crash Trends

930 crashes, seen in Figure 1, occurred within Newport over the five-year analysis period (2013-2017). There were on average 186 crashes each year, including:

- 322 rear-end crashes (35% of crashes)
- 234 turning movement crashes (25% of crashes)
- 31 pedestrian crashes (3% of crashes)
- 14 bicycle crashes (2% of crashes)

Crashes within Newport were generally not severe; over the analysis period:

- 3 crashes resulted in fatalities
- 20 crashes resulted in serious injuries (Injury A)

---

[6] Transportation Research Board. *Highway Capacity Manual, 6th Ed., Ch. 19 Signalized Intersections.* 2016.

[7] ODOT. *Analysis and Procedures Manual, V. 2, Ch. 12 Unsignalized Intersection Analysis*. July, 2018.

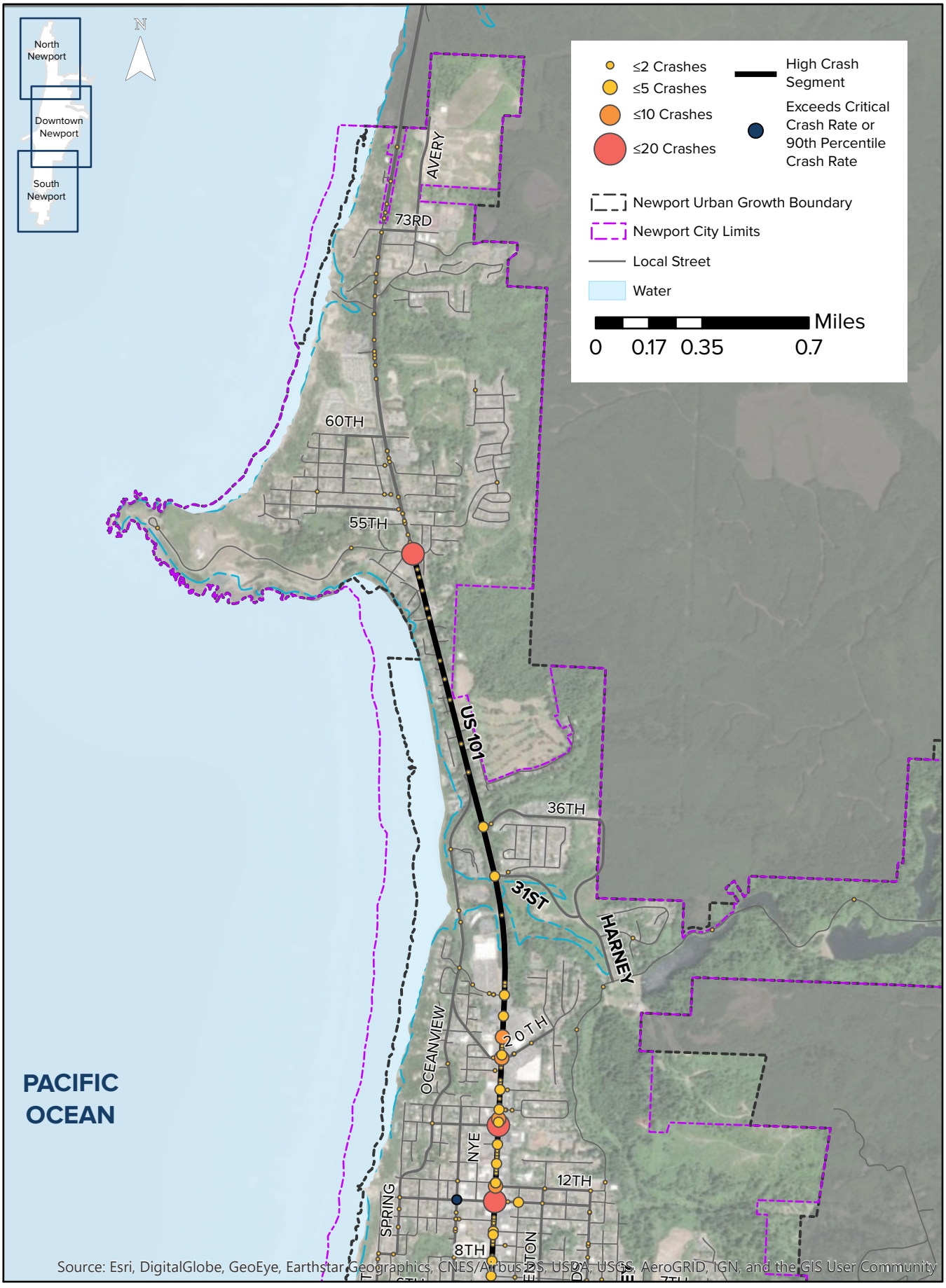
[8] ODOT. *Oregon Highway Plan, Table 6.* August, 2005.

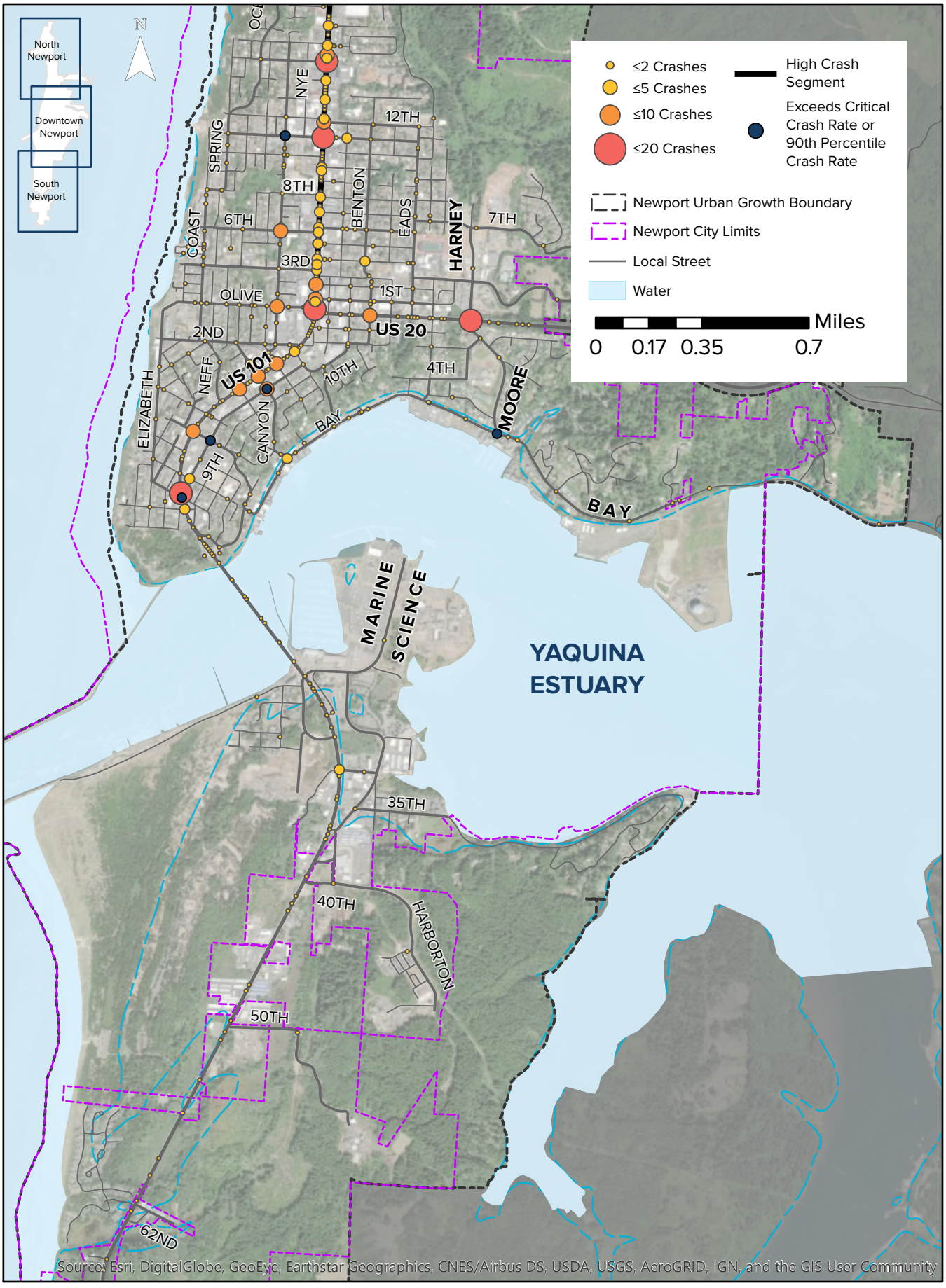
- 85% of crashes resulted in property damage only or lead to minor injuries (Injury C)

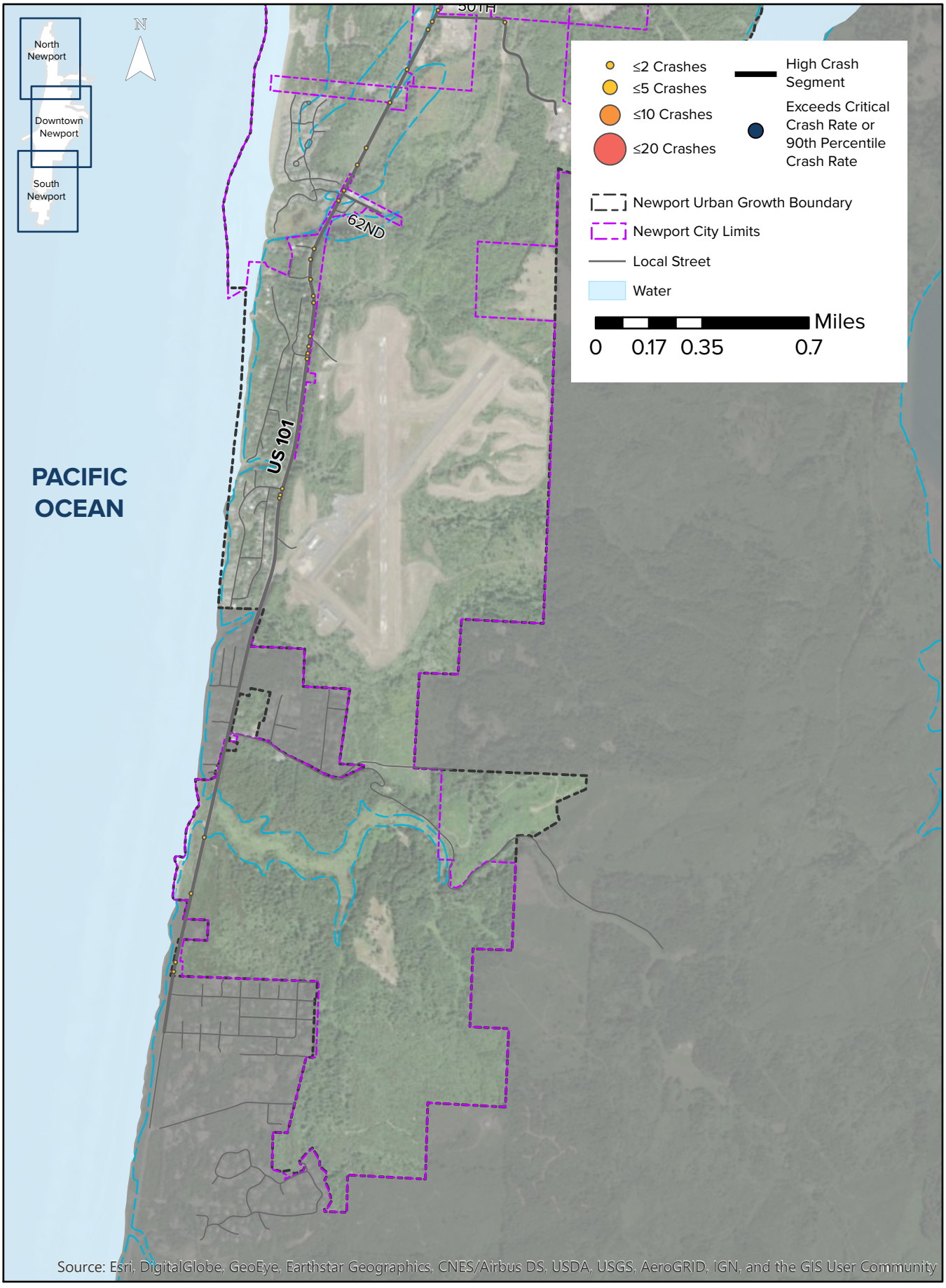
The five most common driver errors are responsible for nearly 65 percent of all crashes in Newport, including:

- Did Not Yield Right-of-Way (28 percent)
- Followed Too Closely (14 percent)
- Other Improper Driving (9 percent)
- Inattention (6 percent)
- Failed to Avoid Vehicle Ahead (6 percent)

Risky behavior, including alcohol/drug use or speeding was implicated in 41 and 39 crashes, respectively. These crashes tend to be more severe; alcohol/drug use and speeding is involved in 17% and 9% of high-severity crashes, respectively, despite being a factor in only 4% of crashes.


North Newport
Downtown Newport
South Newport
N
≤2 Crashes
≤5 Crashes
≤10 Crashes
≤20 Crashes
High Crash Segment
Exceeds Critical Crash Rate or 90th Percentile Crash Rate
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
AVERY
73RD
60TH
55TH
US 101
36TH
31ST
HARNEY
20TH
OCEANVIEW
NYE
12TH
SPRING
8TH
PACIFIC OCEAN
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


North Newport
Downtown Newport
South Newport
N
≤2 Crashes
≤5 Crashes
≤10 Crashes
≤20 Crashes
High Crash Segment
Exceeds Critical Crash Rate or 90th Percentile Crash Rate
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
NYE
12TH
SPRING
8TH
BENTON
EADS
HARNEY
7TH
COAST
6TH
3RD
OLIVE
1ST
US 20
2ND
US 101
NEFF
10TH
4TH
MOORE
ELIZABETH
CANYON
BAY
9TH
BAY
MARINE SCIENCE
YAQUINA ESTUARY
35TH
40TH
HARBORTON
50TH
62ND
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


North Newport
Downtown Newport
South Newport
N
30TH
62ND
US 101
PACIFIC OCEAN
≤2 Crashes
≤5 Crashes
≤10 Crashes
≤20 Crashes
High Crash Segment
Exceeds Critical Crash Rate or 90th Percentile Crash Rate
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Pedestrian Safety

31 pedestrian crashes occurred over the analysis period. Crashes involving pedestrians were most common in areas with higher levels of pedestrian activity, including downtown Newport (14 crashes) and at the Bay Boulevard/Fall Street intersection (two crashes).

One pedestrian fatality occurred during the analysis period near the intersection of US 101 and Ferry Slip Road. Pedestrians sustained severe injuries in seven crashes at the following intersections, and moderate injuries were sustained in 10 additional crashes at the following locations:

- US 101/N 11th Street
- US 101/N 1st Street
- US 101/Bayley Street
- Benton Street/N 4th Street
- Nye Street/N 6th Street
- Surf Street/S 4th Street
- Fall Street/Bay Boulevard

The majority of pedestrian-involved crashes (52 percent) were caused by drivers failing to yield the right of way; about 10 percent of the crashes were caused by a pedestrian illegally in the roadway. Over two-thirds (68%) of pedestrian-involved crashes occurred during the day or at night in a location with street lighting.

Bicycle Safety

14 bicyclist crashes occurred over the analysis period, primarily at intersections along US 101 like the US 101/NE 3rd Street intersection (three crashes) or US 101/NE 11th Street intersection (two crashes). A cyclist sustained severe injuries in one of the crashes, while moderate injuries were sustained in nine of the crashes.

Most of the crashes involving a bicyclist were caused by drivers failing to yield the right of way when turning or crossing (64 percent). The remaining crashes were caused by either a bicycle or motorist failing to obey traffic control devices. All reported bicycle crashes occurred during the day.

Intersection Safety

55% of crashes occur at intersections with Newport. Crash rates describe the annual number of crashes relative to the total traffic entering the intersection and can be used to flag intersections with safety deficiencies by comparing to other similar locations (*i.e.* the same control type and number of legs). ODOT uses both the critical crash rate and the statewide 90th percentile crash rate to flag safety

deficiencies. The critical crash rate is calculated for each intersection type based on the average crash rate for study intersections and the selected statistical significance (typically 95th percentile). ODOT also maintains statewide critical crash rates and 90th percentile crash rates for each intersection type. Both the critical crash rate and the 90th percentile crash rates are used to flag intersections whose observed crash rate significantly exceeds the average crash rate of similar intersections in either the study or Oregon. There were four intersections with crash rates that exceeded either the critical crash rate or 90th percentile crash rate as shown in Table 1. Additionally, nine other intersections, also shown in Table 1, experienced an excess proportion of a specific crash type. The crash rates for all study intersections are provided in the appendix.

Table 1: Intersections with High Crash Rates

#	Location	Total Collisions (2013 to 2017)	Observed Crash Rate (per MEV)	Critical Crash Rate (per MEV)	Over Critical Crash Rate	90th Percentile Crash Rate (per MEV)	Over 90th Percentile Rate	Excess Proportion Crash Types**
2	US 101/52nd Street	15	0.46	0.64	No	0.86	No	Rear-End
7	US 101/11th	15	0.31	0.60	No	0.86	No	Bike
8	US 101/6th	15	0.31	0.60	No	0.86	No	Rear-End
12	US 101/Bayley	14	0.37	0.33	**Yes**	0.41	No	--
16	11th/Nye	5	0.96	0.62	**Yes**	0.41	**Yes**	--
18	Hurbert/9th	7	0.92	0.53	**Yes**	0.41	**Yes**	--
19	Abbey/9th	3	0.45	0.56	No	0.41	**Yes**	--
20	Bay/Moore	4	0.46	0.39	**Yes**	0.29	**Yes**	--

Per MEV = Crashes per million entering vehicles

** Parameters used: 90% minimum probability, 10% minimum excess proportion. Full results in appendix.

Each intersection with a high crash rate or an excess proportion of crash types is discussed below.

- **US 101/52nd Street (signal):** This four-leg signalized intersection experienced 15 collisions over the five years, including 11 rear-end crashes. Rear-end crashes at this site were typically

caused by a driver following too closely or failing to avoid the vehicle ahead. Most crashes at this site led to injuries (11 of 15).

- **US 101/11th Street (signal):** This is a four-leg signalized intersection; seven crashes occurred here over the five years. Two of the seven crashes involved bicyclists, caused by a driver failing to yield or disregarding the traffic signal. Both crashes led to an injury to the cyclist.
- **US 101/6th Street (signal):** This is four-leg signalized intersection with offset intersection legs for 6th Street. Two-thirds (10 of 15) of the crashes were rear-ends, primarily caused by a driver following too closely or inattention. Most of the crashes involved property damage only (9 of 15).
- **US 101/Bayley Street (Two-Way Stop Control, or TWSC):** This is a four-leg intersection with stop control on Bayley Street. A Rectangular Rapid Flashing Beacon (RRFB) is located immediately north of the intersection, along US 101, and the 9th Street/US 101 intersection is also located in close proximity which could contribute to a higher crash rate at this location. One pedestrian crash also occurred at this site over the five years caused by careless driving. Over half of the crashes resulted in injuries (10 of 14).
- **11th Street/Nye Street (TWSC):** This is a four-leg intersection with stop control on Nye Street where five crashes occurred over the five years. Both the critical crash rate and 90th percentile crash rate are exceeded at this site, in part due to the relatively low entering volume among study intersections on local streets. All crashes at this site were angle crashes and were caused by a driver failing to yield or drivers who passed the stop sign. All five crashes resulted in property damage only.
- **Hurbert Street/9th Street (TWSC):** This is a four-leg intersection with stop control on 9th Street. The critical crash rate and 90th percentile crash rate are both exceeded at this site, likely due to the comparatively low entering volume. Additionally, this site experienced a high number of angle crashes (6 of 7) which were caused by failure to yield or vehicles passing the stop sign. Over half of the crashes (5 of 7) resulted in injuries.
- **Abbey Street/9th Street (TWSC):** This is a four-leg intersection with stop control on 9th Street. While the observed intersection crash rate is lower than the critical crash rate, this site exceeds the statewide 90th percentile crash rate. Over the past five years, all three crashes at this site were angle crashes caused by either passing the stop sign or failure to yield. Two of the crashes led to injuries and one crash resulted in property damage only.
- **Bay Boulevard/Moore Drive (TWSC):** This three-leg skewed intersection with stop control on the west leg (Bay Boulevard) had four crashes over the five years. Both the critical crash rate and 90th percentile crash rates are exceeded at this site. Half of the crashes involved

turning movements, caused by either failure to yield or passing the stop sign which could be exacerbated due to the sites' geometry. This intersection was realigned to reduce some of the intersection skew between August, 2016, and July, 2019; the impacts of this geometric change cannot be assessed from the available data. Half of the crashes resulted in property damage only (2 of 4).

Segment Safety

One state highway segment was identified as having a high crash rate which exceeded the statewide average crash rate for similar roadways, as shown in Table 2. The appendix includes additional details, including analysis results for all segments.

Table 2: Highway Segment with High Crash Rates

Highway (limits)	Distance (miles)	Total Collisions (2013 to 2017)	Observed Crash Rate (per MVMT)	Statewide Collison Rate (per MVMT)	Over Statewide Collison Rate
US 101- N 52nd Street/Lighthouse Drive to US 20	2.75	305	3.21	3.00	**Yes**

Per MVMT = Crashes per million vehicle miles traveled

US 101 – N 52nd Street/Lighthouse Drive to US 20 is a three- to five-lane two-way roadway segment which comprises the main north-south corridor in Newport. Crash causes on this segment reflect the dense urban land uses and are primarily categorized as failure to yield, following too closely, and failing to avoid the vehicle ahead. Most crashes (59 percent) occurred at intersections. There were five pedestrian-involved collisions and eight bicycle-involved collisions along this segment.

Additionally, according to the ODOT 2017 SPIS report (data reported between 2014 and 2016), and 2016 SPIS report (data reported between 2013 and 2015), several locations in Newport rank among the top most hazardous sections of highways in Oregon. The identified locations are listed below.

- US 101 around the N 20th Street intersection (top 10 percent segment, 2017; top 10 percent segment, 2016)
- US 101 around the N 16th Street intersection (top 10 percent segment, 2017)
- US 101 around the N 3rd Street intersection (top 10 percent segment, 2016)
- US 101 around the N 2nd Street intersection (top 10 percent segment, 2017)

- US 101 around the N 1st Street intersection (top 5 percent segment, 2017)
- US 101 around the SW Lee Street intersection (top 10 percent segment, 2016)
- US 101 around the SW Hurbert Street intersection (top 10 percent segment, 2016)
- US 101 around the SW Bayley Street intersection (top 5 percent segment, 2017)
- US 101 around the SW Bay Street intersection (top 5 percent segment, 2016)

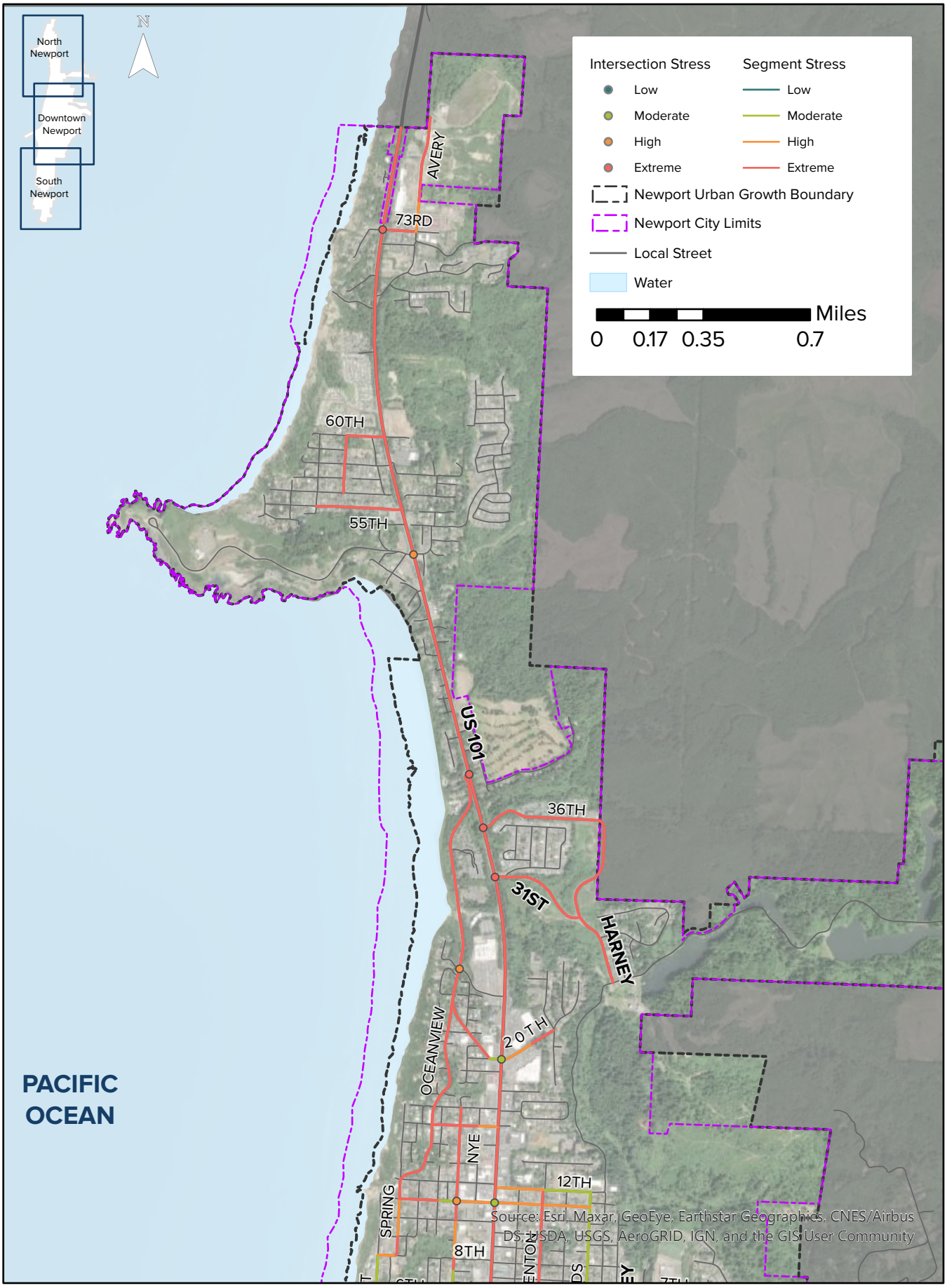
Pedestrian LTS

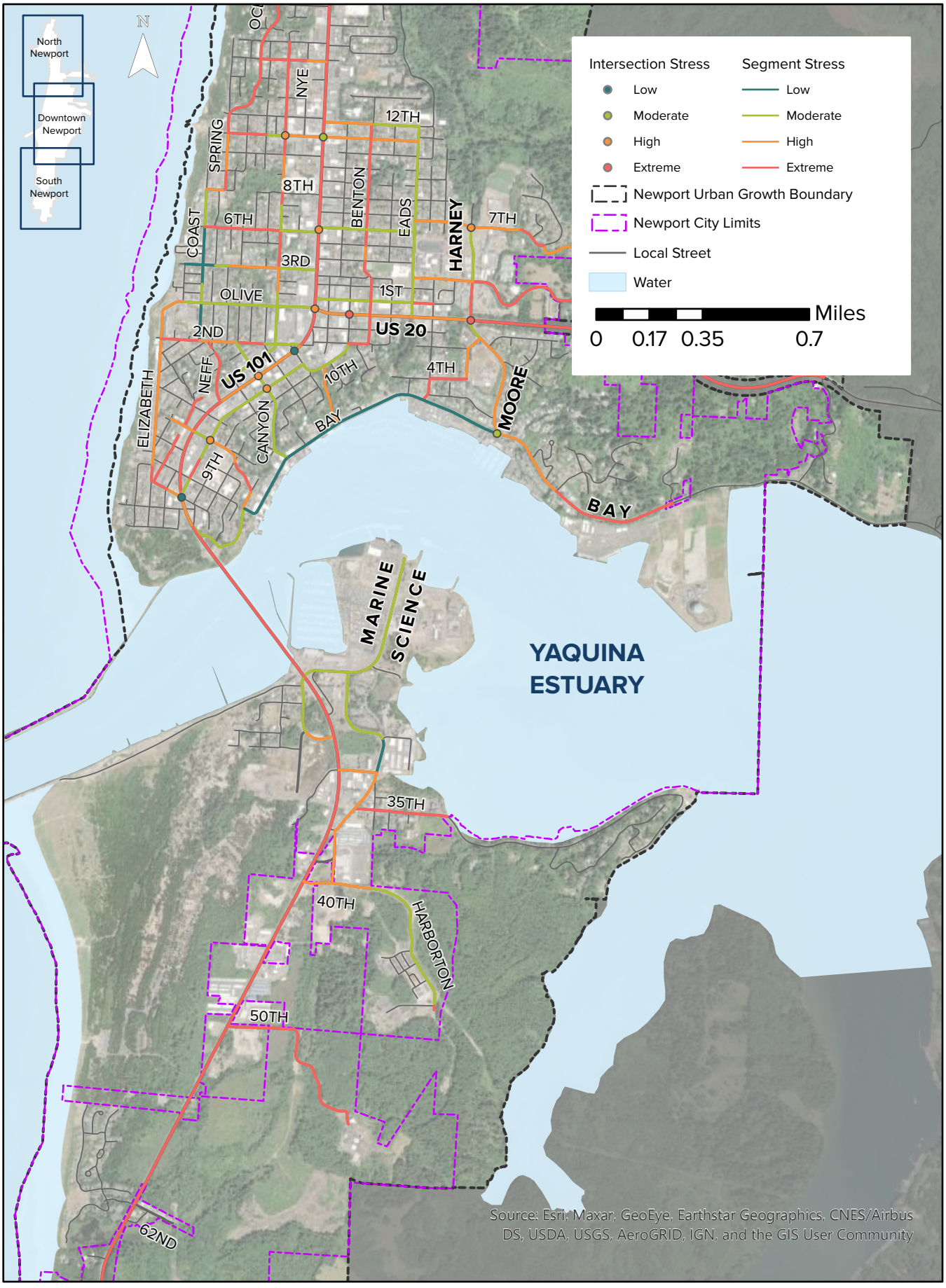
Pedestrians in Newport currently face a variety of sidewalk conditions throughout the City. When sidewalks are provided along an arterial or collector roadway in Newport, it is typically designated with moderate or high stress (LTS 2 or 3) which is suitable for most teenagers and adults. Only a few roadways in Newport operate with low stress (LTS 1) which is suitable for users of all ages and abilities. The existing pedestrian LTS is summarized in Figure 2. The following factors contribute to different LTS levels in the City:

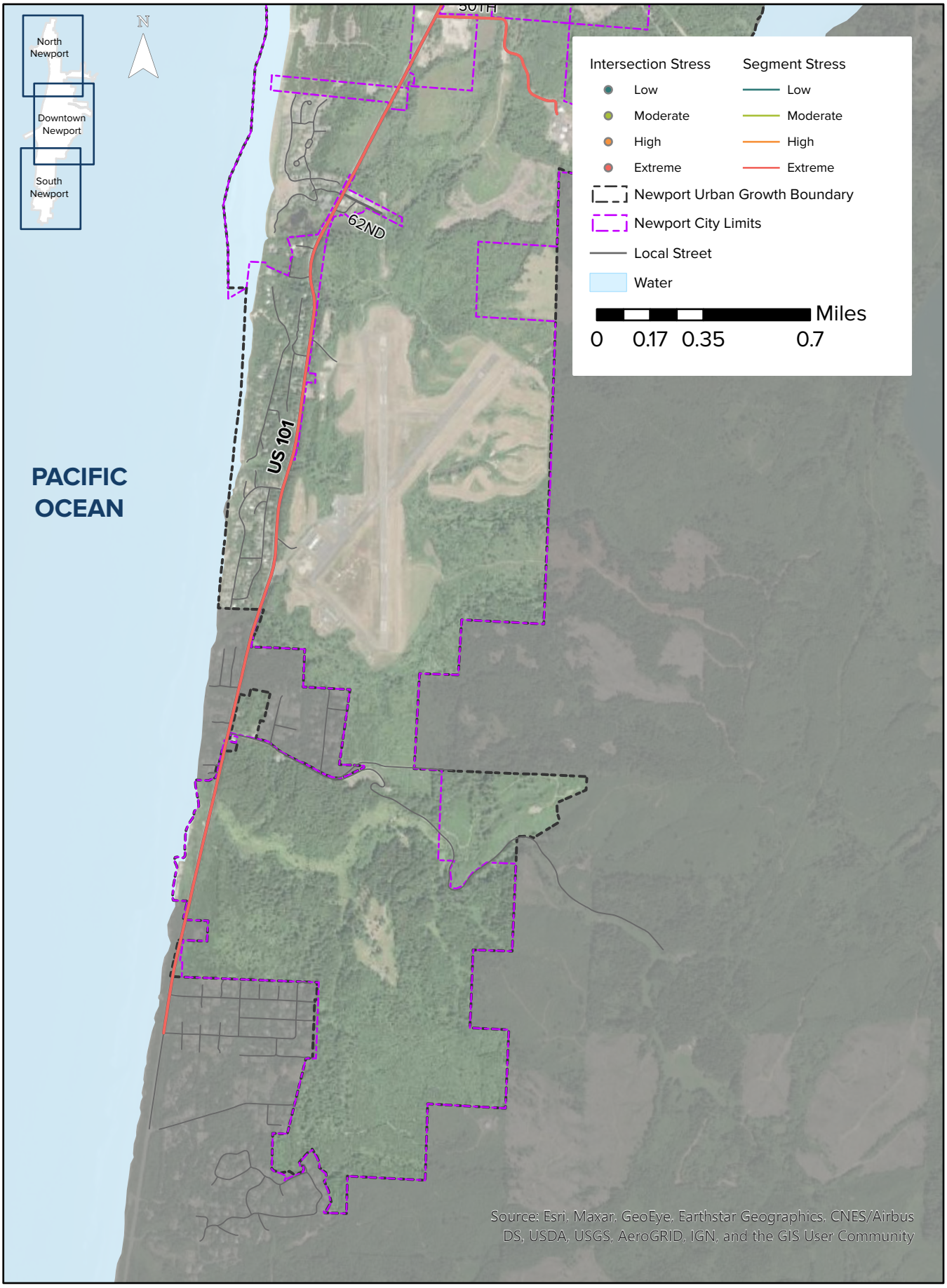
- Presence of buffers: buffers provide greater physical separation between pedestrians and vehicles creating a more comfortable environment for pedestrians. Many streets within Newport only have curb-tight sidewalks or a narrow landscape buffer which restricts these segments to moderate stress (LTS 2) or higher stress, except in pedestrian oriented districts (*i.e.* Agate Beach or Bay Boulevard) where wider sidewalks or other street furnishings create provide additional separation from vehicles for pedestrians
- Lack of sidewalks: older or more rural streets within Newport often lack sidewalks which restricts these segments to extreme stress (LTS 4) which is only suitable for able-bodied adults. In the event sidewalks are provided on at least one side of the street, these segments generally achieved high stress ratings (LTS 3)

Intersections, both signalized and unsignalized, also pose many challenges for pedestrians; the majority of study intersections operate at high or extreme stress (LTS 3 or 4). Key factors that degrade the LTS at intersections include:

- Lack of ADA compliant curb ramps: only six study intersections have curb ramps that meet ADA standards for all intersection legs
- Complex elements at signals, including: permissive right turns, channelized right turns, offset intersection legs, or crosswalk closures
- Limited medians on high-speed, high-volume routes to create pedestrian refuges or provide other enhancements (*e.g.* rectangular rapid flashing beacons or RRFBs)


North Newport
Downtown Newport
South Newport
N
Intersection Stress
Low
Moderate
High
Extreme
Segment Stress
Low
Moderate
High
Extreme
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
AVERY
73RD
60TH
55TH
US 101
36TH
31ST
HARNEY
20TH
OCEANVIEW
NYE
12TH
SPRING
8TH
PACIFIC OCEAN
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


North Newport
Downtown Newport
South Newport
N
Intersection Stress
Low
Moderate
High
Extreme
Segment Stress
Low
Moderate
High
Extreme
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
OCEAN
NYE
SPRING
12TH
8TH
BENTON
EADS
HARNEY
7TH
COAST
6TH
3RD
OLIVE
1ST
2ND
US 20
US 101
NEFF
10TH
4TH
MOORE
ELIZABETH
CANYON
BAY
9TH
BAY
MARINE SCIENCE
YAQUINA ESTUARY
35TH
40TH
HARBORTON
50TH
62ND
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


North Newport
Downtown Newport
South Newport
N
30TH
62ND
US 101
PACIFIC OCEAN
Intersection Stress
Low
Moderate
High
Extreme
Segment Stress
Low
Moderate
High
Extreme
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Bicycle LTS

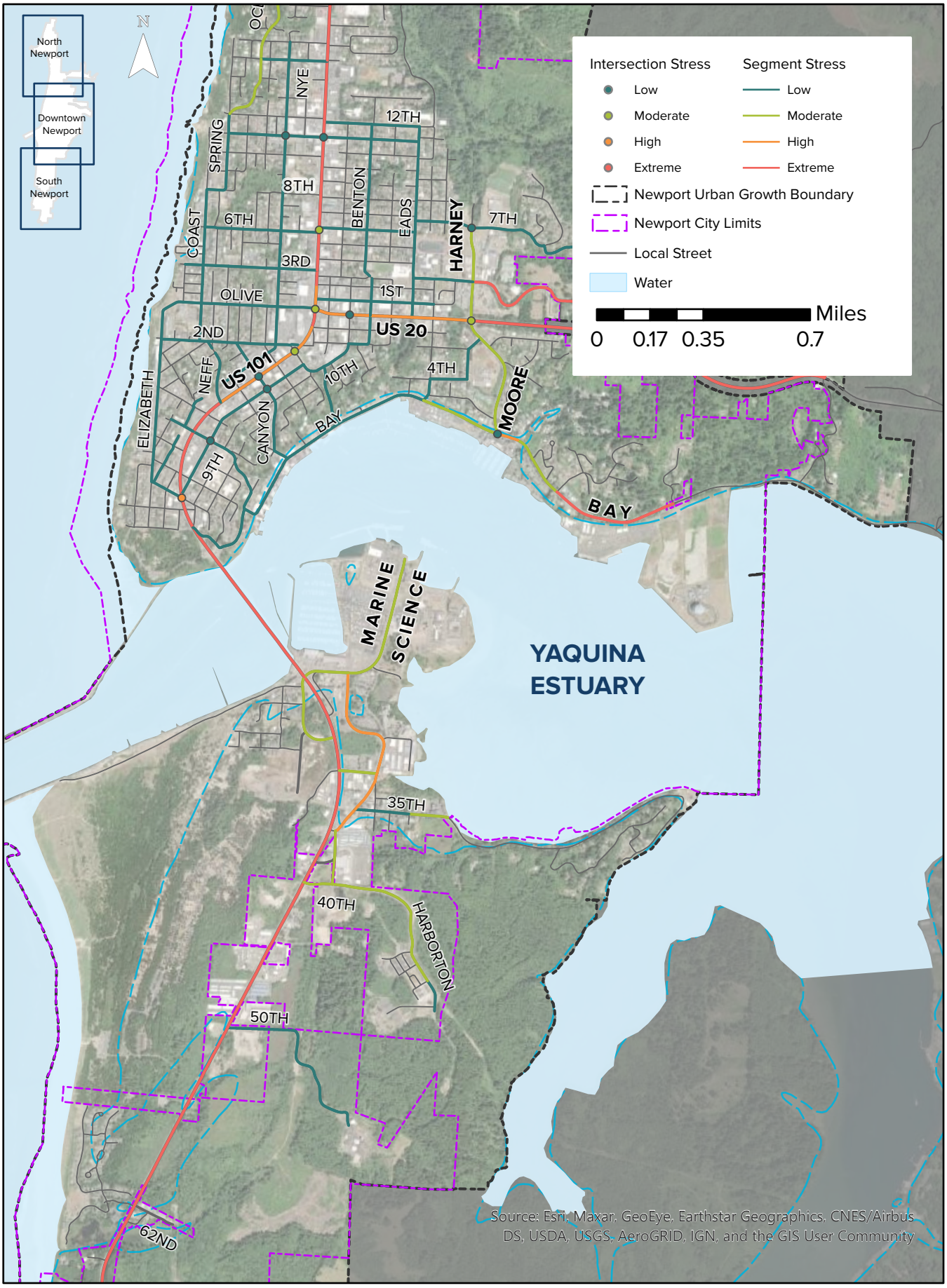
The Level of Traffic Stress (LTS) for bicyclists is generally good in Newport although major barriers to connectivity do exist (see Figure 3). Most collector streets in Newport have characteristics similar to local streets (*e.g.* 25 mph speeds, two lanes, shared roadway environments) and operate at low stress (LTS 1) which is suitable for cyclists of all ages and abilities. The LTS tends to increase on collector or arterial roadways away from Newport's downtown core, driven by a higher speed (30 mph or greater), shared roadway environment. The LTS is highest on US 101 and US 20 for Newport which creates a major barrier for the bicycle network connectivity, particularly north of Oceanview Drive and across the Yaquina Bay Bridge. Most segments of US 101 and US 20 within Newport are extreme stress (LTS 4) which is only suitable for experienced and confident cyclists, and even within the downtown core, US 101 and US 20 have a high bicycle stress (LTS 3), deterring many cyclists from riding on these facilities. Key findings for the segment bicycle LTS include:

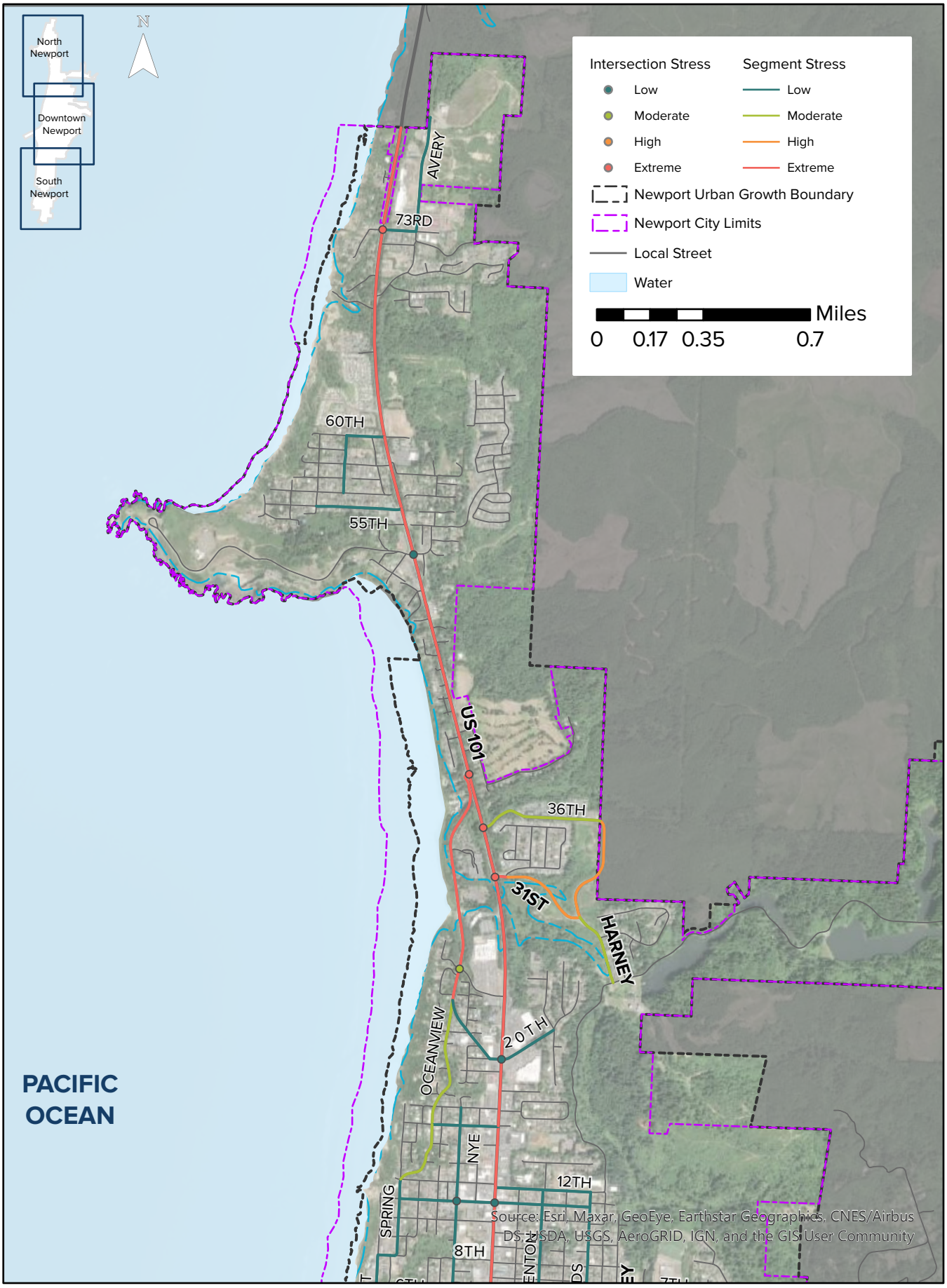
- Most collectors in Newport's downtown core operate at low stress (LTS 1) due to a low-speed, shared roadway environment
- Adding bicycle facilities on collectors or minor arterials with higher speeds (*e.g.* Oceanview Drive north of 12th Street) could reduce the LTS, although many of these roadways in Newport have a constrained roadway width and tend to be more rural in character
- US 101 and US 20 have a high or extreme LTS (3 or 4) due to their lack of bicycle facilities; even in locations with existing on-street bike lanes (*i.e.* near the US 101/NE 52nd Street/NW Lighthouse Drive intersection), the bicycle LTS remains high due to high operating speeds for vehicles
- Due to Newport's topography, US 101 is the primary north-south route and provides the only connection for vehicles or bicyclists in certain locations (*e.g.* Yaquina Bay Bridge) creating a significant barrier for bicyclists

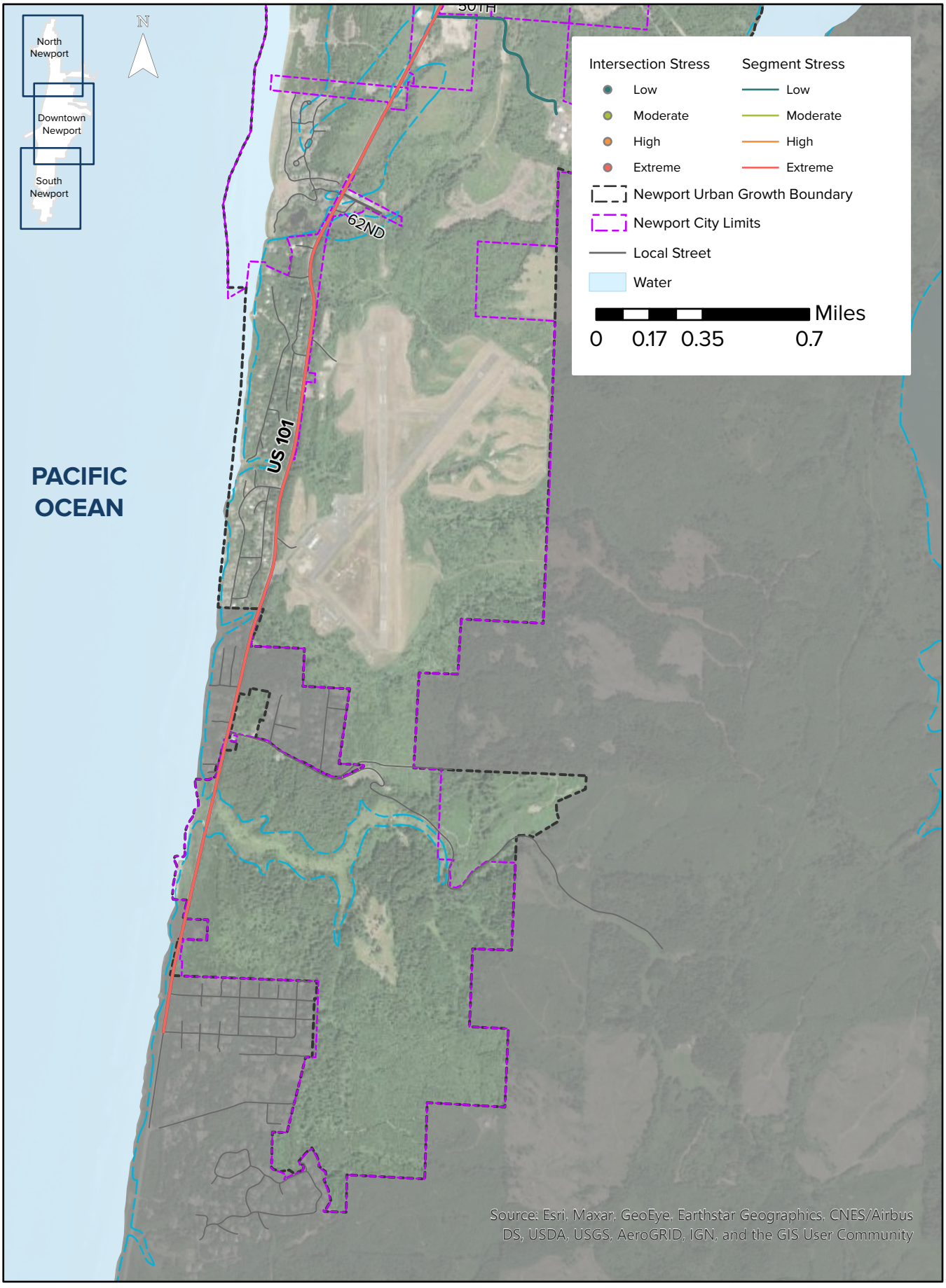
Signalized intersections generally provide the best opportunities for cyclists to cross US 101 or US 20, and most signalized study intersections along these corridors operate at low or moderate stress (LTS 1 or 2). Signalized study intersections with a lower LTS generally had one of the following characteristics which create a more challenging environment for cyclists to navigate:

- A three-lane approach (US 101/US 20)
- Offset intersection legs (US 101/N 6th Street)
- Potential sight distance limitation (US 20/Harney Street/Moore Drive)

Most unsignalized study intersections along US 101 had a high or extreme LTS (either 3 or 4) which is driven by the speed and the wide cross section for US 101. Conversely, unsignalized study intersections on local streets primarily had a low stress ranking (LTS 1) driven by their low speed and narrow cross section.


North Newport
Downtown Newport
South Newport
N
Intersection Stress
Low
Moderate
High
Extreme
Segment Stress
Low
Moderate
High
Extreme
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
OCEAN
NYE
SPRING
12TH
8TH
COAST
6TH
BENTON
EADS
HARNEY
7TH
3RD
OLIVE
1ST
2ND
US 20
US 101
NEFF
10TH
4TH
MOORE
ELIZABETH
CANYON
BAY
9TH
BAY
MARINE SCIENCE
YAQUINA ESTUARY
35TH
40TH
HARBORTON
50TH
62ND
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


North Newport
Downtown Newport
South Newport
N
Intersection Stress
Low
Moderate
High
Extreme
Segment Stress
Low
Moderate
High
Extreme
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
AVERY
73RD
60TH
55TH
US 101
36TH
31ST
HARNEY
20TH
OCEANVIEW
NYE
12TH
SPRING
8TH
PACIFIC OCEAN
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


North Newport
Downtown Newport
South Newport
N
30TH
62ND
US 101
PACIFIC OCEAN
Intersection Stress
Low
Moderate
High
Extreme
Segment Stress
Low
Moderate
High
Extreme
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Existing Transit Service

Lincoln County Transit provides basic transit service to Newport which includes a city loop and inter-city transit service to Lincoln City, Siletz, Yachats, Corvallis, and Albany. Characteristics of this transit service are:

- The Newport city loop completes a full loop through Newport six times each day, seven days a week, and in the evening, there is an additional southbound run to City Hall. Key destinations within Newport served by transit include grocery stores and other shopping, restaurants, local hotels and residences, Newport City Hall, post office, Oregon Coast Aquarium, NOAA facilities, and Nye Beach. Most destinations served by transit are north of Yaquina Bay Bridge or in the South Beach area. City loop buses are wheelchair accessible with bicycle racks.
- Inter-city transit service operates routes to Corvallis and Albany four times each day, to Lincoln City four times each day, to Yachats four times each day, and to Siletz six times a day between Monday and Saturday.
- Lincoln County Transit also operates Dial-A-Ride transit in Newport between Monday and Friday.
- Most Newport residents are within a half mile of a transit stop, and in the downtown core, most residents are within a quarter mile of a transit stop.
- Limited stop amenities (including many unmarked stops) makes the transit system challenging to navigate, particularly for visitors.
- Long headways (up to 90 minutes) and limited service hours (approximately between 7 am and 5pm) for the Newport city loop transit service limits the utility of this service for residents and visitors.
- Transit service is not currently provided south of SE 50th Avenue.

Intersection Operations

Intersection operations were analyzed for existing (2019) conditions and compared to the mobility targets developed by ODOT which use the volume to capacity (v/c) ratio for a performance measure at each study intersection. Mobility targets define an acceptable level of congestion for roadways within Oregon which depends on the roadway functional class and posted speed; these targets are applied to evaluate transportation system improvements and identify potential improvements. Vehicle delay and level of service (LOS) are two other commonly reported operations metrics which

can more directly translate to a driver's experience when travelling through an intersection. The correlation between vehicle delay and LOS is summarized below in Table 3 for both signalized and unsignalized intersections.

Table 3: HCM 6th Edition LOS Thresholds[9]

Level of Service	Average Control Delay (s/veh) – Signalized Intersections	Average Control Delay (s/veh) – Unsignalized Intersections	Description
A	≤10	0-10	Free flow
B	>10-20	>10-15	Stable flow (slight delays)
C	>20-35	>15-25	Stable flow (acceptable delays)
D	>35-55	>25-35	Approaching unstable flow (tolerable delay)
E	>55-80	>35-50	Unstable flow (intolerable delay)
F	>80	>50	Forced flow (congested and queues fail to clear)

As shown in Table 4, the intersection of US 101/US 20 currently exceeds its mobility target (v/c ratio – 0.92). All other study intersections operate well within the currently adopted mobility targets. Although these intersections meet the mobility target, many drivers attempting to turn left from an unsignalized side street approach to US 101 or US 20 experience high delay during peak travel periods (>35 seconds or LOS E/F is common at many unsignalized intersections). These approaches typically require more time for an acceptable gap in traffic to make a left turn onto the mainline.

[9] *Highway Capacity Manual 2010*. http://www.seatacwa.gov/home/showdocument?id=11371

Table 4: Study Intersection Operations

#	Study Intersection	Intersection Control	Mobility Target	v/c Ratio	Delay	LOS	Exceeds Mobility Target
1	US 101/73rd	TWSC	0.80/0.95	0.41/0.46	10.8/45.8	B/E	No
2	US 101/52nd	Signal	0.80	0.68*	25.9	C	No
3	US 101/Oceanview	TWSC	0.80/0.95	0.58/0.36	9.9/28.5	A/D	No
4	US 101/36th	TWSC	0.80/0.95	0.58/0.16	10.3/23.3	B/C	No
5	US 101/31st	TWSC	0.80/0.95	0.61/0.16	10.7/24.7	B/C	No
6	US 101/20th	Signal	0.90	0.72*	29.4*	C*	No
7	US 101/11th	Signal	0.90	0.54	5.4	A	No
8	US 101/6th	Signal	0.90	0.69	21.7	C	No
9	US 101/US 20	Signal	0.85	0.92	61.7	E	**Yes**
10	US 101/Angle	TWSC	0.90/0.95	0.37/0.71	10.8/168.5	B/F	No
11	US 101/Hurbert	Signal	0.90	0.74	34.8	C	No
12	US 101/Bayley	UTWSC	0.90/0.95	0.33/0.39	11.2/36.4	B/E	No
13	US 20/Benton	TWSC	0.85/0.95	0.43/0.75	9.8/49.4	A/E	No
14	US 20/Moore	Signal	0.85	0.68	18.8	B	No
15	Oceanview/25th	TWSC	0.95/0.95	0.12/0.08	7.7/10.6	A/B	No
16	11th/Nye	TWSC	0.95/0.95	0.03/0.21	7.3/10.3	A/B	No
17	Harney/7th	AWSC	0.95	0.21	9.8	A	No
18	Hurbert/9th	TWSC	0.95/0.95	0.06/0.41	7.4/14.1	A/B	No
19	Abbey/9th	TWSC	0.95/0.95	0.07/0.21	7.6/12.5	A/B	No

20	Bay/Moore	TWSC	0.95/0.95	0.09/0.2	7.6/11.4	A/B	No

*Reported using HCM 2000

Note: Intersection operations are reported for the entire intersection at traffic signals, for the worst case major street turn movement/worst case minor street turn movement at two-way stop control (TWSC) intersections, and for the worst case turn movement at all-way stop control (AWSC) intersections.

Poor intersection operations is driven by both high seasonal traffic demands and commuting patterns for residents and employees in Newport. Newport's position along the Oregon Coast and US 101 leads to significant variations in traffic throughout the year; traffic volumes along US 101 are approximately 20% higher during July and August compared to average weekday volumes. Newport is also a major employment destination along the Oregon Coast with major employers including Lincoln County, Oregon State University, NOAA, the fishing industry, and the tourism industry. However, many Newport residents still choose to work outside of the city. Approximately 50% of Newport residents commute more than 10 miles to work with key destinations including Corvallis and other coastal towns, while 50% of Newport workers commute more than 10 miles to work from other coastal towns. Similarly, nearly 70% of workers employed in Newport live outside of Newport city limits while almost 55% of Newport's residents work outside of Newport[10].

Key findings

Walking

- Actions to improve driver yielding behavior (*e.g.* signing, lighting, or modified signal phasing) would be effective in reducing the number of crashes involving pedestrians.
- Other enforcement measures (*e.g.* red light cameras) could increase motorist compliance with red signal indications and stop signs.
- The historical built environment (lack of buffered sidewalks) creates a more stressful walking environment within Newport, particularly for high-speed and high-volume facilities like US 101 or US 20.

[10] US Census. *On the Map. Newport, Oregon.* https://onthemap.ces.census.gov/ Accessed December, 2019.

- Many intersections lack ADA-compliant curb ramps, if ramps are even provided, creating a barrier for pedestrians.
- Installing median refuges on high-volume, high-speed facilities, like US 101, creates a lower stress pedestrian environment at existing unsignalized crossings. Locations with RRFBs can further reduce the crossing stress for pedestrians; RRFBs are currently installed on US 101 at SW Bayley Street, SW Abbey Street, SW Angle Street, NW 3rd Street, NE 10th Street, and NW 15th Street.
- Due to Newport's topography, US 101 is the primary north-south route and provides the only connection for vehicles or pedestrians in certain locations (*e.g.* Yaquina Bay Bridge) creating a significant barrier for pedestrians.
- Sidewalk infill, an ADA transition plan, and a low-stress parallel route to US 101 could improve pedestrian conditions throughout Newport.

Biking

- Actions to improve driver yielding behavior at intersections (*e.g.* bike boxes, signing, or dedicated signal phases) would be effective in reducing the number of crashes involving bicyclists.
- Other enforcement or education measures (*e.g.* camera enforcement, good driver programs, or cycling skills courses) could improve motorist and bicyclist behavior.
- Most collectors in Newport's downtown core operate at low stress (LTS 1) due to a low-speed, shared roadway environment.
- Adding bicycle facilities on collectors or minor arterials with higher speeds (*e.g.* Oceanview Drive north of 12th Street) could reduce the LTS, although many higher speed roadways currently have a constrained roadway width and tend to be more rural in character. Without significant investments in quality bicycle facilities (*e.g.* shared use paths) on these routes, these roads will likely not be suitable for users of all ages and abilities.
- US 101 and US 20 have high or extreme stress for cyclists(LTS 3 or 4) due to their lack of bicycle facilities; even in locations with existing on-street bike lanes (*i.e.* near the US 101/NE 52nd Street/NW Lighthouse Drive intersection), the bicycle LTS remains high due to high operating speeds for vehicles.
- Due to Newport's topography, US 101 is the primary north-south route and provides the only connection for vehicles or bicyclists in certain locations (*e.g.* Yaquina Bay Bridge) creating a significant barrier for bicyclists.

- Traffic signals provide the best opportunities for bicyclists to cross US 101 due to the speed and total number of lanes although Newport has relatively few traffic signals. While existing RRFBs can serve pedestrians crossing US 101, RRFBs are typically placed only on one intersection leg or mid-block which does not serve cyclists travelling from both directions.
- Developing a comprehensive bicycle network, including a low-stress, parallel route to US 101 would reduce total conflicts between bicycles and vehicles.

Transit

Lincoln County Transit provides service in Newport and manages potential transit improvements. Noted existing needs from Lincoln County's Transit Development Plan[11] include:

- Increase transit frequency and service hours, particularly for midday, evening, and weekend service or for alternate work schedules
- Expand dial-a-ride service areas and increase service hours to allow customers to complete multiple errands
- Create tourist-oriented routes in Newport (*e.g.* Nye Beach to Bayfront)
- Improve transit facilities and stop accessibility
- Improve ease of use through new technology or other public information

Driving

- The US 101/US 20 intersection currently exceeds its mobility target (v/c ratio – 0.92) during the summer peak in Newport (30 HV conditions).
- Side street approaches at unsignalized intersections with US 101 experience high delay, particularly for left-turning vehicles.
- There are limited parallel routes to US 101 for north-south vehicle traffic in Newport including:
    - Between SW Naterlin Drive and SW Abalone Street (Yaquina Bay Bridge)
    - Between NE 12th Street and NE 52nd Street (Northbound traffic only)

11 Lincoln County Transit. Transit Development Plan. 2018.

- Between NW Oceanview Drive and NE 52nd Street (Southbound traffic only)
- South of SE 42nd Street

- Limited parallel routes outside of US 101 can isolate neighborhoods and residential areas in Newport that are located outside the downtown core whose only access is to US 101, including Agate Beach, South Beach, and San-Bay-O Circle
- Local street connectivity is limited in parts of Newport, including within the downtown core. Existing gaps in the street network include SW 7th Street and NE 3rd Street
- Limited parking in tourist-oriented areas such as Nye Beach and the Bay front, particularly during peak summer
- Bay front is a unique working waterfront and is a significant freight generator for the City of Newport. Freight traffic may have difficulties navigating parking vehicles and heavy pedestrian traffic during peak summer.

Appendix

General & Site Information	
Analyst:	Rochelle Starrett
Agency/Company:	DKS
Date:	8/7/2019
Project Name:	Newport TSP

Intersection Crash Data

Intersection	Intersection Type	Year 2013	2014	2015	2016	2017	Total
US 101/73rd	Urban 4ST	0	0	0	0	0	0
US 101/52nd	Urban 4SG	5	0	4	3	3	15
US 101/Oceanview	Urban 3ST	1	0	1	1	0	3
US 101/36th	Urban 3ST	1	3	1	2	0	7
US 101/31st	Urban 3ST	1	0	2	1	0	4
US 101/20th	Urban 4SG	8	5	1	8	4	26
US 101/11th	Urban 4SG	1	1	2	6	5	15
US 101/6th	Urban 4SG	4	3	1	4	3	15
US 101/US 20	Urban 4SG	8	4	9	6	5	32
US 101/Angle	Urban 4ST	3	2	0	5	1	11
US 101/Hurbert	Urban 4SG	3	1	5	4	3	16
US 101/Bayley	Urban 4ST	3	3	2	2	4	14
US 20/Benton	Urban 4ST	1	0	1	2	1	5
US 20/Moore	Urban 4SG	1	2	1	7	5	16
							AWSC
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
	Total	40	24	30	51	34	179

Intersection Population Type Crash Rate				
Average Crash Rate per intersection type				
Intersection Pop. Type	Sum of Crashes	Sum of 5-year MEV	Avg Crash Rate for Ref Pop.	INT in Pop
Rural 3SG	0	0		
Rural 3ST	0	0		
Rural 4SG	0	0		
Rural 4ST	0	0		
Urban 3ST	14	99	0.1421	3
Urban 3SG	0	0		
Urban 4ST	30	130	0.2309	4
Urban 4SG	135	309	0.4372	7

Critical Rate Calculation														
Intersection	AADT Entering Intersection	5-year MEV	Crash Total	Intersection Population Type	Intersection Crash Rate	Reference Population Crash Rate	Critical Rate	Over Critical	APM Exhibit 4-1 Reference Population Crash Rate		Critical Rate	Over Critical	90th Percentile Rate	Over 90th Percentile
US 101/73rd	12,720	23.2	0	Urban 4ST	0.00	APM Exhibit 4-1			0.198		0.37	Under	0.408	Under
US 101/52nd	17,990	32.8	15	Urban 4SG	0.46	0.44	0.64	Under	0.437		0.64	Under	0.86	Under
US 101/Oceanview	18,310	33.4	3	Urban 3ST	0.09	APM Exhibit 4-1			0.131		0.25	Under	0.293	Under
US 101/36th	17,610	32.1	7	Urban 3ST	0.22	APM Exhibit 4-1			0.131		0.25	Under	0.293	Under
US 101/31st	18,080	33.0	4	Urban 3ST	0.12	APM Exhibit 4-1			0.131		0.25	Under	0.293	Under
US 101/20th	26,810	48.9	26	Urban 4SG	0.53	0.44	0.60	Under	0.437		0.60	Under	0.86	Under
US 101/11th	26,530	48.4	15	Urban 4SG	0.31	0.44	0.60	Under	0.437		0.60	Under	0.86	Under
US 101/6th	26,910	49.1	15	Urban 4SG	0.31	0.44	0.60	Under	0.437		0.60	Under	0.86	Under
US 101/US 20	32,740	59.8	32	Urban 4SG	0.54	0.44	0.59	Under	0.437		0.59	Under	0.86	Under
US 101/Angle	20,780	37.9	11	Urban 4ST	0.29	APM Exhibit 4-1			0.198		0.33	Under	0.408	Under
US 101/Hurbert	19,580	35.7	16	Urban 4SG	0.45	0.44	0.63	Under	0.437		0.63	Under	0.86	Under
US 101/Bayley	20,830	38.0	14	Urban 4ST	0.37	APM Exhibit 4-1			0.198		0.33	**Over**	0.408	Under
US 20/Benton	16,850	30.8	5	Urban 4ST	0.16	APM Exhibit 4-1			0.198		0.35	Under	0.408	Under
US 20/Moore	18,650	34.0	16	Urban 4SG	0.47	0.44	0.64	Under	0.437		0.64	Under	0.86	Under

General & Site Information	
Analyst:	Rochelle Starrett
Agency/Company:	DKS
Date:	8/7/2019
Project Name:	Newport TSP

Intersection Crash Data

Intersection	Intersection Type	Year 2013	2014	2015	2016	2017	Total	
Oceanview/25th	Urban 4ST	0	1	1	0	0	2	
11th/Nye	Urban 4ST	2	0	1	1	1	5	
Harney/7th	Rural 4ST	0	0	0	0	0	0	AWSC
Hurbert/9th	Urban 4ST	0	1	1	3	2	7	
Abbey/9th	Urban 4ST	0	0	0	1	2	3	
Bay/Moore	Urban 3ST	2	1	0	0	1	4	
							0	
							0	
							0	
							0	
							0	
							0	
							0	
							0	
							0	
							0	
	Total	4	3	3	5	6	21	

Intersection Population Type Crash Rate				
Average Crash Rate per intersection type				
Intersection Pop. Type	Sum of Crashes	Sum of 5-year MEV	Avg Crash Rate for Ref Pop.	INT in Pop
Rural 3SG	0	0		
Rural 3ST	0	0		
Rural 4SG	0	0		
Rural 4ST	0	7	0.0000	1
Urban 3ST	4	9	0.4634	1
Urban 3SG	0	0		
Urban 4ST	17	25	0.6745	4
Urban 4SG	0	0		

Critical Rate Calculation														
Intersection	AADT Entering Intersection	5-year MEV	Crash Total	Intersection Population Type	Intersection Crash Rate	Reference Population Crash Rate	Critical Rate	Over Critical	APM Exhibit 4-1 Reference Population Crash Rate		Critical Rate	Over Critical	90th Percentile Rate	Over 90th Percentile
Oceanview/25th	3,160	5.8	2	Urban 4ST	0.35	APM Exhibit 4-1			0.198		0.59	Under	0.408	Under
11th/Nye	2,850	5.2	5	Urban 4ST	0.96	APM Exhibit 4-1			0.198		0.62	**Over**	0.408	**Over**
Harney/7th	3,730	6.8	0	Rural 4ST	0.00	APM Exhibit 4-1			0.434		0.92	Under	1.08	Under
Hurbert/9th	4,180	7.6	7	Urban 4ST	0.92	APM Exhibit 4-1			0.198		0.53	**Over**	0.408	**Over**
Abbey/9th	3,620	6.6	3	Urban 4ST	0.45	APM Exhibit 4-1			0.198		0.56	Under	0.408	**Over**
Bay/Moore	4,730	8.6	4	Urban 3ST	0.46	APM Exhibit 4-1			0.131		0.39	**Over**	0.293	**Over**

POSITIVE EXCESS PROPORTION OF CRASHES (FLAGGED IF GREATER THAN 0.1)

Name	Int	Ref Pop	Angle	Back	Bike	Fix	Head	NonCol OTH	Park	Ped	SS-M	SS-O	Turn	Rear
US 101/73rd	1	U4ST												
US 101/52nd	2	U4SG											0.030	0.200
US 101/Oceanview	3	U3ST											0.143	
US 101/36th	4	U3ST											0.000	0.000
US 101/31st	5	U3ST											0.000	0.107
US 101/20th	6	U4SG	0.041	0.047								0.032	0.000	0.005
US 101/11th	7	U4SG	0.000		0.119	0.044				0.030			0.096	0.000
US 101/6th	8	U4SG	0.000										0.030	0.133
US 101/US 20	9	U4SG	0.020	0.033		0.009				0.025		0.018	0.013	0.000
US 101/Angle	10	U4ST	0.106			0.024						0.115	0.015	0.000
US 101/Hurbert	11	U4SG				0.040	0.055			0.088		0.081	0.000	0.000
US 101/Bayley	12	U4ST	0.000			0.005				0.038			0.000	0.214
US 20/Benton	13	U4ST	0.033										0.233	0.000
US 20/Moore	14	U4SG	0.051										0.013	0.092
Oceanview/25th	15													
11th/Nye	16													
Harney/7th - AWSC	17													
Hurbert/9th	18													
Abbey/9th	19													
Bay/Moore	20													

POSITIVE EXCESS PROPORTION OF CRASHES (FLAGGED IF GREATER THAN 0.1)

Name	Int	Ref Pop	Angle	Back	Bike	Fix	Head	NonCol	OTH	Park	Ped	SS-M	SS-O	Turn	Rear
US 101/73rd	1														
US 101/52nd	2														
US 101/Oceanvie	3														
US 101/36th	4														
US 101/31st	5														
US 101/20th	6														
US 101/11th	7														
US 101/6th	8														
US 101/US 20	9														
US 101/Angle	10														
US 101/Hurbert	11														
US 101/Bayley	12														
US 20/Benton	13														
US 20/Moore	14														
Oceanview/25th	15	U4ST					0.441							0.441	
11th/Nye	16	U4ST	0.176												
Harney/7th - AW	17	R4ST													
Hurbert/9th	18	U4ST	0.034												0.084
Abbey/9th	19	U4ST	0.176												
Bay/Moore	20	U3ST	0.000				0.000							0.000	

				Total Crashes							Crash Rate							Statewide Crash Rate						
Start MP	Road	Section	Type	Miles	2017	2016	2015	2014	2013	2012	Total	2017	2016	2015	2014	2013	2012	Avg	2017	2016	2015	2014	2013	2012	Average
136.2	US 101	Newport UA to CL	Suburban	0.33	2	0	0	0	3	0	5	1.63	0	0	0	2.83	0	0.892	1.39	1.41	1.45	1.7	1.45	1.71	1.48
136.53	US 101	Newport CL to Agate Beach	Urban	1.08	7	8	2	4	5	3	26	1.43	1.6	0.41	0.74	0.92	0.55	1.02	2.95	3.2	3.11	2.93	2.82	2.8	3.002
137.61	US 101	Agate Beach (52nd) to US 20	Urban	2.75	49	82	51	61	62	48	305	2.6	4.27	2.71	3.21	3.26	2.52	**3.21**	2.95	3.2	3.11	2.93	2.82	2.8	3.002
140.36	US 101	US 20 to Yaquina Bay Bridge	Urban	2.15	37	40	52	31	26	37	186	2.83	3	3.98	2.36	1.97	2.79	2.828	2.95	3.2	3.11	2.93	2.82	2.8	3.002
0	US 20	US 101 to Newport CL	Urban	0.76	12	14	13	9	7	11	55	3.23	3.69	3.49	2.26	1.75	2.74	2.884	2.95	3.2	3.11	2.93	2.82	2.8	3.002
0.76	US 20	Newport CL to UA	Suburban	1.08	1	8	4	2	1	4	16	0.23	1.79	0.91	0.39	0.19	0.78	0.702	1.39	1.41	1.45	1.7	1.45	1.71	1.48

Data Source: ODOT Crash Rate Tables, 2012-2017

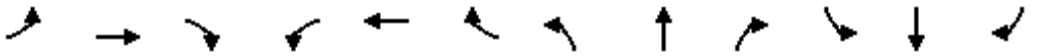
Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	4	59	0	9	3	655	34	13	492	2
Future Vol, veh/h	1	0	4	59	0	9	3	655	34	13	492	2
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	-	-	-	-	-	-	200	-	200	200	-	-
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, %	0	0	0	7	0	0	0	3	38	69	3	0
Mvmt Flow	1	0	4	62	0	9	3	689	36	14	518	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1265	1278	519	1244	1243	689	520	0	0	725	0	0
Stage 1	547	547	-	695	695	-	-	-	-	-	-	-
Stage 2	718	731	-	549	548	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.5	6.2	4.1	-	-	4.79	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4	3.3	2.2	-	-	2.821	-	-
Pot Cap-1 Maneuver	147	168	561	147	176	449	1056	-	-	638	-	-
Stage 1	525	521	-	425	447	-	-	-	-	-	-	-
Stage 2	423	430	-	511	520	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	141	164	561	143	172	449	1056	-	-	638	-	-
Mov Cap-2 Maneuver	141	164	-	143	172	-	-	-	-	-	-	-
Stage 1	523	510	-	424	446	-	-	-	-	-	-	-
Stage 2	413	429	-	496	509	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.4	45.8	0	0.3
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1056	-	-	352	157	638	-	-
HCM Lane V/C Ratio	0.003	-	-	0.015	0.456	0.021	-	-
HCM Control Delay (s)	8.4	-	-	15.4	45.8	10.8	-	-
HCM Lane LOS	A	-	-	C	E	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0	2.1	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	2	86	49	0	8	50	818	73	17	635	28
Future Volume (veh/h)	33	2	86	49	0	8	50	818	73	17	635	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1736	1750	1750	1750	1695	1682	1750	1750	1695	1750
Adj Flow Rate, veh/h	35	2	91	52	0	8	53	861	0	18	668	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	0	0	4	5	0	0	4	0
Cap, veh/h	74	2	394	76	0	397	74	972		42	944	
Arrive On Green	0.26	0.27	0.27	0.26	0.00	0.27	0.05	0.58	0.00	0.03	0.56	0.00
Sat Flow, veh/h	0	8	1461	0	0	1472	1615	1682	1483	1667	1695	1483
Grp Volume(v), veh/h	37	0	91	52	0	8	53	861	0	18	668	0
Grp Sat Flow(s),veh/h/ln	8	0	1461	0	0	1472	1615	1682	1483	1667	1695	1483
Q Serve(g_s), s	0.0	0.0	4.6	0.0	0.0	0.4	3.1	41.8	0.0	1.0	27.2	0.0
Cycle Q Clear(g_c), s	25.0	0.0	4.6	25.0	0.0	0.4	3.1	41.8	0.0	1.0	27.2	0.0
Prop In Lane	0.95		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	76	0	394	76	0	397	74	972		42	944	
V/C Ratio(X)	0.49	0.00	0.23	0.68	0.00	0.02	0.71	0.89		0.43	0.71	
Avail Cap(c_a), veh/h	76	0	394	76	0	397	436	1104		450	1113	
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.6	0.0	26.9	47.1	0.0	25.3	44.5	17.2	0.0	45.4	15.3	0.0
Incr Delay (d2), s/veh	3.5	0.0	0.2	20.7	0.0	0.0	9.0	9.1	0.0	5.0	2.4	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	0.0	1.6	1.7	0.0	0.1	1.4	15.7	0.0	0.5	9.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.1	0.0	27.1	67.7	0.0	25.3	53.5	26.4	0.0	50.4	17.7	0.0
LnGrp LOS	D	A	C	E	A	C	D	C		D	B	
Approach Vol, veh/h		128			60			914	A		686	A
Approach Delay, s/veh		33.4			62.1			27.9			18.6	
Approach LOS		C			E			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	56.6		29.5	6.4	58.6		29.5				
Change Period (Y+Rc), s	4.5	6.0		4.5	4.5	6.0		4.5				
Max Green Setting (Gmax), s	25.0	60.0		25.0	25.0	60.0		25.0				
Max Q Clear Time (g_c+I1), s	5.1	29.2		27.0	3.0	43.8		27.0				
Green Ext Time (p_c), s	0.1	8.8		0.0	0.0	8.8		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		25.9	
HCM 6th LOS		C	

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	59	22	19	932	747	52
Future Vol, veh/h	59	22	19	932	747	52
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	-	300	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	11	5	4	4
Mvmt Flow	63	23	20	991	795	55

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1826	795	850	0	-	0
Stage 1	795	-	-	-	-	-
Stage 2	1031	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	86	391	751	-	-	-
Stage 1	448	-	-	-	-	-
Stage 2	347	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	84	391	751	-	-	-
Mov Cap-2 Maneuver	208	-	-	-	-	-
Stage 1	436	-	-	-	-	-
Stage 2	347	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.5	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	751	-	238	-	-
HCM Lane V/C Ratio	0.027	-	0.362	-	-
HCM Control Delay (s)	9.9	-	28.5	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.6	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	13	927	38	10	752
Future Vol, veh/h	21	13	927	38	10	752
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	-	-	125	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	31	4	0	0	3
Mvmt Flow	22	14	986	40	11	800

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1808	986	0	0	1026	0
Stage 1	986	-	-	-	-	-
Stage 2	822	-	-	-	-	-
Critical Hdwy	6.4	6.51	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.579	-	-	2.2	-
Pot Cap-1 Maneuver	88	265	-	-	685	-
Stage 1	364	-	-	-	-	-
Stage 2	435	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	87	265	-	-	685	-
Mov Cap-2 Maneuver	217	-	-	-	-	-
Stage 1	358	-	-	-	-	-
Stage 2	435	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.3	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	233	685	-
HCM Lane V/C Ratio	-	-	0.155	0.016	-
HCM Control Delay (s)	-	-	23.3	10.3	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

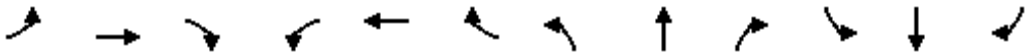
Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	7	957	48	9	763
Future Vol, veh/h	24	7	957	48	9	763
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	-	-	50	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	14	5	0	0	3
Mvmt Flow	26	8	1040	52	10	829

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1889	1040	0	0	1092	0
Stage 1	1040	-	-	-	-	-
Stage 2	849	-	-	-	-	-
Critical Hdwy	6.4	6.34	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	-	-	2.2	-
Pot Cap-1 Maneuver	78	265	-	-	647	-
Stage 1	344	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	77	265	-	-	647	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	339	-	-	-	-	-
Stage 2	423	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	216	647	-
HCM Lane V/C Ratio	-	-	0.156	0.015	-
HCM Control Delay (s)	-	-	24.7	10.7	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	51	79	293	26	80	58	1028	98	65	848	18
Future Volume (vph)	37	51	79	293	26	80	58	1028	98	65	848	18
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1694	1405	1564	1495		1630	3159		1614	3218	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1694	1405	1564	1495		1630	3159		1614	3218	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	55	85	315	28	86	62	1105	105	70	912	19
RTOR Reduction (vph)	0	0	77	0	23	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	95	8	220	186	0	62	1205	0	70	930	0
Confl. Peds. (#/hr)	4		4	4		4	7		2	2		7
Heavy Vehicles (%)	0%	2%	4%	1%	0%	2%	2%	4%	0%	3%	3%	0%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases			8									
Actuated Green, G (s)		10.6	10.6	21.6	21.6		7.8	61.2		8.1	61.5	
Effective Green, g (s)		11.1	11.1	22.1	22.1		8.3	62.2		8.6	62.5	
Actuated g/C Ratio		0.09	0.09	0.18	0.18		0.07	0.52		0.07	0.52	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		2.5	5.1		2.5	5.1	
Lane Grp Cap (vph)		156	129	288	275		112	1637		115	1676	
v/s Ratio Prot		c0.06		c0.14	0.12		0.04	c0.38		c0.04	0.29	
v/s Ratio Perm			0.01									
v/c Ratio		0.61	0.06	0.76	0.68		0.55	0.74		0.61	0.55	
Uniform Delay, d1		52.4	49.7	46.5	45.6		54.1	22.5		54.1	19.4	
Progression Factor		1.00	1.00	1.00	1.00		0.98	0.78		1.00	1.00	
Incremental Delay, d2		5.6	0.1	10.9	5.9		4.1	2.6		7.5	1.3	
Delay (s)		57.9	49.8	57.4	51.5		57.3	20.1		61.5	20.7	
Level of Service		E	D	E	D		E	C		E	C	
Approach Delay (s)		54.1			54.5			21.9			23.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	15	24	26	9	49	10	1209	15	15	1189	21
Future Volume (veh/h)	71	15	24	26	9	49	10	1209	15	15	1189	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1750	1750	1750	1750	1750	1750	1750	1709	1709	1750	1709	1709
Adj Flow Rate, veh/h	75	16	25	27	9	52	11	1273	16	16	1252	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	3	0	3	3
Cap, veh/h	143	28	34	77	33	102	24	2536	32	30	2532	44
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.03	1.00	1.00	0.04	1.00	1.00
Sat Flow, veh/h	856	260	307	342	300	927	1667	3283	41	1667	3263	57
Grp Volume(v), veh/h	116	0	0	88	0	0	11	629	660	16	623	651
Grp Sat Flow(s),veh/h/ln	1422	0	0	1569	0	0	1667	1624	1700	1667	1624	1697
Q Serve(g_s), s	3.3	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	1.1	0.0	0.0
Cycle Q Clear(g_c), s	9.5	0.0	0.0	6.3	0.0	0.0	0.8	0.0	0.0	1.1	0.0	0.0
Prop In Lane	0.65		0.22	0.31		0.59	1.00		0.02	1.00		0.03
Lane Grp Cap(c), veh/h	199	0	0	205	0	0	24	1254	1314	30	1260	1317
V/C Ratio(X)	0.58	0.00	0.00	0.43	0.00	0.00	0.46	0.50	0.50	0.53	0.49	0.49
Avail Cap(c_a), veh/h	352	0	0	362	0	0	125	1254	1314	125	1260	1317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.65	0.65	0.65	0.79	0.79	0.79
Uniform Delay (d), s/veh	52.0	0.0	0.0	50.6	0.0	0.0	57.8	0.0	0.0	57.4	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.0	1.1	0.0	0.0	6.4	0.9	0.9	8.4	1.1	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	3.6	0.0	0.0	2.6	0.0	0.0	0.4	0.3	0.3	0.5	0.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.0	0.0	0.0	51.7	0.0	0.0	64.3	0.9	0.9	65.8	1.1	1.1
LnGrp LOS	D	A	A	D	A	A	E	A	A	E	A	A
Approach Vol, veh/h		116			88			1300			1290	
Approach Delay, s/veh		54.0			51.7			1.5			1.9	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	97.1		17.1	6.2	96.7		17.1
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	8.5	72.0		25.5	8.5	72.0		25.5
Max Q Clear Time (g_c+I1), s	2.8	2.0		8.3	3.1	2.0		11.5
Green Ext Time (p_c), s	0.0	37.7		0.3	0.0	38.4		0.4

Intersection Summary	
HCM 6th Ctrl Delay	5.4
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	31	30	72	16	33	31	1177	20	21	1146	26
Future Volume (veh/h)	88	31	30	72	16	33	31	1177	20	21	1146	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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	1750	1750	1750	1750	1750	1750	1750	1709	1709	1750	1695	1695
Adj Flow Rate, veh/h	98	34	33	80	18	37	34	1308	22	23	1273	29
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	3	3	0	4	4
Cap, veh/h	127	44	43	111	25	51	49	1940	33	37	1888	43
Arrive On Green	0.11	0.13	0.11	0.10	0.12	0.10	0.02	0.40	0.39	0.04	1.00	1.00
Sat Flow, veh/h	972	337	327	957	215	442	1667	3267	55	1667	3219	73
Grp Volume(v), veh/h	165	0	0	135	0	0	34	650	680	23	637	665
Grp Sat Flow(s),veh/h/ln	1637	0	0	1614	0	0	1667	1624	1699	1667	1611	1681
Q Serve(g_s), s	11.7	0.0	0.0	9.7	0.0	0.0	2.4	39.5	39.6	1.6	0.0	0.0
Cycle Q Clear(g_c), s	11.7	0.0	0.0	9.7	0.0	0.0	2.4	39.5	39.6	1.6	0.0	0.0
Prop In Lane	0.59		0.20	0.59		0.27	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	214	0	0	187	0	0	49	964	1008	37	944	986
V/C Ratio(X)	0.77	0.00	0.00	0.72	0.00	0.00	0.70	0.67	0.67	0.63	0.67	0.67
Avail Cap(c_a), veh/h	218	0	0	215	0	0	153	964	1008	153	944	986
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.48	0.48	0.48	0.86	0.86	0.86
Uniform Delay (d), s/veh	51.2	0.0	0.0	52.0	0.0	0.0	58.3	26.6	26.6	56.9	0.0	0.0
Incr Delay (d2), s/veh	14.5	0.0	0.0	8.7	0.0	0.0	6.2	1.8	1.8	10.7	3.3	3.2
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	5.8	0.0	0.0	4.5	0.0	0.0	1.1	16.5	17.2	0.8	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.7	0.0	0.0	60.8	0.0	0.0	64.5	28.4	28.4	67.6	3.3	3.2
LnGrp LOS	E	A	A	E	A	A	E	C	C	E	A	A
Approach Vol, veh/h		165			135			1364			1325	
Approach Delay, s/veh		65.7			60.8			29.3			4.4	
Approach LOS		E			E			C			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	74.9		17.9	6.6	75.7		19.7
Change Period (Y+Rc), s	4.5	6.5		6.0	4.5	6.5		6.0
Max Green Setting (Gmax), s	10.5	58.5		14.0	10.5	58.5		14.0
Max Q Clear Time (g_c+I1), s	4.4	2.0		11.7	3.6	41.6		13.7
Green Ext Time (p_c), s	0.0	21.7		0.1	0.0	14.3		0.0

Intersection Summary	
HCM 6th Ctrl Delay	21.7
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	190	28	239	159	280	60	784	193	306	777	65
Future Volume (veh/h)	193	190	28	239	159	280	60	784	193	306	777	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	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	1736	1736	1736	1654	1723	1723	1750	1695	1614	1695	1709	1709
Adj Flow Rate, veh/h	205	202	30	254	169	298	64	834	0	326	827	69
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, %	1	1	1	7	2	2	0	4	10	4	3	3
Cap, veh/h	237	238	35	276	334	274	87	1007		350	1444	120
Arrive On Green	0.14	0.16	0.16	0.17	0.19	0.19	0.05	0.31	0.00	0.07	0.16	0.15
Sat Flow, veh/h	1654	1468	218	1576	1723	1410	1667	3221	1367	1615	3027	253
Grp Volume(v), veh/h	205	0	232	254	169	298	64	834	0	326	443	453
Grp Sat Flow(s),veh/h/ln	1654	0	1686	1576	1723	1410	1667	1611	1367	1615	1624	1656
Q Serve(g_s), s	14.5	0.0	16.0	19.0	10.5	23.3	4.5	28.8	0.0	24.1	30.4	30.4
Cycle Q Clear(g_c), s	14.5	0.0	16.0	19.0	10.5	23.3	4.5	28.8	0.0	24.1	30.4	30.4
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	237	0	274	276	334	274	87	1007		350	774	790
V/C Ratio(X)	0.86	0.00	0.85	0.92	0.51	1.09	0.73	0.83		0.93	0.57	0.57
Avail Cap(c_a), veh/h	289	0	295	276	334	274	153	1007		350	774	790
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.65	0.65	0.65
Uniform Delay (d), s/veh	50.3	0.0	48.9	48.7	43.2	48.4	56.0	38.2	0.0	54.8	39.2	39.3
Incr Delay (d2), s/veh	18.9	0.0	18.5	33.9	1.2	80.4	8.5	7.8	0.0	25.1	2.0	2.0
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	7.3	0.0	8.2	10.0	4.6	14.3	2.1	12.5	0.0	12.9	13.7	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.1	0.0	67.3	82.5	44.5	128.8	64.5	46.1	0.0	80.0	41.2	41.2
LnGrp LOS	E	A	E	F	D	F	E	D		E	D	D
Approach Vol, veh/h		437			721			898	A		1222	
Approach Delay, s/veh		68.2			92.7			47.4			51.6	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	61.2	21.2	27.3	30.0	41.5	25.0	23.5
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5
Max Green Setting (Gmax), s	10.5	50.0	20.5	20.5	25.5	35.0	20.5	20.5
Max Q Clear Time (g_c+I1), s	6.5	32.4	16.5	25.3	26.1	30.8	21.0	18.0
Green Ext Time (p_c), s	0.0	9.5	0.2	0.0	0.0	2.9	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	61.7
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

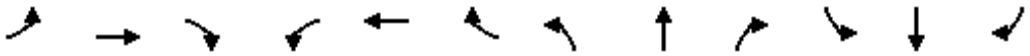
Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	12	12	7	8	105	7	894	11	45	924	44
Future Vol, veh/h	9	12	12	7	8	105	7	894	11	45	924	44
Conflicting Peds, #/hr	0	0	17	17	0	0	22	0	11	11	0	22
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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	14	0	2	0	4	0	4	2	2
Mvmt Flow	10	13	13	8	9	115	8	982	12	49	1015	48

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1671	2180	571	1644	2198	508	1085	0	0	1005	0	0
Stage 1	1159	1159	-	1015	1015	-	-	-	-	-	-	-
Stage 2	512	1021	-	629	1183	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.78	6.5	6.94	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.78	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.78	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.64	4	3.32	2.2	-	-	2.24	-	-
Pot Cap-1 Maneuver	64	47	469	58	45	510	651	-	-	673	-	-
Stage 1	212	272	-	234	318	-	-	-	-	-	-	-
Stage 2	518	316	-	409	265	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	33	36	452	33	35	505	637	-	-	666	-	-
Mov Cap-2 Maneuver	33	36	-	33	35	-	-	-	-	-	-	-
Stage 1	202	218	-	225	306	-	-	-	-	-	-	-
Stage 2	377	304	-	300	212	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	168.5	61.9	0.2	1.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	637	-	-	52	185	666	-	-
HCM Lane V/C Ratio	0.012	-	-	0.697	0.713	0.074	-	-
HCM Control Delay (s)	10.7	0.1	-	168.5	61.9	10.8	0.9	-
HCM Lane LOS	B	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0	-	-	2.8	4.5	0.2	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	22	34	67	40	44	20	768	9	38	859	20
Future Volume (veh/h)	37	22	34	67	40	44	20	768	9	38	859	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.98		0.98	1.00		0.95	1.00		0.95
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	1682	1682	1682	1695	1695	1695	1723	1723	1723
Adj Flow Rate, veh/h	38	23	35	69	41	45	21	792	9	39	886	21
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, %	0	0	0	5	5	5	4	4	4	2	2	2
Cap, veh/h	103	64	71	121	63	58	26	1044	12	59	1413	35
Arrive On Green	0.13	0.14	0.13	0.13	0.14	0.13	0.31	0.32	0.31	0.58	0.59	0.58
Sat Flow, veh/h	440	459	516	562	458	417	82	3256	39	135	3205	80
Grp Volume(v), veh/h	96	0	0	155	0	0	431	0	391	497	0	449
Grp Sat Flow(s),veh/h/ln	1414	0	0	1436	0	0	1691	0	1686	1716	0	1703
Q Serve(g_s), s	0.0	0.0	0.0	5.1	0.0	0.0	27.9	0.0	24.6	23.4	0.0	20.2
Cycle Q Clear(g_c), s	7.3	0.0	0.0	12.5	0.0	0.0	27.9	0.0	24.6	23.4	0.0	20.2
Prop In Lane	0.40		0.36	0.45		0.29	0.05		0.02	0.08		0.05
Lane Grp Cap(c), veh/h	232	0	0	236	0	0	542	0	541	756	0	751
V/C Ratio(X)	0.41	0.00	0.00	0.66	0.00	0.00	0.79	0.00	0.72	0.66	0.00	0.60
Avail Cap(c_a), veh/h	273	0	0	276	0	0	620	0	618	756	0	751
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
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	47.7	0.0	0.0	50.0	0.0	0.0	37.2	0.0	36.1	18.8	0.0	18.1
Incr Delay (d2), s/veh	0.9	0.0	0.0	3.7	0.0	0.0	8.6	0.0	5.7	4.4	0.0	3.5
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	2.8	0.0	0.0	4.8	0.0	0.0	12.9	0.0	11.0	9.2	0.0	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	0.0	0.0	53.7	0.0	0.0	45.8	0.0	41.7	23.2	0.0	21.6
LnGrp LOS	D	A	A	D	A	A	D	A	D	C	A	C
Approach Vol, veh/h		96			155			822			946	
Approach Delay, s/veh		48.6			53.7			43.9			22.4	
Approach LOS		D			D			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		56.9		20.6		42.5		20.6				
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5				
Max Green Setting (Gmax), s		43.0		19.5		43.0		19.5				
Max Q Clear Time (g_c+I1), s		25.4		14.5		29.9		9.3				
Green Ext Time (p_c), s		10.0		0.3		7.6		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		34.8
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

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	12	0	56	9	0	27	25	955	7	6	968	18
Future Vol, veh/h	12	0	56	9	0	27	25	955	7	6	968	18
Conflicting Peds, #/hr	10	0	0	0	0	10	13	0	8	8	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
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, %	0	0	0	0	0	0	4	3	0	0	2	0
Mvmt Flow	13	0	62	10	0	30	28	1061	8	7	1076	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1710	2246	561	1681	2252	553	1109	0	0	1077	0	0
Stage 1	1113	1113	-	1129	1129	-	-	-	-	-	-	-
Stage 2	597	1133	-	552	1123	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.24	-	-	2.2	-	-
Pot Cap-1 Maneuver	60	42	476	63	42	482	614	-	-	655	-	-
Stage 1	226	286	-	221	281	-	-	-	-	-	-	-
Stage 2	461	280	-	491	283	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	52	38	470	51	38	474	606	-	-	650	-	-
Mov Cap-2 Maneuver	52	38	-	51	38	-	-	-	-	-	-	-
Stage 1	213	275	-	209	266	-	-	-	-	-	-	-
Stage 2	408	265	-	414	272	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	34.9	36.4	0.3	0.2
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	606	-	-	194	154	650	-	-
HCM Lane V/C Ratio	0.046	-	-	0.389	0.26	0.01	-	-
HCM Control Delay (s)	11.2	-	-	34.9	36.4	10.6	0.1	-
HCM Lane LOS	B	-	-	D	E	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.7	1	0	-	-

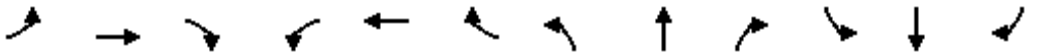
Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	654	38	109	624	4	16	3	177	5	6	37
Future Vol, veh/h	12	654	38	109	624	4	16	3	177	5	6	37
Conflicting Peds, #/hr	1	0	1	1	0	1	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	50	-	-	100	-	-	-	-	-	-	-	-
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, %	0	6	5	4	4	0	6	0	3	0	0	3
Mvmt Flow	13	688	40	115	657	4	17	3	186	5	6	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	662	0	0	729	0	0	1648	1627	710	1720	1645	661
Stage 1	-	-	-	-	-	-	735	735	-	890	890	-
Stage 2	-	-	-	-	-	-	913	892	-	830	755	-
Critical Hdwy	4.1	-	-	4.14	-	-	7.16	6.5	6.23	7.1	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.236	-	-	3.554	4	3.327	3.5	4	3.327
Pot Cap-1 Maneuver	936	-	-	866	-	-	77	103	432	71	101	461
Stage 1	-	-	-	-	-	-	405	428	-	340	364	-
Stage 2	-	-	-	-	-	-	322	363	-	367	420	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	935	-	-	865	-	-	59	88	431	35	86	460
Mov Cap-2 Maneuver	-	-	-	-	-	-	59	88	-	35	86	-
Stage 1	-	-	-	-	-	-	399	422	-	335	315	-
Stage 2	-	-	-	-	-	-	250	314	-	204	414	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.4	49.4	36.4
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	274	935	-	-	865	-	-	164
HCM Lane V/C Ratio	0.753	0.014	-	-	0.133	-	-	0.308
HCM Control Delay (s)	49.4	8.9	-	-	9.8	-	-	36.4
HCM Lane LOS	E	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	5.5	0	-	-	0.5	-	-	1.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	680	135	37	453	71	106	50	46	137	64	37
Future Volume (veh/h)	49	680	135	37	453	71	106	50	46	137	64	37
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		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	1614	1723	1723	1709	1709	1654	1723	1723	1695	1750	1750	1750
Adj Flow Rate, veh/h	53	739	147	40	492	77	115	54	50	149	70	40
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, %	10	2	2	3	3	7	2	2	4	0	0	0
Cap, veh/h	83	1238	246	76	764	627	341	142	456	255	113	52
Arrive On Green	0.05	0.45	0.44	0.05	0.45	0.45	0.31	0.32	0.32	0.31	0.32	0.31
Sat Flow, veh/h	1537	2721	541	1628	1709	1402	785	446	1430	535	353	162
Grp Volume(v), veh/h	53	444	442	40	492	77	169	0	50	259	0	0
Grp Sat Flow(s),veh/h/ln	1537	1637	1625	1628	1709	1402	1232	0	1430	1050	0	0
Q Serve(g_s), s	2.3	13.6	13.7	1.6	14.9	2.1	0.0	0.0	1.7	9.7	0.0	0.0
Cycle Q Clear(g_c), s	2.3	13.6	13.7	1.6	14.9	2.1	7.3	0.0	1.7	16.9	0.0	0.0
Prop In Lane	1.00		0.33	1.00		1.00	0.68		1.00	0.58		0.15
Lane Grp Cap(c), veh/h	83	745	739	76	764	627	474	0	456	412	0	0
V/C Ratio(X)	0.64	0.60	0.60	0.53	0.64	0.12	0.36	0.00	0.11	0.63	0.00	0.00
Avail Cap(c_a), veh/h	471	1003	997	499	1048	860	665	0	652	608	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.0	13.6	13.8	31.2	14.3	10.8	18.0	0.0	16.1	23.2	0.0	0.0
Incr Delay (d2), s/veh	5.8	2.9	3.0	4.1	3.5	0.3	0.3	0.0	0.1	1.6	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	0.9	5.0	5.1	0.7	5.8	0.7	2.0	0.0	0.5	3.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.8	16.6	16.7	35.3	17.8	11.1	18.3	0.0	16.1	24.8	0.0	0.0
LnGrp LOS	D	B	B	D	B	B	B	A	B	C	A	A
Approach Vol, veh/h		939			609			219			259	
Approach Delay, s/veh		17.8			18.1			17.8			24.8	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	34.4		25.3	7.6	33.9		25.3				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	20.0	40.0		30.0	20.0	40.0		30.0				
Max Q Clear Time (g_c+I1), s	3.6	15.7		18.9	4.3	16.9		9.3				
Green Ext Time (p_c), s	0.0	13.8		1.2	0.1	8.5		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		18.8	
HCM 6th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	28	0	14	0	89	82	16	87	0
Future Vol, veh/h	0	0	0	28	0	14	0	89	82	16	87	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	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	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	7	0	0	0	0	0	0	2	0
Mvmt Flow	0	0	0	35	0	17	0	110	101	20	107	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	316	359	107	309	309	162	107	0	0	212	0	0
Stage 1	147	147	-	162	162	-	-	-	-	-	-	-
Stage 2	169	212	-	147	147	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	641	571	953	634	609	888	1497	-	-	1370	-	-
Stage 1	860	779	-	828	768	-	-	-	-	-	-	-
Stage 2	838	731	-	844	779	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	621	561	953	626	599	887	1497	-	-	1369	-	-
Mov Cap-2 Maneuver	621	561	-	626	599	-	-	-	-	-	-	-
Stage 1	860	767	-	827	767	-	-	-	-	-	-	-
Stage 2	822	730	-	830	767	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.6	0	1.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1497	-	-	-	694	1369	-	-
HCM Lane V/C Ratio	-	-	-	-	0.075	0.014	-	-
HCM Control Delay (s)	0	-	-	0	10.6	7.7	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	-	-

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	3	29	3	12	21	6	14	75	54	12	51	5
Future Vol, veh/h	3	29	3	12	21	6	14	75	54	12	51	5
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	2	2	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	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	36	4	15	26	8	18	94	68	15	64	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	34	0	0	40	0	0	142	110	40	189	108	31
Stage 1	-	-	-	-	-	-	46	46	-	60	60	-
Stage 2	-	-	-	-	-	-	96	64	-	129	48	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1591	-	-	1583	-	-	832	784	1037	776	786	1049
Stage 1	-	-	-	-	-	-	973	861	-	957	849	-
Stage 2	-	-	-	-	-	-	916	846	-	880	859	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1591	-	-	1583	-	-	767	774	1035	650	776	1048
Mov Cap-2 Maneuver	-	-	-	-	-	-	767	774	-	650	776	-
Stage 1	-	-	-	-	-	-	970	858	-	954	841	-
Stage 2	-	-	-	-	-	-	832	838	-	729	856	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	2.2	10.3	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	855	1591	-	-	1583	-	-	764
HCM Lane V/C Ratio	0.209	0.002	-	-	0.009	-	-	0.111
HCM Control Delay (s)	10.3	7.3	0	-	7.3	0	-	10.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.4

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	36	127	24	28	0	124	0	32	0	1	0
Future Vol, veh/h	1	36	127	24	28	0	124	0	32	0	1	0
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
Heavy Vehicles, %	0	0	0	0	0	0	1	0	0	0	0	0
Mvmt Flow	1	40	143	27	31	0	139	0	36	0	1	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	8	8	9.3	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	1%	46%	0%
Vol Thru, %	0%	0%	22%	54%	100%
Vol Right, %	0%	100%	77%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	32	164	52	1
LT Vol	124	0	1	24	0
Through Vol	0	0	36	28	1
RT Vol	0	32	127	0	0
Lane Flow Rate	139	36	184	58	1
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.215	0.043	0.203	0.075	0.001
Departure Headway (Hd)	5.557	4.334	3.975	4.647	4.745
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	649	831	905	772	754
Service Time	3.257	2.034	1.989	2.668	2.777
HCM Lane V/C Ratio	0.214	0.043	0.203	0.075	0.001
HCM Control Delay	9.8	7.2	8	8	7.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.8	0.1	0.8	0.2	0

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	51	9	3	68	20	16	212	13	17	91	70
Future Vol, veh/h	9	51	9	3	68	20	16	212	13	17	91	70
Conflicting Peds, #/hr	4	0	15	15	0	4	2	0	11	11	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	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	0	0	6	2	23	0	6	0
Mvmt Flow	10	58	10	3	77	23	18	241	15	19	103	80

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	104	0	0	83	0	0	286	208	89	321	202	95
Stage 1	-	-	-	-	-	-	98	98	-	99	99	-
Stage 2	-	-	-	-	-	-	188	110	-	222	103	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.16	6.52	6.43	7.1	6.56	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.52	-	6.1	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.52	-	6.1	5.56	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.554	4.018	3.507	3.5	4.054	3.3
Pot Cap-1 Maneuver	1500	-	-	1527	-	-	658	689	914	636	687	967
Stage 1	-	-	-	-	-	-	899	814	-	912	805	-
Stage 2	-	-	-	-	-	-	805	804	-	785	802	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1494	-	-	1505	-	-	520	670	892	441	668	961
Mov Cap-2 Maneuver	-	-	-	-	-	-	520	670	-	441	668	-
Stage 1	-	-	-	-	-	-	880	797	-	902	800	-
Stage 2	-	-	-	-	-	-	640	799	-	529	785	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.2	14.1	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	666	1494	-	-	1505	-	-	719
HCM Lane V/C Ratio	0.411	0.007	-	-	0.002	-	-	0.281
HCM Control Delay (s)	14.1	7.4	0	-	7.4	0	-	12
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	2	0	-	-	0	-	-	1.2

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	23	30	11	1	61	39	17	80	8	33	44	15
Future Vol, veh/h	23	30	11	1	61	39	17	80	8	33	44	15
Conflicting Peds, #/hr	23	0	27	27	0	23	8	0	34	34	0	8
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	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	3	0	4	0	6	0	7
Mvmt Flow	28	36	13	1	73	47	20	96	10	40	53	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	143	0	0	76	0	0	268	271	104	308	254	128
Stage 1	-	-	-	-	-	-	126	126	-	122	122	-
Stage 2	-	-	-	-	-	-	142	145	-	186	132	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.54	6.2	7.16	6.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-	6.16	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-	6.16	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.036	3.3	3.554	4	3.363
Pot Cap-1 Maneuver	1452	-	-	1536	-	-	689	632	956	637	653	909
Stage 1	-	-	-	-	-	-	883	788	-	873	799	-
Stage 2	-	-	-	-	-	-	866	773	-	807	791	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1420	-	-	1497	-	-	599	590	901	513	609	882
Mov Cap-2 Maneuver	-	-	-	-	-	-	599	590	-	513	609	-
Stage 1	-	-	-	-	-	-	843	753	-	837	781	-
Stage 2	-	-	-	-	-	-	784	755	-	660	755	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.7	0.1	12.5	12.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	607	1420	-	-	1497	-	-	599
HCM Lane V/C Ratio	0.208	0.02	-	-	0.001	-	-	0.185
HCM Control Delay (s)	12.5	7.6	0	-	7.4	0	-	12.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	0.7

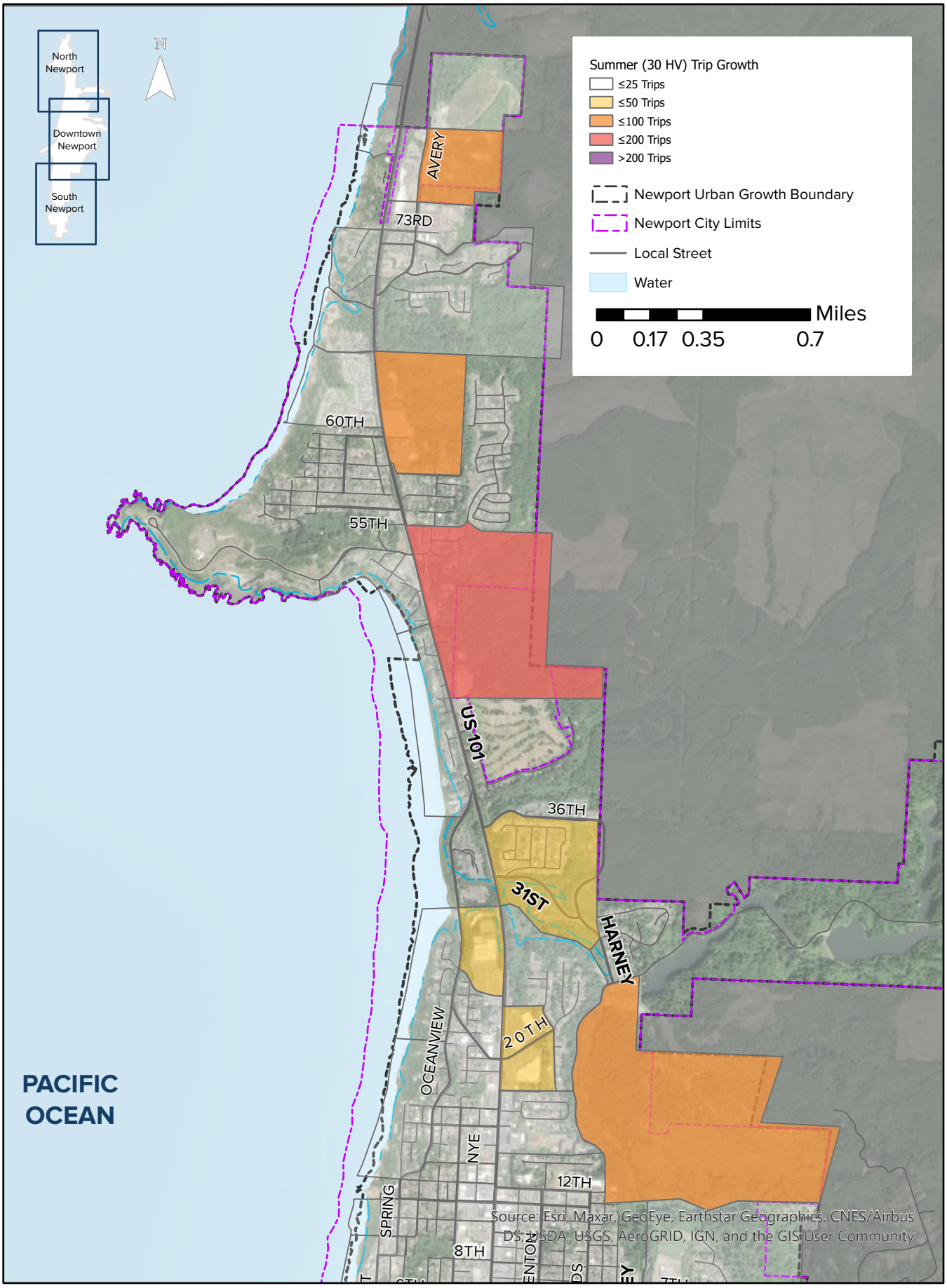
Intersection	
Int Delay, s/veh	4.2

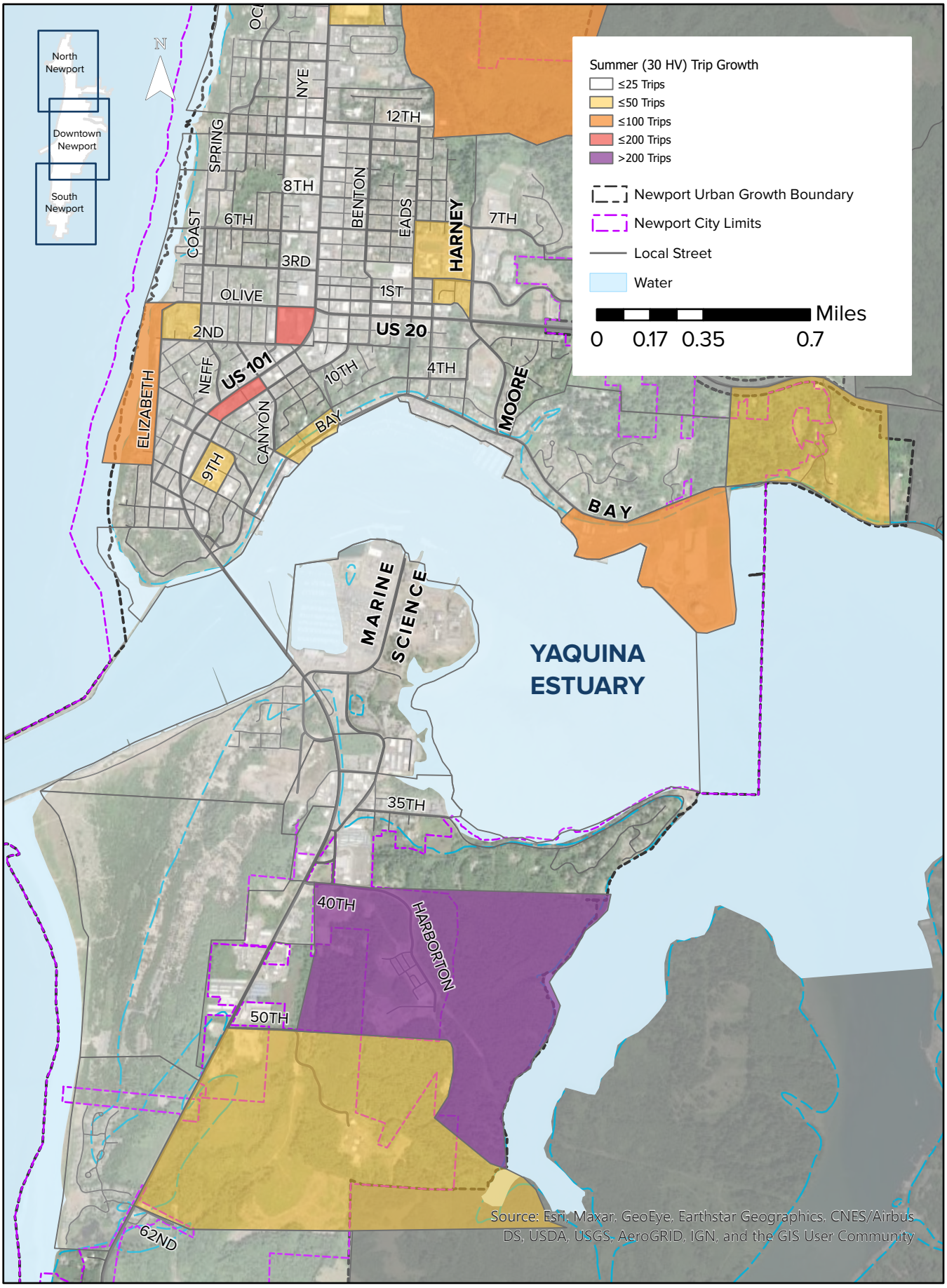
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	71	70	104	132	40
Future Vol, veh/h	56	71	70	104	132	40
Conflicting Peds, #/hr	2	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Yield
Storage Length	0	-	100	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	0	0	3	3	8
Mvmt Flow	62	79	78	116	147	44

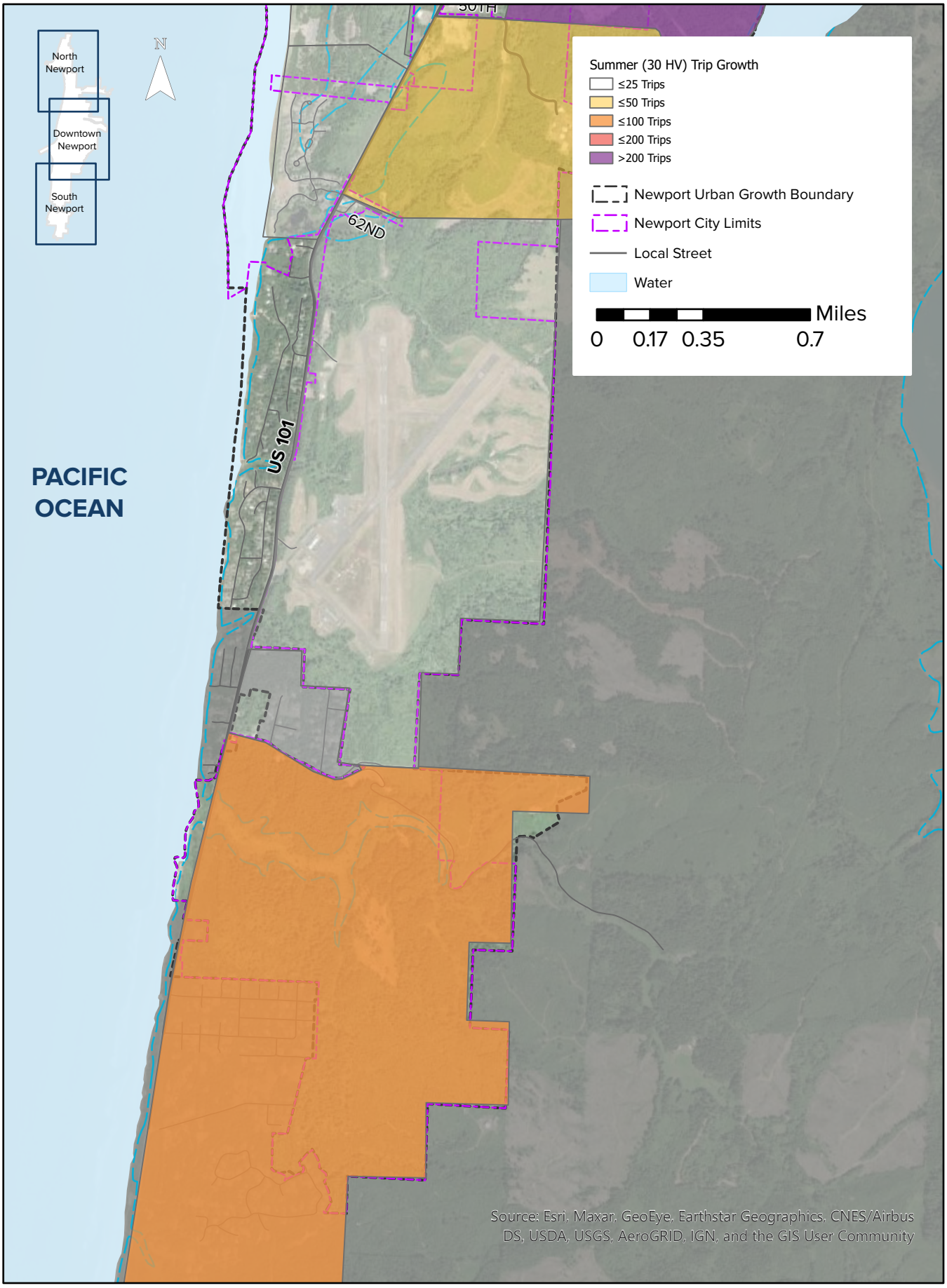
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	421	156	147	0	-	0
Stage 1	147	-	-	-	-	-
Stage 2	274	-	-	-	-	-
Critical Hdwy	6.44	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	585	895	1447	-	-	-
Stage 1	876	-	-	-	-	-
Stage 2	768	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	553	887	1447	-	-	-
Mov Cap-2 Maneuver	553	-	-	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	768	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	3.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1447	-	700	-	-
HCM Lane V/C Ratio	0.054	-	0.202	-	-
HCM Control Delay (s)	7.6	-	11.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-


North Newport
Downtown Newport
South Newport
N
Summer (30 HV) Trip Growth
≤25 Trips
≤50 Trips
≤100 Trips
≤200 Trips
>200 Trips
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
AVERY
73RD
60TH
55TH
US 101
36TH
31ST
HARNEY
20TH
OCEANVIEW
NYE
12TH
SPRING
8TH
PACIFIC OCEAN
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


North Newport
Downtown Newport
South Newport
N
Summer (30 HV) Trip Growth
≤25 Trips
≤50 Trips
≤100 Trips
≤200 Trips
>200 Trips
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
OCEAN
NYE
12TH
SPRING
8TH
COAST
6TH
BENTON
EADS
HARNEY
7TH
3RD
OLIVE
1ST
2ND
US 20
US 101
NEFF
10TH
4TH
MOORE
ELIZABETH
CANYON
BAY
9TH
BAY
MARINE SCIENCE
YAQUINA ESTUARY
35TH
40TH
HARBORTON
50TH
62ND
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


North Newport
Downtown Newport
South Newport
N
30TH
62ND
US 101
PACIFIC OCEAN
Summer (30 HV) Trip Growth
≤25 Trips
≤50 Trips
≤100 Trips
≤200 Trips
>200 Trips
Newport Urban Growth Boundary
Newport City Limits
Local Street
Water
Miles
0 0.17 0.35 0.7
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

DKS 720 SW WASHINGTON STREET, SUITE 500, PORTLAND, OR 97205 • 503.243.3500 • DKSASSOCIATES.COM

FUTURE TRANSPORTATION CONDITIONS AND NEEDS

DATE: September 2, 2020

TO: Project Management Team

FROM: Carl Springer, Kevin Chewuk, and Rochelle Starrett | DKS Associates

SUBJECT: Newport Transportation System Plan Project #17081-007

Future Transportation Conditions and Needs | (Task 4.5; Technical Memo #7)

The condition of Newport's future transportation system depends on the growth in population, visitors, and employment; future travel patterns (*e.g.* choice of modes, routes, and frequency of trips); and community investment decisions. Growth in population, visitors, and the number of jobs is forecast based on trends and knowledge of the city and region. Future travel patterns are more difficult to predict as the community's investment decisions and the economy can have significant effect on choice of modes and routes. The objective of the transportation planning process is to generate information necessary for making decisions that will result in safe and efficient travel options through 2040.

SUMMARY OF 2040 SYSTEM NEEDS

The 2040 baseline analysis identifies how Newport's transportation system is expected to operate with additional residents, businesses, and visitors. These conditions were assessed based on the forecasted increase in trips generated by future transportation growth without any new investments in the transportation infrastructure. This analysis describes where the transportation system will perform satisfactorily and identifies areas that will likely be congested without additional investments. Subsequent memos will explore solutions for addressing future transportation system needs, including an analysis of alternative routes to the highway.

The most significant increases in traffic volumes are expected along the primary regional state facilities: US 20 and US 101. Increased traffic volumes on these state facilities is primarily driven by increased regional through traffic, which is expected to increase by over 50% through 2040. However, growth in traffic volumes will also be driven by new developments on the periphery of Newport where US 101 and US 20 serve as the only connection to retail and employment opportunities within Newport's core. As traffic volumes grow, traffic on adjacent local streets may increase as traffic seeks to avoid delay on US 101 and US 20 where parallel routes are available.

Overall, average daily traffic is forecast to increase nearly 30% during typical weekday traffic conditions and nearly 25% during peak summer traffic conditions on US 101 in downtown Newport. Average daily traffic is also forecast to increase up to 13% on US 20. Other routes with notable growth include Bay Boulevard, Yaquina Bay Road, and various roadways that parallel US 20 or US 101. For more detail on the travel forecasting process, refer to Technical Memorandum #6.

VEHICLE TRANSPORTATION SYSTEM NEEDS

Traffic volumes are forecast to increase by 2040 in Newport with most of the growth concentrated on US 101 and US 20. This growth will increase congestion on these key corridors during peak summer and average weekday conditions. Key identified needs include:

- Limited capacity at the following study intersections:
    - US 101/NE 73rd Street
    - US 101/NE 52nd Street
    - US 101/NW Oceanview Drive
    - US 101/US 20
    - US 101/ SW Angle Street
    - US 101/SW Hurbert Street
    - US 20/SE Benton Street
    - US 20/SE Moore Drive
- High delay for left turning traffic to or from US 101 and US 20 during the summer peak
- Limited alternatives to US 101 for north-south vehicle traffic in Newport, including:
    - Between SW Naterlin Drive and SW Abalone Street (Yaquina Bay Bridge)
    - Between NE 12th Street and NE 52nd Street (Northbound traffic only)
    - Between NW Oceanview Drive and NE 52nd Street (Southbound traffic only)
    - South of SE 42nd Street

PEDESTRIAN AND BICYCLE TRANSPORTATION SYSTEM NEEDS

Newport will continue to expand their existing pedestrian and bicycle networks through 2040; new developments, programmed investments, and an urban renewal district will help to expand Newport's future multimodal network. However, the historical built environment in much of Newport has created many significant sidewalk gaps that will likely remain through 2040. Key identified needs carried forward from the existing conditions analysis include:

- Sidewalk infill along Newport's arterial and collector streets
- ADA upgrades at intersections and accessible paths to the ultimate destination
- Safe crossing opportunities on US 101 and US 20

- Parallel routes or facility upgrades in locations where US 101 is the primary north-south route and a significant barrier for pedestrians (*e.g.* Yaquina Bay Bridge, between NW 25th Street and Agate Beach) including for areas that are expected to see new development through 2040

- Safety enhancements for NW Oceanview Drive

Much of Newport's arterial and collector street system provides a safe and comfortable experience for cyclists even without dedicated facilities due to low traffic volumes. However, new facilities can enhance the connectivity of Newport's bicycle network. Key identified needs include:

- New bike facilities (*e.g.* on-street bike lanes or separated multi-use pathways) or identified parallel routes for US 101 and US 20

- Safe crossing opportunities on US 101 and US 20

- Parallel routes or facility upgrades in locations where US 101 is the primary north-south route and a significant barrier for bicyclists (*e.g.* Yaquina Bay Bridge) including for areas that are expected to see new development through 2040

- Safety enhancements for NW Oceanview Drive

SNAPSHOT OF NEWPORT IN 2040

RISING POPULATION AND EMPLOYMENT

Today, Newport is home to over 4,600 households and accounts for over 11,300 jobs. Between now and 2040, both the number of households and employees is forecast to grow by 20 percent. Newport will have 5,600 households and about 13,500 jobs[1] by 2040. Summer tourism is also expected to continue to draw Oregonians to Newport for day trips or longer visits. With more residents, visitors, and employees in Newport, the transportation network will face increasing demand through 2040.

Housing growth is concentrated in Newport's urban fringe to the north, east, and south near the Oregon Coast Community College. Limited residential infill is also expected throughout the city. High employment growth is concentrated near Avery Street, the Lincoln County Fairgrounds, the Port of Newport, the South Beach area, Oregon Coast Community College, the Newport Airport, and the Holiday Beach area. Moderate employment growth is also expected along US 101 and in Newport's downtown area.

[1] Based on Newport Travel Demand Model land use data – note that these totals are based on boundaries approximated by the TAZs, which may not match current or future City limits (see Technical Memorandum #6: Future Traffic Forecast).

MORE TRAVEL

With more jobs, residents, visitors, and through travel, the street network in Newport must accommodate an additional 1,800 motor vehicle trips during the summer weekday evening design hour[2] and another 1,500 motor vehicle trips during average weekday evening traffic conditions. Today, the Newport street network is generally able to tolerate the extent of delay per current ODOT standards at most locations; however, limited local street connectivity through Newport will translate to high growth on both US 101 and US 20. Higher vehicle volumes along US 101 and US 20 will increase the left turn delay for side streets and further increase congestion. A detailed review of future travel patterns for Newport is provided in Technical Memorandum #6.

2040 motor vehicle volumes for design hour conditions were utilized to determine areas on the baseline roadway network that will be congested and may require future investments or alternate mobility targets to accommodate forecasted growth. The 2040 baseline motor vehicle volumes for study intersections in the appendix show volumes are anticipated to be highest along US 101, which connects Newport to other coastal communities and is a key tourist route.

FUTURE TRAVEL ESTIMATES

Future traffic volumes were developed using Newport's 2040 Travel Demand Models. Future vehicle travel patterns and forecast traffic volumes for each study intersection are documented in Technical Memorandum #6.

FUTURE ESTIMATES OF WALKING, BIKING, AND TRANSIT

Commute mode choice, traffic counts, and land use can all be used to identify locations in Newport where current residents might bike, walk, or take transit which, in turn, informs the future travel demand for these modes. Between 2014 and 2018, 68% of Newport residents drove to work alone while 16% of workers carpooled. Only 7% of Newport residents walked to work while less than 2% of residents took transit or biked to work[3]. The existing commute mode share will likely remain unchanged without future investments in multimodal infrastructure.

Existing traffic counts show pedestrian activity is highest near downtown Newport roughly between SW Bayley Street, SW 9th Street, US 101/W Olive Street, and SW Nye Street/SW 7th Street, and over 90 pedestrians were recorded at the intersection of SW 9th Street and SW Abbey Street during the PM peak hour[4]. Moderate pedestrian demand (*i.e.* over 10 observed pedestrians per hour) is present throughout much of Newport's residential adjacent to downtown although pedestrian

---

[2] The future "design hour" is equivalent to the 30th highest annual hour analyzed under existing conditions which occurs in the summer.

[3] US Census. *Commuting Characteristics by Sex,* 2018. https://data.census.gov/cedsci/table?q=commute&tid=ACSST5Y2018.S0801&vintage=2018&hidePreview=true&moe=false&g=1600000US4152450

[4] Traffic counts collected July 11, 2019 as part of the TSP update.

demand drops significantly north of 20th Street. Bicycle volumes were low (less than 5 recorded bikes per hour for a given direction) at all study intersections. Outside of the downtown area, both the Nye Beach and Historic Bayfront areas are expected to generate significant pedestrian and bicyclist demand based on their existing land use.

Most housing growth is concentrated near the northern (*i.e.* north of N 20th Street) periphery of Newport, the eastern periphery of Newport, Big Creek Park, or the Oregon Coast Community College. Employment growth is concentrated around NE 73rd Street/NE Avery Street, the Lincoln County Fairgrounds, the Port of Newport, South Beach, the Oregon Coast Community College, and on Newport's southern periphery with only moderate employment growth near downtown Newport. Much of the forecasted growth is planned for areas with limited existing pedestrian and bicycle facilities. While new development will include enhancements to existing facilities, connectivity gaps between Newport's historical downtown and high-growth areas will remain, particularly for developments in northern Newport, eastern Newport, and the South Beach area where north-south travel is concentrated on highways with limited multimodal facilities. The inadequate walking and biking infrastructure further hinders transit riders, as these users typically utilize these facilities at the beginning and end of their trip.

2040 TRANSPORTATION SYSTEM NEEDS

Review of the expected growth throughout the City and existing gaps and deficiencies of the transportation system identified the following locations as possible candidates for improvements.

MOTOR VEHICLE NEEDS

Study intersection operations were analyzed for 2040 using the methodology outlined in the existing conditions memo[5]. Forecasted intersection operations were compared to applicable agency mobility targets to identify where significant congestion is likely to occur. Table 1, below, shows the study intersections that do not meet mobility targets under the 2040 design hour conditions[6]. A complete listing of operating conditions at study intersections is provided in the appendix.

Of the 20 study intersections, eight will not meet their respective mobility target during the 2040 design hour conditions. Nineteen of the study intersections met their mobility targets under existing conditions (2020); the intersection of US 101/US 20 is the only intersection that exceeded its mobility target under existing PM peak hour conditions[5]. All of the substandard intersections are on state highways. Half of the study intersections that exceed their mobility target are two-way

[5] DKS Associates. Technical Memorandum #5: Existing Conditions. April 8, 2020.

[6] The future "design hour" is equivalent to the 30th highest annual hour analyzed under existing conditions which corresponds to summer traffic conditions for Newport. This is a common time period applied for design purposes and corresponds with adopted mobility targets.

stop control intersections. Increased traffic on US 101 will lead to excessive delay for left-turning traffic by 2040 at all unsignalized intersections, particularly during the summer peak.

TABLE 1: STUDY INTERSECTIONS THAT DO NOT MEET MOBILITY TARGETS/ STANDARDS (2040 PM PEAK- DESIGN HOUR CONDITIONS)

#	Study Intersection	Mobility Target	Volume/ Capacity Ratio	Delay (secs)	Level of Service
1	US 101/73rd (stop controlled on side street)	Highway Approaches 0.80 v/c; Side Street Approaches 0.95 v/c	0.55/ 1.57	13/ 405	B/ F
2	US 101/52nd (signalized)	0.80 v/c	0.89*	57.2	E
3	US 101/Oceanview (stop controlled on side street)	Highway Approaches 0.80 v/c; Side Street Approaches 0.95 v/c	0.72/ 1.12	11/ 157	B/ F
9	US 101/US 20 (signalized)	0.85 v/c	0.99	69.2	E
10	US 101/Angle (stop controlled on side street)	Highway Approaches 0.90 v/c; Side Street Approaches 0.95 v/c	0.49/ 2.63	12/ 1093	B/ F
11	US 101/Hurbert (signalized)	0.90 v/c	0.90	48.5	D
13	US 20/Benton (stop controlled on side street)	Highway Approaches 0.85 v/c; Side Street Approaches 0.95 v/c	0.46/ 1.05	10/ 118	B/ F
14	US 20/Moore (signalized)	0.85 v/c	0.85	30.5	C

*Reported using HCM 2000

Note: At signalized study intersections the v/c, LOS and delay are reported as the intersection average and at unsignalized intersections the v/c, LOS and delay are reported for the worst highway approach/ worst side street approach.

Considering the amount of congestion forecast for some study intersections, it may be found impractical to mitigate them sufficiently to comply with adopted mobility targets. This could be true for a variety of reasons, such as the project costs to reduce congestion or resulting undesirable impacts to the environment or other modes of travel from a project to reduce congestion. In such situations, adoption of "alternative" mobility targets that allow for higher levels of congestion, in balance with other objectives, may be considered.

A common approach to developing alternative mobility targets is to change the standard analysis parameters used or the time period to which the targets apply from the design hour[7] to an average weekday, which better represents traffic volumes experienced throughout the majority of the year.

[7] On state highways in Newport, the design hour volume occurs during the summer season when traffic volumes can be as much as 17 percent higher than typical weekday peaks hours.

In consideration of the possible need for alternative mobility targets, the analysis of study intersection operations was repeated under an average weekday condition. Study intersections that do not meet mobility targets under average weekday PM peak hour conditions in 2040 are summarized in Table 2.

Two intersections that fail to meet mobility targets during the design hour continue to do so during the average weekday, although the degree of congestion experienced is smaller. Six intersections (US 101/73rd, US 101/52nd, US 101/Oceanview, US 101/Hurbert, US 20/Benton, and US 20/Moore) that are substandard under 2040 design hour conditions are not under average weekday PM peak hour conditions. A complete listing of average weekday operating conditions at all study intersections is provided in the appendix.

TABLE 2: STUDY INTERSECTIONS THAT DO NOT MEET MOBILITY TARGETS/ STANDARDS (2040 PM PEAK- AVERAGE WEEKDAY CONDITIONS)

#	Study Intersection	Mobility Target	Volume/ Capacity Ratio	Delay (secs)	Level of Service
9	US 101/US 20 (signalized)	0.85 v/c	0.91	52.8	D
10	US 101/Angle (stop controlled on side street)	Highway Approaches 0.90 v/c; Side Street Approaches 0.95 v/c	0.41/1.24	11/377	B/F

Note: At signalized study intersections the v/c, LOS and delay are reported as the intersection average and at unsignalized intersections the v/c, LOS and delay are reported for the worst highway approach/ worst side street approach.

YAQUINA BAY BRIDGE

The Yaquina Bay Bridge is a key constraint for vehicles travelling north-south in Newport both today and in the future. Existing narrow travel lanes, lack of shoulders, and a steep grade all contribute to a capacity that is reduced by up to 25% when compared to similar highway segments[8]. The forecasted traffic volumes, summarized below in Table 3, are expected to exceed the capacity of the Yaquina Bay Bridge for both 2040 scenarios based on the projected land use. As traffic volumes grow, this congestion could impact segments of US 101 approaching the Yaquina Bay Bridge or lead to additional congestion in off-peak hours without any mitigations.

[8] Newport Transportation System Plan, 2012.

TABLE 3: EXPECTED GROWTH IN TRAFFIC VOLUMES ON THE YAQUINA BAY BRIDGE

Scenario	2018 Average Daily Traffic	2040 Average Daily Traffic	Percent Growth
AVERAGE WEEKDAY	14,200	19,800	39%
SUMMER	16,900	21,800	28%

Like many coastal bridges, the Yaquina Bay Bridge is a designated historic structure. The ODOT Historic Bridge Preservation Plan[9] details treatment options to extend the useful life of historic structures and maintain their original purpose. ODOT ensures that every reasonable effort is pursued to maintain transportation service for their historic bridges prior to other, more impactful decisions. The existing historic structural elements will be maintained to the maximum extent necessary, and any new elements must maintain the historical significance of the structure. Maintenance considerations could also include vehicle or load restrictions that limit traffic on historic bridges.

If in the future, ODOT determines that the Yaquina Bay Bridge can no longer maintain its intended function, the bridge could be paired with a parallel crossing to lessen vehicle demands or converted to a new use. Only after these options are exhausted will ODOT consider a full closure of the bridge. All future decisions regarding the use of the Yaquina Bay Bridge will be coordinated with ODOT.

PEDESTRIAN NETWORK NEEDS

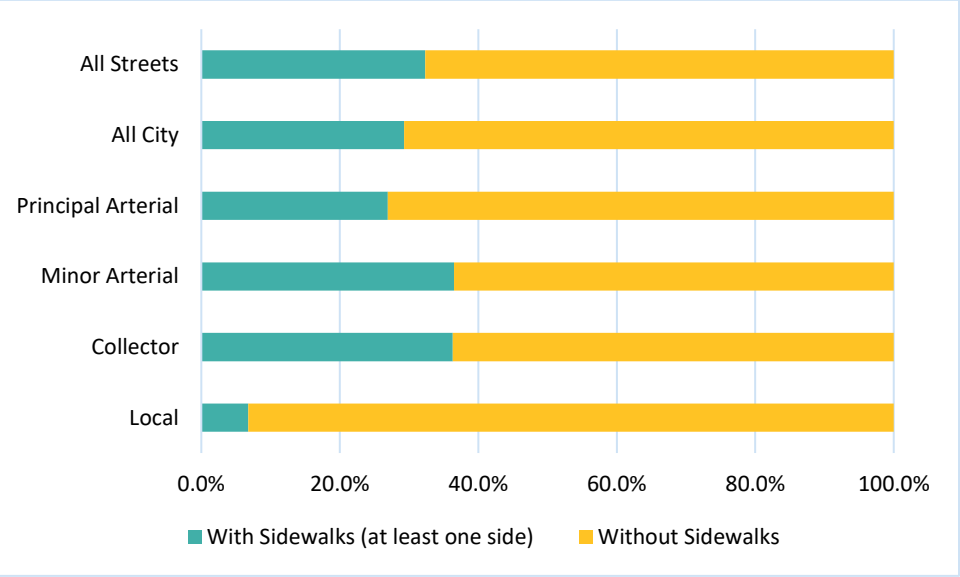
The following section describes the walking network needs identified for the 2040 Baseline street network.

FUTURE WALKING NETWORK

The percent of roadways with sidewalks, seen below in Figure 1, is not expected to change noticeably from existing conditions. Nearly 70% of streets in Newport lack sidewalks on both sides. While around 36% of Newport's collector and arterial streets have sidewalks on at least one side, only 7% of local streets have sidewalks on at least one side. These numbers do not incorporate Newport's 9.5 miles of off-street trails that also serve pedestrian travel.

[9] ODOT. *Historic Bridge Preservation Plan.* 2007.

FIGURE 1: PERCENT OF STREET MILES WITH SIDEWALKS IN NEWPORT



Identified pedestrian improvements expected to be complete by 2040 include:

- Sidewalk improvements on SW Harbor Way
- New sidewalk on US 101 in South Beach near SE 35th Street

FUTURE PEDESTRIAN LEVEL OF TRAFFIC STRESS (LTS)

The Pedestrian LTS assessment shows the extent to which the walking network on collector and arterial streets provides a level of comfort and safety for users. Locations rated as low or moderate stress (LTS 1 or 2) provide a safe and comfortable walking experience while locations rated as high or moderate stress (LTS 3 or 4) provide a less comfortable walking experience. The assessment method and conditions of the pedestrian network are summarized in a previous memo[10]. Since traffic volume is the only input factor anticipated to change significantly under future conditions, there were no changes made to the Pedestrian LTS evaluation identified in existing conditions (see Technical Memo #5).

About one-quarter of the collector and arterial street miles in Newport rate as low or moderate stress (LTS 1 or 2) for pedestrians. However, 60 percent of the collector and arterial street miles rate as extreme stress (LTS 4), largely due to lack of existing sidewalks. Overall, the pedestrian network continues to rate relatively high near downtown, and poor towards the edges of the City and in residential areas without sidewalks.

[10] DKS Associates. Technical Memorandum #5: Existing Conditions. April 8, 2020.

WALKING FACILITY GAPS

Although there is generally good sidewalk coverage near downtown Newport, many of the residential areas of Newport were developed without sidewalks, and these sidewalk gaps remain. Completing selected segments on arterial and collector roadways, identified below, can create a more comprehensive pedestrian network. This list does not identify road segments where sidewalks are only provided on one side of the street which could still present a barrier to pedestrian travel.

- SW Harbor Way, SW 13th Street to SW 11th Street (City of Newport)
- SE 2nd Street, SE Benton Street to SE Coos Street (City of Newport)
- SE Coos Street, SE 2nd Street to US 20 (City of Newport)
- SW Bayley Street, SW 8th Street to SW Elizabeth Street (City of Newport)
- SW Elizabeth Street, SW Bayley Street to SW Park Street (City of Newport)
- SW 7th Street, SW Bayley Street to SW Alder Street (City of Newport)
- SW Abbey Street, US 101 to SW 6th Street (City of Newport)
- SW 2nd Street, SW Elizabeth Street to SW Cliff Street (City of Newport)
- NW 6th Street, NW Nye Street to NW Coast Street (City of Newport)
- NW Nye Street, NW 3rd Street to NW 6th Street (City of Newport)
- NW Nye Street, NW 7th Street to NW 8th Street (City of Newport)
- NW Nye Street, NW 10th Street to NW 16th Street (City of Newport)
- NW 8th Street, NW Coast Street to NW Spring Street (City of Newport)
- NW Spring Street, NW 8th Street to NW 12th Street (City of Newport)
- NW 11th Street, NW Spring Street to NW Lake Street (City of Newport)
- NW Oceanview Drive, NW 12th Street to US 101 (City of Newport)
- NW Edenview Way, NW 20th Street to NW Oceanview Drive (City of Newport)
- SE Coos Street, US 20 to NE 3rd Street (City of Newport)
- NE Benton Street, NE 3rd Street to NE 12th Street (City of Newport)
- NE Harney Street, US 20 to NE 3rd Street/NE Yaquina Heights Drive (City of Newport)
- NE 7th Street, Newport Middle School East Driveway to NE 6th Street (City of Newport)
- NE 20th Street, east of Fred Meyer (City of Newport)
- NE Harney Street, NE Big Creek Road to NE 31st Street (City of Newport)
- NE 36th Street, NE Harney Street to US 101 (City of Newport)
- NE Big Creek Road, NE Harney Street to NE 12th Street (City of Newport)
- NW 55th Street, US 101 to NW Rhododendron Street (City of Newport)

- NW 60th Street, US 101 to NW Biggs Street (City of Newport)
- NW Biggs Street, NW 60th Street to NW 55th Street (City of Newport)

In addition to the areas where these gaps already exist, future pedestrian infrastructure needs can be identified based on anticipated growth. Higher densities and more people require more pedestrian infrastructure to accommodate demand. Where growth is anticipated, street segments rated as high or extreme stress (LTS 3 or LTS 4) will need enhancements in order to improve their conditions. Potential treatments could include completing sidewalks on both sides of the street or widening existing sidewalks. These segments include:

- SE 40th Street, US 101 to existing shared use path (City of Newport) – complete shared use path on south side of street or consider crossing enhancements to connect to sidewalks on north side of street
- SE Ash Street, SE 40th Street to SE Ferry Slip Road (City of Newport) – complete sidewalks on east side of street and widen shared use path on west side of street as needed
- SE Ferry Slip Road, SE Ash Street to SE Chestnut Street (City of Newport) – complete sidewalks on east side of street and widen shared use path as needed
- NE 3rd Street, NE Harney Street to NE Eads Street (City of Newport) – complete sidewalks on south side of street
- NE 7th Street, NE Harney Street to 6th Street (City of Newport) – complete sidewalks on south side of street and existing gaps on north side of street
- NE Harney Street, NE 3rd Street to US 20 (City of Newport) – complete sidewalks on both sides of street
- US 101, SW Neff Way to SW Angle Street (ODOT) – install urban design features as needed to enhance the existing pedestrian space

OTHER PEDESTRIAN NEEDS

Other areas identified by the public as critical pedestrian needs are across the Yaquina Bay Bridge, along the NW Oceanview Drive corridor, the Oregon Coast Trail (including near Yaquina Head), and existing pedestrian crossings on US 101 and US 20, including previously proposed locations at US 20/NE Eads Street and near US 101/NE 60th Street. Vehicle speeds, safety, existing gaps, and poor connections are some of the top concerns for these areas. Completing the existing pedestrian system is another key step towards promoting walking as a safe and attractive option for Newport residents.

As mitigations for motor vehicle travel are considered for intersections and along roadway segments, innovative designs and/or "alternative" vehicular mobility targets that allow for higher levels of congestion may be considered to avoid undesirable impacts on pedestrian safety and connectivity.

METHODOLOGY TO ADDRESS DEFICIENCIES

A list of potential pedestrian network improvement projects will be developed in Technical Memorandum #8 based on streets with pedestrian deficiencies. A street is considered deficient for walking if it meets one or more of the following conditions:

- Arterial or collector street without pedestrian facilities.
- Extreme pedestrian stress (LTS 4) rating.
- High or extreme pedestrian stress (LTS 3 or 4) in close proximity to parks, schools, transit stops, or other important destinations.

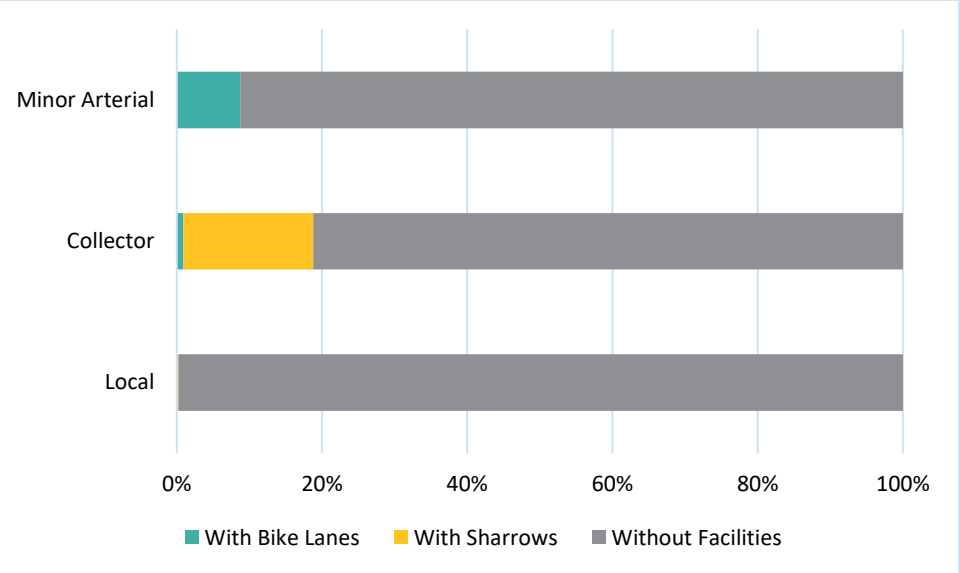
BICYCLE NETWORK NEEDS

The following section describes the bicycle network needs identified for the 2040 Baseline street network.

FUTURE BICYCLE NETWORK

The percent of roadways with bike facilities (either bike lanes or sharrows), seen below in Figure 2, will not change noticeably from existing conditions. Over 80% of Newport's collector streets and over 90% of Newport's arterial streets currently lack any bike facilities (*e.g.* bike lanes). Much of US 101 and US 20 also lack bike lanes although wider shoulders are available on US 101 north of NW 25th Street and south of SW Abalone Street which can serve a similar role for cyclists. These numbers do not incorporate off-street shared-use paths that may run alongside some roadways and serve bicycle travel.

FIGURE 2: PERCENT OF STREET MILES WITH BIKE FACILITIES IN NEWPORT



FUTURE BICYCLE LEVEL OF TRAFFIC STRESS (LTS)

Bicycle Level of Traffic Stress measures the degree that different street characteristics are stressful to people operating a bicycle. Locations rated as low or moderate stress (LTS 1 or 2) provide a safe and comfortable cycling experience while locations rated as high or extreme stress (LTS 3 or 4) provide a less comfortable cycling experience. The assessment method and conditions of the bicycle network are summarized in a previous memo[11]. Since traffic volume is the only input factor anticipated to change significantly under future conditions, there were no changes made to the Bicycle LTS evaluation identified in existing conditions (see Technical Memo #5).

Nearly 90% of Newport's collector streets rate as low or moderate stress (LTS 1 or 2) for cyclists. While most of Newport's collector streets lack dedicated bike facilities (*e.g.* bike lanes), most of these streets are relatively low volume, creating a comfortable environment for cyclists even without dedicated facilities. Conversely, less than 15% of Newport's arterial streets rate as low or moderate stress (LTS 1 or 2) and nearly 75% of the arterial streets rate as extreme stress (LTS 4) due to the lack of bike facilities (*e.g.* bike lanes) and higher volumes, particularly on US 101 and US 20. The streets with highest stress levels are the streets important for local and regional through travel, where most businesses and services are located. These streets can also provide the only through route for cyclists (*e.g.* the Yaquina Bay Bridge).

[11] DKS Associates. Technical Memorandum #5: Existing Conditions. April 8, 2020.

BICYCLE FACILITY GAPS

Most of Newport's arterial and collector street network does not include bike facilities (*e.g.* bike lanes), and existing facilities are often not continuous. While all existing gaps should be completed, completing key gaps which can provide safe alternatives to high traffic routes for cyclists should be priority. Potential key gaps on arterial and collector street segments include:

- SW 9th Street/SW Angle Street/SW 10th Street/SE 2nd Street/SE Coos Street, US 101 to US 20 (City of Newport)
- SW Bay Boulevard, SW Bay Street to SE Moore Drive (City of Newport)
- SW Hurbert Street/SW Canyon Way, SW 2nd Street to Bay Boulevard (City of Newport)
- SE Coos Street/NE Benton Street, US 20 to NE 11th Street (City of Newport)
- NW 11th Street/NE 11th Street, NW Spring Street to NE Eads Street (City of Newport)
- NW 3rd Street/NE 11th Street, NW Coast Street to NE Eads Street (City of Newport)
- SW 7th Street, SW Elizabeth Street to SW 2nd Street (City of Newport)
- SW Bayley Street, SW Elizabeth Street to US 101 (City of Newport)
- SW 2nd Street, SW Elizabeth Street to US 101 (City of Newport)
- SW Nye Street/NW Nye Street, SW 2nd Street to NW 15th Street (City of Newport)
- SW Abalone Street, US 101 to Existing Shared Use Path (City of Newport)
- NE Harney Street, NE Big Creek Road to NE 36th Street (City of Newport)
- NE 36th Street, NE Harney Street to US 101 (City of Newport)
- US 101, NW Oceanview Drive to NE 36th Street (ODOT)
- NE Big Creek Road, NE Harney Street to NE 12th Street (City of Newport)

High stress arterial and collector roadways with existing bike facilities (*e.g.* bike lanes) are another area that should be targeted for improvements. Major street segments rated as high or extreme stress (LTS 3 or 4) for cyclists include:

- US 101 (ODOT)
- US 20 (ODOT)
- NW Oceanview Drive, US 101 to NW Edenview Way (City of Newport)
- SE Bay Boulevard, SE Moore Drive to Embarcadero Resort Driveway (City of Newport)

Several of the identified bicycle facility gaps occur in areas where high household or employment growth is expected nearby. The following segments were identified for their potential to complete a key facility gap near high growth areas, connect existing bicycle facilities that are located near high growth areas, or to increase bicyclists' comfort near high growth areas:

- SE Ferry Slip Road, SE Ash Street to SE Marine Science Drive (City of Newport) – install on-street bike facility (*e.g.* bike lanes) or enhance intersection crossings for existing multi-use path
- NE Eads Street, NE 3rd Street to NE 7th Street (City of Newport) – install on-street bike facility (*e.g.* bike lanes)
- NE 7th Street, NE Eads Street to NE Harney Street (City of Newport) – install on-street bike facility (*e.g.* bike lanes)
- NE 3rd Street, NE Eads Street to NE Harney Street (City of Newport) – install on-street bike facility (*e.g.* bike lanes)
- NE Harney Street, NE 3rd Street to US 20 (City of Newport) – install on-street bike facility (*e.g.* bike lanes)
- SE Moore Drive, US 20 to SE Bay Boulevard (City of Newport) – install on-street bike facility (*e.g.* bike lanes)

Generally, improvements are needed if the City prioritizes more bicycle friendly streets for novice riders or tourists. Such improvements would focus on improving the density and connectivity of low-stress bike routes, improving crossing opportunities for key barriers (*e.g.* US 101, US 20), and providing parallel accommodations to US 101 to improve north-south connections for Newport.

OTHER BICYCLE NEEDS

Other areas identified by the public as critical bicycle needs are across the Yaquina Bay Bridge, along the NW Oceanview Drive corridor, the Oregon Coast Bike Route, and existing bicycle crossings on US 101 and US 20. Vehicle speeds and safety are some of the top concerns for these areas. Connecting the existing bicycle system is another key step towards promoting cycling as a safe and attractive option for Newport residents. High stress barriers in the cycling network can limit interest in bicycling but providing a connected bike network creates opportunities for cyclists to travel between home and work in a safe and comfortable manner. Ideally, all of Newport's street network would create low or moderate stress for cyclists (LTS 1 or 2).

Not all of the roadways lacking bicycle facilities will be able to accommodate bike lanes due to right-of-way constraints, limited funding, and/or fewer constraints on parallel corridors. A network of low and moderate stress bikeways (LTS 1 or 2) will be considered to relieve some of the right-of-way constraints posed on streets where bikeways are high or extreme stress (LTS 3 or 4), but space does not permit consideration of bike lanes or buffered bike lanes. This could include installing enhanced bike facilities (*e.g.* bike lanes) on parallel routes to US 101 or US 20 to facilitate bicycle travel when these opportunities existing. Ideally, these parallel routes will be

installed immediately adjacent to the US 101 or US 20 corridors to facilitate wayfinding and minimize out of direction travel for bicyclists. Crossing enhancements will likely be needed at locations where this proposed parallel system crosses US 101 or US 20 to protect cyclists and encourage cyclists of all ages and abilities to feel comfortable travelling within Newport.

As mitigations for motor vehicle travel are considered for intersections and along roadway segments, innovative designs and/or "alternative" vehicular mobility targets that allow for higher levels of congestion may also be considered to avoid undesirable impacts on bicycle safety and connectivity.

METHODOLOGY TO ADDRESS DEFICIENCIES

A list of potential bicycle network improvement projects will be developed in Technical Memorandum #8 based on streets with bicycle deficiencies. A street is considered deficient if it meets one or more of the following conditions:

- Arterial or collector street without bicycle facilities or adjacent corridor with bicycle facilities.
- Extreme bicycle stress (LTS 4) rating.
- High or extreme bicycle stress (LTS 3 or 4) in close proximity to parks, schools, transit stops, or other important destinations.

SAFETY NEEDS

Several locations were identified in Technical Memorandum #5 as high collision locations. With growing traffic volumes, these problematic areas likely will persist, and may even become progressively worse. These previously identified locations include:

- **US 101/52nd Street (signal):** This four-leg signalized intersection experienced 15 collisions over the five years, including 11 rear-end crashes. Rear-end crashes at this site were typically caused by a driver following too closely or failing to avoid the vehicle ahead. Most crashes at this site led to injuries (11 of 15).
- **US 101/11th Street (signal):** This is a four-leg signalized intersection; seven crashes occurred here over the five years. Two of the seven crashes involved bicyclists, caused by a driver failing to yield or disregarding the traffic signal. Both crashes led to an injury to the cyclist.
- **US 101/6th Street (signal):** This is four-leg signalized intersection with offset intersection legs for 6th Street. Two-thirds (10 of 15) of the crashes were rear-ends, primarily caused by a driver following too closely or inattention. Most of the crashes involved property damage only (9 of 15).
- **US 101/Bayley Street (Two-Way Stop Control, or TWSC):** This is a four-leg intersection with stop control on Bayley Street. A Rectangular Rapid Flashing Beacon (RRFB) is located immediately north of the intersection, along US 101, and the 9th Street/US 101 intersection is also located in close proximity which could contribute to a higher crash rate at this location. One pedestrian crash also occurred at this site over the five years caused by careless driving. Over half of the crashes resulted in injuries (10 of 14).
- **11th Street/Nye Street (TWSC):** This is a four-leg intersection with stop control on Nye Street where five crashes occurred over the five years. Both the critical crash rate and 90th percentile crash rate are exceeded at this site, in part due to the relatively low entering volume among study intersections on local streets. All crashes at this site were angle

crashes and were caused by a driver failing to yield or drivers who passed the stop sign. All five crashes resulted in property damage only.

- **Hurbert Street/9th Street (TWSC):** This is a four-leg intersection with stop control on 9th Street. The critical crash rate and 90th percentile crash rate are both exceeded at this site, likely due to the comparatively low entering volume. Additionally, this site experienced a high number of angle crashes (6 of 7) which were caused by failure to yield or vehicles passing the stop sign. Over half of the crashes (5 of 7) resulted in injuries.

- **Abbey Street/9th Street (TWSC):** This is a four-leg intersection with stop control on 9th Street. While the observed intersection crash rate is lower than the critical crash rate, this site exceeds the statewide 90th percentile crash rate. Over the past five years, all three crashes at this site were angle crashes caused by either passing the stop sign or failure to yield. Two of the crashes led to injuries and one crash resulted in property damage only.

- **Bay Boulevard/Moore Drive (TWSC):** This three-leg skewed intersection with stop control on the west leg (Bay Boulevard) had four crashes over the five years. Both the critical crash rate and 90th percentile crash rates are exceeded at this site. Half of the crashes involved turning movements, caused by either failure to yield or passing the stop sign which could be exacerbated due to the sites' geometry. This intersection was realigned to reduce some of the intersection skew between August, 2016, and July, 2019; the impacts of this geometric change cannot be assessed from the available data. Half of the crashes resulted in property damage only (2 of 4).

Additionally, the segment of US 101 between NE 52nd Street/Lighthouse Drive and US 20 was previously identified as having a crash rate over the statewide average crash rate. Crash causes on this segment reflect the dense urban land uses and are primarily categorized as failure to yield, following too closely, and failing to avoid the vehicle ahead. Most crashes (59 percent) occurred at intersections. There were five pedestrian-involved collisions and eight bicycle-involved collisions along this segment.

Additionally, according to the ODOT 2017 SPIS report (data reported between 2014 and 2016), and 2016 SPIS report (data reported between 2013 and 2015), several locations in Newport rank among the top most hazardous sections of highways in Oregon. The identified locations are listed below.

- US 101 around the N 20th Street intersection (top 10 percent segment, 2017; top 10 percent segment, 2016)

- US 101 around the N 16th Street intersection (top 10 percent segment, 2017)

- US 101 around the N 3rd Street intersection (top 10 percent segment, 2016)

- US 101 around the N 2nd Street intersection (top 10 percent segment, 2017)

- US 101 around the N 1st Street intersection (top 5 percent segment, 2017)
- US 101 around the SW Lee Street intersection (top 10 percent segment, 2016)
- US 101 around the SW Hurbert Street intersection (top 10 percent segment, 2016)
- US 101 around the SW Bayley Street intersection (top 5 percent segment, 2017)
- US 101 around the SW Bay Street intersection (top 5 percent segment, 2016)

Without targeted safety improvements, these identified safety deficiencies will likely remain through 2040. As traffic volumes growth through 2040 in Newport, additional safety deficiencies could also arise as vehicle exposure increases. Specific care should be taken at locations where high volumes of pedestrians or cyclists are expected to prioritize the safety of vulnerable road users.

FREIGHT NEEDS

With growing traffic volumes from existing conditions, six intersections along Oregon Freight Routes or Federal Truck Routes would not meet their respective mobility target/standard during the 2040 design hour conditions. These intersections are:

- US 101/73rd
- US 101/52nd
- US 101/Oceanview
- US 101/US 20
- US 20/Benton
- US 20/Moore

Although all of these intersections are on a designated freight route, three of the intersections are two-way stop control where the side street will experience significant delay in the future. Since freight traffic is concentrated on US 101 and US 20 in Newport, high side-street delay at the intersections of US 101/Oceanview and US 20/Benton will likely have a minimal impact to freight. However, 73rd Street serves an industrial area which can generate high freight traffic, and increased side street delay at this location will negatively impact freight operations. High vehicle delay at the other three traffic signals will also increase delay for freight travel through Newport on US 101 or US 20.

Other locations with identified freight needs include Bay Boulevard and the Yaquina Bay Bridge. Bay Boulevard is a working waterfront and is a key freight generator for the City of Newport. This area is also a tourist destination which can create conflicts between the high volume of

pedestrians, passenger cars, and freight vehicles which serve Newport's fishing industry. Freight vehicles can also struggle to navigate the steep grades for northbound traffic approaching the Yaquina Bay Bridge. A short term project which will relocate the existing signal from SE 32nd Street to SE 35th Street is expected to improve this operational issue for freight vehicles.

TRANSIT NEEDS

Transit service for Newport is provided by Lincoln County Transit. Typical existing service characteristics are summarized below:

- Lincoln County Transit provides service to Newport which includes a city loop and inter-city transit service to Lincoln City, Siletz, Yachats, Corvallis, and Albany.
- The Newport city loop completes a full loop through Newport six times each day, seven days a week, and in the evening, there is an additional southbound run to City Hall. Key destinations within Newport served by transit include grocery stores and other shopping, restaurants, local hotels and residences, Newport City Hall, post office, Oregon Coast Aquarium, NOAA facilities, and Nye Beach. Most destinations served by transit are north of Yaquina Bay Bridge or in the South Beach area. City loop buses are wheelchair accessible with bicycle racks.
- Inter-city transit service operates routes to Corvallis and Albany four times each day, to Lincoln City four times each day, to Yachats four times each day, and to Siletz six times a day between Monday and Saturday.
- Lincoln County Transit also operates Dial-A-Ride transit in Newport between Monday and Friday.
- Most Newport residents are within a half mile of a transit stop, and in the downtown core, most residents are within a quarter mile of a transit stop.
- Limited stop amenities (including many unmarked stops) makes the transit system challenging to navigate, particularly for visitors.
- Long headways (up to 90 minutes) and limited service hours (approximately between 7 am and 5pm) for the Newport city loop transit service limits the utility of this service for residents and visitors.
- Transit service is not currently provided south of SE 50th Avenue.

Lincoln County's Transit Development Plan will guide future changes to transit service. Identified changes through 2028 include:

- Add additional stops at Newport's Walmart and Fred Meyer as part of the Newport-Siletz route

- Add up to four additional daily runs on the Coast to Valley route which serves Corvallis and Albany and coordinate these runs to better align with work or Amtrak schedules
- Increase frequency up to 50 percent on weekdays and weekends for the Newport-Lincoln City Route
- Add additional stops at the Oregon Coast Community College as part of the Newport-Yachats route
- Extend Dial-A-Ride service hours and provide service seven days a week
- Modify the Newport City Loop route to remove the Nye Beach and Bayfront and maintain existing 90 minute headways
- Add a new Newport City Loop route which serves Fred Meyer, Nye Beach, City Hall, Bayfront, and Embarcadero with 45 minute headways
- Add a new Newport City Loop route which serves Nye Beach, City Hall, Bayfront, and Embarcadero with 30 minute headways

These transit enhancements were identified by Lincoln County Transit to address the most significant unmet needs within their transit system. Further investments will be coordinated with Lincoln County Transit.

OTHER NEEDS

Other key community concerns identified include:

- Congestion around NE Harney Street/SE Moore Drive due to schools and county fairground traffic
- Limited access to the hospital from US 101
- Dangerous on-street parking on US 101 in downtown Newport due to narrow travel lanes
- Southbound vehicle speeds on US 101 approaching the Yaquina Bay Bridge as vehicles merge
- Limited access and high delay travelling to and from residential neighborhoods whose only access is from US 101, such as San-Bay-O Circle

APPENDIX

STUDY INTERSECTION OPERATIONS: 2040 PM PEAK- DESIGN HOUR CONDITIONS

#	Study Intersection	Intersection Control	Mobility Target	V/C Ratio	Delay	LOS
1	US 101/73rd	Urban 4ST	0.8/0.95	0.55/1.57	13/405	B/F
2	US 101/52nd*	Urban 4SG	0.80	0.89	57.2	E
3	US 101/Oceanview	Urban 3ST	0.8/0.95	0.72/1.12	11/157	B/F
4	US 101/36th	Urban 3ST	0.8/0.95	0.68/0.24	11/32	B/D
5	US 101/31st	Urban 3ST	0.8/0.95	0.71/0.3	12/37	B/E
6	US 101/20th*	Urban 4SG	0.90	0.88	34.1	C
7	US 101/11th	Urban 4SG	0.90	0.65	5	A
8	US 101/6th	Urban 4SG	0.90	0.81	20.4	C
9	US 101/US 20	Urban 4SG	0.85	0.99	69.2	E
10	US 101/Angle	Urban 4ST	0.90/0.95	0.49/2.63	12/1093	B/F
11	US 101/Hurbert	Urban 4SG	0.90	0.90	48.5	D
12	US 101/Bayley	Urban 4ST	0.90/0.95	0.41/0.79	13/111	B/F
13	US 20/Benton	Urban 4ST	0.85/0.95	0.46/1.05	10/118	B/F
14	US 20/Moore	Urban 4SG	0.85	0.85	30.5	C
15	Oceanview/25th	Urban 4ST	0.95/0.95	0.15/0.27	8/12	A/B
16	11th/Nye	Urban 4ST	0.95/0.95	0.04/0.26	7/11	A/B
17	Harney/7th	Urban 4ST - AWSC	0.95	0.22	9.8	A
18	Hurbert/9th	Urban 4ST	0.95/0.95	0.06/0.44	7/15	A/B
19	Abbey/9th	Urban 4ST	0.95/0.95	0.09/0.23	8/13	A/B
20	Bay/Moore	Urban 3ST	0.95/0.95	0.11/0.33	8/14	A/B

*Reported using HCM 2000 (v/c ratio only)

**Reported using HCM 2000

STUDY INTERSECTION OPERATIONS: 2040 PM PEAK- AVERAGE WEEKDAY CONDITIONS

#	Study Intersection	Intersection Control	Mobility Target	V/C Ratio	Delay	LOS
1	US 101/73rd	Urban 4ST	0.8/0.95	0.46/0.92	12/130	B/F
2	US 101/52nd*	Urban 4SG	0.80	0.78	37.3	D
3	US 101/Oceanview	Urban 3ST	0.8/0.95	0.64/0.57	10/43	B/E
4	US 101/36th	Urban 3ST	0.8/0.95	0.63/0.18	11/26	B/D
5	US 101/31st	Urban 3ST	0.8/0.95	0.66/0.22	11/29	B/D
6	US 101/20th*	Urban 4SG	0.90	0.75	31.6	C
7	US 101/11th	Urban 4SG	0.90	0.55	6.8	A
8	US 101/6th	Urban 4SG	0.90	0.71	25.3	C
9	US 101/US 20	Urban 4SG	0.85	0.91	52.8	D
10	US 101/Angle	Urban 4ST	0.90/0.95	0.41/1.24	11/377	B/F
11	US 101/Hurbert	Urban 4SG	0.90	0.79	34.7	C
12	US 101/Bayley	Urban 4ST	0.90/0.95	0.36/0.41	12/50	B/F
13	US 20/Benton	Urban 4ST	0.85/0.95	0.43/0.62	10/36	A/E
14	US 20/Moore	Urban 4SG	0.85	0.69	19.3	B
15	Oceanview/25th	Urban 4ST	0.95/0.95	0.11/0.11	8/10	A/B
16	11th/Nye	Urban 4ST	0.95/0.95	0.03/0.19	7/10	A/B
17	Harney/7th	Urban 4ST - AWSC	0.95	0.20	9.5	A
18	Hurbert/9th	Urban 4ST	0.95/0.95	0.06/0.35	7/13	A/B
19	Abbey/9th	Urban 4ST	0.95/0.95	0.06/0.18	8/12	A/B
20	Bay/Moore	Urban 3ST	0.95/0.95	0.08/0.21	8/11	A/B

*Reported using HCM 2000 (v/c ratio only)

**Reported using HCM 2000

Intersection	
Int Delay, s/veh	25.3

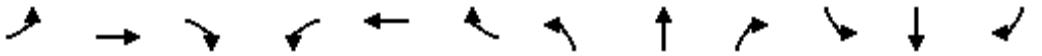
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑	↱	↰	↕	
Traffic Vol, veh/h	1	0	5	95	0	15	5	885	60	20	690	2
Future Vol, veh/h	1	0	5	95	0	15	5	885	60	20	690	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	200	200	-	-
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, %	0	0	0	7	0	0	0	3	38	69	3	0
Mvmt Flow	1	0	5	100	0	16	5	932	63	21	726	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1751	1774	727	1714	1712	932	728	0	0	995	0	0
Stage 1	769	769	-	942	942	-	-	-	-	-	-	-
Stage 2	982	1005	-	772	770	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.5	6.2	4.1	-	-	4.79	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4	3.3	2.2	-	-	2.821	-	-
Pot Cap-1 Maneuver	68	84	427	~ 69	91	326	885	-	-	489	-	-
Stage 1	397	413	-	309	344	-	-	-	-	-	-	-
Stage 2	302	322	-	385	413	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	62	80	427	~ 66	87	326	885	-	-	489	-	-
Mov Cap-2 Maneuver	62	80	-	~ 66	87	-	-	-	-	-	-	-
Stage 1	395	395	-	307	342	-	-	-	-	-	-	-
Stage 2	286	320	-	364	395	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.2	$ 405.2	0	0.4
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	885	-	-	216	74	489	-	-
HCM Lane V/C Ratio	0.006	-	-	0.029	1.565	0.043	-	-
HCM Control Delay (s)	9.1	-	-	22.2	$ 405.2	12.7	-	-
HCM Lane LOS	A	-	-	C	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	9.7	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



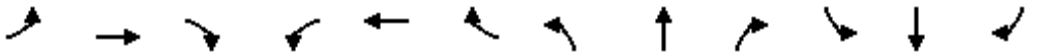
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	5	90	95	0	15	55	1080	120	30	850	30
Future Volume (veh/h)	35	5	90	95	0	15	55	1080	120	30	850	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		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	1736	1750	1750	1750	1695	1682	1750	1750	1695	1750
Adj Flow Rate, veh/h	37	5	95	100	0	16	58	1137	0	32	895	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	0	0	4	5	0	0	4	0
Cap, veh/h	55	4	297	59	0	299	79	1123		52	1102	
Arrive On Green	0.20	0.20	0.20	0.20	0.00	0.20	0.05	0.67	0.00	0.03	0.65	0.00
Sat Flow, veh/h	0	19	1457	0	0	1468	1615	1682	1483	1667	1695	1483
Grp Volume(v), veh/h	42	0	95	100	0	16	58	1137	0	32	895	0
Grp Sat Flow(s),veh/h/ln	19	0	1457	0	0	1468	1615	1682	1483	1667	1695	1483
Q Serve(g_s), s	0.0	0.0	6.8	0.0	0.0	1.1	4.4	82.0	0.0	2.3	48.1	0.0
Cycle Q Clear(g_c), s	24.5	0.0	6.8	24.5	0.0	1.1	4.4	82.0	0.0	2.3	48.1	0.0
Prop In Lane	0.88		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	59	0	297	59	0	299	79	1123		52	1102	
V/C Ratio(X)	0.71	0.00	0.32	1.71	0.00	0.05	0.74	1.01		0.62	0.81	
Avail Cap(c_a), veh/h	59	0	297	59	0	299	79	1123		81	1132	
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.9	0.0	41.7	61.2	0.0	39.4	57.7	20.4	0.0	58.8	15.9	0.0
Incr Delay (d2), s/veh	31.4	0.0	0.5	379.7	0.0	0.1	28.8	30.0	0.0	8.5	5.0	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	1.8	0.0	2.5	8.0	0.0	0.4	2.4	35.7	0.0	1.1	17.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.3	0.0	42.1	440.9	0.0	39.4	86.5	50.4	0.0	67.3	21.0	0.0
LnGrp LOS	F	A	D	F	A	D	F	F		E	C	
Approach Vol, veh/h		137			116			1195	A		927	A
Approach Delay, s/veh		56.9			385.5			52.2			22.6	
Approach LOS		E			F			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	83.8		29.0	7.8	86.0		29.0				
Change Period (Y+Rc), s	4.5	6.0		4.5	4.5	6.0		4.5				
Max Green Setting (Gmax), s	5.5	80.0		24.5	5.5	80.0		24.5				
Max Q Clear Time (g_c+I1), s	6.4	50.1		26.5	4.3	84.0		26.5				
Green Ext Time (p_c), s	0.0	13.4		0.0	0.0	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		57.2
HCM 6th LOS		E

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	5	90	95	0	15	55	1080	120	30	850	30
Future Volume (vph)	35	5	90	95	0	15	55	1080	120	30	850	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.97	1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1663	1440		1659	1442	1599	1667	1457	1662	1683	1488
Flt Permitted		0.68	1.00		0.73	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1176	1440		1274	1442	1599	1667	1457	1662	1683	1488
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	5	95	100	0	16	58	1137	126	32	895	32
RTOR Reduction (vph)	0	0	83	0	0	14	0	0	19	0	0	9
Lane Group Flow (vph)	0	42	12	0	100	2	58	1137	107	32	895	23
Confl. Peds. (#/hr)	4		1	1		4						
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	4%	5%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4		4			6			2
Actuated Green, G (s)		13.7	13.7		13.7	13.7	4.4	83.3	83.3	3.2	82.1	82.1
Effective Green, g (s)		14.2	14.2		14.2	14.2	4.9	85.3	85.3	3.7	84.1	84.1
Actuated g/C Ratio		0.12	0.12		0.12	0.12	0.04	0.74	0.74	0.03	0.73	0.73
Clearance Time (s)		4.5	4.5		4.5	4.5	4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)		2.5	2.5		2.5	2.5	2.5	4.8	4.8	2.5	4.8	4.8
Lane Grp Cap (vph)		144	177		157	177	68	1234	1078	53	1228	1086
v/s Ratio Prot							c0.04	c0.68		0.02	0.53	
v/s Ratio Perm		0.04	0.01		c0.08	0.00			0.07			0.02
v/c Ratio		0.29	0.07		0.64	0.01	0.85	0.92	0.10	0.60	0.73	0.02
Uniform Delay, d1		45.9	44.6		48.0	44.3	54.8	12.2	4.2	55.0	9.0	4.3
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.8	0.1		7.2	0.0	60.3	11.7	0.1	15.3	2.6	0.0
Delay (s)		46.7	44.8		55.3	44.4	115.1	23.9	4.3	70.3	11.6	4.3
Level of Service		D	D		E	D	F	C	A	E	B	A
Approach Delay (s)		45.4			53.7			26.1			13.3	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	115.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	12.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	130	60	20	1150	970	55
Future Vol, veh/h	130	60	20	1150	970	55
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	-	300	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	11	5	4	4
Mvmt Flow	138	64	21	1223	1032	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2297	1032	1091	0	-	0
Stage 1	1032	-	-	-	-	-
Stage 2	1265	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	~ 43	285	607	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 41	285	607	-	-	-
Mov Cap-2 Maneuver	154	-	-	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	268	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	156.9	0.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	607	-	180	-	-
HCM Lane V/C Ratio	0.035	-	1.123	-	-
HCM Control Delay (s)	11.1	-	156.9	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.1	-	10.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	15	1085	40	10	995
Future Vol, veh/h	25	15	1085	40	10	995
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	-	-	125	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	31	4	0	0	3
Mvmt Flow	27	16	1154	43	11	1059

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2235	1154	0	0	1197	0
Stage 1	1154	-	-	-	-	-
Stage 2	1081	-	-	-	-	-
Critical Hdwy	6.4	6.51	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.579	-	-	2.2	-
Pot Cap-1 Maneuver	47	210	-	-	590	-
Stage 1	303	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	46	210	-	-	590	-
Mov Cap-2 Maneuver	163	-	-	-	-	-
Stage 1	303	-	-	-	-	-
Stage 2	322	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.5	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	178	590	-
HCM Lane V/C Ratio	-	-	0.239	0.018	-
HCM Control Delay (s)	-	-	31.5	11.2	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

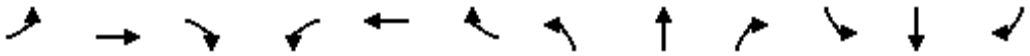
Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	10	1115	90	20	995
Future Vol, veh/h	35	10	1115	90	20	995
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	-	-	50	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	14	5	0	0	3
Mvmt Flow	38	11	1212	98	22	1082

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2338	1212	0	0	1310	0
Stage 1	1212	-	-	-	-	-
Stage 2	1126	-	-	-	-	-
Critical Hdwy	6.4	6.34	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	-	-	2.2	-
Pot Cap-1 Maneuver	41	209	-	-	535	-
Stage 1	284	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	39	209	-	-	535	-
Mov Cap-2 Maneuver	151	-	-	-	-	-
Stage 1	284	-	-	-	-	-
Stage 2	300	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	36.8	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	161	535	-
HCM Lane V/C Ratio	-	-	0.304	0.041	-
HCM Control Delay (s)	-	-	36.8	12	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	1.2	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	55	80	325	30	90	60	1325	115	80	1075	20
Future Volume (vph)	40	55	80	325	30	90	60	1325	115	80	1075	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1694	1405	1564	1495		1630	3162		1614	3218	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1694	1405	1564	1495		1630	3162		1614	3218	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	43	59	86	349	32	97	65	1425	124	86	1156	22
RTOR Reduction (vph)	0	0	78	0	22	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	102	8	244	212	0	65	1544	0	86	1177	0
Confl. Peds. (#/hr)	4		4	4		4	7		2	2		7
Heavy Vehicles (%)	0%	2%	4%	1%	0%	2%	2%	4%	0%	3%	3%	0%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases			8									
Actuated Green, G (s)		10.5	10.5	22.1	22.1		6.7	60.3		8.6	62.2	
Effective Green, g (s)		11.0	11.0	22.6	22.6		7.2	61.3		9.1	63.2	
Actuated g/C Ratio		0.09	0.09	0.19	0.19		0.06	0.51		0.08	0.53	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		2.5	5.1		2.5	5.1	
Lane Grp Cap (vph)		155	128	294	281		97	1615		122	1694	
v/s Ratio Prot		c0.06		c0.16	0.14		0.04	c0.49		c0.05	0.37	
v/s Ratio Perm			0.01									
v/c Ratio		0.66	0.06	0.83	0.75		0.67	0.96		0.70	0.69	
Uniform Delay, d1		52.7	49.8	46.9	46.1		55.2	28.1		54.1	21.2	
Progression Factor		1.00	1.00	1.00	1.00		1.07	0.58		1.00	1.00	
Incremental Delay, d2		8.7	0.1	17.0	10.4		12.0	11.7		15.8	2.4	
Delay (s)		61.4	49.9	63.9	56.5		70.9	27.9		69.9	23.6	
Level of Service		E	D	E	E		E	C		E	C	
Approach Delay (s)		56.1			60.3			29.6			26.7	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	15	25	30	10	50	10	1500	15	15	1445	25
Future Volume (veh/h)	75	15	25	30	10	50	10	1500	15	15	1445	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1750	1750	1750	1750	1750	1750	1750	1709	1709	1750	1709	1709
Adj Flow Rate, veh/h	79	16	26	32	11	53	11	1579	16	16	1521	26
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	3	0	3	3
Cap, veh/h	147	28	34	84	36	99	24	2525	26	30	2515	43
Arrive On Green	0.11	0.12	0.11	0.11	0.12	0.11	0.03	1.00	1.00	0.04	1.00	1.00
Sat Flow, veh/h	845	245	298	382	315	858	1667	3292	33	1667	3265	56
Grp Volume(v), veh/h	121	0	0	96	0	0	11	778	817	16	755	792
Grp Sat Flow(s),veh/h/ln	1388	0	0	1554	0	0	1667	1624	1702	1667	1624	1697
Q Serve(g_s), s	3.4	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	1.1	0.0	0.0
Cycle Q Clear(g_c), s	10.3	0.0	0.0	6.9	0.0	0.0	0.8	0.0	0.0	1.1	0.0	0.0
Prop In Lane	0.65		0.21	0.33		0.55	1.00		0.02	1.00		0.03
Lane Grp Cap(c), veh/h	204	0	0	213	0	0	24	1245	1305	30	1251	1308
V/C Ratio(X)	0.59	0.00	0.00	0.45	0.00	0.00	0.46	0.62	0.63	0.53	0.60	0.61
Avail Cap(c_a), veh/h	336	0	0	349	0	0	83	1245	1305	83	1251	1308
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.41	0.41	0.41	0.65	0.65	0.65
Uniform Delay (d), s/veh	51.7	0.0	0.0	50.2	0.0	0.0	57.8	0.0	0.0	57.4	0.0	0.0
Incr Delay (d2), s/veh	2.1	0.0	0.0	1.1	0.0	0.0	4.1	1.0	0.9	7.0	1.4	1.4
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	3.7	0.0	0.0	2.8	0.0	0.0	0.4	0.3	0.3	0.5	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.8	0.0	0.0	51.3	0.0	0.0	61.9	1.0	0.9	64.3	1.4	1.4
LnGrp LOS	D	A	A	D	A	A	E	A	A	E	A	A
Approach Vol, veh/h		121			96			1606			1563	
Approach Delay, s/veh		53.8			51.3			1.4			2.0	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	96.4		17.8	6.2	96.0		17.8
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	5.5	76.0		24.5	5.5	76.0		24.5
Max Q Clear Time (g_c+I1), s	2.8	2.0		8.9	3.1	2.0		12.3
Green Ext Time (p_c), s	0.0	51.9		0.3	0.0	54.0		0.4

Intersection Summary		
HCM 6th Ctrl Delay		5.0
HCM 6th LOS		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	35	30	75	20	35	35	1445	25	25	1400	30
Future Volume (veh/h)	90	35	30	75	20	35	35	1445	25	25	1400	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1750	1750	1750	1750	1750	1750	1750	1709	1709	1750	1695	1695
Adj Flow Rate, veh/h	100	39	33	83	22	39	39	1606	28	28	1556	33
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	3	3	0	4	4
Cap, veh/h	127	50	42	113	30	53	55	1907	33	41	1855	39
Arrive On Green	0.12	0.13	0.12	0.10	0.12	0.10	0.03	0.58	0.57	0.05	1.00	1.00
Sat Flow, veh/h	954	372	315	932	247	438	1667	3265	57	1667	3225	68
Grp Volume(v), veh/h	172	0	0	144	0	0	39	797	837	28	776	813
Grp Sat Flow(s),veh/h/ln	1641	0	0	1617	0	0	1667	1624	1698	1667	1611	1682
Q Serve(g_s), s	12.2	0.0	0.0	10.4	0.0	0.0	2.8	48.2	48.5	2.0	0.0	0.0
Cycle Q Clear(g_c), s	12.2	0.0	0.0	10.4	0.0	0.0	2.8	48.2	48.5	2.0	0.0	0.0
Prop In Lane	0.58		0.19	0.58		0.27	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	219	0	0	195	0	0	55	948	992	41	927	968
V/C Ratio(X)	0.79	0.00	0.00	0.74	0.00	0.00	0.71	0.84	0.84	0.69	0.84	0.84
Avail Cap(c_a), veh/h	219	0	0	216	0	0	83	948	992	83	927	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.30	0.30	0.30	0.75	0.75	0.75
Uniform Delay (d), s/veh	51.1	0.0	0.0	51.8	0.0	0.0	57.4	20.4	20.5	56.6	0.0	0.0
Incr Delay (d2), s/veh	16.5	0.0	0.0	10.5	0.0	0.0	3.7	2.9	2.8	10.9	6.9	6.7
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	6.1	0.0	0.0	4.9	0.0	0.0	1.2	17.6	18.6	0.9	1.8	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.7	0.0	0.0	62.3	0.0	0.0	61.1	23.3	23.3	67.6	6.9	6.7
LnGrp LOS	E	A	A	E	A	A	E	C	C	E	A	A
Approach Vol, veh/h		172			144			1673			1617	
Approach Delay, s/veh		67.7			62.3			24.2			7.8	
Approach LOS		E			E			C			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.0	73.5		18.5	6.9	74.6		20.0
Change Period (Y+Rc), s	4.5	6.5		6.0	4.5	6.5		6.0
Max Green Setting (Gmax), s	5.5	63.5		14.0	5.5	63.5		14.0
Max Q Clear Time (g_c+I1), s	4.8	2.0		12.4	4.0	50.5		14.2
Green Ext Time (p_c), s	0.0	32.1		0.1	0.0	12.3		0.0

Intersection Summary	
HCM 6th Ctrl Delay	20.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	195	35	255	165	280	75	900	215	335	975	80
Future Volume (veh/h)	205	195	35	255	165	280	75	900	215	335	975	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	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	1736	1736	1736	1654	1723	1723	1750	1695	1614	1695	1709	1709
Adj Flow Rate, veh/h	218	207	37	271	176	298	80	957	0	356	1037	85
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, %	1	1	1	7	2	2	0	4	10	4	3	3
Cap, veh/h	250	238	43	276	330	270	106	991		350	1396	114
Arrive On Green	0.15	0.17	0.16	0.17	0.19	0.19	0.06	0.31	0.00	0.07	0.15	0.15
Sat Flow, veh/h	1654	1423	254	1576	1723	1410	1667	3221	1367	1615	3032	248
Grp Volume(v), veh/h	218	0	244	271	176	298	80	957	0	356	555	567
Grp Sat Flow(s),veh/h/ln	1654	0	1678	1576	1723	1410	1667	1611	1367	1615	1624	1657
Q Serve(g_s), s	15.5	0.0	17.0	20.6	11.0	23.0	5.7	35.1	0.0	26.0	39.2	39.3
Cycle Q Clear(g_c), s	15.5	0.0	17.0	20.6	11.0	23.0	5.7	35.1	0.0	26.0	39.2	39.3
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	250	0	281	276	330	270	106	991		350	748	763
V/C Ratio(X)	0.87	0.00	0.87	0.98	0.53	1.10	0.75	0.97		1.02	0.74	0.74
Avail Cap(c_a), veh/h	289	0	294	276	330	270	153	991		350	748	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.43	0.43	0.43
Uniform Delay (d), s/veh	49.8	0.0	48.7	49.3	43.7	48.5	55.2	40.9	0.0	55.7	44.1	44.1
Incr Delay (d2), s/veh	21.2	0.0	22.1	49.2	1.7	85.6	9.5	21.4	0.0	36.0	2.9	2.9
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	7.9	0.0	8.9	11.8	4.9	14.5	2.7	16.8	0.0	14.8	17.8	18.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.1	0.0	70.8	98.5	45.4	134.1	64.7	62.4	0.0	91.7	47.0	47.0
LnGrp LOS	E	A	E	F	D	F	E	E		F	D	D
Approach Vol, veh/h		462			745			1037	A		1478	
Approach Delay, s/veh		70.9			100.2			62.5			57.8	
Approach LOS		E			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	59.3	22.1	27.0	30.0	40.9	25.0	24.1
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5
Max Green Setting (Gmax), s	10.5	50.0	20.5	20.5	25.5	35.0	20.5	20.5
Max Q Clear Time (g_c+I1), s	7.7	41.3	17.5	25.0	28.0	37.1	22.6	19.0
Green Ext Time (p_c), s	0.0	6.6	0.1	0.0	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	69.2
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	25.2

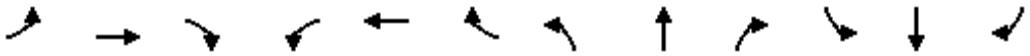
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	20	20	10	10	120	10	1080	15	60	1135	55
Future Vol, veh/h	15	20	20	10	10	120	10	1080	15	60	1135	55
Conflicting Peds, #/hr	0	0	17	17	0	0	22	0	11	11	0	22
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	14	0	2	0	4	0	4	2	2
Mvmt Flow	16	22	22	11	11	132	11	1187	16	66	1247	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2052	2667	693	2012	2689	613	1329	0	0	1214	0	0
Stage 1	1431	1431	-	1228	1228	-	-	-	-	-	-	-
Stage 2	621	1236	-	784	1461	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.78	6.5	6.94	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.78	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.78	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.64	4	3.32	2.2	-	-	2.24	-	-
Pot Cap-1 Maneuver	33	23	390	30	22	435	526	-	-	559	-	-
Stage 1	144	202	-	171	253	-	-	-	-	-	-	-
Stage 2	446	250	-	327	195	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	0	~ 12	376	-	11	430	515	-	-	553	-	-
Mov Cap-2 Maneuver	0	~ 12	-	-	11	-	-	-	-	-	-	-
Stage 1	132	109	-	158	234	-	-	-	-	-	-	-
Stage 2	276	232	-	134	105	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	1092.8		0.5	2.9
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	515	-	-	23	-	553	-	-
HCM Lane V/C Ratio	0.021	-	-	2.628	-	0.119	-	-
HCM Control Delay (s)	12.1	0.4	-	$ 1092.8	-	12.4	2.5	-
HCM Lane LOS	B	A	-	F	-	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	7.6	-	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	25	35	70	40	45	20	965	10	45	1080	20
Future Volume (veh/h)	40	25	35	70	40	45	20	965	10	45	1080	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.98		0.98	1.00		0.96	1.00		0.94
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	1682	1682	1682	1695	1695	1695	1723	1723	1723
Adj Flow Rate, veh/h	41	26	36	72	41	46	21	995	10	46	1113	21
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, %	0	0	0	5	5	5	4	4	4	2	2	2
Cap, veh/h	105	67	70	124	62	58	23	1135	12	52	1330	26
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.34	0.35	0.34	0.40	0.41	0.40
Sat Flow, veh/h	441	471	490	564	439	408	66	3279	35	127	3232	64
Grp Volume(v), veh/h	103	0	0	159	0	0	538	0	488	619	0	561
Grp Sat Flow(s),veh/h/ln	1403	0	0	1411	0	0	1692	0	1687	1716	0	1707
Q Serve(g_s), s	0.0	0.0	0.0	5.1	0.0	0.0	36.6	0.0	31.9	39.9	0.0	34.5
Cycle Q Clear(g_c), s	8.0	0.0	0.0	13.1	0.0	0.0	36.6	0.0	31.9	39.9	0.0	34.5
Prop In Lane	0.40		0.35	0.45		0.29	0.04		0.02	0.07		0.04
Lane Grp Cap(c), veh/h	235	0	0	238	0	0	586	0	584	706	0	702
V/C Ratio(X)	0.44	0.00	0.00	0.67	0.00	0.00	0.92	0.00	0.84	0.88	0.00	0.80
Avail Cap(c_a), veh/h	271	0	0	273	0	0	592	0	591	706	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)	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	47.6	0.0	0.0	49.9	0.0	0.0	37.6	0.0	36.1	32.5	0.0	31.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	4.4	0.0	0.0	20.4	0.0	11.5	14.4	0.0	9.2
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	3.0	0.0	0.0	5.0	0.0	0.0	18.4	0.0	15.0	19.3	0.0	16.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.5	0.0	0.0	54.3	0.0	0.0	58.0	0.0	47.6	46.9	0.0	40.2
LnGrp LOS	D	A	A	D	A	A	E	A	D	D	A	D
Approach Vol, veh/h		103			159			1026			1180	
Approach Delay, s/veh		48.5			54.3			53.0			43.7	
Approach LOS		D			D			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.4		21.1		45.6		21.1				
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5				
Max Green Setting (Gmax), s		45.0		19.5		41.0		19.5				
Max Q Clear Time (g_c+I1), s		41.9		15.1		38.6		10.0				
Green Ext Time (p_c), s		2.6		0.3		2.0		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			48.5									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	0	60	10	0	30	25	1110	10	10	1195	20
Future Vol, veh/h	15	0	60	10	0	30	25	1110	10	10	1195	20
Conflicting Peds, #/hr	10	0	0	0	0	10	13	0	8	8	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
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, %	0	0	0	0	0	0	4	3	0	0	2	0
Mvmt Flow	17	0	67	11	0	33	28	1233	11	11	1328	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2057	2682	688	1989	2688	640	1363	0	0	1252	0	0
Stage 1	1374	1374	-	1303	1303	-	-	-	-	-	-	-
Stage 2	683	1308	-	686	1385	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.24	-	-	2.2	-	-
Pot Cap-1 Maneuver	33	22	393	37	22	423	490	-	-	563	-	-
Stage 1	156	215	-	173	233	-	-	-	-	-	-	-
Stage 2	410	231	-	408	213	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	27	19	388	27	19	416	484	-	-	559	-	-
Mov Cap-2 Maneuver	27	19	-	27	19	-	-	-	-	-	-	-
Stage 1	145	196	-	162	218	-	-	-	-	-	-	-
Stage 2	352	216	-	311	194	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	110.6	79	0.3	0.5
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	484	-	-	106	90	559	-	-
HCM Lane V/C Ratio	0.057	-	-	0.786	0.494	0.02	-	-
HCM Control Delay (s)	12.9	-	-	110.6	79	11.6	0.4	-
HCM Lane LOS	B	-	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	4.3	2.1	0.1	-	-

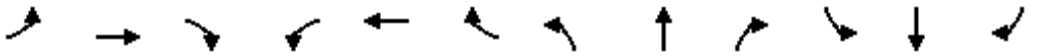
Intersection	
Int Delay, s/veh	17.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	695	45	120	625	5	20	5	210	5	10	40
Future Vol, veh/h	15	695	45	120	625	5	20	5	210	5	10	40
Conflicting Peds, #/hr	1	0	1	1	0	1	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	50	-	-	100	-	-	-	-	-	-	-	-
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, %	0	6	5	4	4	0	6	0	3	0	0	3
Mvmt Flow	16	732	47	126	658	5	21	5	221	5	11	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	664	0	0	780	0	0	1729	1705	758	1816	1726	663
Stage 1	-	-	-	-	-	-	789	789	-	914	914	-
Stage 2	-	-	-	-	-	-	940	916	-	902	812	-
Critical Hdwy	4.1	-	-	4.14	-	-	7.16	6.5	6.23	7.1	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.236	-	-	3.554	4	3.327	3.5	4	3.327
Pot Cap-1 Maneuver	935	-	-	828	-	-	68	92	405	61	90	459
Stage 1	-	-	-	-	-	-	378	405	-	330	355	-
Stage 2	-	-	-	-	-	-	311	354	-	335	395	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	934	-	-	827	-	-	48	77	404	23	75	458
Mov Cap-2 Maneuver	-	-	-	-	-	-	48	77	-	23	75	-
Stage 1	-	-	-	-	-	-	371	398	-	324	301	-
Stage 2	-	-	-	-	-	-	231	300	-	147	388	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.6	118.2	55.8
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	235	934	-	-	827	-	-	126
HCM Lane V/C Ratio	1.053	0.017	-	-	0.153	-	-	0.459
HCM Control Delay (s)	118.2	8.9	-	-	10.1	-	-	55.8
HCM Lane LOS	F	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	10.4	0.1	-	-	0.5	-	-	2.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	835	135	75	570	195	125	80	75	175	65	40
Future Volume (veh/h)	60	835	135	75	570	195	125	80	75	175	65	40
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		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	1614	1723	1723	1709	1709	1654	1723	1723	1695	1750	1750	1750
Adj Flow Rate, veh/h	65	908	147	82	620	212	136	87	82	190	71	43
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, %	10	2	2	3	3	7	2	2	4	0	0	0
Cap, veh/h	87	1228	199	106	758	622	340	202	529	265	95	49
Arrive On Green	0.06	0.44	0.42	0.06	0.44	0.44	0.36	0.37	0.37	0.36	0.37	0.36
Sat Flow, veh/h	1537	2821	457	1628	1709	1402	749	545	1431	546	256	132
Grp Volume(v), veh/h	65	527	528	82	620	212	223	0	82	304	0	0
Grp Sat Flow(s),veh/h/ln	1537	1637	1641	1628	1709	1402	1294	0	1431	934	0	0
Q Serve(g_s), s	3.9	24.8	24.8	4.6	29.3	9.2	0.0	0.0	3.5	18.5	0.0	0.0
Cycle Q Clear(g_c), s	3.9	24.8	24.8	4.6	29.3	9.2	12.0	0.0	3.5	30.5	0.0	0.0
Prop In Lane	1.00		0.28	1.00		1.00	0.61		1.00	0.62		0.14
Lane Grp Cap(c), veh/h	87	712	714	106	758	622	535	0	529	404	0	0
V/C Ratio(X)	0.74	0.74	0.74	0.78	0.82	0.34	0.42	0.00	0.15	0.75	0.00	0.00
Avail Cap(c_a), veh/h	100	797	799	106	832	683	639	0	635	504	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	42.9	21.7	21.9	42.6	22.5	16.9	22.1	0.0	19.5	32.4	0.0	0.0
Incr Delay (d2), s/veh	21.1	6.0	6.0	28.7	8.8	1.2	0.4	0.0	0.1	4.9	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	2.0	10.2	10.3	2.7	12.9	3.1	3.7	0.0	1.2	7.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.1	27.8	27.9	71.3	31.3	18.1	22.5	0.0	19.6	37.3	0.0	0.0
LnGrp LOS	E	C	C	E	C	B	C	A	B	D	A	A
Approach Vol, veh/h		1120			914			305			304	
Approach Delay, s/veh		30.0			31.8			21.7			37.3	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	44.2		38.2	9.2	45.0		38.2				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.5	44.0		40.5	5.5	44.0		40.5				
Max Q Clear Time (g_c+I1), s	6.6	26.8		32.5	5.9	31.3		14.0				
Green Ext Time (p_c), s	0.0	12.4		1.2	0.0	8.0		1.4				

Intersection Summary			
HCM 6th Ctrl Delay		30.5	
HCM 6th LOS		C	

Notes

User approved pedestrian interval to be less than phase max green.

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	0	0	0	80	0	70	0	110	100	20	90	0
Future Vol, veh/h	0	0	0	80	0	70	0	110	100	20	90	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	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	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	7	0	0	0	0	0	0	2	0
Mvmt Flow	0	0	0	99	0	86	0	136	123	25	111	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	402	421	111	360	360	199	111	0	0	260	0	0
Stage 1	161	161	-	199	199	-	-	-	-	-	-	-
Stage 2	241	260	-	161	161	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	562	527	948	586	570	847	1492	-	-	1316	-	-
Stage 1	846	769	-	791	740	-	-	-	-	-	-	-
Stage 2	767	697	-	829	769	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	497	516	948	577	558	846	1492	-	-	1315	-	-
Mov Cap-2 Maneuver	497	516	-	577	558	-	-	-	-	-	-	-
Stage 1	846	754	-	790	739	-	-	-	-	-	-	-
Stage 2	689	696	-	812	754	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	12.3	0	1.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1492	-	-	-	678	1315	-	-
HCM Lane V/C Ratio	-	-	-	-	0.273	0.019	-	-
HCM Control Delay (s)	0	-	-	0	12.3	7.8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	1.1	0.1	-	-

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	5	30	5	15	25	10	15	100	55	15	60	5
Future Vol, veh/h	5	30	5	15	25	10	15	100	55	15	60	5
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	2	2	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	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	38	6	19	31	13	19	125	69	19	75	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	44	0	0	44	0	0	170	135	43	228	132	39
Stage 1	-	-	-	-	-	-	53	53	-	76	76	-
Stage 2	-	-	-	-	-	-	117	82	-	152	56	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1577	-	-	1577	-	-	798	760	1033	731	762	1038
Stage 1	-	-	-	-	-	-	965	855	-	938	836	-
Stage 2	-	-	-	-	-	-	892	831	-	855	852	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1577	-	-	1577	-	-	723	748	1031	586	750	1037
Mov Cap-2 Maneuver	-	-	-	-	-	-	723	748	-	586	750	-
Stage 1	-	-	-	-	-	-	961	852	-	934	826	-
Stage 2	-	-	-	-	-	-	796	821	-	677	849	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	2.2	10.9	10.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	818	1577	-	-	1577	-	-	725
HCM Lane V/C Ratio	0.26	0.004	-	-	0.012	-	-	0.138
HCM Control Delay (s)	10.9	7.3	0	-	7.3	0	-	10.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1	0	-	-	0	-	-	0.5

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	40	135	25	30	0	125	0	35	0	1	0
Future Vol, veh/h	1	40	135	25	30	0	125	0	35	0	1	0
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
Heavy Vehicles, %	0	0	0	0	0	0	1	0	0	0	0	0
Mvmt Flow	1	45	152	28	34	0	140	0	39	0	1	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	8.1	8.1	9.3	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	1%	45%	0%
Vol Thru, %	0%	0%	23%	55%	100%
Vol Right, %	0%	100%	77%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	125	35	176	55	1
LT Vol	125	0	1	25	0
Through Vol	0	0	40	30	1
RT Vol	0	35	135	0	0
Lane Flow Rate	140	39	198	62	1
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.217	0.048	0.219	0.08	0.001
Departure Headway (Hd)	5.569	4.374	3.995	4.672	4.79
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	645	823	902	768	746
Service Time	3.297	2.074	2.009	2.694	2.826
HCM Lane V/C Ratio	0.217	0.047	0.22	0.081	0.001
HCM Control Delay	9.8	7.3	8.1	8.1	7.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.8	0.2	0.8	0.3	0

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	55	10	5	70	20	20	215	15	20	100	70
Future Vol, veh/h	10	55	10	5	70	20	20	215	15	20	100	70
Conflicting Peds, #/hr	4	0	15	15	0	4	2	0	11	11	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	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	0	0	6	2	23	0	6	0
Mvmt Flow	11	63	11	6	80	23	23	244	17	23	114	80

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	107	0	0	89	0	0	309	225	95	340	219	98
Stage 1	-	-	-	-	-	-	106	106	-	108	108	-
Stage 2	-	-	-	-	-	-	203	119	-	232	111	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.16	6.52	6.43	7.1	6.56	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.52	-	6.1	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.52	-	6.1	5.56	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.554	4.018	3.507	3.5	4.054	3.3
Pot Cap-1 Maneuver	1497	-	-	1519	-	-	636	674	907	618	672	963
Stage 1	-	-	-	-	-	-	890	807	-	902	798	-
Stage 2	-	-	-	-	-	-	790	797	-	775	796	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1491	-	-	1497	-	-	492	654	885	420	652	958
Mov Cap-2 Maneuver	-	-	-	-	-	-	492	654	-	420	652	-
Stage 1	-	-	-	-	-	-	870	789	-	891	792	-
Stage 2	-	-	-	-	-	-	617	791	-	515	778	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.4	14.8	12.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	647	1491	-	-	1497	-	-	693
HCM Lane V/C Ratio	0.439	0.008	-	-	0.004	-	-	0.312
HCM Control Delay (s)	14.8	7.4	0	-	7.4	0	-	12.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	2.2	0	-	-	0	-	-	1.3

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	25	35	15	1	75	45	20	80	10	40	45	15
Future Vol, veh/h	25	35	15	1	75	45	20	80	10	40	45	15
Conflicting Peds, #/hr	23	0	27	27	0	23	8	0	34	34	0	8
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	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	3	0	4	0	6	0	7
Mvmt Flow	30	42	18	1	90	54	24	96	12	48	54	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	87	0	0	301	307	112	341	289	148
Stage 1	-	-	-	-	-	-	138	138	-	142	142	-
Stage 2	-	-	-	-	-	-	163	169	-	199	147	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.54	6.2	7.16	6.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-	6.16	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-	6.16	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.036	3.3	3.554	4	3.363
Pot Cap-1 Maneuver	1423	-	-	1522	-	-	655	604	947	605	624	886
Stage 1	-	-	-	-	-	-	870	779	-	851	783	-
Stage 2	-	-	-	-	-	-	844	755	-	794	779	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1392	-	-	1483	-	-	566	562	893	482	581	860
Mov Cap-2 Maneuver	-	-	-	-	-	-	566	562	-	482	581	-
Stage 1	-	-	-	-	-	-	829	742	-	814	765	-
Stage 2	-	-	-	-	-	-	761	738	-	645	742	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.1	13	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	582	1392	-	-	1483	-	-	562
HCM Lane V/C Ratio	0.228	0.022	-	-	0.001	-	-	0.214
HCM Control Delay (s)	13	7.6	0	-	7.4	0	-	13.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	0.8

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	65	100	145	160	155	110
Future Vol, veh/h	65	100	145	160	155	110
Conflicting Peds, #/hr	2	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Yield
Storage Length	0	-	100	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	0	0	3	3	8
Mvmt Flow	72	111	161	178	172	122

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	674	181	172	0	-	0
Stage 1	172	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Critical Hdwy	6.44	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	417	867	1417	-	-	-
Stage 1	853	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	369	860	1417	-	-	-
Mov Cap-2 Maneuver	369	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	3.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1417	-	564	-	-
HCM Lane V/C Ratio	0.114	-	0.325	-	-
HCM Control Delay (s)	7.9	-	14.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.4	-	-

Intersection ID and Name	use dropdown NB PhasingType	use dropdown SB PhasingType	use dropdown EB PhasingType	use dropdown WB PhasingType	Cycle Length	Lost Time
2: US 101 & Lighthouse Dr/52nd St	Protected	Protected	Permitted	Permitted	125	12
7: US 101 & 11th St	Protected	Protected	Permitted	Permitted	120	12
8: US 101 & 6th St	Protected	Protected	Split	Split	120	16
9: US 101 & Olive St/US 20	Protected	Protected	Protected	Protected	120	16
11: US 101 & Hurbert St	Split	Split	Permitted	Permitted	120	12
14: Moore Dr/Harney St & US 20	Permitted	Permitted	Protected	Protected	104	12

BEGIN CALCULATIONS	1	3	4	5	6	7	8	9	10	11	12	13	14		Critical Flow Calculator									
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		WBL/EBT	EBL/WBT	NBL/SBT	SBL/NBT	V/S E/W	V/S N/S	Intersection V/C	HCM 6th Ctrl Delay	HCM 6th LOS	Synchro ID
2: US 101 & Lighthouse Dr/52nd St	Adj Flow Rate, veh/h	37	5	95	100	0	16	58	1137	0	32	895	0	Protected	0.26	0.01	0.56	0.70						
	Sat Flow, veh/h	0	19	1457	0	0	1468	1615	1682	1483	1667	1695	1483	Permitted or Split	0.26	0.01	0.53	0.68						
	V/S	0.00	0.26	0.07	0.00	0.00	0.01	0.04	0.68	0.00	0.02	0.53	0.00	selected phasing	0.26	0.01	0.56	0.70	0.26	0.70	**1.06**	**57.2**	**E**	2
7: US 101 & 11th St	Adj Flow Rate, veh/h	79	16	26	32	11	53	11	1579	16	16	1521	26	Protected	0.17	0.16	0.47	0.49						
	Sat Flow, veh/h	845	245	298	382	315	858	1667	3292	33	1667	3265	56	Permitted or Split	0.09	0.08	0.47	0.48						
	V/S	0.09	0.07	0.09	0.08	0.03	0.06	0.01	0.48	0.48	0.01	0.47	0.46	selected phasing	0.09	0.08	0.47	0.49	0.09	0.49	**0.65**	**5**	**A**	7
8: US 101 & 6th St	Adj Flow Rate, veh/h	100	39	33	83	22	39	39	1606	28	28	1556	33	Protected	0.19	0.19	0.51	0.51						
	Sat Flow, veh/h	954	372	315	932	247	438	1667	3265	57	1667	3225	68	Permitted or Split	0.10	0.09	0.49	0.49						
	V/S	0.10	0.10	0.10	0.09	0.09	0.09	0.02	0.49	0.49	0.02	0.48	0.49	selected phasing	0.10	0.09	0.51	0.51	0.19	0.51	**0.81**	**20.4**	**C**	8
9: US 101 & Olive St/US 20	Adj Flow Rate, veh/h	218	207	37	271	176	298	80	957	0	356	1037	85	Protected	0.32	0.34	0.39	0.52						
	Sat Flow, veh/h	1654	1423	254	1576	1723	1410	1667	3221	1367	1615	3032	248	Permitted or Split	0.15	0.21	0.34	0.30						
	V/S	0.13	0.15	0.15	0.17	0.10	0.21	0.05	0.30	0.00	0.22	0.34	0.34	selected phasing	0.32	0.34	0.39	0.52	0.34	0.52	**0.99**	**69.2**	**E**	9
11: US 101 & Hurbert St	Adj Flow Rate, veh/h	41	26	36	72	41	46	21	995	10	46	1113	21	Protected	0.20	0.21	0.66	0.67						
	Sat Flow, veh/h	441	471	490	564	439	408	66	3279	35	127	3232	64	Permitted or Split	0.09	0.13	0.36	0.32						
	V/S	0.09	0.06	0.07	0.13	0.09	0.11	0.32	0.30	0.29	0.36	0.34	0.33	selected phasing	0.09	0.13	0.36	0.32	0.13	0.68	**0.90**	**48.5**	**D**	11
14: Moore Dr/Harney St & US 20	Adj Flow Rate, veh/h	65	908	147	82	620	212	136	87	82	190	71	43	Protected	0.37	0.41	0.51	0.51						
	Sat Flow, veh/h	1537	2821	457	1628	1709	1402	749	545	1431	546	256	132	Permitted or Split	0.32	0.36	0.35	0.18						
	V/S	0.04	0.32	0.32	0.05	0.36	0.15	0.18	0.16	0.06	0.35	0.28	0.33	selected phasing	0.37	0.41	0.35	0.18	0.41	0.35	**0.85**	**30.5**	**C**	14
	Adj Flow Rate, veh/h													Protected	0.00	0.00	0.00	0.00						
	Sat Flow, veh/h													Permitted or Split	0.00	0.00	0.00	0.00						
	V/S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	selected phasing	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0**	**A**	
	Adj Flow Rate, veh/h													Protected	0.00	0.00	0.00	0.00						
	Sat Flow, veh/h													Permitted or Split	0.00	0.00	0.00	0.00						
	V/S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	selected phasing	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0**	**A**	
	Adj Flow Rate, veh/h													Protected	0.00	0.00	0.00	0.00						
	Sat Flow, veh/h													Permitted or Split	0.00	0.00	0.00	0.00						
	V/S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	selected phasing	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0**	**A**	

Sheet Description:
This sheet reads in the adjusted flow rate and the saturation flow rate from Synchro and divides them to calculated the V/S for each movement.
The critical flow calculator calculates the critical v/s for each conflicting phase pair.
for protected phases, this v/s is the left turn v/s plus the max of the opposing movement v/s
for the permitted and split phases, this v/s is the max of the three movement v/s
The next step selects the proper v/s based on phasing provided
V/S by east-west and north-south is selected by taking the max of the phase pairs or by adding them (if split phasing)
If overlap calculator was selected in input section and overlap phases were indicated, then overlap v/s for intersection is calculated. See details below
If the right turn v/s is greater than the through v/s for the right turn overlap approach, then the right turn is assumed the critical movement and intersection v/c calc will use the v/s overlap instead of approach v/s
The final step in v/c calculation uses the approach v/s ratios, cycle length, and lost time to calculate overall intersection v/c
Delay and LOS are read directly from the HCM 6 report

Overlap Calculator Details
Overlap calculator reads in whether an overlap phase is in use and what type of phasing is associated with the right turn approach and the overlapped approach
V/S is read in for right turn movement, and remaining approaches from previous calculations
-right turn overlap v/s is just the v/s for the right turn movement (i.e. NBR)
-right turn approach v/s is the critical v/s associated with the right turn approaches (i.e. NB/SB) and is calculated differently for protected vs split
-overlap approach v/s is the critical v/s associated with the overlap approaches (i.e. EB/WB) and is calculated differently for protected vs split phasing
The v/s overlap column sums the 3 v/s values for the overlap phasing to get the total v/s overlap to be used in the v/c calculation
If there are overlaps for multiple approaches, the v/s overlap will use the greatest of the approaches for most conservative approach
Use Overlap Calculator' must be enabled and 'Use OV V/S' must be showing in V/S Overlap column in order for overlap v/s to be used in final v/c calculation

Intersection ID and Name	Control Type		Major Approach	Row	Reference	1	3	4	5	6	7	8	9	10	11	12	13	14	Outputs	NB	SB	EB	WB	Synchro ID
1: US 101 & 73rd Ct/73rd St	TWSC	use dropdown	NB/SB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		1: US 101 & 73rd Ct/73rd St V/C	**0.55**	**0.43**	**0.03**	**1.57**	**1**
		BEGIN		8	Lane Configurations		0	1	0	0	1	0	1	1	1	1	1	0	1: US 101 & 73rd Ct/73rd St Delay	**9.10**	**12.70**	**22.20**	**405.20**	
		CALCULATIONS		19	Mvmt Flow		1	0	5	100	0	16	5	932	63	21	726	2	1: US 101 & 73rd Ct/73rd St LOS	**A**	**B**	**C**	**F**	
				10	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R	L	T or TR	TR or R							
					Major V/C			0.00	0.00			0.01	0.01	0.01	0.55	0.04	0.04	0.43	0.43					
					Minor (or AWSC) V/C	0.03				1.57														
				45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.01	-	-	0.03	1.57	0.04	-	-	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	9.1	-	-	22.2	405.2	12.7	-	-	0.0	0.0	0.0							
				49	HCM Lane LOS	0	A	-	-	C	F	B	-	-	0	0	0							
3: US 101 & Oceanview Dr	TWSC		NB/SB	7	Movement	EBL		EBR				NBL	NBT			SBT	SBR		3: US 101 & Oceanview Dr V/C	**0.72**	**0.61**	**1.12**	**0.00**	**3**
				8	Lane Configurations		1		0				1	1			1	1	1	3: US 101 & Oceanview Dr Delay	**11.10**	**0.00**	**156.90**	**0.00**	
				19	Mvmt Flow		138	0	64	0	0	0	21	1223	0	0	1032	59	3: US 101 & Oceanview Dr LOS	**B**	**A**	**F**	**A**	
				70	Major V/C Lanes	LTR	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R							
					Major V/C								0.04	0.72			0.61	0.03						
					Minor (or AWSC) V/C	1.12																		
				45	Minor Lane/Major Mvmt	0	NBL	NBT	EBLn1	SBT	SBR	0	0	0	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.04	-	1.12	-	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	11.1	-	156.9	-	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49	HCM Lane LOS	0	B	-	F	-	-	0	0	0	0	0	0							
4: US 101 & 36th Street	TWSC		NB/SB	7	Movement				WBL		WBR		NBT	NBR	SBL	SBT			4: US 101 & 36th Street V/C	**0.68**	**0.62**	**0.00**	**0.24**	**4**
				8	Lane Configurations					1		0		1	1	1	1		4: US 101 & 36th Street Delay	**0.00**	**11.20**	**0.00**	**31.50**	
				19	Mvmt Flow		0	0	0	27	0	16	0	1154	43	11	1059	0	4: US 101 & 36th Street LOS	**A**	**B**	**A**	**D**	
				130	Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R							
					Major V/C									0.68	0.03	0.02	0.62							
					Minor (or AWSC) V/C					0.24														
				45	Minor Lane/Major Mvmt	0	NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0							
				47	HCM Lane V/C Ratio	0.00	-	-	0.24	0.02	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	-	-	31.5	11.2	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49	HCM Lane LOS	0	-	-	D	B	-	0	0	0	0	0	0							
5: US 101 & 31st St	TWSC		NB/SB	7	Movement				WBL		WBR		NBT	NBR	SBL	SBT			5: US 101 & 31st St V/C	**0.71**	**0.64**	**0.00**	**0.30**	**5**
				8	Lane Configurations					1		0		1	1	1	1		5: US 101 & 31st St Delay	**0.00**	**12.00**	**0.00**	**36.80**	
				19	Mvmt Flow		0	0	0	38	0	11	0	1212	98	22	1082	0	5: US 101 & 31st St LOS	**A**	**B**	**A**	**E**	
				187	Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R							
					Major V/C									0.71	0.06	0.04	0.64							
					Minor (or AWSC) V/C					0.30														
				45	Minor Lane/Major Mvmt	0	NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0							
				47	HCM Lane V/C Ratio	0.00	-	-	0.30	0.04	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	-	-	36.8	12.0	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49	HCM Lane LOS	0	-	-	E	B	-	0	0	0	0	0	0							
10: US 101 & Angle St	TWSC		NB/SB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		10: US 101 & Angle St V/C	**0.37**	**0.49**	**2.63**	**0.00**	**10**
				8	Lane Configurations		0	1	0	0	1	0	0	2	0	0	2	0	10: US 101 & Angle St Delay	**12.10**	**12.40**	**1092.80**	**0.00**	
				19	Mvmt Flow		16	22	22	11	11	132	11	1187	16	66	1247	60	10: US 101 & Angle St LOS	**B**	**B**	**F**	**A**	
				244	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LT	T or TR	TR or R	LT	T or TR	TR or R							
					Major V/C			0.03	0.03			0.08	0.08	0.37	0.35	0.35	0.49	0.38	0.38					
					Minor (or AWSC) V/C	2.63				-														
				45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.02	-	-	2.63	-	0.12	-	-	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	12.1	0.4	-	1092.8	-	12.4	2.5	-	0.0	0.0	0.0							
				49	HCM Lane LOS	0	B	A	-	F	-	B	A	-	0	0	0							
12: US 101 & Bayley St	TWSC		NB/SB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		12: US 101 & Bayley St V/C	**0.37**	**0.41**	**0.79**	**0.49**	**12**
				8	Lane Configurations		0	1	0	0	1	0	1	2	0	0	2	0	12: US 101 & Bayley St Delay	**12.90**	**11.60**	**110.60**	**79.00**	
				19	Mvmt Flow		17	0	67	11	0	33	28	1233	11	11	1328	22	12: US 101 & Bayley St LOS	**B**	**B**	**F**	**F**	
				304	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R							
					Major V/C			0.04	0.04			0.02	0.02	0.06	0.37	0.37	0.41	0.40	0.40					
					Minor (or AWSC) V/C	0.79				0.49														
				45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.06	-	-	0.79	0.49	0.02	-	-	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	12.9	-	-	110.6	79.0	11.6	0.4	-	0.0	0.0	0.0							
				49	HCM Lane LOS	0	B	-	-	F	F	B	A	-	0	0	0							
13: Benton St & US 20	TWSC		EB/WB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		13: Benton St & US 20 V/C	**1.05**	**0.46**	**0.46**	**0.39**	**13**
				8	Lane Configurations		1	1	0	1	1	0	0	1	0	0	1	0	13: Benton St & US 20 Delay	**118.20**	**55.80**	**8.90**	**10.10**	
				19	Mvmt Flow		16	732	47	126	658	5	21	5	221	5	11	42	13: Benton St & US 20 LOS	**F**	**F**	**A**	**B**	
				361	Major V/C Lanes	L	T or TR	TR or R	L	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
					Major V/C		0.02	0.46	0.46	0.15	0.39	0.39			0.13	0.13		0.03	0.03					
					Minor (or AWSC) V/C								1.05				0.46							
				45	Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47	HCM Lane V/C Ratio	0.00	1.05	0.02	-	-	0.15	-	-	0.46	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	118.2	8.9	-	-	10.1	-	-	55.8	0.0	0.0	0.0							
				49	HCM Lane LOS	0	F	A	-	-	B	-	-	F	0	0	0							
15: Oceanview Dr & Pacific Pl/25th St	TWSC		NB/SB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		15: Oceanview Dr & Pacific Pl/25th St V/C	**0.15**	**0.08**	**0.00**	**0.27**	**15**
				8	Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	15: Oceanview Dr & Pacific Pl/25th St Delay	**0.00**	**7.80**	**0.00**	**12.30**	

Intersection ID and Name	use dropdown Control Type	BEGIN CALCULATIONS	Sat. Flow Default / Major Approach	Row	Reference	1	3	4	5	6	7	8	9	10	11	12	13	14	Outputs	NB	SB	EB	WB	Synchro ID
			1700			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR							
				19	Mvmt Flow		0	0	0	99	0	86	0	136	123	25	111	0	15: Oceanview Dr & Pacific Pl/25th St LOS	A	A	A	B	
				418	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
					Major V/C		0.00	0.00		0.05	0.05		0.15	0.15	0.08	0.07	0.07							
					Minor (or AWSC) V/C	-			0.27															
				45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47	HCM Lane V/C Ratio	0.00	-	-	-	-	0.27	0.02	-	-	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	0.0	-	-	0.0	12.3	7.8	0.0	-	0.0	0.0	0.0							
				49	HCM Lane LOS	0	A	-	-	A	B	A	A	-	0	0	0							
16: Nye St & 11th St	TWSC		EB/WB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		16: Nye St & 11th St V/C	**0.26**	**0.14**	**0.03**	**0.04**	16
				8	Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	16: Nye St & 11th St Delay	**10.90**	**10.80**	**7.30**	**7.30**	
				19	Mvmt Flow		6	38	6	19	31	13	19	125	69	19	75	6	16: Nye St & 11th St LOS	B	B	A	A	
				475	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
					Major V/C		0.03	0.03	0.03	0.04	0.03	0.03		0.11	0.11		0.05	0.05						
					Minor (or AWSC) V/C								0.26			0.14								
				45	Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.26	0.00	-	-	0.01	-	-	0.14	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	10.9	7.3	0.0	-	7.3	0.0	-	10.8	0.0	0.0	0.0							
				49	HCM Lane LOS	0	B	A	A	-	A	A	-	B	0	0	0							
17: Harney St & 7th St	AWSC		N/A	9	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		17: Harney St & 7th St V/C	**0.22**	**0.00**	**0.22**	**0.08**	17
				10	Lane Configurations		0	1	0	0	1	0	0	1	1	0	1	0	17: Harney St & 7th St Delay	**9.80**	**7.80**	**8.10**	**8.10**	
				15	Mvmt Flow		1	45	152	28	34	0	140	0	39	0	1	0	17: Harney St & 7th St LOS	A	A	A	A	
				534	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LT	T or TR	TR or R	LTR	T or TR	TR or R							
					Major V/C		0.12	0.12		0.02	0.02		0.00	0.02		0.00	0.00							
					Minor (or AWSC) V/C	0.22			0.08			0.22	0.05		0.00									
				29	Lane	0	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	0	0	0	0	0	0							
				45	HCM Lane V/C Ratio	0.00	0.22	0.05	0.22	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
				46	HCM Control Delay	0.0	9.8	7.3	8.1	8.1	7.8	0.0	0.0	0.0	0.0	0.0	0.0							
				47	HCM Lane LOS	0	A	A	A	A	A	0	0	0	0	0	0							
18: 9th St & Hurbert St	TWSC		EB/WB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		18: 9th St & Hurbert St V/C	**0.44**	**0.31**	**0.05**	**0.06**	18
				8	Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	18: 9th St & Hurbert St Delay	**14.80**	**12.50**	**7.40**	**7.40**	
				19	Mvmt Flow		11	63	11	6	80	23	23	244	17	23	114	80	18: 9th St & Hurbert St LOS	B	B	A	A	
				587	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
					Major V/C		0.05	0.04	0.04	0.06	0.06	0.06		0.15	0.15		0.11	0.11						
					Minor (or AWSC) V/C								0.44			0.31								
				45	Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.44	0.01	-	-	0.00	-	-	0.31	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	14.8	7.4	0.0	-	7.4	0.0	-	12.5	0.0	0.0	0.0							
				49	HCM Lane LOS	0	B	A	A	-	A	A	-	B	0	0	0							
19: 9th St & Abbey St	TWSC		EB/WB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		19: 9th St & Abbey St V/C	**0.23**	**0.21**	**0.06**	**0.09**	19
				8	Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	19: 9th St & Abbey St Delay	**13.00**	**13.10**	**7.60**	**7.40**	
				19	Mvmt Flow		30	42	18	1	90	54	24	96	12	48	54	18	19: 9th St & Abbey St LOS	B	B	A	A	
				644	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
					Major V/C		0.06	0.04	0.04	0.09	0.08	0.08		0.06	0.06		0.04	0.04						
					Minor (or AWSC) V/C								0.23			0.21								
				45	Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.23	0.02	-	-	0.00	-	-	0.21	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	13.0	7.6	0.0	-	7.4	0.0	-	13.1	0.0	0.0	0.0							
				49	HCM Lane LOS	0	B	A	A	-	A	A	-	B	0	0	0							
20: Bay Blvd & Moore Dr	TWSC		NB/SB	7	Movement	EBL	EBR					NBL	NBT			SBT	SBR		20: Bay Blvd & Moore Dr V/C	**0.11**	**0.10**	**0.33**	**0.00**	20
				8	Lane Configurations		1	0					1	1			1	1	20: Bay Blvd & Moore Dr Delay	**7.90**	**0.00**	**14.40**	**0.00**	
				19	Mvmt Flow		72	0	111	0	0	0	161	178	0	0	172	122	20: Bay Blvd & Moore Dr LOS	A	A	B	A	
				701	Major V/C Lanes	LTR	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R							
					Major V/C								0.11	0.10			0.10	0.07						
					Minor (or AWSC) V/C		0.33																	
				45	Minor Lane/Major Mvmt	0	NBL	NBT	EBLn1	SBT	SBR	0	0	0	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.11	-	0.33	-	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	7.9	-	14.4	-	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49	HCM Lane LOS	0	A	-	B	-	-	0	0	0	0	0	0							

Sheet Description:
This sheet reads in lane configurations by representing exclusive through or shared lanes with the number of lanes in the through movement, and any exclusive number of turn lanes in the respective turn movement. So a single LTR lane would have 1 under through and 0s under left and right.
This sheet also reads in movement flow and select v/c, LOS, and delay results. The calculations are shown in the box.
Calculations are split out by major and minor approach v/c; Major approach is determined from free approaches in report
The major v/c lanes row indicates the left turn lane configuration for each approach. This is important to determine how to add in the delay from the left turns to the overall calculated v/c for the major approach
In the major v/c row, left turn v/c is read from the report, while remaining movement v/c ratios are calculated based on the methodology given in the ODOT APM and the provided default saturation flow rate of 1700 (can be changed by user)
In the minor v/c row, v/c ratios by lane are calculated based on the ODOT APM method using volume and assumed saturation flow rate
The v/c ratio by approach is the max of the v/c by lane as calculated in the major or minor v/c rows
LOS and Delay by approach are read in from the report
For AWSC, all approaches are treated as minor approaches and the calculations remain the same
The summary table selects the worst approach for both directions and concatenates the results with a / for the final summary table for TWSC. For AWSC, the overall worst approach is reported.

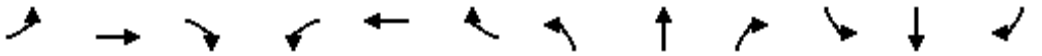
Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	5	90	0	15	2	735	50	20	570	2
Future Vol, veh/h	1	0	5	90	0	15	2	735	50	20	570	2
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	-	-	-	-	-	-	200	-	200	200	-	-
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, %	0	0	0	7	0	0	0	3	38	69	3	0
Mvmt Flow	1	0	5	95	0	16	2	774	53	21	600	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1456	1474	601	1424	1422	774	602	0	0	827	0	0
Stage 1	643	643	-	778	778	-	-	-	-	-	-	-
Stage 2	813	831	-	646	644	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.5	6.2	4.1	-	-	4.79	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4	3.3	2.2	-	-	2.821	-	-
Pot Cap-1 Maneuver	109	128	504	111	137	402	985	-	-	577	-	-
Stage 1	465	472	-	382	410	-	-	-	-	-	-	-
Stage 2	375	387	-	452	471	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	102	123	504	107	132	402	985	-	-	577	-	-
Mov Cap-2 Maneuver	102	123	-	107	132	-	-	-	-	-	-	-
Stage 1	464	455	-	381	409	-	-	-	-	-	-	-
Stage 2	360	386	-	431	454	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.1	130.2	0	0.4
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	985	-	-	304	120	577	-	-
HCM Lane V/C Ratio	0.002	-	-	0.021	0.921	0.036	-	-
HCM Control Delay (s)	8.7	-	-	17.1	130.2	11.5	-	-
HCM Lane LOS	A	-	-	C	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	5.9	0.1	-	-



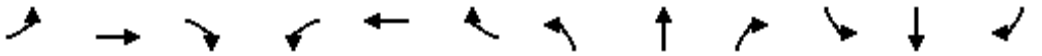
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	5	75	85	0	15	45	915	130	30	720	25
Future Volume (veh/h)	30	5	75	85	0	15	45	915	130	30	720	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	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	1736	1750	1750	1750	1695	1682	1750	1750	1695	1750
Adj Flow Rate, veh/h	32	5	79	89	0	16	47	963	0	32	758	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	0	0	4	5	0	0	4	0
Cap, veh/h	60	5	325	64	0	328	65	1072		54	1067	
Arrive On Green	0.22	0.22	0.22	0.22	0.00	0.22	0.04	0.64	0.00	0.03	0.63	0.00
Sat Flow, veh/h	0	22	1458	0	0	1470	1615	1682	1483	1667	1695	1483
Grp Volume(v), veh/h	37	0	79	89	0	16	47	963	0	32	758	0
Grp Sat Flow(s),veh/h/ln	22	0	1458	0	0	1470	1615	1682	1483	1667	1695	1483
Q Serve(g_s), s	0.0	0.0	5.0	0.0	0.0	1.0	3.2	54.5	0.0	2.1	33.6	0.0
Cycle Q Clear(g_c), s	24.5	0.0	5.0	24.5	0.0	1.0	3.2	54.5	0.0	2.1	33.6	0.0
Prop In Lane	0.86		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	65	0	325	64	0	328	65	1072		54	1067	
V/C Ratio(X)	0.57	0.00	0.24	1.39	0.00	0.05	0.72	0.90		0.59	0.71	
Avail Cap(c_a), veh/h	65	0	325	64	0	328	86	1230		89	1240	
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.6	0.0	35.8	55.8	0.0	34.2	53.2	17.3	0.0	53.5	13.9	0.0
Incr Delay (d2), s/veh	9.9	0.0	0.3	244.8	0.0	0.0	15.0	9.3	0.0	7.3	2.2	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	1.2	0.0	1.8	6.2	0.0	0.4	1.5	20.2	0.0	1.0	11.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.4	0.0	36.0	300.6	0.0	34.2	68.2	26.5	0.0	60.8	16.1	0.0
LnGrp LOS	E	A	D	F	A	C	E	C		E	B	
Approach Vol, veh/h		116			105			1010	A		790	A
Approach Delay, s/veh		44.5			260.0			28.4			17.9	
Approach LOS		D			F			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	74.6		29.0	7.7	75.4		29.0				
Change Period (Y+Rc), s	4.5	6.0		4.5	4.5	6.0		4.5				
Max Green Setting (Gmax), s	5.5	80.0		24.5	5.5	80.0		24.5				
Max Q Clear Time (g_c+I1), s	5.2	35.6		26.5	4.1	56.5		26.5				
Green Ext Time (p_c), s	0.0	11.9		0.0	0.0	13.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			37.3									
HCM 6th LOS			D									

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	5	75	85	0	15	45	915	130	30	720	25
Future Volume (vph)	30	5	75	85	0	15	45	915	130	30	720	25
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.97	1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1667	1441		1660	1445	1599	1667	1457	1662	1683	1488
Flt Permitted		0.71	1.00		0.73	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1242	1441		1280	1445	1599	1667	1457	1662	1683	1488
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	5	79	89	0	16	47	963	137	32	758	26
RTOR Reduction (vph)	0	0	70	0	0	14	0	0	27	0	0	8
Lane Group Flow (vph)	0	37	9	0	89	2	47	963	110	32	758	18
Confl. Peds. (#/hr)	4		1	1		4						
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	4%	5%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4		4			6			2
Actuated Green, G (s)		9.9	9.9		9.9	9.9	4.2	61.3	61.3	2.6	59.7	59.7
Effective Green, g (s)		10.4	10.4		10.4	10.4	4.7	63.3	63.3	3.1	61.7	61.7
Actuated g/C Ratio		0.12	0.12		0.12	0.12	0.05	0.71	0.71	0.03	0.69	0.69
Clearance Time (s)		4.5	4.5		4.5	4.5	4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)		2.5	2.5		2.5	2.5	2.5	4.8	4.8	2.5	4.8	4.8
Lane Grp Cap (vph)		145	168		149	169	84	1188	1038	58	1169	1033
v/s Ratio Prot							c0.03	c0.58		0.02	0.45	
v/s Ratio Perm		0.03	0.01		c0.07	0.00			0.08			0.01
v/c Ratio		0.26	0.06		0.60	0.01	0.56	0.81	0.11	0.55	0.65	0.02
Uniform Delay, d1		35.7	34.8		37.2	34.7	41.0	8.7	4.0	42.2	7.5	4.2
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.7	0.1		5.3	0.0	6.3	4.8	0.1	8.8	1.6	0.0
Delay (s)		36.4	34.9		42.5	34.7	47.4	13.5	4.0	51.0	9.2	4.2
Level of Service		D	C		D	C	D	B	A	D	A	A
Approach Delay (s)		35.4			41.3			13.7			10.6	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	85	30	20	1015	835	45
Future Vol, veh/h	85	30	20	1015	835	45
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	-	300	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	11	5	4	4
Mvmt Flow	90	32	21	1080	888	48

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2010	888	936	0	-	0
Stage 1	888	-	-	-	-	-
Stage 2	1122	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	~ 66	345	696	-	-	-
Stage 1	405	-	-	-	-	-
Stage 2	314	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 64	345	696	-	-	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	393	-	-	-	-	-
Stage 2	314	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	42.5	0.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	696	-	213	-	-
HCM Lane V/C Ratio	0.031	-	0.574	-	-
HCM Control Delay (s)	10.3	-	42.5	-	-
HCM Lane LOS	B	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	3.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	15	1000	35	10	840
Future Vol, veh/h	20	15	1000	35	10	840
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	-	-	125	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	31	4	0	0	3
Mvmt Flow	21	16	1064	37	11	894

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1980	1064	0	0	1101	0
Stage 1	1064	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Critical Hdwy	6.4	6.51	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.579	-	-	2.2	-
Pot Cap-1 Maneuver	69	238	-	-	642	-
Stage 1	335	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	68	238	-	-	642	-
Mov Cap-2 Maneuver	195	-	-	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	386	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.7	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	211	642	-
HCM Lane V/C Ratio	-	-	0.176	0.017	-
HCM Control Delay (s)	-	-	25.7	10.7	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

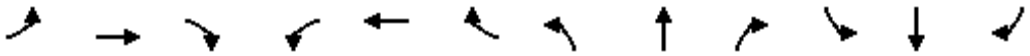
Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	10	1025	85	15	845
Future Vol, veh/h	30	10	1025	85	15	845
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	-	-	50	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	14	5	0	0	3
Mvmt Flow	33	11	1114	92	16	918

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2064	1114	0	0	1206	0
Stage 1	1114	-	-	-	-	-
Stage 2	950	-	-	-	-	-
Critical Hdwy	6.4	6.34	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	-	-	2.2	-
Pot Cap-1 Maneuver	61	240	-	-	586	-
Stage 1	317	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	59	240	-	-	586	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	317	-	-	-	-	-
Stage 2	369	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.8	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	194	586	-
HCM Lane V/C Ratio	-	-	0.224	0.028	-
HCM Control Delay (s)	-	-	28.8	11.3	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	45	70	265	25	75	50	1145	95	65	910	15
Future Volume (vph)	35	45	70	265	25	75	50	1145	95	65	910	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1693	1406	1564	1495		1630	3164		1614	3220	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1693	1406	1564	1495		1630	3164		1614	3220	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	38	48	75	285	27	81	54	1231	102	70	978	16
RTOR Reduction (vph)	0	0	68	0	26	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	86	7	199	168	0	54	1328	0	70	993	0
Confl. Peds. (#/hr)	4		4	4		4	7		2	2		7
Heavy Vehicles (%)	0%	2%	4%	1%	0%	2%	2%	4%	0%	3%	3%	0%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases			8									
Actuated Green, G (s)		9.8	9.8	18.7	18.7		6.1	54.9		8.1	56.9	
Effective Green, g (s)		10.3	10.3	19.2	19.2		6.6	55.9		8.6	57.9	
Actuated g/C Ratio		0.09	0.09	0.17	0.17		0.06	0.51		0.08	0.53	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		2.5	5.1		2.5	5.1	
Lane Grp Cap (vph)		158	131	272	260		97	1607		126	1694	
v/s Ratio Prot		c0.05		c0.13	0.11		0.03	c0.42		c0.04	0.31	
v/s Ratio Perm			0.00									
v/c Ratio		0.54	0.05	0.73	0.65		0.56	0.83		0.56	0.59	
Uniform Delay, d1		47.6	45.4	43.0	42.3		50.3	22.9		48.9	17.8	
Progression Factor		1.00	1.00	1.00	1.00		1.09	1.17		1.00	1.00	
Incremental Delay, d2		3.0	0.1	9.2	4.8		4.7	4.3		4.2	1.5	
Delay (s)		50.6	45.5	52.1	47.1		59.4	31.0		53.1	19.3	
Level of Service		D	D	D	D		E	C		D	B	
Approach Delay (s)		48.2			49.7			32.2			21.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	15	20	25	10	45	10	1290	15	15	1215	20
Future Volume (veh/h)	65	15	20	25	10	45	10	1290	15	15	1215	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1750	1750	1750	1750	1750	1750	1750	1709	1709	1750	1709	1709
Adj Flow Rate, veh/h	68	16	21	26	11	47	11	1358	16	16	1279	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	3	0	3	3
Cap, veh/h	143	30	30	78	35	90	25	2535	30	31	2533	42
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.03	1.00	1.00	0.02	0.78	0.77
Sat Flow, veh/h	888	300	297	353	349	893	1667	3286	39	1667	3268	54
Grp Volume(v), veh/h	105	0	0	84	0	0	11	671	703	16	635	665
Grp Sat Flow(s),veh/h/ln	1484	0	0	1595	0	0	1667	1624	1701	1667	1624	1698
Q Serve(g_s), s	2.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	1.0	15.9	15.9
Cycle Q Clear(g_c), s	7.4	0.0	0.0	5.4	0.0	0.0	0.7	0.0	0.0	1.0	15.9	15.9
Prop In Lane	0.65		0.20	0.31		0.56	1.00		0.02	1.00		0.03
Lane Grp Cap(c), veh/h	197	0	0	196	0	0	25	1253	1312	31	1259	1316
V/C Ratio(X)	0.53	0.00	0.00	0.43	0.00	0.00	0.44	0.54	0.54	0.52	0.50	0.51
Avail Cap(c_a), veh/h	391	0	0	396	0	0	91	1253	1312	91	1259	1316
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.59	0.59	0.59	0.78	0.78	0.78
Uniform Delay (d), s/veh	48.0	0.0	0.0	47.1	0.0	0.0	52.9	0.0	0.0	53.5	4.6	4.6
Incr Delay (d2), s/veh	1.7	0.0	0.0	1.1	0.0	0.0	5.3	1.0	0.9	7.5	1.1	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	2.9	0.0	0.0	2.3	0.0	0.0	0.3	0.3	0.3	0.5	4.3	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.6	0.0	0.0	48.2	0.0	0.0	58.2	1.0	0.9	61.0	5.7	5.7
LnGrp LOS	D	A	A	D	A	A	E	A	A	E	A	A
Approach Vol, veh/h		105			84			1385			1316	
Approach Delay, s/veh		49.6			48.2			1.4			6.3	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.6	89.3		15.1	6.0	88.9		15.1
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	5.5	65.0		25.5	5.5	65.0		25.5
Max Q Clear Time (g_c+I1), s	2.7	17.9		7.4	3.0	2.0		9.4
Green Ext Time (p_c), s	0.0	30.6		0.3	0.0	39.7		0.4

Intersection Summary	
HCM 6th Ctrl Delay	6.8
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	30	25	75	15	35	30	1255	20	20	1190	25
Future Volume (veh/h)	75	30	25	75	15	35	30	1255	20	20	1190	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1750	1750	1750	1750	1750	1750	1750	1709	1709	1750	1695	1695
Adj Flow Rate, veh/h	83	33	28	83	17	39	33	1394	22	22	1322	28
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	3	3	0	4	4
Cap, veh/h	116	46	39	117	24	55	48	1908	30	37	1860	39
Arrive On Green	0.10	0.12	0.10	0.10	0.12	0.10	0.01	0.19	0.19	0.04	1.00	1.00
Sat Flow, veh/h	945	376	319	963	197	452	1667	3271	52	1667	3225	68
Grp Volume(v), veh/h	144	0	0	139	0	0	33	691	725	22	660	690
Grp Sat Flow(s),veh/h/ln	1640	0	0	1613	0	0	1667	1624	1699	1667	1611	1682
Q Serve(g_s), s	9.3	0.0	0.0	9.2	0.0	0.0	2.2	44.0	44.1	1.4	0.0	0.0
Cycle Q Clear(g_c), s	9.3	0.0	0.0	9.2	0.0	0.0	2.2	44.0	44.1	1.4	0.0	0.0
Prop In Lane	0.58		0.19	0.60		0.28	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	202	0	0	196	0	0	48	947	991	37	929	970
V/C Ratio(X)	0.71	0.00	0.00	0.71	0.00	0.00	0.69	0.73	0.73	0.59	0.71	0.71
Avail Cap(c_a), veh/h	239	0	0	235	0	0	91	947	991	91	929	970
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.46	0.46	0.46	0.85	0.85	0.85
Uniform Delay (d), s/veh	47.1	0.0	0.0	47.3	0.0	0.0	54.0	36.3	36.3	52.0	0.0	0.0
Incr Delay (d2), s/veh	7.1	0.0	0.0	6.7	0.0	0.0	6.0	2.3	2.2	9.1	3.9	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	4.3	0.0	0.0	4.1	0.0	0.0	1.0	19.7	20.6	0.7	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.2	0.0	0.0	54.1	0.0	0.0	60.0	38.6	38.6	61.1	3.9	3.8
LnGrp LOS	D	A	A	D	A	A	E	D	D	E	A	A
Approach Vol, veh/h		144			139			1449			1372	
Approach Delay, s/veh		54.2			54.1			39.1			4.8	
Approach LOS		D			D			D			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.2	68.0		17.4	6.5	68.6		17.5
Change Period (Y+Rc), s	4.5	6.5		6.0	4.5	6.5		6.0
Max Green Setting (Gmax), s	5.5	53.5		14.0	5.5	53.5		14.0
Max Q Clear Time (g_c+I1), s	4.2	2.0		11.2	3.4	46.1		11.3
Green Ext Time (p_c), s	0.0	22.3		0.1	0.0	6.8		0.1

Intersection Summary	
HCM 6th Ctrl Delay	25.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	170	25	220	140	250	60	825	205	330	870	70
Future Volume (veh/h)	170	170	25	220	140	250	60	825	205	330	870	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	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	1736	1736	1736	1654	1723	1723	1750	1695	1614	1695	1709	1709
Adj Flow Rate, veh/h	181	181	27	234	149	266	64	878	0	351	926	74
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, %	1	1	1	7	2	2	0	4	10	4	3	3
Cap, veh/h	217	232	35	265	337	276	88	1086		308	1445	115
Arrive On Green	0.13	0.16	0.15	0.17	0.20	0.20	0.05	0.34	0.00	0.19	0.48	0.47
Sat Flow, veh/h	1654	1467	219	1576	1723	1411	1667	3221	1367	1615	3039	243
Grp Volume(v), veh/h	181	0	208	234	149	266	64	878	0	351	495	505
Grp Sat Flow(s),veh/h/ln	1654	0	1685	1576	1723	1411	1667	1611	1367	1615	1624	1658
Q Serve(g_s), s	11.7	0.0	13.0	16.0	8.4	20.6	4.2	27.3	0.0	21.0	25.3	25.3
Cycle Q Clear(g_c), s	11.7	0.0	13.0	16.0	8.4	20.6	4.2	27.3	0.0	21.0	25.3	25.3
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	217	0	267	265	337	276	88	1086		308	772	788
V/C Ratio(X)	0.84	0.00	0.78	0.88	0.44	0.96	0.73	0.81		1.14	0.64	0.64
Avail Cap(c_a), veh/h	286	0	322	272	337	276	167	1086		308	772	788
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	1.00	1.00	1.00	1.00	0.00	0.60	0.60	0.60
Uniform Delay (d), s/veh	46.6	0.0	44.5	44.7	39.0	43.9	51.3	33.2	0.0	44.5	21.8	21.8
Incr Delay (d2), s/veh	13.7	0.0	8.9	26.2	0.9	44.4	8.2	6.5	0.0	83.8	2.5	2.4
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	5.7	0.0	6.1	8.1	3.6	10.6	1.9	11.6	0.0	15.6	10.1	10.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.4	0.0	53.4	70.9	39.9	88.3	59.5	39.7	0.0	128.3	24.2	24.3
LnGrp LOS	E	A	D	E	D	F	E	D		F	C	C
Approach Vol, veh/h		389			649			942	A		1351	
Approach Delay, s/veh		56.6			70.9			41.0			51.3	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	56.3	18.4	25.5	25.0	41.1	22.5	21.4
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5
Max Green Setting (Gmax), s	10.5	42.0	18.5	20.5	20.5	32.0	18.5	20.5
Max Q Clear Time (g_c+I1), s	6.2	27.3	13.7	22.6	23.0	29.3	18.0	15.0
Green Ext Time (p_c), s	0.0	9.3	0.2	0.0	0.0	2.0	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	52.8
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	20.8

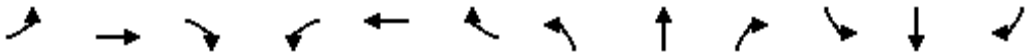
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕			↕	
Traffic Vol, veh/h	10	15	15	10	10	105	10	950	10	45	1015	45
Future Vol, veh/h	10	15	15	10	10	105	10	950	10	45	1015	45
Conflicting Peds, #/hr	0	0	17	17	0	0	22	0	11	11	0	22
Sign Control	Stop	Stop	Stop	Stop	Stop	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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	14	0	2	0	4	0	4	2	2
Mvmt Flow	11	16	16	11	11	115	11	1044	11	49	1115	49

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1810	2348	621	1764	2367	539	1186	0	0	1066	0	0
Stage 1	1260	1260	-	1083	1083	-	-	-	-	-	-	-
Stage 2	550	1088	-	681	1284	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.78	6.5	6.94	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.78	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.78	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.64	4	3.32	2.2	-	-	2.24	-	-
Pot Cap-1 Maneuver	50	37	435	47	36	487	596	-	-	638	-	-
Stage 1	183	244	-	212	296	-	-	-	-	-	-	-
Stage 2	492	294	-	379	238	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	20	27	419	19	26	482	584	-	-	631	-	-
Mov Cap-2 Maneuver	20	27	-	19	26	-	-	-	-	-	-	-
Stage 1	171	185	-	200	279	-	-	-	-	-	-	-
Stage 2	343	278	-	253	181	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 376.6	235.5	0.4	1.6
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	584	-	-	37	111	631	-	-
HCM Lane V/C Ratio	0.019	-	-	1.188	1.238	0.078	-	-
HCM Control Delay (s)	11.3	0.3	-	$ 376.6	235.5	11.2	1.2	-
HCM Lane LOS	B	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	4.5	9	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	20	30	60	35	40	20	845	10	40	965	20
Future Volume (veh/h)	35	20	30	60	35	40	20	845	10	40	965	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.98		0.98	1.00		0.96	1.00		0.94
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	1682	1682	1682	1695	1695	1695	1723	1723	1723
Adj Flow Rate, veh/h	36	21	31	62	36	41	21	871	10	41	995	21
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, %	0	0	0	5	5	5	4	4	4	2	2	2
Cap, veh/h	108	64	69	122	63	58	25	1103	13	53	1358	30
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.33	0.34	0.33	0.55	0.56	0.55
Sat Flow, veh/h	472	488	522	570	480	439	75	3263	39	127	3223	71
Grp Volume(v), veh/h	88	0	0	139	0	0	473	0	429	555	0	502
Grp Sat Flow(s),veh/h/ln	1482	0	0	1490	0	0	1692	0	1686	1716	0	1705
Q Serve(g_s), s	0.0	0.0	0.0	3.8	0.0	0.0	28.3	0.0	24.9	27.5	0.0	23.4
Cycle Q Clear(g_c), s	5.9	0.0	0.0	9.6	0.0	0.0	28.3	0.0	24.9	27.5	0.0	23.4
Prop In Lane	0.41		0.35	0.45		0.29	0.04		0.02	0.07		0.04
Lane Grp Cap(c), veh/h	234	0	0	237	0	0	572	0	570	723	0	718
V/C Ratio(X)	0.38	0.00	0.00	0.59	0.00	0.00	0.83	0.00	0.75	0.77	0.00	0.70
Avail Cap(c_a), veh/h	307	0	0	307	0	0	615	0	613	723	0	718
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
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	44.1	0.0	0.0	45.7	0.0	0.0	33.5	0.0	32.3	20.1	0.0	19.2
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.7	0.0	0.0	10.6	0.0	6.7	7.7	0.0	5.6
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	2.3	0.0	0.0	3.8	0.0	0.0	13.2	0.0	11.2	11.2	0.0	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.9	0.0	0.0	47.4	0.0	0.0	44.1	0.0	39.0	27.7	0.0	24.7
LnGrp LOS	D	A	A	D	A	A	D	A	D	C	A	C
Approach Vol, veh/h		88			139			902			1057	
Approach Delay, s/veh		44.9			47.4			41.7			26.3	
Approach LOS		D			D			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		50.3		18.5		41.2		18.5				
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5				
Max Green Setting (Gmax), s		37.0		19.5		39.0		19.5				
Max Q Clear Time (g_c+I1), s		29.5		11.6		30.3		7.9				
Green Ext Time (p_c), s		5.6		0.3		5.9		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			34.7									
HCM 6th LOS			C									

Notes

User approved pedestrian interval to be less than phase max green.

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	10	0	50	10	0	25	25	1015	10	5	1080	15
Future Vol, veh/h	10	0	50	10	0	25	25	1015	10	5	1080	15
Conflicting Peds, #/hr	10	0	0	0	0	10	13	0	8	8	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
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, %	0	0	0	0	0	0	4	3	0	0	2	0
Mvmt Flow	11	0	56	11	0	28	28	1128	11	6	1200	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1864	2437	622	1810	2440	588	1230	0	0	1147	0	0
Stage 1	1234	1234	-	1198	1198	-	-	-	-	-	-	-
Stage 2	630	1203	-	612	1242	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.24	-	-	2.2	-	-
Pot Cap-1 Maneuver	46	32	434	50	32	457	551	-	-	616	-	-
Stage 1	190	251	-	200	261	-	-	-	-	-	-	-
Stage 2	441	260	-	452	249	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	40	29	429	41	29	449	544	-	-	611	-	-
Mov Cap-2 Maneuver	40	29	-	41	29	-	-	-	-	-	-	-
Stage 1	178	240	-	188	246	-	-	-	-	-	-	-
Stage 2	389	245	-	382	239	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	41.2	50.4	0.3	0.2
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	544	-	-	164	117	611	-	-
HCM Lane V/C Ratio	0.051	-	-	0.407	0.332	0.009	-	-
HCM Control Delay (s)	12	-	-	41.2	50.4	10.9	0.2	-
HCM Lane LOS	B	-	-	E	F	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.8	1.3	0	-	-

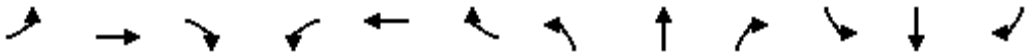
Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	655	45	110	550	5	15	2	150	5	5	35
Future Vol, veh/h	10	655	45	110	550	5	15	2	150	5	5	35
Conflicting Peds, #/hr	1	0	1	1	0	1	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	50	-	-	100	-	-	-	-	-	-	-	-
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, %	0	6	5	4	4	0	6	0	3	0	0	3
Mvmt Flow	11	689	47	116	579	5	16	2	158	5	5	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	585	0	0	737	0	0	1572	1553	715	1631	1574	584
Stage 1	-	-	-	-	-	-	736	736	-	815	815	-
Stage 2	-	-	-	-	-	-	836	817	-	816	759	-
Critical Hdwy	4.1	-	-	4.14	-	-	7.16	6.5	6.23	7.1	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.236	-	-	3.554	4	3.327	3.5	4	3.327
Pot Cap-1 Maneuver	1000	-	-	860	-	-	87	114	429	82	111	510
Stage 1	-	-	-	-	-	-	404	428	-	374	394	-
Stage 2	-	-	-	-	-	-	356	393	-	374	418	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	999	-	-	859	-	-	69	97	428	45	95	509
Mov Cap-2 Maneuver	-	-	-	-	-	-	69	97	-	45	95	-
Stage 1	-	-	-	-	-	-	399	423	-	370	340	-
Stage 2	-	-	-	-	-	-	281	340	-	232	413	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.6	36.3	29.4
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	284	999	-	-	859	-	-	194
HCM Lane V/C Ratio	0.619	0.011	-	-	0.135	-	-	0.244
HCM Control Delay (s)	36.3	8.6	-	-	9.8	-	-	29.4
HCM Lane LOS	E	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	3.8	0	-	-	0.5	-	-	0.9



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	725	115	60	500	135	90	60	65	135	55	35
Future Volume (veh/h)	45	725	115	60	500	135	90	60	65	135	55	35
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		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	1614	1723	1723	1709	1709	1654	1723	1723	1695	1750	1750	1750
Adj Flow Rate, veh/h	49	788	125	65	543	147	98	65	71	147	60	38
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, %	10	2	2	3	3	7	2	2	4	0	0	0
Cap, veh/h	78	1317	209	94	808	663	304	180	439	255	98	50
Arrive On Green	0.05	0.47	0.45	0.06	0.47	0.47	0.30	0.31	0.31	0.30	0.31	0.30
Sat Flow, veh/h	1537	2830	449	1628	1709	1402	724	588	1430	565	321	163
Grp Volume(v), veh/h	49	456	457	65	543	147	163	0	71	245	0	0
Grp Sat Flow(s),veh/h/ln	1537	1637	1642	1628	1709	1402	1311	0	1430	1048	0	0
Q Serve(g_s), s	2.2	14.6	14.7	2.8	17.4	4.4	0.0	0.0	2.6	10.1	0.0	0.0
Cycle Q Clear(g_c), s	2.2	14.6	14.7	2.8	17.4	4.4	6.9	0.0	2.6	16.9	0.0	0.0
Prop In Lane	1.00		0.27	1.00		1.00	0.60		1.00	0.60		0.16
Lane Grp Cap(c), veh/h	78	762	764	94	808	663	475	0	439	396	0	0
V/C Ratio(X)	0.63	0.60	0.60	0.69	0.67	0.22	0.34	0.00	0.16	0.62	0.00	0.00
Avail Cap(c_a), veh/h	130	1041	1045	138	1087	892	866	0	829	776	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.9	14.0	14.1	32.7	14.4	11.0	19.3	0.0	17.9	24.8	0.0	0.0
Incr Delay (d2), s/veh	6.0	2.9	2.9	6.4	3.7	0.6	0.3	0.0	0.1	1.6	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	0.9	5.4	5.5	1.2	6.8	1.3	2.1	0.0	0.8	3.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.9	16.9	17.0	39.1	18.1	11.6	19.7	0.0	18.0	26.4	0.0	0.0
LnGrp LOS	D	B	B	D	B	B	B	A	B	C	A	A
Approach Vol, veh/h		962			755			234			245	
Approach Delay, s/veh		18.1			18.7			19.2			26.4	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.1	36.9		25.7	7.6	37.4		25.7				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.5	44.0		40.5	5.5	44.0		40.5				
Max Q Clear Time (g_c+I1), s	4.8	16.7		18.9	4.2	19.4		8.9				
Green Ext Time (p_c), s	0.0	15.3		1.6	0.0	10.6		1.0				

Intersection Summary			
HCM 6th Ctrl Delay		19.3	
HCM 6th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.

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	0	0	0	35	0	35	0	85	70	15	75	0
Future Vol, veh/h	0	0	0	35	0	35	0	85	70	15	75	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	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	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	7	0	0	0	0	0	0	2	0
Mvmt Flow	0	0	0	43	0	43	0	105	86	19	93	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	301	323	93	280	280	149	93	0	0	192	0	0
Stage 1	131	131	-	149	149	-	-	-	-	-	-	-
Stage 2	170	192	-	131	131	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	655	598	970	662	632	903	1514	-	-	1394	-	-
Stage 1	877	792	-	842	778	-	-	-	-	-	-	-
Stage 2	837	745	-	861	792	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	617	589	970	654	623	902	1514	-	-	1393	-	-
Mov Cap-2 Maneuver	617	589	-	654	623	-	-	-	-	-	-	-
Stage 1	877	781	-	841	777	-	-	-	-	-	-	-
Stage 2	797	744	-	849	781	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.4	0	1.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1514	-	-	-	758	1393	-	-
HCM Lane V/C Ratio	-	-	-	-	0.114	0.013	-	-
HCM Control Delay (s)	0	-	-	0	10.4	7.6	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0	-	-

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	2	25	2	10	20	5	15	70	45	10	45	5
Future Vol, veh/h	2	25	2	10	20	5	15	70	45	10	45	5
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	2	2	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	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	31	3	13	25	6	19	88	56	13	56	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	31	0	0	34	0	0	125	96	35	167	94	29
Stage 1	-	-	-	-	-	-	39	39	-	54	54	-
Stage 2	-	-	-	-	-	-	86	57	-	113	40	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1595	-	-	1591	-	-	854	798	1044	802	800	1052
Stage 1	-	-	-	-	-	-	981	866	-	963	854	-
Stage 2	-	-	-	-	-	-	927	851	-	897	866	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1595	-	-	1591	-	-	796	790	1042	688	792	1051
Mov Cap-2 Maneuver	-	-	-	-	-	-	796	790	-	688	792	-
Stage 1	-	-	-	-	-	-	979	864	-	961	847	-
Stage 2	-	-	-	-	-	-	853	844	-	760	864	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	2.1	10.1	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	863	1595	-	-	1591	-	-	788
HCM Lane V/C Ratio	0.188	0.002	-	-	0.008	-	-	0.095
HCM Control Delay (s)	10.1	7.3	0	-	7.3	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0.3

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	1	45	115	20	35	0	105	0	30	0	1	0
Future Vol, veh/h	1	45	115	20	35	0	105	0	30	0	1	0
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
Heavy Vehicles, %	0	0	0	0	0	0	1	0	0	0	0	0
Mvmt Flow	1	51	129	22	39	0	118	0	34	0	1	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.9	8	9	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	1%	36%	0%
Vol Thru, %	0%	0%	28%	64%	100%
Vol Right, %	0%	100%	71%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	30	161	55	1
LT Vol	105	0	1	20	0
Through Vol	0	0	45	35	1
RT Vol	0	30	115	0	0
Lane Flow Rate	118	34	181	62	1
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.182	0.041	0.198	0.078	0.001
Departure Headway (Hd)	5.553	4.33	3.949	4.558	4.714
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	650	832	912	788	759
Service Time	3.253	2.03	1.963	2.576	2.741
HCM Lane V/C Ratio	0.182	0.041	0.198	0.079	0.001
HCM Control Delay	9.5	7.2	7.9	8	7.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.7	0.1	0.7	0.3	0

Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	45	10	2	60	20	15	180	15	15	80	60
Future Vol, veh/h	10	45	10	2	60	20	15	180	15	15	80	60
Conflicting Peds, #/hr	4	0	15	15	0	4	2	0	11	11	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	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	0	0	6	2	23	0	6	0
Mvmt Flow	11	51	11	2	68	23	17	205	17	17	91	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	95	0	0	77	0	0	259	193	83	289	187	86
Stage 1	-	-	-	-	-	-	94	94	-	88	88	-
Stage 2	-	-	-	-	-	-	165	99	-	201	99	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.16	6.52	6.43	7.1	6.56	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.52	-	6.1	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.52	-	6.1	5.56	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.554	4.018	3.507	3.5	4.054	3.3
Pot Cap-1 Maneuver	1512	-	-	1535	-	-	686	702	921	667	700	978
Stage 1	-	-	-	-	-	-	903	817	-	925	814	-
Stage 2	-	-	-	-	-	-	828	813	-	805	805	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1506	-	-	1513	-	-	560	683	898	492	681	972
Mov Cap-2 Maneuver	-	-	-	-	-	-	560	683	-	492	681	-
Stage 1	-	-	-	-	-	-	883	799	-	914	810	-
Stage 2	-	-	-	-	-	-	682	809	-	577	787	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.2	13.1	11.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	684	1506	-	-	1513	-	-	739
HCM Lane V/C Ratio	0.349	0.008	-	-	0.002	-	-	0.238
HCM Control Delay (s)	13.1	7.4	0	-	7.4	0	-	11.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.6	0	-	-	0	-	-	0.9

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	20	30	10	1	55	35	15	70	10	30	40	15
Future Vol, veh/h	20	30	10	1	55	35	15	70	10	30	40	15
Conflicting Peds, #/hr	23	0	27	27	0	23	8	0	34	34	0	8
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	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	3	0	4	0	6	0	7
Mvmt Flow	24	36	12	1	66	42	18	84	12	36	48	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	131	0	0	75	0	0	247	250	103	284	235	118
Stage 1	-	-	-	-	-	-	117	117	-	112	112	-
Stage 2	-	-	-	-	-	-	130	133	-	172	123	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.54	6.2	7.16	6.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-	6.16	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-	6.16	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.036	3.3	3.554	4	3.363
Pot Cap-1 Maneuver	1467	-	-	1537	-	-	711	649	957	660	669	921
Stage 1	-	-	-	-	-	-	892	795	-	883	807	-
Stage 2	-	-	-	-	-	-	878	782	-	821	798	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1435	-	-	1497	-	-	625	607	902	543	626	894
Mov Cap-2 Maneuver	-	-	-	-	-	-	625	607	-	543	626	-
Stage 1	-	-	-	-	-	-	855	761	-	849	788	-
Stage 2	-	-	-	-	-	-	801	764	-	685	764	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.1	12	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	632	1435	-	-	1497	-	-	625
HCM Lane V/C Ratio	0.181	0.017	-	-	0.001	-	-	0.164
HCM Control Delay (s)	12	7.6	0	-	7.4	0	-	11.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	85	95	95	120	40
Future Vol, veh/h	50	85	95	95	120	40
Conflicting Peds, #/hr	2	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Yield
Storage Length	0	-	100	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	0	0	3	3	8
Mvmt Flow	56	94	106	106	133	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	453	142	133	0	-	0
Stage 1	133	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Critical Hdwy	6.44	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	561	911	1464	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	732	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	521	903	1464	-	-	-
Mov Cap-2 Maneuver	521	-	-	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	732	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	3.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1464	-	710	-	-
HCM Lane V/C Ratio	0.072	-	0.211	-	-
HCM Control Delay (s)	7.7	-	11.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.8	-	-

Intersection ID and Name	use dropdown NB PhasingType	use dropdown SB PhasingType	use dropdown EB PhasingType	use dropdown WB PhasingType	Cycle Length	Lost Time
2: US 101 & Lighthouse Dr/52nd St	Protected	Protected	Permitted	Permitted	125	12
7: US 101 & 11th St	Protected	Protected	Permitted	Permitted	120	12
8: US 101 & 6th St	Protected	Protected	Split	Split	120	16
9: US 101 & Olive St/US 20	Protected	Protected	Protected	Protected	120	16
11: US 101 & Hurbert St	Split	Split	Permitted	Permitted	120	12
14: Moore Dr/Harney St & US 20	Permitted	Permitted	Protected	Protected	104	12

BEGIN CALCULATIONS	1	3 EBL	4 EBT	5 EBR	6 WBL	7 WBT	8 WBR	9 NBL	10 NBT	11 NBR	12 SBL	13 SBT	14 SBR		Critical Flow Calculator WBL/EBT	EBL/WBT	NBL/SBT	SBL/NBT	V/S E/W	V/S N/S	Intersection V/C	HCM 6th Ctrl Delay	HCM 6th LOS	Synchro ID
2: US 101 & Lighthouse Dr/52nd St	Adj Flow Rate, veh/h	32	5	79	89	0	16	47	963	0	32	758	0	Protected	0.23	0.01	0.48	0.59						
	Sat Flow, veh/h	0	22	1458	0	0	1470	1615	1682	1483	1667	1695	1483	Permitted or Split	0.23	0.01	0.45	0.57						
	V/S	0.00	0.23	0.05	0.00	0.00	0.01	0.03	0.57	0.00	0.02	0.45	0.00	selected phasing	0.23	0.01	0.48	0.59	0.23	0.59	**0.91**	**37.3**	**D**	2
7: US 101 & 11th St	Adj Flow Rate, veh/h	68	16	21	26	11	47	11	1358	16	16	1279	21	Protected	0.14	0.13	0.40	0.42						
	Sat Flow, veh/h	888	300	297	353	349	893	1667	3286	39	1667	3268	54	Permitted or Split	0.08	0.07	0.39	0.41						
	V/S	0.08	0.05	0.07	0.07	0.03	0.05	0.01	0.41	0.41	0.01	0.39	0.39	selected phasing	0.08	0.07	0.40	0.42	0.08	0.42	**0.55**	**6.8**	**A**	7
8: US 101 & 6th St	Adj Flow Rate, veh/h	83	33	28	83	17	39	33	1394	22	22	1322	28	Protected	0.17	0.17	0.43	0.44						
	Sat Flow, veh/h	945	376	319	963	197	452	1667	3271	52	1667	3225	68	Permitted or Split	0.09	0.09	0.41	0.43						
	V/S	0.09	0.09	0.09	0.09	0.09	0.09	0.02	0.43	0.42	0.01	0.41	0.41	selected phasing	0.09	0.09	0.43	0.44	0.17	0.44	**0.71**	**25.3**	**C**	8
9: US 101 & Olive St/US 20	Adj Flow Rate, veh/h	181	181	27	234	149	266	64	878	0	351	926	74	Protected	0.27	0.30	0.34	0.49						
	Sat Flow, veh/h	1654	1467	219	1576	1723	1411	1667	3221	1367	1615	3039	243	Permitted or Split	0.12	0.19	0.30	0.27						
	V/S	0.11	0.12	0.12	0.15	0.09	0.19	0.04	0.27	0.00	0.22	0.30	0.30	selected phasing	0.27	0.30	0.34	0.49	0.30	0.49	**0.91**	**52.8**	**D**	9
11: US 101 & Hurbert St	Adj Flow Rate, veh/h	36	21	31	62	36	41	21	871	10	41	995	21	Protected	0.17	0.17	0.59	0.59						
	Sat Flow, veh/h	472	488	522	570	480	439	75	3263	39	127	3223	71	Permitted or Split	0.08	0.11	0.32	0.28						
	V/S	0.08	0.04	0.06	0.11	0.08	0.09	0.28	0.27	0.26	0.32	0.31	0.30	selected phasing	0.08	0.11	0.32	0.28	0.11	0.60	**0.79**	**34.7**	**C**	11
14: Moore Dr/Harney St & US 20	Adj Flow Rate, veh/h	49	788	125	65	543	147	98	65	71	147	60	38	Protected	0.32	0.35	0.37	0.37						
	Sat Flow, veh/h	1537	2830	449	1628	1709	1402	724	588	1430	565	321	163	Permitted or Split	0.28	0.32	0.26	0.14						
	V/S	0.03	0.28	0.28	0.04	0.32	0.10	0.14	0.11	0.05	0.26	0.19	0.23	selected phasing	0.32	0.35	0.26	0.14	0.35	0.26	**0.69**	**19.3**	**B**	14
	Adj Flow Rate, veh/h													Protected	0.00	0.00	0.00	0.00						
	Sat Flow, veh/h													Permitted or Split	0.00	0.00	0.00	0.00						
	V/S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	selected phasing	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0**	**A**	
	Adj Flow Rate, veh/h													Protected	0.00	0.00	0.00	0.00						
	Sat Flow, veh/h													Permitted or Split	0.00	0.00	0.00	0.00						
	V/S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	selected phasing	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0**	**A**	
	Adj Flow Rate, veh/h													Protected	0.00	0.00	0.00	0.00						
	Sat Flow, veh/h													Permitted or Split	0.00	0.00	0.00	0.00						
	V/S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	selected phasing	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0**	**A**	

Sheet Description:
This sheet reads in the adjusted flow rate and the saturation flow rate from Synchro and divides them to calculated the V/S for each movement.
The critical flow calculator calculates the critical v/s for each conflicting phase pair.
for protected phases, this v/s is the left turn v/s plus the max of the opposing movement v/s
for the permitted and split phases, this v/s is the max of the three movement v/s
The next step selects the proper v/s based on phasing provided
V/S by east-west and north-south is selected by taking the max of the phase pairs or by adding them (if split phasing)
If overlap calculator was selected in input section and overlap phases were indicated, then overlap v/s for intersection is calculated. See details below
If the right turn v/s is greater than the through v/s for the right turn overlap approach, then the right turn is assumed the critical movement and intersection v/c calc will use the v/s overlap instead of approach v/s
The final step in v/c calculation uses the approach v/s ratios, cycle length, and lost time to calculate overall intersection v/c
Delay and LOS are read directly from the HCM 6 report

Overlap Calculator Details
Overlap calculator reads in whether an overlap phase is in use and what type of phasing is associated with the right turn approach and the overlapped approach
V/S is read in for right turn movement, and remaining approaches from previous calculations
-right turn overlap v/s is just the v/s for the right turn movement (i.e. NBR)
-right turn approach v/s is the critical v/s associated with the right turn approaches (i.e. NB/SB) and is calculated differently for protected vs split
-overlap approach v/s is the critical v/s associated with the overlap approaches (i.e. EB/WB) and is calculated differently for protected vs split phasing
The v/s overlap column sums the 3 v/s values for the overlap phasing to get the total v/s overlap to be used in the v/c calculation
If there are overlaps for multiple approaches, the v/s overlap will use the greatest of the approaches for most conservative approach
Use Overlap Calculator' must be enabled and 'Use OV V/S' must be showing in V/S Overlap column in order for overlap v/s to be used in final v/c calculation

Intersection ID and Name	Control Type		Major Approach	Row		1	3	4	5	6	7	8	9	10	11	12	13	14	Outputs	NB	SB	EB	WB	Synchro ID
	use dropdown	BEGIN	Sat. Flow Default	1700																				
		CALCULATIONS		Reference		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR							
1: US 101 & 73rd Ct/73rd St	TWSC		NB/SB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		1: US 101 & 73rd Ct/73rd St V/C	**0.46**	**0.35**	**0.02**	**0.92**	**1**
				8	Lane Configurations		0	1	0	0	1	0	1	1	1	1	1	0	1: US 101 & 73rd Ct/73rd St Delay	**8.70**	**11.50**	**17.10**	**130.20**	
				19	Mvmt Flow		1	0	5	95	0	16	2	774	53	21	600	2	1: US 101 & 73rd Ct/73rd St LOS	**A**	**B**	**C**	**F**	
				10	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R	L	T or TR	TR or R							
					Major V/C			0.00	0.00			0.01	0.01	0.00	0.46	0.03	0.04	0.35	0.35					
					Minor (or AWSC) V/C	0.02				0.92														
				45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.00	-	-	0.02	0.92	0.04	-	-	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	8.7	-	-	17.1	130.2	11.5	-	-	0.0	0.0	0.0							
				49	HCM Lane LOS	0	A	-	-	C	F	B	-	-	0	0	0							
3: US 101 & Oceanview Dr	TWSC		NB/SB	7	Movement	EBL		EBR				NBL	NBT			SBT	SBR		3: US 101 & Oceanview Dr V/C	**0.64**	**0.52**	**0.57**	**0.00**	**3**
				8	Lane Configurations		1		0				1	1			1	1	1	3: US 101 & Oceanview Dr Delay	**10.30**	**0.00**	**42.50**	**0.00**	
				19	Mvmt Flow		90	0	32	0	0	0	21	1080	0	0	888	48	3: US 101 & Oceanview Dr LOS	**B**	**A**	**E**	**A**	
				67	Major V/C Lanes	LTR	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R							
					Major V/C								0.03	0.64			0.52	0.03						
					Minor (or AWSC) V/C	0.57																		
				45	Minor Lane/Major Mvmt	0	NBL	NBT	EBLn1	SBT	SBR	0	0	0	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.03	-	0.57	-	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	10.3	-	42.5	-	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49	HCM Lane LOS	0	B	-	E	-	-	0	0	0	0	0	0							
4: US 101 & 36th Street	TWSC		NB/SB	7	Movement				WBL		WBR		NBT	NBR	SBL	SBT			4: US 101 & 36th Street V/C	**0.63**	**0.53**	**0.00**	**0.18**	**4**
				8	Lane Configurations					1		0		1	1	1	1		4: US 101 & 36th Street Delay	**0.00**	**10.70**	**0.00**	**25.70**	
				19	Mvmt Flow		0	0	0	21	0	16	0	1064	37	11	894	0	4: US 101 & 36th Street LOS	**A**	**B**	**A**	**D**	
				127	Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R							
					Major V/C									0.63	0.02	0.02	0.53							
					Minor (or AWSC) V/C					0.18														
				45	Minor Lane/Major Mvmt	0	NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0							
				47	HCM Lane V/C Ratio	0.00	-	-	0.18	0.02	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	-	-	25.7	10.7	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49	HCM Lane LOS	0	-	-	D	B	-	0	0	0	0	0	0							
5: US 101 & 31st St	TWSC		NB/SB	7	Movement				WBL		WBR		NBT	NBR	SBL	SBT			5: US 101 & 31st St V/C	**0.66**	**0.54**	**0.00**	**0.22**	**5**
				8	Lane Configurations					1		0		1	1	1	1		5: US 101 & 31st St Delay	**0.00**	**11.30**	**0.00**	**28.80**	
				19	Mvmt Flow		0	0	0	33	0	11	0	1114	92	16	918	0	5: US 101 & 31st St LOS	**A**	**B**	**A**	**D**	
				184	Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R							
					Major V/C									0.66	0.05	0.03	0.54							
					Minor (or AWSC) V/C					0.22														
				45	Minor Lane/Major Mvmt	0	NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0							
				47	HCM Lane V/C Ratio	0.00	-	-	0.22	0.03	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	-	-	28.8	11.3	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49	HCM Lane LOS	0	-	-	D	B	-	0	0	0	0	0	0							
10: US 101 & Angle St	TWSC		NB/SB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		10: US 101 & Angle St V/C	**0.33**	**0.41**	**1.19**	**1.24**	**10**
				8	Lane Configurations		0	1	0	0	1	0	0	2	0	0	2	0	10: US 101 & Angle St Delay	**11.30**	**11.20**	**376.60**	**235.50**	
				19	Mvmt Flow		11	16	16	11	11	115	11	1044	11	49	1115	49	10: US 101 & Angle St LOS	**B**	**B**	**F**	**F**	
				241	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LT	T or TR	TR or R	LT	T or TR	TR or R							
					Major V/C			0.02	0.02			0.07	0.07	0.33	0.31	0.31	0.41	0.34	0.34					
					Minor (or AWSC) V/C	1.19				1.24														
				45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.02	-	-	1.19	1.24	0.08	-	-	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	11.3	0.3	-	376.6	235.5	11.2	1.2	-	0.0	0.0	0.0							
				49	HCM Lane LOS	0	B	A	-	F	F	B	A	-	0	0	0							
12: US 101 & Bayley St	TWSC		NB/SB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		12: US 101 & Bayley St V/C	**0.34**	**0.36**	**0.41**	**0.33**	**12**
				8	Lane Configurations		0	1	0	0	1	0	1	2	0	0	2	0	12: US 101 & Bayley St Delay	**12.00**	**10.90**	**41.20**	**50.40**	
				19	Mvmt Flow		11	0	56	11	0	28	28	1128	11	6	1200	17	12: US 101 & Bayley St LOS	**B**	**B**	**E**	**F**	
				301	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R							
					Major V/C			0.03	0.03			0.02	0.02	0.05	0.34	0.34	0.36	0.36	0.36					
					Minor (or AWSC) V/C	0.41				0.33														
				45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.05	-	-	0.41	0.33	0.01	-	-	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	12.0	-	-	41.2	50.4	10.9	0.2	-	0.0	0.0	0.0							
				49	HCM Lane LOS	0	B	-	-	E	F	B	A	-	0	0	0							
13: Benton St & US 20	TWSC		EB/WB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		13: Benton St & US 20 V/C	**0.62**	**0.24**	**0.43**	**0.34**	**13**
				8	Lane Configurations		1	1	0	1	1	0	0	1	0	0	1	0	13: Benton St & US 20 Delay	**36.30**	**29.40**	**8.60**	**9.80**	
				19	Mvmt Flow		11	689	47	116	579	5	16	2	158	5	5	37	13: Benton St & US 20 LOS	**E**	**D**	**A**	**A**	
				358	Major V/C Lanes	L	T or TR	TR or R	L	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
					Major V/C		0.01	0.43	0.43	0.14	0.34	0.34		0.09	0.09		0.02	0.02							
					Minor (or AWSC) V/C								0.62			0.24								
				45	Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.62	0.01	-	-	0.14	-	-	0.24	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	36.3	8.6	-	-	9.8	-	-	29.4	0.0	0.0	0.0							
				49	HCM Lane LOS	0	E	A	-	-	A	-	-	D	0	0	0							
15: Oceanview Dr & Pacific Pl/25th St	TWSC		NB/SB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		15: Oceanview Dr & Pacific Pl/25th St V/C	**0.11**	**0.07**	**0.00**	**0.11**	**15**
				8	Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	15: Oceanview Dr & Pacific Pl/25th St Delay	**0.00**	**7.60**	**0.00**	**10.40**	

Intersection ID and Name	use dropdown Control Type	BEGIN CALCULATIONS	Sat. Flow Default Major Approach	1700 Row Reference	1	3	4	5	6	7	8	9	10	11	12	13	14	Outputs	NB	SB	EB	WB	Synchro ID
				19 Mvmt Flow		0	0	0	43	0	43	0	105	86	19	93	0	15: Oceanview Dr & Pacific Pl/25th St LOS	**A**	**A**	**A**	**B**	
				415 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.00	0.00		0.03	0.03		0.11	0.11	0.07	0.05	0.05							
				Minor (or AWSC) V/C	-			0.11																
				45 Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47 HCM Lane V/C Ratio	0.00	-	-	-	-	0.11	0.01	-	-	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	0.0	-	-	0.0	10.4	7.6	0.0	-	0.0	0.0	0.0							
				49 HCM Lane LOS	0	A	-	-	A	B	A	A	-	0	0	0							
16: Nye St & 11th St	TWSC		EB/WB	7 Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		16: Nye St & 11th St V/C	**0.19**	**0.10**	**0.02**	**0.03**	**16**
				8 Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	16: Nye St & 11th St Delay	**10.10**	**10.00**	**7.30**	**7.30**	
				19 Mvmt Flow		3	31	3	13	25	6	19	88	56	13	56	6	16: Nye St & 11th St LOS	**B**	**B**	**A**	**A**	
				472 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.02	0.02	0.02	0.03	0.02	0.02		0.08	0.08		0.04	0.04						
				Minor (or AWSC) V/C								0.19			0.10								
				45 Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47 HCM Lane V/C Ratio	0.00	0.19	0.00	-	-	0.01	-	-	0.10	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	10.1	7.3	0.0	-	7.3	0.0	-	10.0	0.0	0.0	0.0							
				49 HCM Lane LOS	0	B	A	A	-	A	A	-	B	0	0	0							
17: Harney St & 7th St	AWSC		N/A	9 Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		17: Harney St & 7th St V/C	**0.18**	**0.00**	**0.20**	**0.08**	**17**
				10 Lane Configurations		0	1	0	0	1	0	0	1	1	0	1	0	17: Harney St & 7th St Delay	**9.50**	**7.70**	**7.90**	**8.00**	
				15 Mvmt Flow		1	51	129	22	39	0	118	0	34	0	1	0	17: Harney St & 7th St LOS	**A**	**A**	**A**	**A**	
				531 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LT	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.11	0.11		0.02	0.02		0.00	0.02		0.00	0.00							
				Minor (or AWSC) V/C	0.20			0.08			0.18	0.04		0.00									
				29 Lane	0	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	0	0	0	0	0	0							
				45 HCM Lane V/C Ratio	0.00	0.18	0.04	0.20	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
				46 HCM Control Delay	0.0	9.5	7.2	7.9	8.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0							
				47 HCM Lane LOS	0	A	A	A	A	A	0	0	0	0	0	0							
18: 9th St & Hurbert St	TWSC		EB/WB	7 Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		18: 9th St & Hurbert St V/C	**0.35**	**0.24**	**0.04**	**0.06**	**18**
				8 Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	18: 9th St & Hurbert St Delay	**13.10**	**11.40**	**7.40**	**7.40**	
				19 Mvmt Flow		11	51	11	2	68	23	17	205	17	17	91	68	18: 9th St & Hurbert St LOS	**B**	**B**	**A**	**A**	
				584 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.04	0.04	0.06	0.05	0.05		0.13	0.13		0.09	0.09							
				Minor (or AWSC) V/C								0.35			0.24								
				45 Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47 HCM Lane V/C Ratio	0.00	0.35	0.01	-	-	0.00	-	-	0.24	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	13.1	7.4	0.0	-	7.4	0.0	-	11.4	0.0	0.0	0.0							
				49 HCM Lane LOS	0	B	A	A	-	A	A	-	B	0	0	0							
19: 9th St & Abbey St	TWSC		EB/WB	7 Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		19: 9th St & Abbey St V/C	**0.18**	**0.16**	**0.05**	**0.06**	**19**
				8 Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	19: 9th St & Abbey St Delay	**12.00**	**11.90**	**7.60**	**7.40**	
				19 Mvmt Flow		24	36	12	1	66	42	18	84	12	36	48	18	19: 9th St & Abbey St LOS	**B**	**B**	**A**	**A**	
				641 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.05	0.03	0.03	0.06	0.06	0.06		0.06	0.06		0.04	0.04						
				Minor (or AWSC) V/C								0.18			0.16								
				45 Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47 HCM Lane V/C Ratio	0.00	0.18	0.02	-	-	0.00	-	-	0.16	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	12.0	7.6	0.0	-	7.4	0.0	-	11.9	0.0	0.0	0.0							
				49 HCM Lane LOS	0	B	A	A	-	A	A	-	B	0	0	0							
20: Bay Blvd & Moore Dr	TWSC		NB/SB	7 Movement	EBL		EBR				NBL	NBT			SBT	SBR		20: Bay Blvd & Moore Dr V/C	**0.07**	**0.08**	**0.21**	**0.00**	**20**
				8 Lane Configurations		1		0				1	1			1	1	20: Bay Blvd & Moore Dr Delay	**7.70**	**0.00**	**11.40**	**0.00**	
				19 Mvmt Flow		56	0	94	0	0	0	106	106	0	0	133	44	20: Bay Blvd & Moore Dr LOS	**A**	**A**	**B**	**A**	
				698 Major V/C Lanes	LTR	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R							
				Major V/C							0.07	0.06			0.08	0.03							
				Minor (or AWSC) V/C	0.21																		
				45 Minor Lane/Major Mvmt	0	NBL	NBT	EBLn1	SBT	SBR	0	0	0	0	0	0							
				47 HCM Lane V/C Ratio	0.00	0.07	-	0.21	-	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	7.7	-	11.4	-	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49 HCM Lane LOS	0	A	-	B	-	-	0	0	0	0	0	0							

Sheet Description:
This sheet reads in lane configurations by representing exclusive through or shared lanes with the number of lanes in the through movement, and any exclusive number of turn lanes in the respective turn movement. So a single LTR lane would have 1 under through and 0s under left and right.
This sheet also reads in movement flow and select v/c, LOS, and delay results. The calculations are shown in the box.
Calculations are split out by major and minor approach v/c; Major approach is determined from free approaches in report
The major v/c lanes row indicates the left turn lane configuration for each approach. This is important to determine how to add in the delay from the left turns to the overall calculated v/c for the major approach
In the major v/c row, left turn v/c is read from the report, while remaining movement v/c ratios are calculated based on the methodology given in the ODOT APM and the provided default saturation flow rate of 1700 (can be changed by user)
In the minor v/c row, v/c ratios by lane are calculated based on the ODOT APM method using volume and assumed saturation flow rate
The v/c ratio by approach is the max of the v/c by lane as calculated in the major or minor v/c rows
LOS and Delay by approach are read in from the report
For AWSC, all approaches are treated as minor approaches and the calculations remain the same
The summary table selects the worst approach for both directions and concatenates the results with a / for the final summary table for TWSC. For AWSC, the overall worst approach is reported.

NEWPORT TSP

OUTREACH / EVENT PLAN

EVENT #1 - DEVELOP + EVALUATE SOLUTIONS

Prepared for

City of Newport

Prepared by

JLA Public Involvement, Inc.
921 SW Washington St., Suite 570
Portland, OR 97205

Date

September 1, 2020

This Outreach/Event Plan is meant to document all of the details related to the preparation for an event or larger scale outreach activity.

OVERVIEW

PURPOSE OF OUTREACH + HOUSEKEEPING ITEMS	
Project Scope/ Description*	The City of Newport and the Oregon Department of Transportation are updating the Transportation System Plan (TSP). The TSP is a long-range plan that will guide future investments in the city's transportation system. The plan will guide how we develop and invest in streets, sidewalks, bike lanes, and transit to meet the current and future needs of Newport and surrounding areas. It helps determine which projects, policies and programs are important to protecting and enhancing the quality of life in the City of Newport. What will the Newport TSP do? • Review community, business, visitor and stakeholder input to identify and prioritize future transportation projects and investments. • Provide a strategic investment plan that enhances safety, access and economic opportunities for the community. • Align and implement strategies within the Greater Newport Vision 2040 and Northside Urban Renewal Plan. • Consider issues such as increased traffic volumes on Highway 101 and Highway 20, citywide pedestrian and bicyclist activity, opportunities for enhanced connectivity, funding opportunities, and consideration of updated and flexible street design standards to adapt to unique development conditions in the city. • With community input, identify strategies to improve mobility through the city center, along US 101 and US 20, and throughout Newport, considering bike and pedestrian needs, connectivity, increased traffic volumes, funding opportunities, street design, development conditions, and user preferences.
What is this event/outreach activity?	Online open house – public self-directed experience Virtual work session – Facilitated by JLA and SERA
When and where will the event take place?	*November 17 to December 15, 2020 (online open house)* *Saturday, November 21 (virtual work session)*
Who is the audience?	• ***Residents**: Residents of Newport, key stakeholders interviewed* • ***Government Officials/Stakeholders:** County Commissioners, City Officials,* • ***Project Partners:** PAC members, Community groups*
Goals for this event/outreach activity	*List the goals for the is event/outreach activity, such as* • Provide project background information/previous efforts and input collected through stakeholder interviews. • Gather public input on the future growth of Newport and how the transportation system will affect the livability of the community, framed by the goals and objectives identified earlier in the project. • Continue project awareness and community engagement

	• Understand community issues by area (Commercial core, Agate Beach, Nye Beach, City-wide) • Get some level of support for the draft design options and collect new ideas. • Prioritize the community's needs through a fiscally constrained list
Native Land Acknowledgement	*The client may not have a consistent approach to Native Land Acknowledgement. In documentation, standard practice is to list human settlements in the area including tribal groups and any special land use that took place in the area.* *More information can be found at https://www.portlandoregon.gov/civic/article/505489 or https://oregonhistoryproject.org/narratives/commerce-climate-and-community-a-history-of-portland-and-its-people/introduction-3/first-peoples-in-the-portland-basin/#.XS9Y_-hKhPY. In meetings, acknowledging the native people whose land we are holding the meeting on is a good practice if presenters would like to do so. More information is available at https://usdac.us/nativeland.*
Non-Discrimination Policy Statement	*The following text should be included in all advertising materials for the event, as well as posted at the event.* *Consistent with the policy of the City of Newport is committed to compliance with all state and federal non-discrimination directives, including Title VI of the Civil Rights Act of 1964 and the Americans with Disabilities Act Title II.*

There are other internal and external activities that will lead up to these events. Below is a high-level summary of those activities:

Tasks	**Schedule**
Remaining interviews	Early September
Event #1	
Online Open House	11/17-12/13
Postcard	10/26
Survey mailed to targeted households	11/9
Virtual Work Session	11/21
Summary of comments	12/29
PAC Meeting – review outreach results/review recommendations	3-4 weeks after online open house closes

2. RUN OF SHOW + EVENT LOGISTICS

Staff responsibilities are shown in the following tables.

Online Open House

Date: November 17-December 13

Goal: Introduce people to the project, review our assumptions (past comments, existing conditions) and start to understand the public's preference for solving for those issues (review designs based on geography and project goals). Allow people to answer as much or little as they want, but completing all questions should take 30 minutes or less (1-2 open ended questions).

PAGE	TEASER HEADER	QUESTIONS, COLLECTION TOOL, CONTENT
Landing	*Welcome to this project page*	*None; list of pages (or geographies shown with icons/images?)*
Welcome	*Learn about the project and tell us what you think*	*None; goals of the project and this event; video (previous one)*
What we heard	*We've heard many comments. Here is a summary of the information.*	*No new questions except, of these comments which is your top concern (or ranking) – no open-ended question.* *List of comments collected; summary of stakeholder interviews; previous projects that feed into this process; Links to other projects in Newport (South Beach CON and Yaquina Bridge)*
Citywide	*Learn more about this area*	*graphics explaining the area* *Frame questions around the main criteria/goals for the project, then ask specific questions related to this area.*
Agate Beach	*Learn more about this area*	*graphics explaining the area* *Frame questions around the main criteria/goals for the project, then ask specific questions related to this area.*
Commercial Core	*Learn more about this area*	*graphics explaining the area* *Frame questions around the main criteria/goals for the project, then ask specific questions related to this area.*
Nye Beach	*Learn more about this area*	*graphics explaining the area* *Frame questions around the main criteria/goals for the project, then ask specific questions related to this area.*
Newport Bridge	*Learn more about this area*	*What is the plan for the bridge over the next 20 years?* *Provide more information about ODOT's separate project (information from James Feldmann)*
Next steps	*Thanks so much for getting involved. We'll*	*Demographic questions; add to mailing list*

	use your input to move to the next phase.	*thank you and share options on social media, email, printed flyer, etc.*

Virtual Work Session

Date: Saturday, November 21, 2020

Goal: show existing conditions, confirm assumptions, start to review designs; collect more open-ended responses in this format than the online open house.

Zoom link:

TIME	STAFF/RESPONSIBILITY	DETAILS
9:30 am	*JLA/Brandy*	*Key staff arrive and set up presentation / Zoom call logistics*
10:00 am	*JLA/Brandy*	*Work session starts*
10:15 am	*City/Derrick* *DKS/Carl* *SERA/Ben* *JLA/Brandy – facilitate*	*Presentation / Q&A*
10:30 am	*Each group facilitated by one staff member*	*Break into small groups*
11:30 am		*Return to large group and present summary*
noon		*Work session ends*
12:30 pm	*JLA/Brandy*	*Collect comments and key takeaways to help with the summary; save chat features and video;*

3. ADVERTISING CONTENT

Begin thinking about the visual identity for this event/outreach activity, considering the visual identity of the project as a whole.

Visual Identity

ITEM	DETAILS	NOTES
Style guide	*Associated Press (AP)*	*JLA uses AP unless the client has a specific style guide*
Colors	*HEX* *RGB* *CMYK*	
Icons/logos	*City of Newport logo*	*Include ODOT?*
Main take-away for the public	This is the most important time to give your input on the future growth of Newport. The comments we collect now will shape the livability of the city, how you walk, bike, take the bus, or drive around town.	

ITEM	DETAILS	NOTES
Call to action	Visit the online open house and submit comments Attend the virtual work session to ask the technical team questions	
Contact person	Derrick Tokos, AICP, City of Newport Community Development Director 541-574-0626 d.tokos@newportoregon.gov	
Translated text and non-discrimination language	*For ADA Title II or Civil Rights Title VI accommodations, translation/interpretation services or for additional information call TTY (800) 735-2900 or use the statewide Oregon Relay Service: 7-1-1.*	*Is there a request for more information in another language? Standard text includes:* *Aprenda más sobre este proyecto y tomar la encuesta en.*

Advertising Calendar

MEDIUM	SEND	WHO	CONTENT
Email	*#1 = 10/25* *#2 = 11/16* *#3 = 12/14*	*City sends* *JLA creates content*	Refine content to send in standard email template, which includes partner logos.
Press Release	*11/16*	*City sends* *JLA creates content*	Modify email #2 content
Postcard	*Send = 10/19* *Arrive = 10/26-10/30*	*City sends* *JLA creates content*	**Front/Mailing information** Return address Key message Website Event information/dates/details **Back** All of the details that people need to know in 3-5 sentences. Graphics? Images? Survey questions?
Website	*10/25*	*JLA content/ update*	Add the above text/event details in the current website format
	11/17	*JLA content/ update*	Add link to online open house
	12/14	*JLA content/ update*	Remove the "invite" and open house/survey text and replace with: Thank you to everyone who attended the online open house or virtual work session. We are working hard to summarize your thoughts, questions and concerns. The event and comment summary will be posted here when it is completed. If you have additional questions or concerns, please contact ….
Social Media	*10/25*	*City sends*	Create free events on Facebook and Nextdoor, one for each event using the information above:

		JLA creates content	
	11/09	*City sends* *JLA creates content*	Post on all social media channels: Tell us how you want the City of Newport to grow in the future. How do you want to travel around town to shop, spend time with family, or get to the doctor. Your comments will help narrow the designs for Highway 101, as well as local streets throughout the city. For Facebook/Instagram/Twitter, include these hashtags when possible: #Highway101 #NewportOR #OregonCoast
	11/16	*City sends* *JLA creates content*	Post on all social media channels: This is the week to provide input on how you want the City of Newport to grow in the future. How do you want to travel around town to shop, spend time with family, or get to the doctor. Your comments will help narrow the designs for Highway 101, as well as local streets throughout the city. For Facebook/Instagram/Twitter, include these hashtags when possible: #Highway101 #NewportOR #OregonCoast
	11/23	*City sends* *JLA creates content*	Post on all social media channels: Couldn't make the virtual work session on Saturday? Don't worry, there's still an opportunity to share your thoughts! Visit our online open house through October 20 to learn more and tell us what you think about the draft design options. Learn more at https://sites.jla.us.com/newport-tsp. For Facebook/Instagram/Twitter, include these hashtags when possible: #Highway101 #NewportOR #OregonCoast
	12/16	*City sends* *JLA creates content*	Post on all social media channels: Thank you to everyone who attended the online open house and virtual work session. We are working hard to summarize your thoughts, questions and concerns! Want to stay up-to-date on this project? Join our mailing list at https://sites.jla.us.com/newport-tsp. For Facebook/Instagram/Twitter, include these hashtags when possible: #Highway101 #NewportOR #OregonCoast

4. EVALUATE AND SUMMARIZE

POST EVENT SUMMARY*	
The questions below will be asked at or after the event by the project team to evaluate the success of the activity. • Were our messages about the project effective? If not, why? • Were translation/interpretation services helpful? Were translated materials easy to understand and accurately translated? • How did each of the project's communications tools work? How can we expand the use of those that are working well and refine those not working as well as they could be? • Did we reach our target audiences? If not, what other tools would have been more effective? = number of minority or low-income respondents on the online open house vs virtual work session • How many people attended the virtual work session? Online Open House? = head count; submitted comments • How many people participated through the online open house? = response numbers, website hits	
*Project review by JLA**	*Name of reviewer**
	*Date**
	What went well with the project, specifically the public involvement? What could be improved for future projects? What did you hear from other staff or public about this project?
*Project review by Client**	*Name of reviewer**
	*Date**
	What went well with the project, specifically the public involvement? What could be improved for future projects? What did you hear from other staff or public about this project?

NEWPORT TRANSPORTATION SYSTEM PLAN

Project Advisory Committee Meeting - 9/9/2020

Online Engagement and Public Event #1 Run of Show DRAFT

Prepared by: SERA Architects
Ben Weber (benw@seradesign.com)

FIRST, SOME CAVEATS

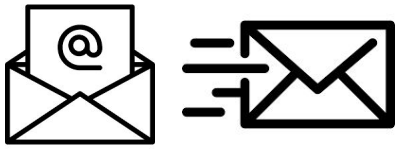
- We are very early in the design alternative process
- Specific questions and methods of gathering input will change between now and November when Public Engagement Round #1 begins
- The PAC and others will be involved in helping prioritize projects, figuring out exact evaluation criteria, and evaluating concepts based on those criteria

ONLINE OPEN HOUSE PUBLIC EVENT #1 - ACTIVE SEVERAL WEEKS

ADVERTISE THE PROJECT

MID OCTOBER

TO THE FULL COMMUNITY



SEND DIRECT MAIL SURVEY

MID OCTOBER

FOR PEOPLE SEEKING ANALOG ENGAGEMENT

Q1.
❑

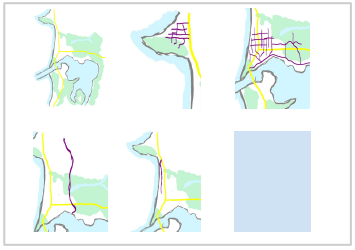
Q2.
❑

LAUNCH ONLINE OPEN HOUSE

MID NOVEMBER

BROADLY ADVERTISED TO THE COMMUNITY

15-30 MINUTES TO ENGAGE AT YOUR OWN PACE

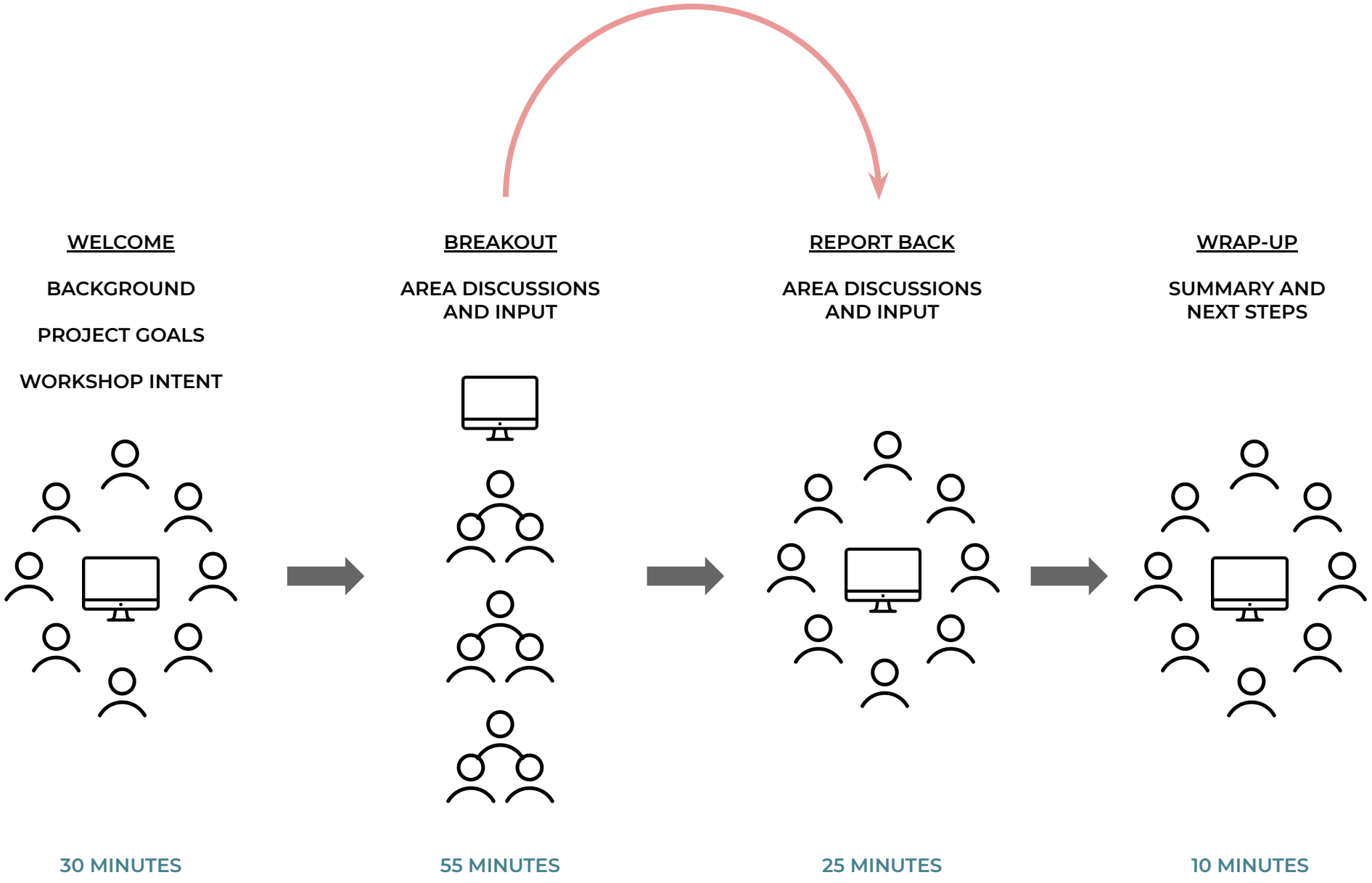


CLOSE ONLINE OPEN HOUSE AND FINALIZE COMMENT COLLECTIONS

MID DECEMBER

Comments
Design
Safety
Access
Businesses
Schools

LIVE PUBLIC EVENT #1 - 2-HOUR SESSION (MID-NOVEMBER)



ONLINE: WELCOME PAGE

Welcome

Learn about this project and through the online open house tell us what you think.

Nice Newport photo

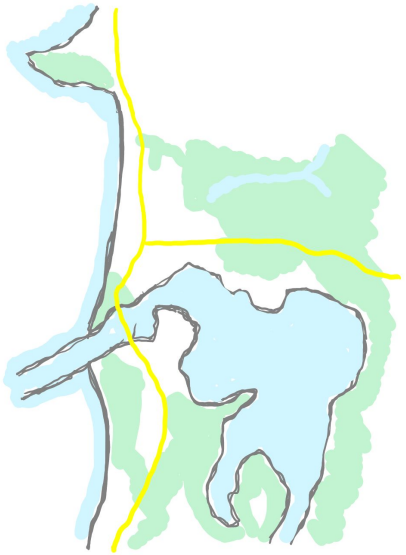
Study Area Map

ONLINE: WHAT WE'VE HEARD

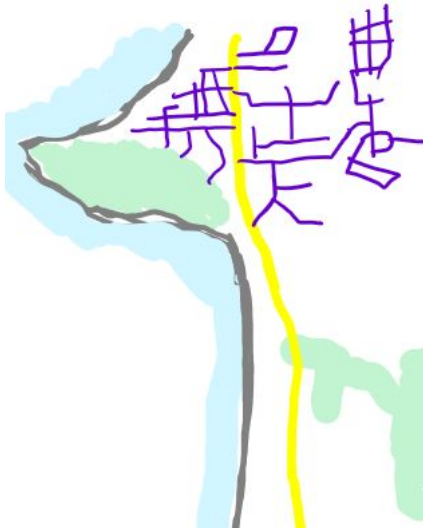
Input so Far

- Interviews
- Existing Conditions Memo: key findings regarding Walking, Biking, Transit, Vehicles, Congestion, Safety, Access

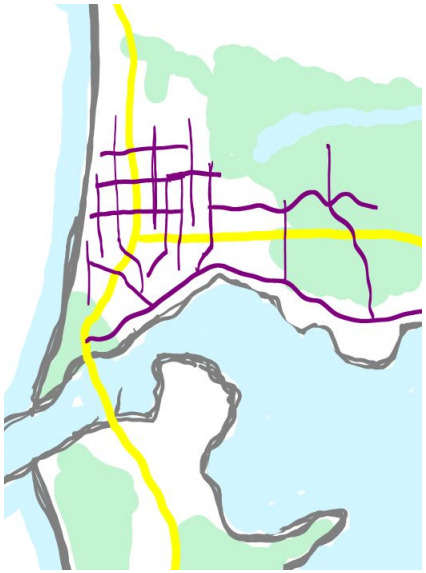
ONLINE: FOCUS AREA NAVIGATION



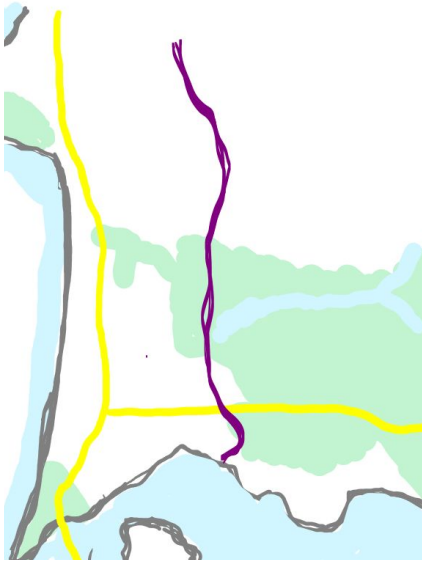
CITYWIDE



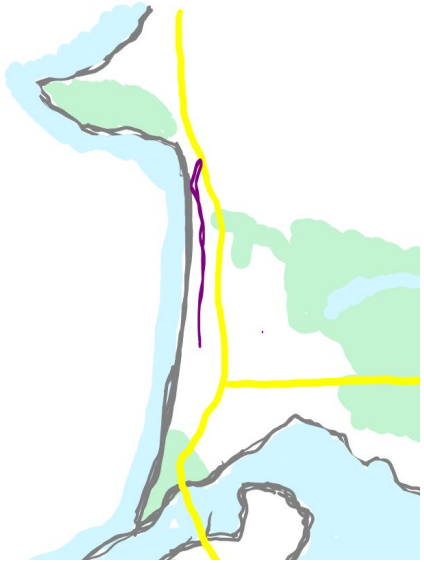
AGATE BEACH



CITY CORE



HARNEY EXTENSION



OCEANVIEW DRIVE

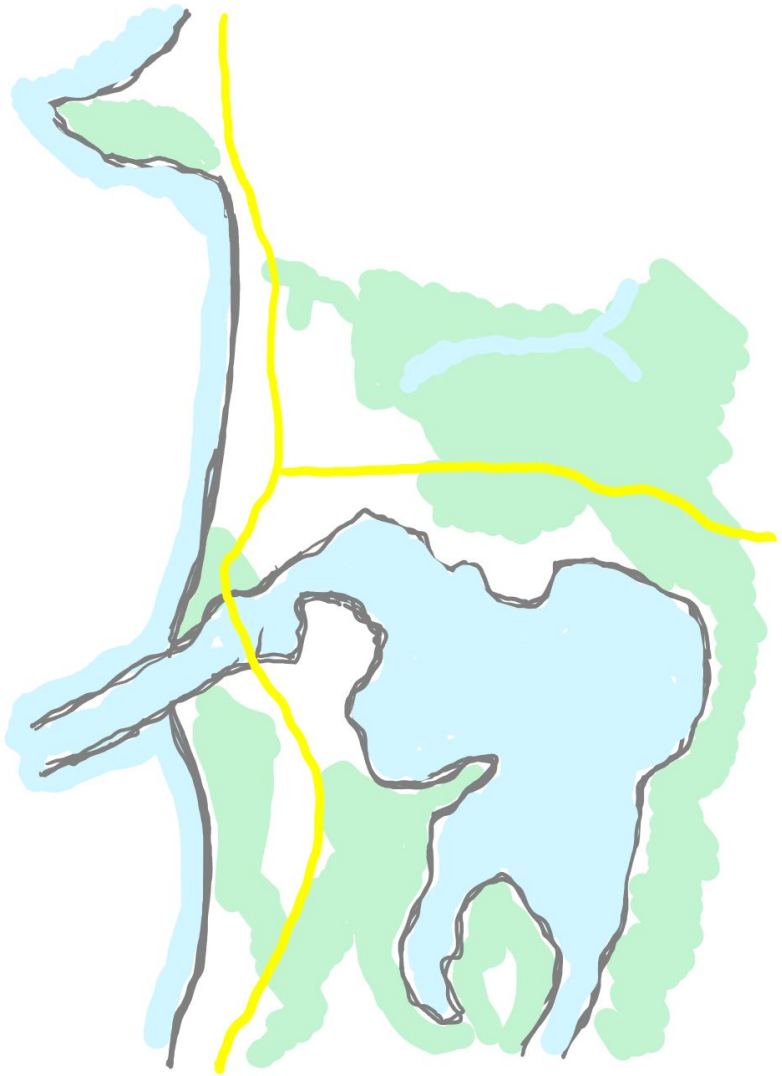
OTHER FOCUS AREAS T.B.D.

ONLINE: CITYWIDE

BACKGROUND
- Role of TSP in citywide improvement
- Citywide goals

GRAPHICS
- Identification of key connections/routes
- Intersections
- New route possibilities
- Bikeways
- Walkways
- Local and Collector street cross sections

TOOLS
- Map navigation with Post-in commenting
- Open-ended questions:
  - What other improvements do you think are important?
- Design-specific questions:
  - Does this potential bikeway connection provide needed access and safety improvements?



ONLINE: AGATE BEACH

BACKGROUND

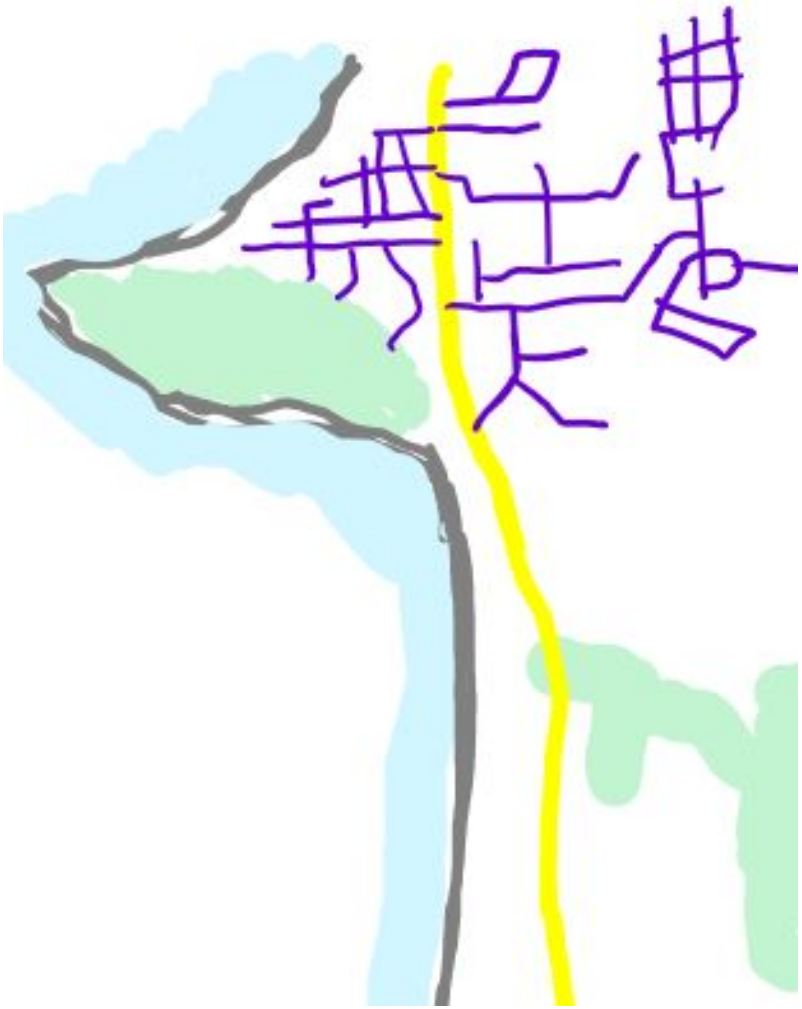
- Nature of Agate Beach informal and unimproved streets
- Erosion context and landslide risk
- Potential for semi-improvements

GRAPHICS

- Semi-improvement concept map
- Cross section of streets, walkways, stormwater functions

TOOLS

- Map navigation with Post-in commenting
- Open-ended questions:
  - What other improvements do you think are important?
- Design-specific questions:
  - What streets are best suited for connecting Agate Beach to Highway 101?
  - What are the best options for better connecting the internal street network within Agate Beach?



ONLINE: COMMERCIAL CORE

BACKGROUND

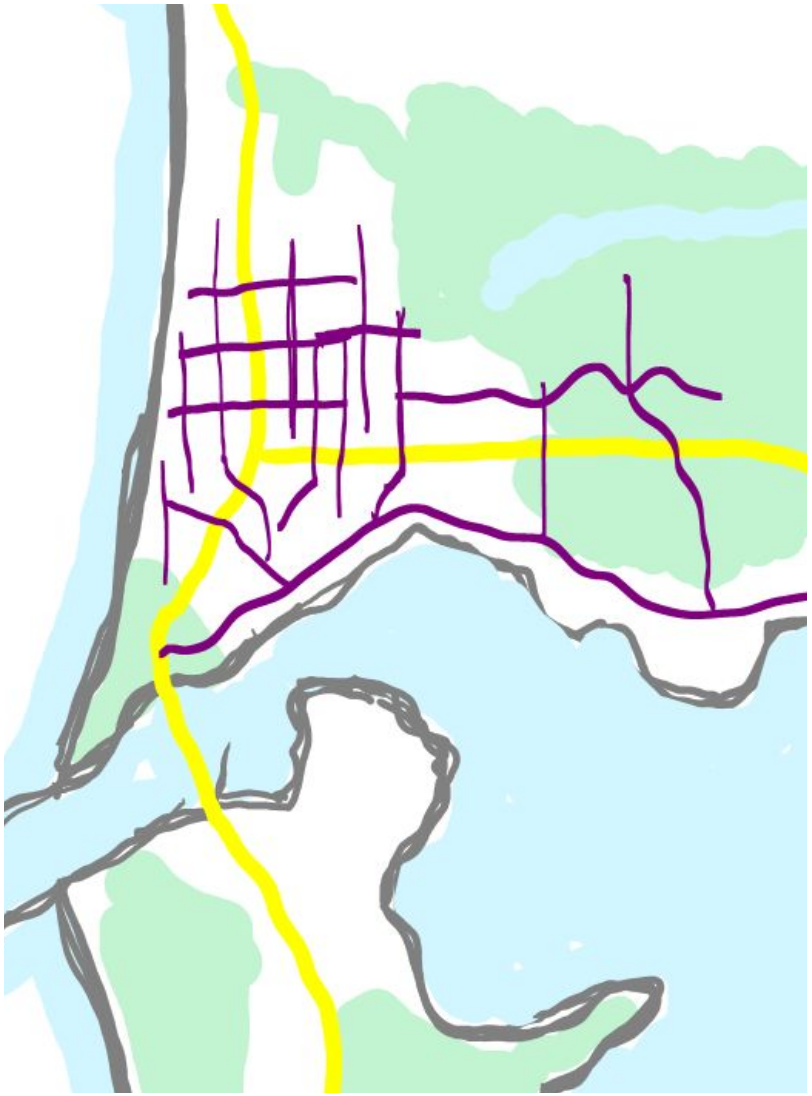
- Description of street connectivity and safety
- Role of streets in promoting vibrant places and business environments
- Balancing needs of commerce, freight, residents, tourists....

GRAPHICS

- Local and collector street improvements
- Cross section options: walkway and bikeway services
- Transit routes and stops
- Relationship of local streets to potential Highway 101 and 20 changes

TOOLS

- Map navigation with Post-in commenting
- Open-ended questions:
  - What other improvements do you think are important?
- Design-specific questions:
  - Do these improvements serve the potential need connecting destinations for users of all abilities and modes of travel?
  - Is business access improved sufficiently?
  - Does the concept street network provide flexibility for unknown future needs and demand?



ONLINE: HARNEY STREET EXTENSION

BACKGROUND

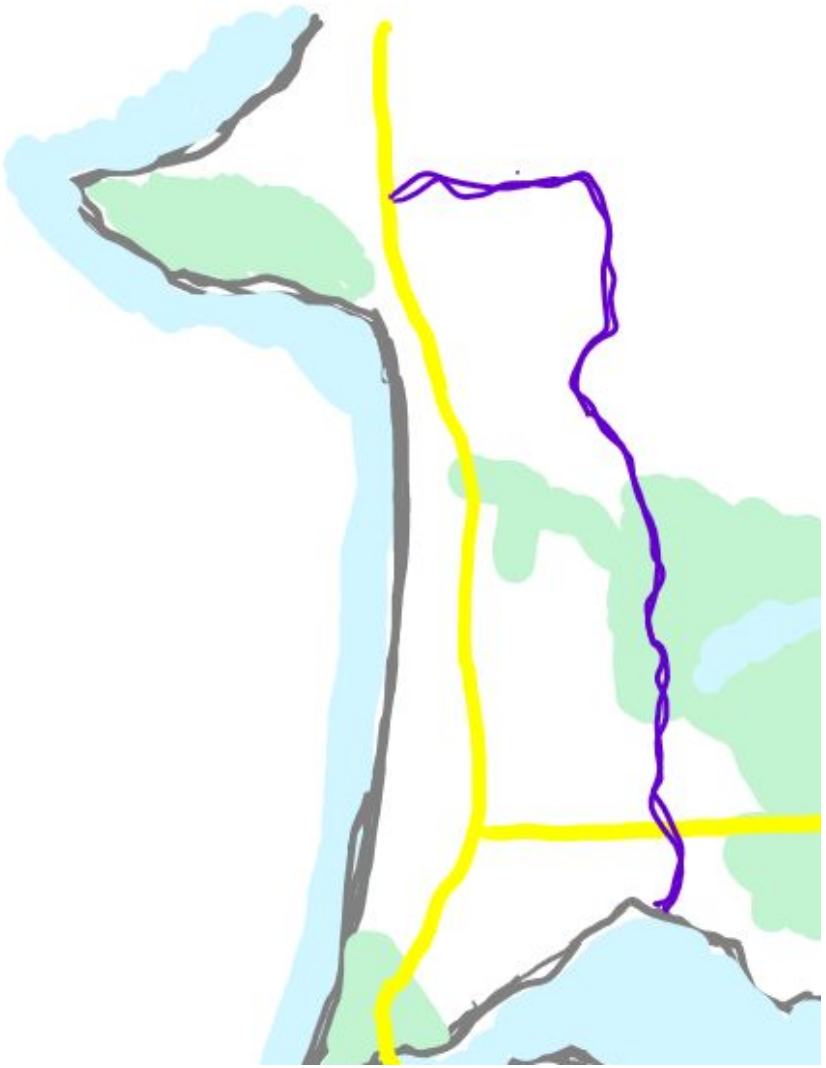
- Complexity of the route and terrain
- Perceived need (or not) for the route - new construction near the reservoir will necessitate options for new roadway capacity and connections (Harney, Big Creek Road, 101 - among options)

GRAPHICS

- Route map and constraints I.D.
- Cross sections, especially re: terrain
- New citywide routing available if Harney connection is made

TOOLS

- Map navigation with Post-in commenting
- Open-ended questions:
  - How could this connection best serve the Newport community?
- Design-specific questions:
  - Is this connection needed and cost-benefit analysis positive?
  - Are the environmental mitigation measures sufficient?



ONLINE: OCEANVIEW DRIVE IMPROVEMENT

BACKGROUND

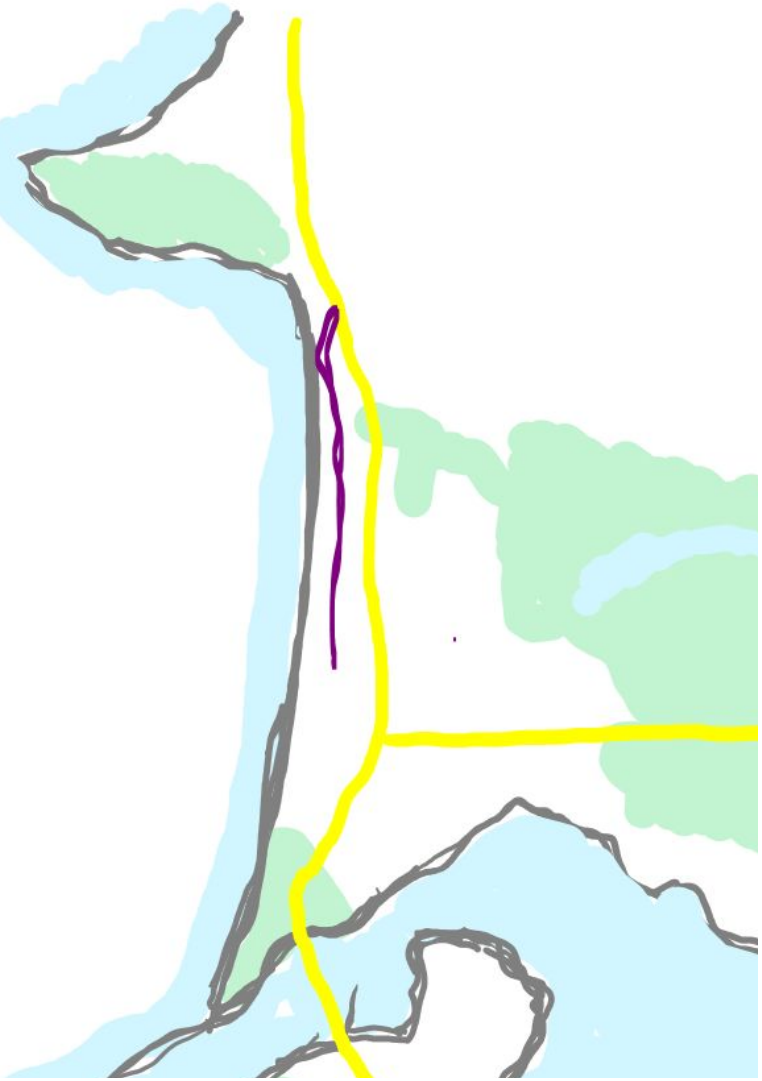
- Complexity of the route and terrain
- Perceived need (or not) for the route
- Options for Oceanview as a local bypass for Hwy 101

GRAPHICS

- Route map and constraints I.D.
- Cross sections, especially re: terrain
- New citywide routing available if Oceanview connection is made

TOOLS

- Map navigation with Post-in commenting
- Open-ended questions:
  - How could this connection best serve the Newport community?
- Design-specific questions:
  - Is this connection needed and cost-benefit analysis positive?
  - Are the environmental mitigation measures sufficient?



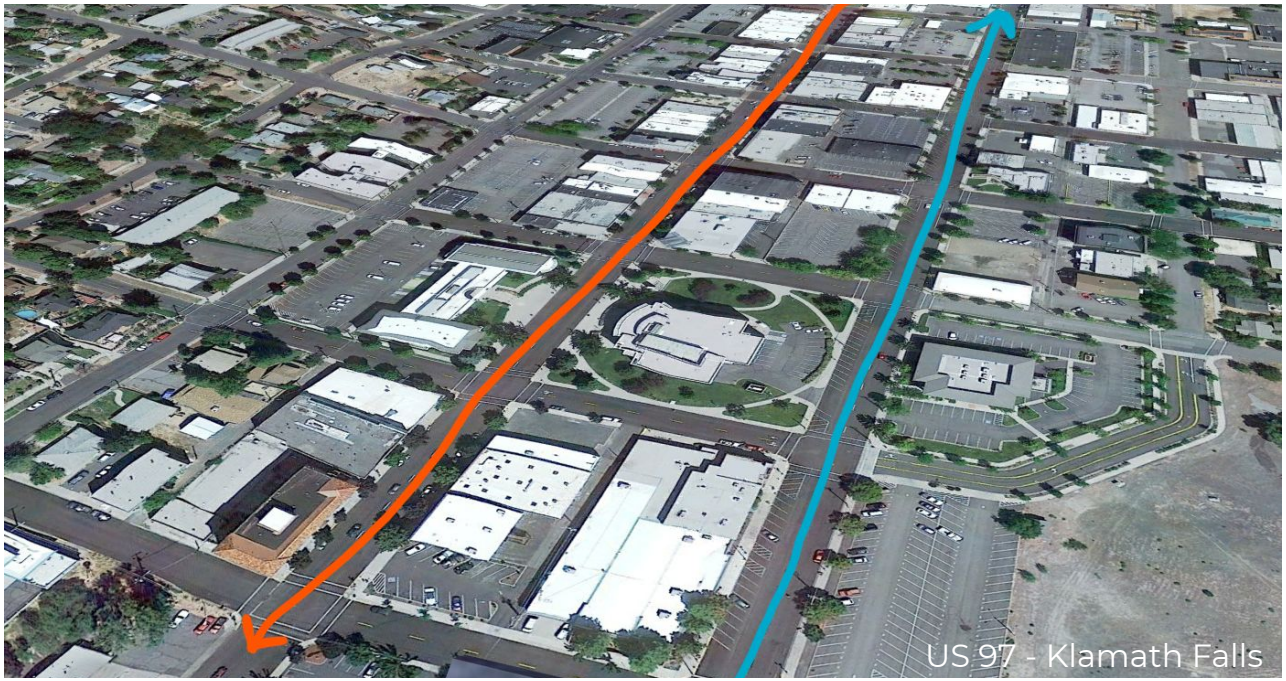
INFO ON COUPLETS

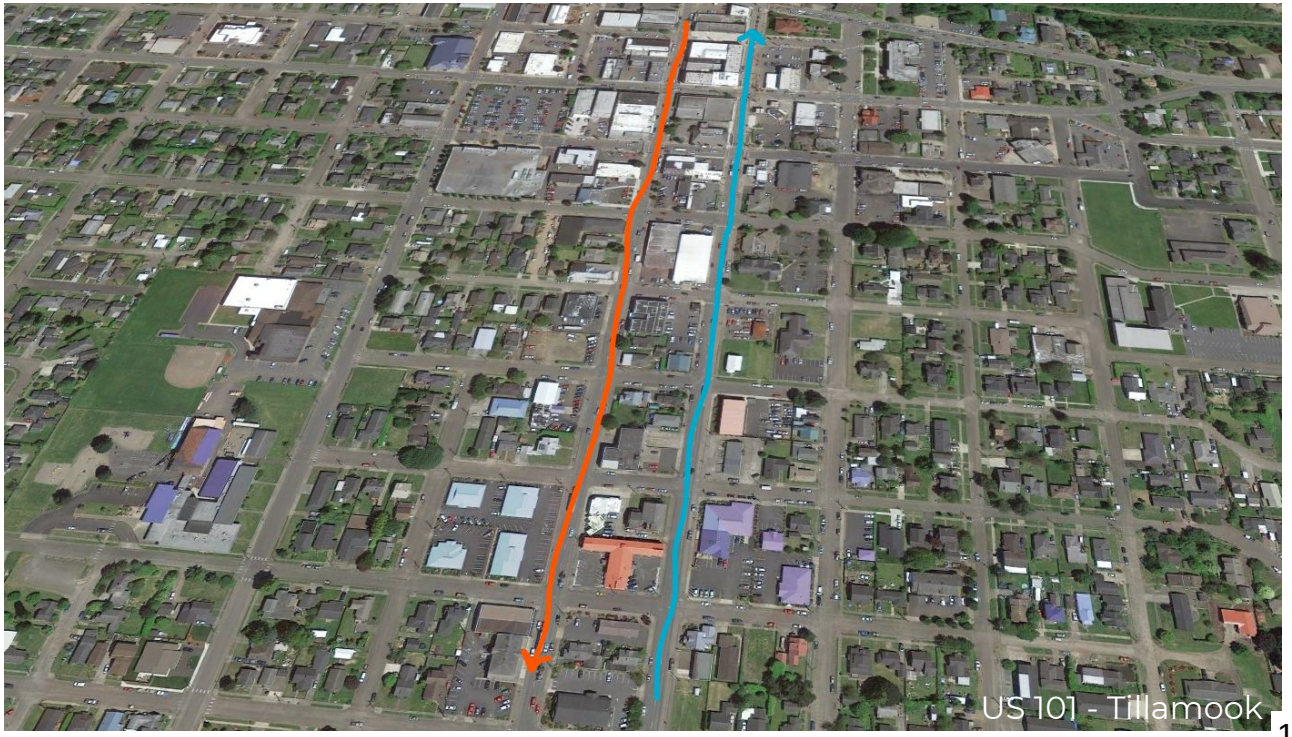
How couplets are implements

Benefits of couplets

Drawbacks of couplets

Example couplets





HIGHWAYS 101 / 20 INTERSECTION

Traffic and safety considerations

Roundabouts

Signaled intersections


Springfield, OR

Clackmas, OR

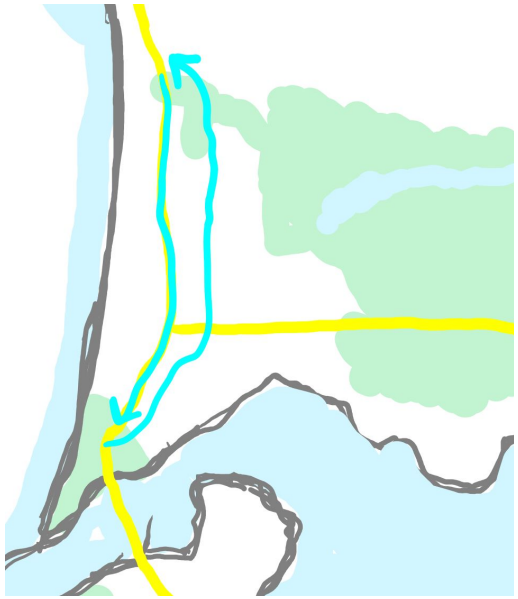
HIGHWAY OPTIONS

LONG HWY 101 COUPLET

Pros
1. Text
2. Text

Cons
1. Text
2. Text

Questions and Input from Community

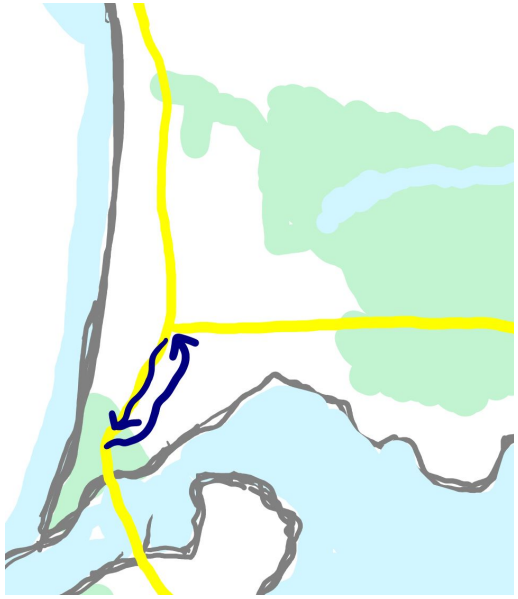


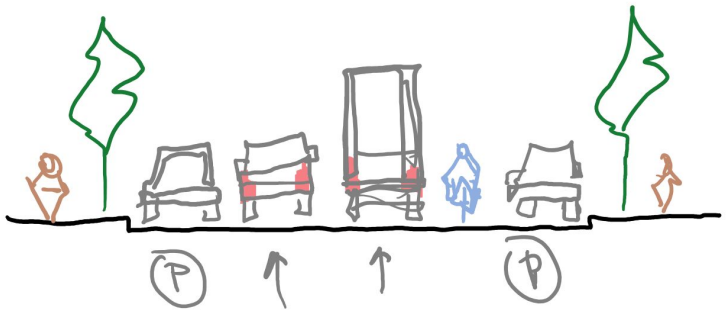
SHORT HWY 101 COUPLET

Pros
1. Text
2. Text

Cons
1. Text
2. Text

Questions and Input from Community





*Roadway design will comply with the ODOT Blueprint for Urban Design

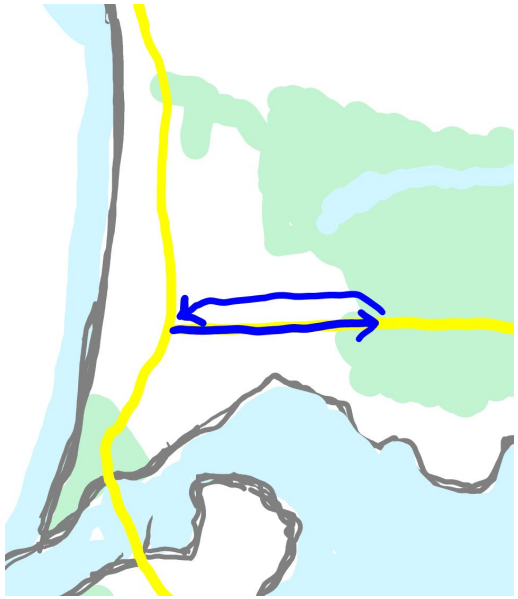
HIGHWAY OPTIONS

HWY 20 COUPLET

Pros
1. Text
2. Text

Cons
1. Text
2. Text

Questions and Input from Community

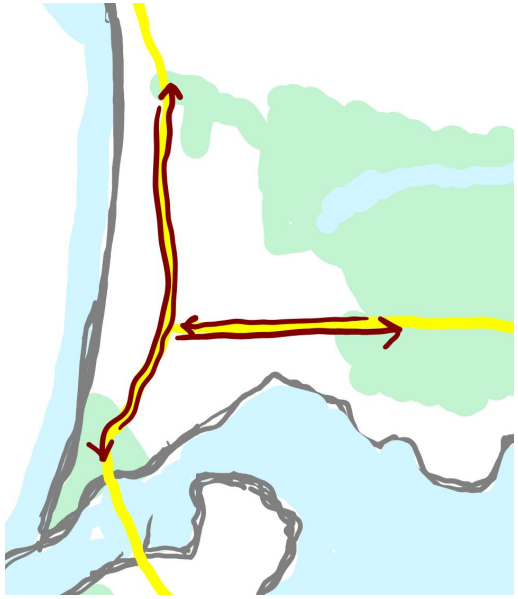


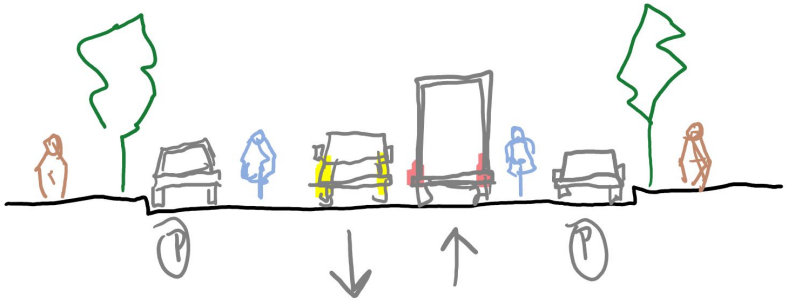
IMPROVED 2-WAY HIGHWAYS

Pros
1. Text
2. Text

Cons
1. Text
2. Text

Questions and Input from Community





*Roadway design will comply with the ODOT Blueprint for Urban Design

ONLINE: POSSIBLE OTHER QUESTIONS

OTHER POSSIBLE QUESTIONS

- Are there certain locations where you experience particular walking, biking, transit, or driving safety concerns or hazards?
- What important Newport destinations do you believe need the most attention to improve safety and access to get to?
- Please share your thoughts about the possible concept street routes and reconfigurations being considered. Do you think these changes would have a positive or negative impact on access around the city, safety for all users, and overall traffic congestion?
- What street design elements would you most like to see applied to _____ Street? (rank 1-5)
    - Wider sidewalks
    - Quality bicycle lanes and routes
    - Trees and landscaping
    - Outdoor seating
    - Reducing the number of driveway entrances from the street
    - Measures to slow down vehicle traffic
    - Improved street crossings for people walking and biking
    - Better marked transit stops and access to transit stops
    - Clarifying on-street parking and ensuring adequate supply for businesses

LONG-TERM YAQUINA BAY BRIDGE PLAN

Details forthcoming - information page; no questions

GRAPHIC SAMPLES: PRECEDENT PHOTOS


Albany, OR

Winslow, WA


Tillamook, OR


Walla Walla, WA


Klamath Falls, OR


Eugene, OR

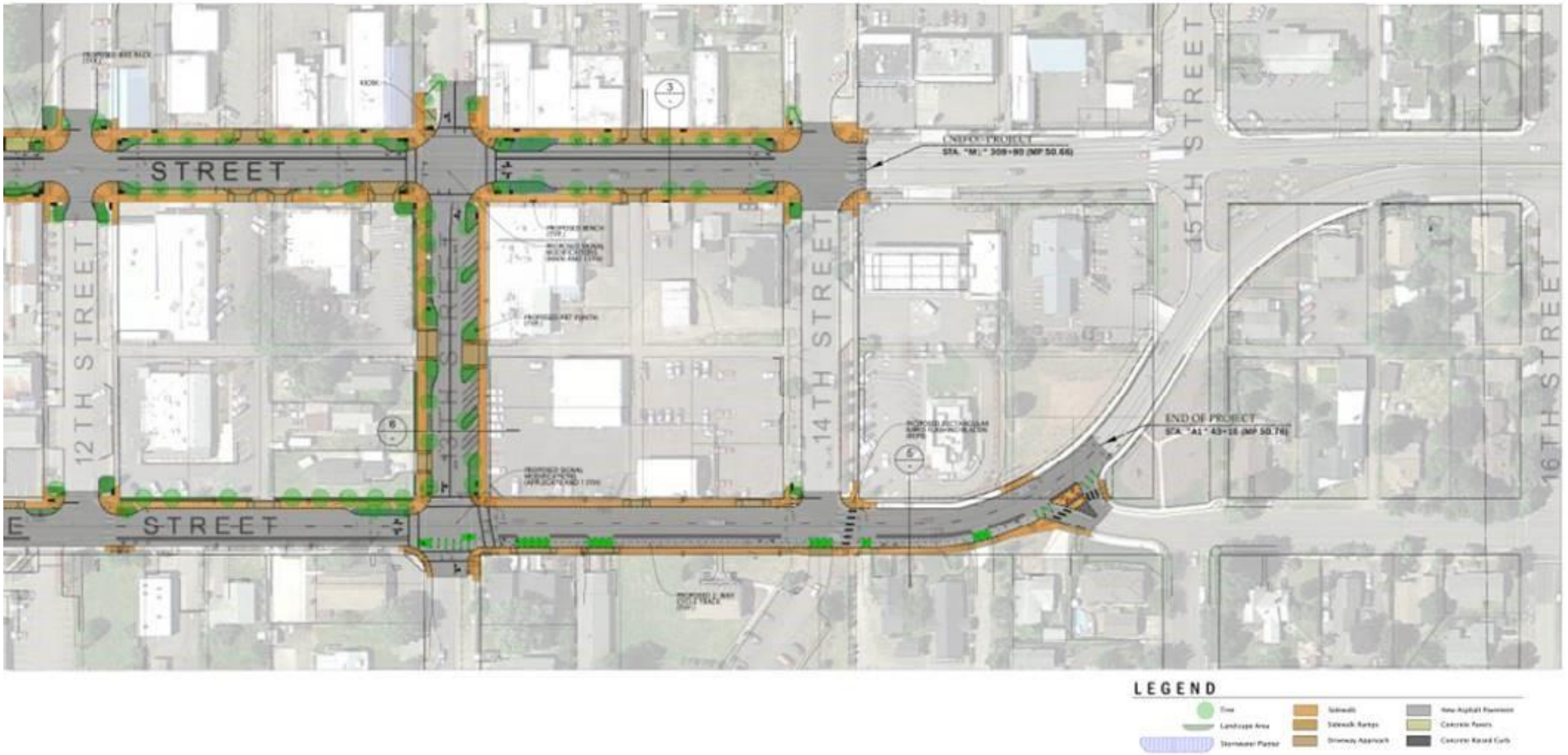

Bozeman, MT


Portland, OR


SIsters, OR

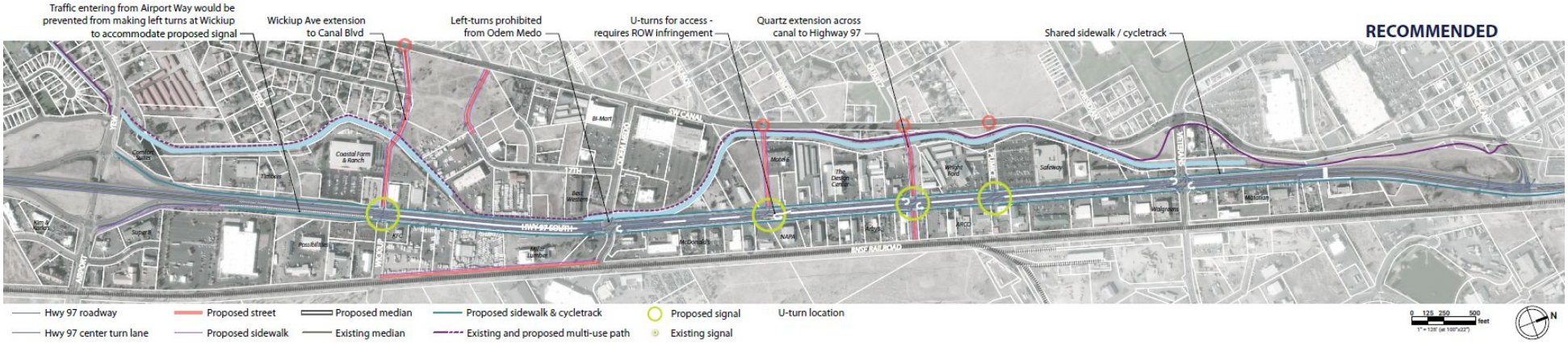
GRAPHIC SAMPLES: PRECEDENT DESIGNS

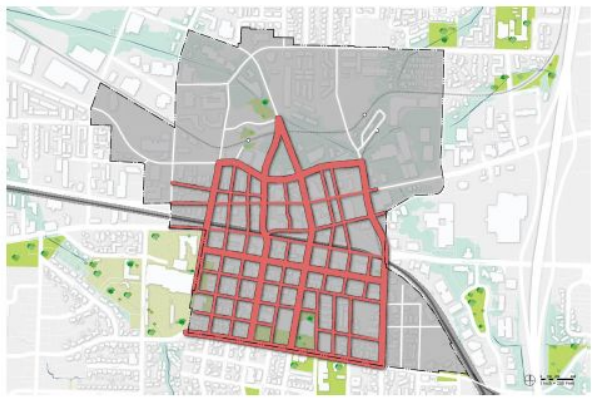
US20 PHILOMATH COUPLET (K21514)



GRAPHIC SAMPLES: Circulation Diagrams

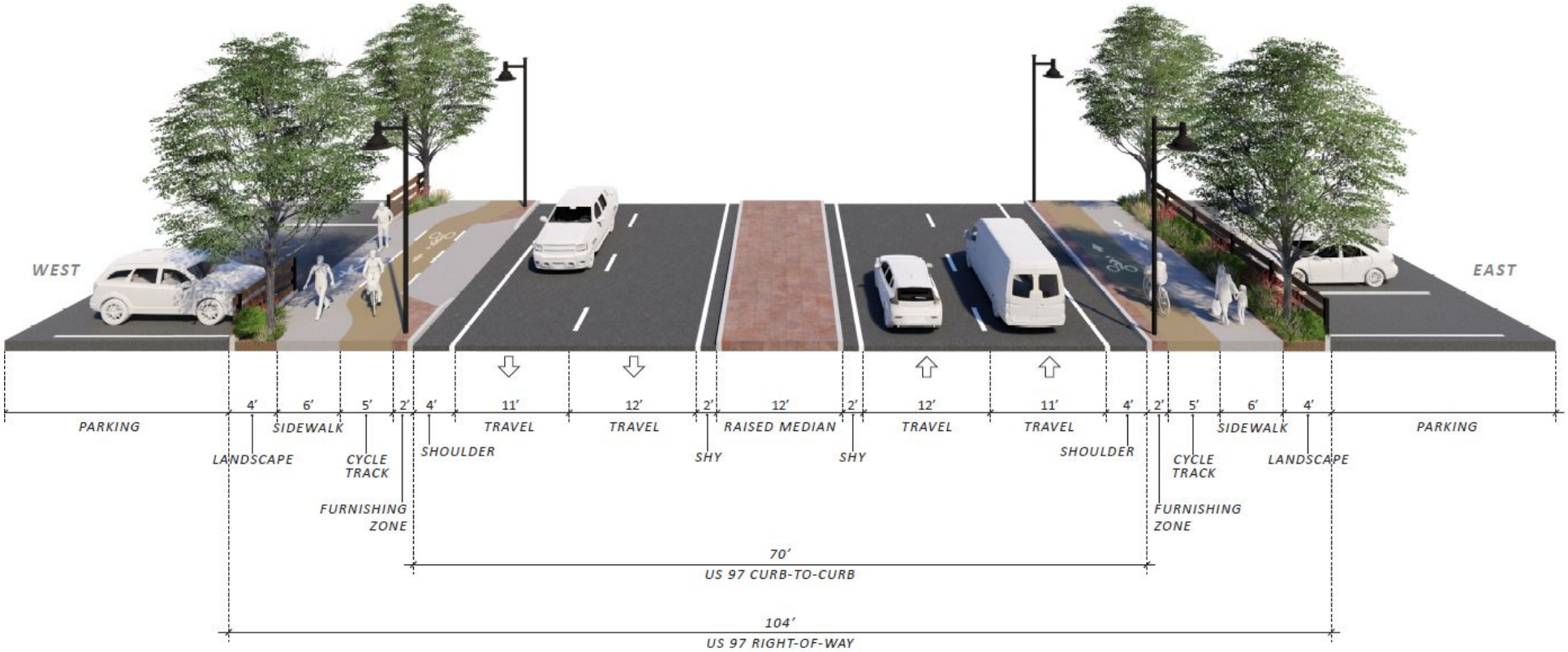
*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.





GRAPHIC SAMPLES: Cross Sections

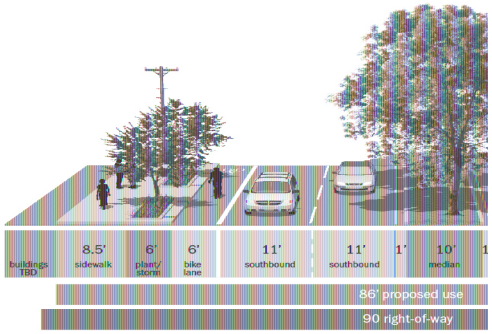
*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.



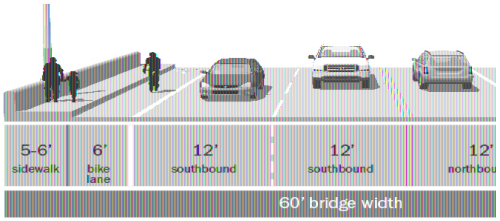
GRAPHIC SAMPLES: Cross Sections

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

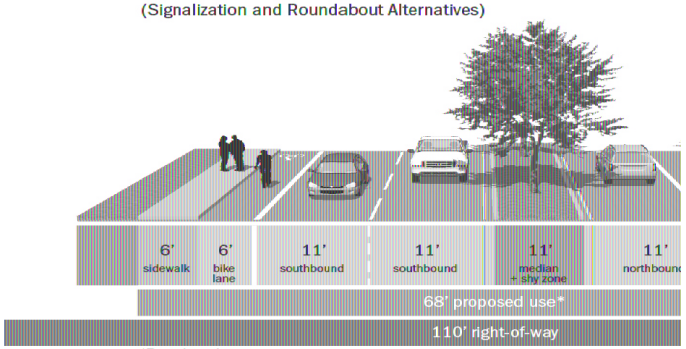
Capitol Blvd. - Custer Way to Emerson St.



Capitol Blvd. - On the Capitol Blvd. Bridge
(Signalization and Roundabout Alternatives)

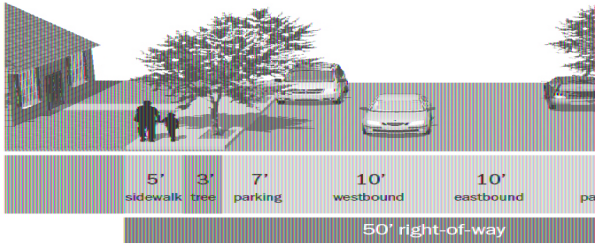


Capitol Blvd. - E Street to Capitol Blvd. Bridge
(Signalization and Roundabout Alternatives)

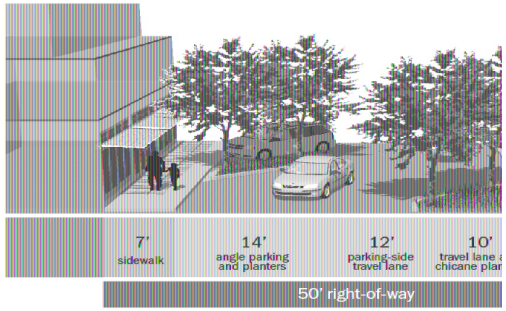


*Typical condition

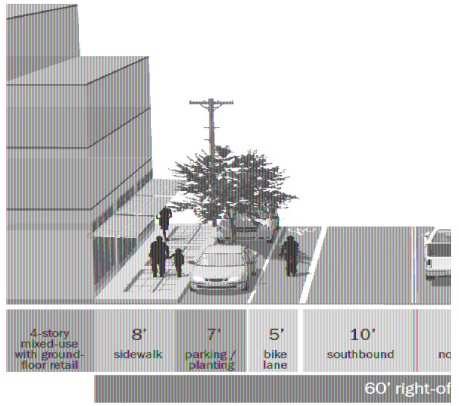
(Option: Enhanced Pedestrian Realm and Landsc



Bates St.
(Option: Angle Parking with Chicane)

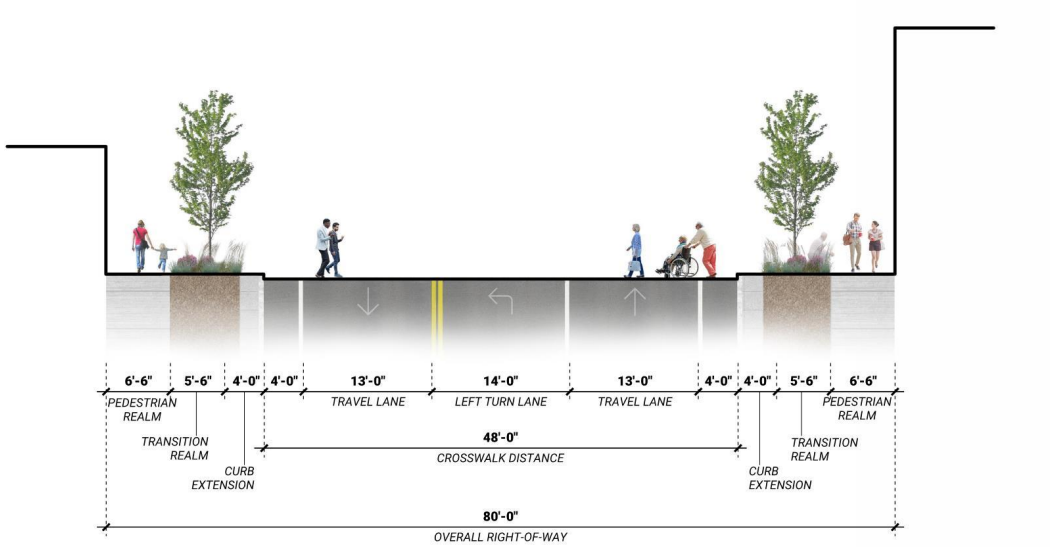


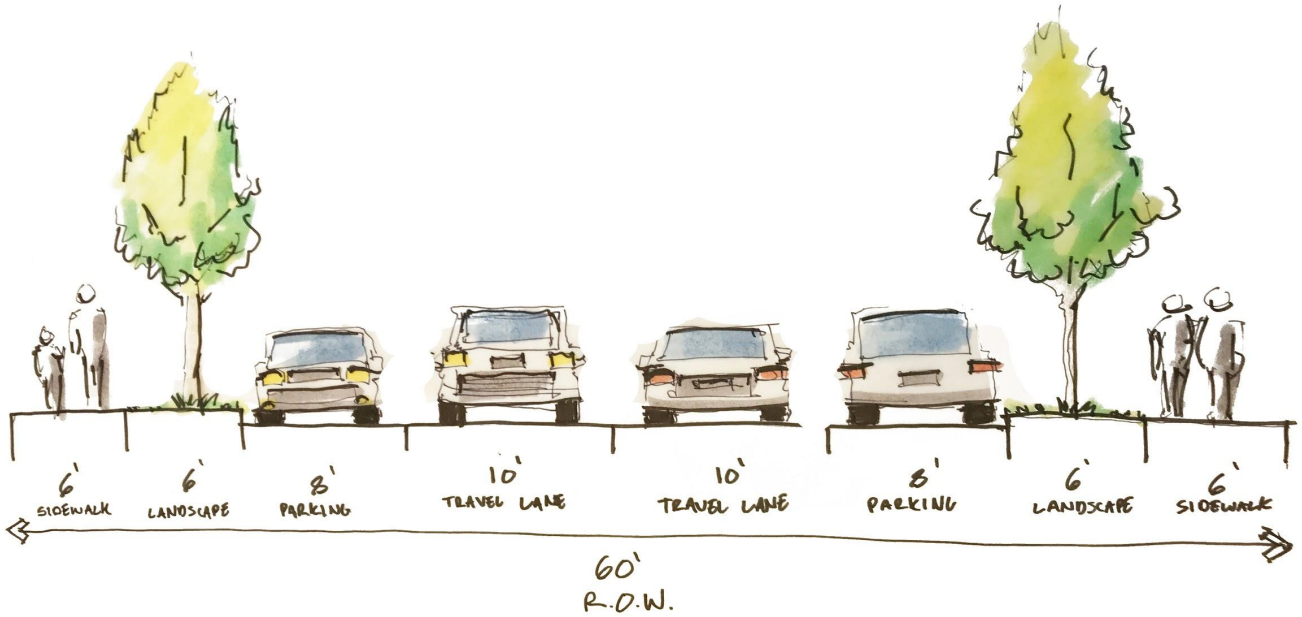
Cleveland Ave. "Main Street" - Custer Way to
(Hybrid Option: Pedestrian Realm Improveme



GRAPHIC SAMPLES: Cross Sections

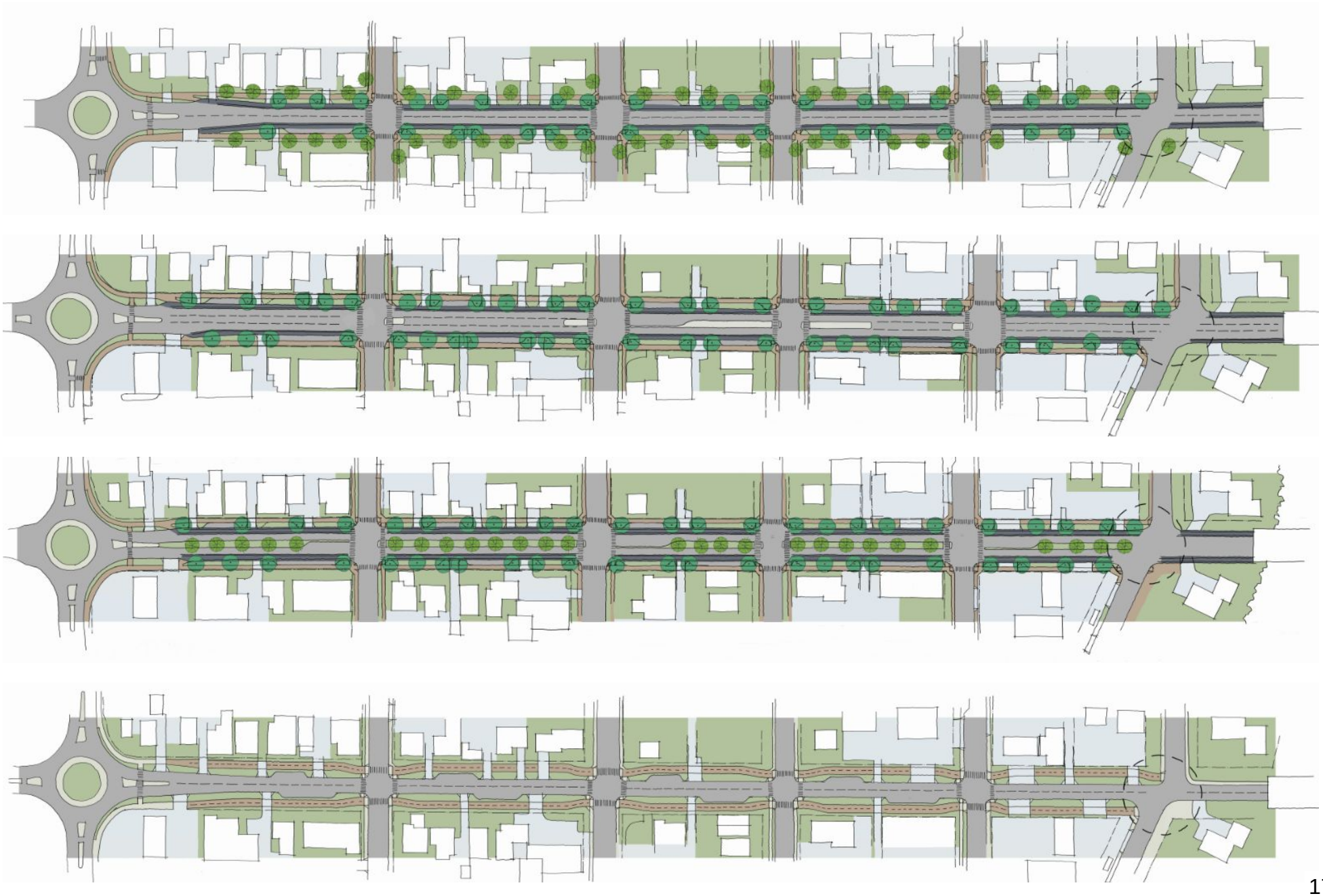
*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.





GRAPHIC SAMPLES: Plan Drawings

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

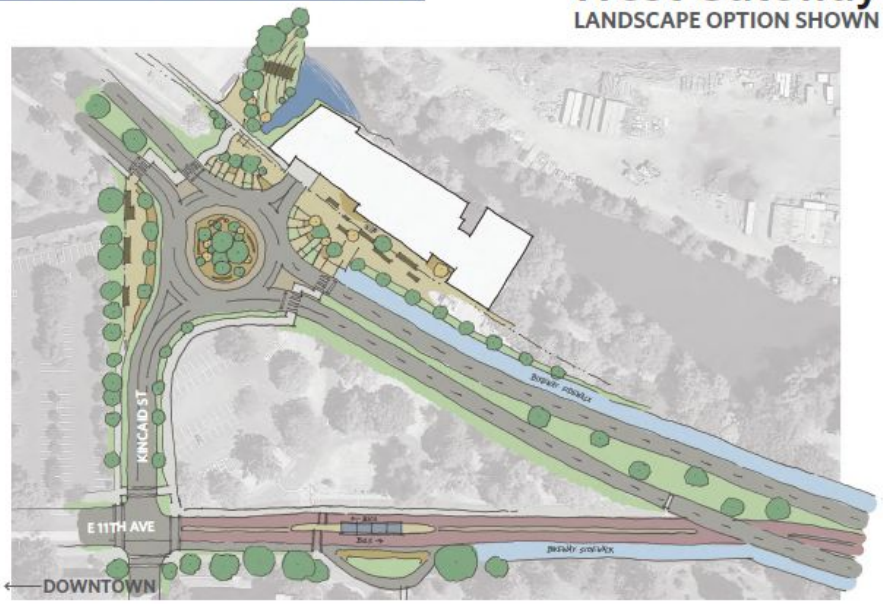


GRAPHIC SAMPLES: Concept Boards

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

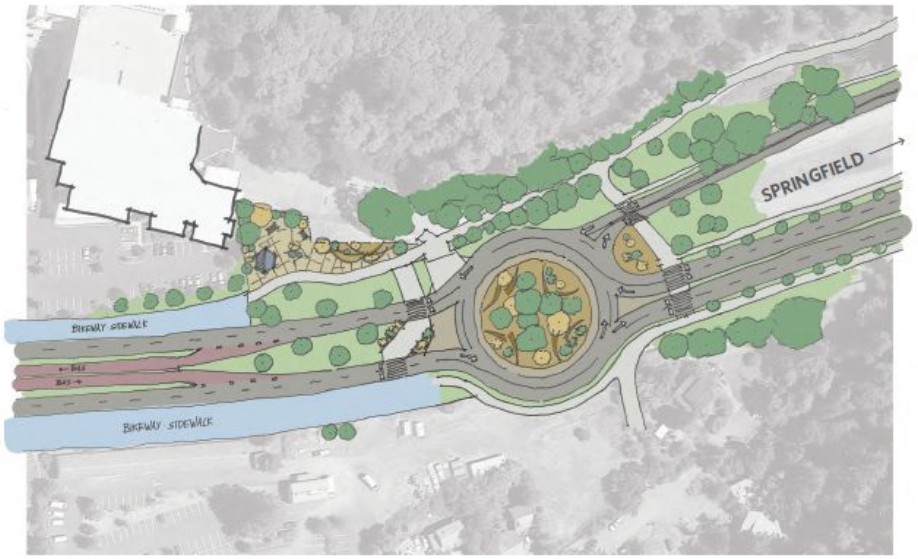
West Gateway

LANDSCAPE OPTION SHOWN



East Gateway

LANDSCAPE OPTION SHOWN



CHARACTER OPTIONS

LANDSCAPE OPTION: filled with trees, landscape, and sculptural earthworks.

PLAZA OPTION: seating, fountains, gathering areas, and frequent crosswalk locations.

ART OPTION: Locally-made, distinctive artwork and sculpture in the roundabout space.

DESIGN ELEMENTS

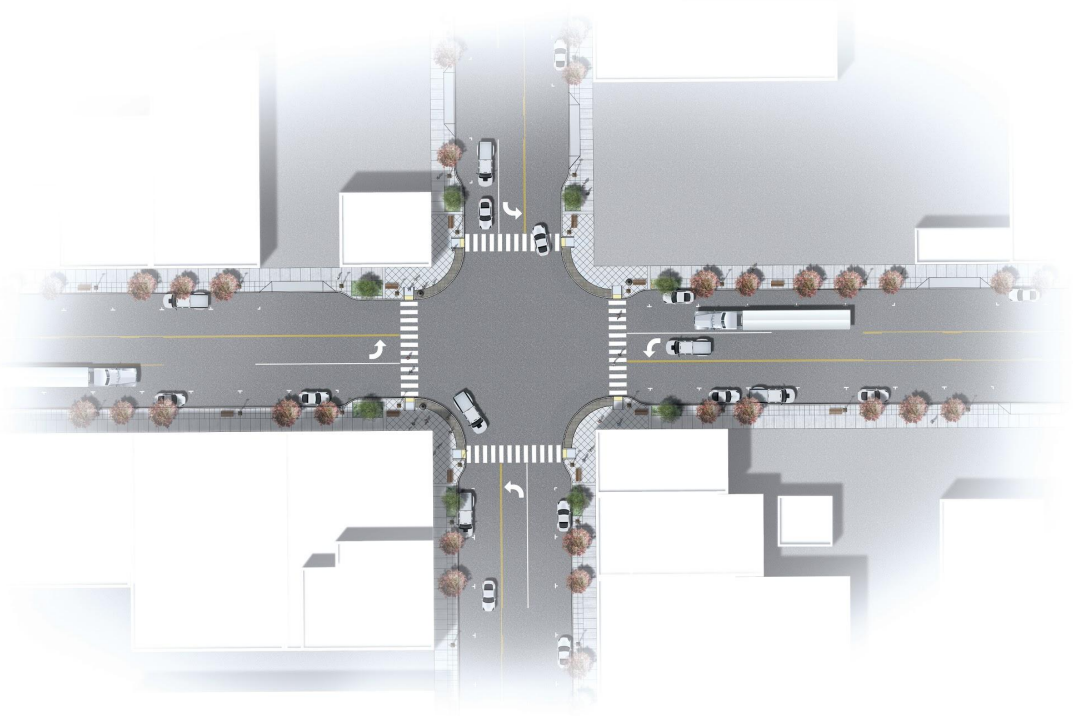
Pathways through a roundabout provide passage for walking and biking.

Roundabout filled with landscaping and art pieces. Mountable aprons for trucks.

Sculpture, monument signage, and landscaping announce a key arrival intersection.

GRAPHIC SAMPLES: Plan Drawings

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.



APPENDIX:

POTENTIAL FINAL GRAPHICS FOR PUBLIC EVENT #2 AND PROJECT CONCLUSION IN 2021

GRAPHIC SAMPLES: Finished Renderings

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

GRAPHIC SAMPLES: Renderings

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

GRAPHIC SAMPLES: Renderings

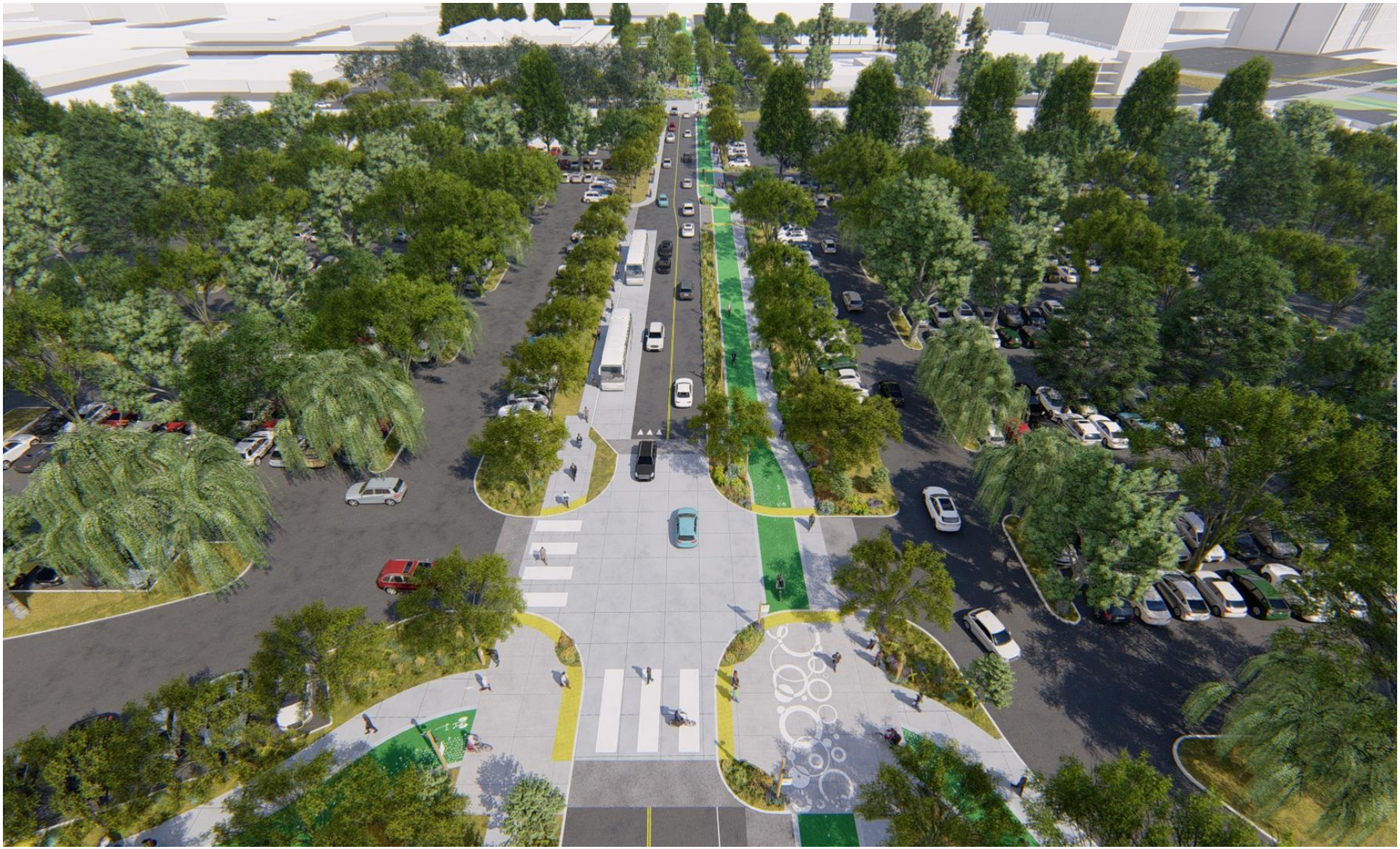
*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

GRAPHIC SAMPLES: Finished Renderings

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

GRAPHIC SAMPLES: Finished Renderings

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.



GRAPHIC SAMPLES: Finished Renderings

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

GRAPHIC SAMPLES: Finished Renderings

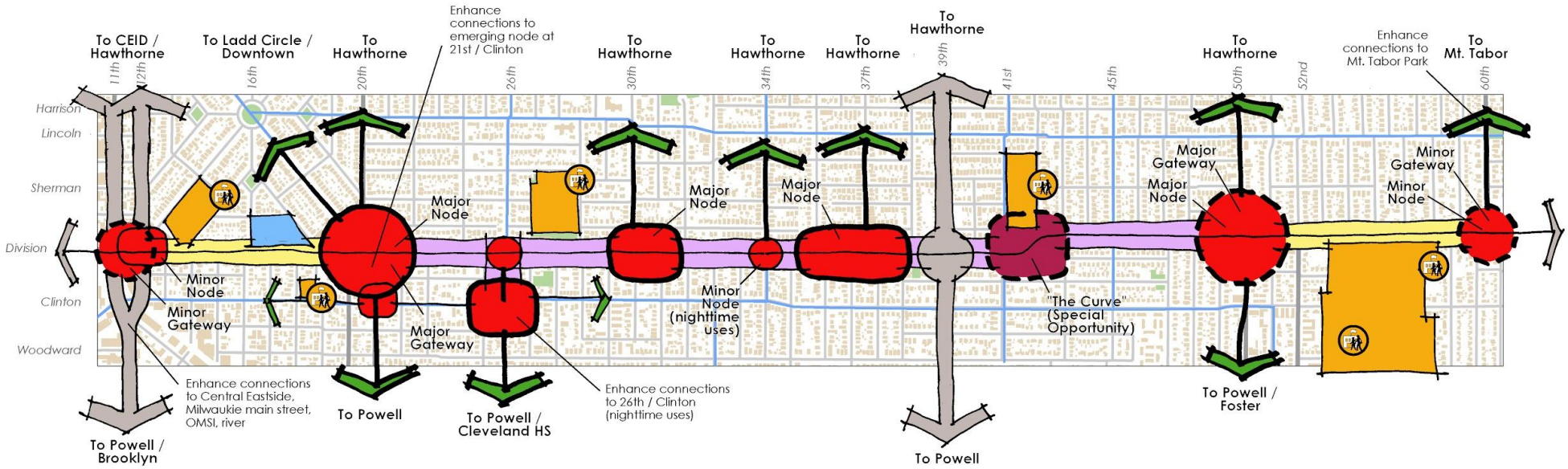
*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

GRAPHIC SAMPLES: Finished Renderings

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

GRAPHIC SAMPLES: Circulation and Centers Framework

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

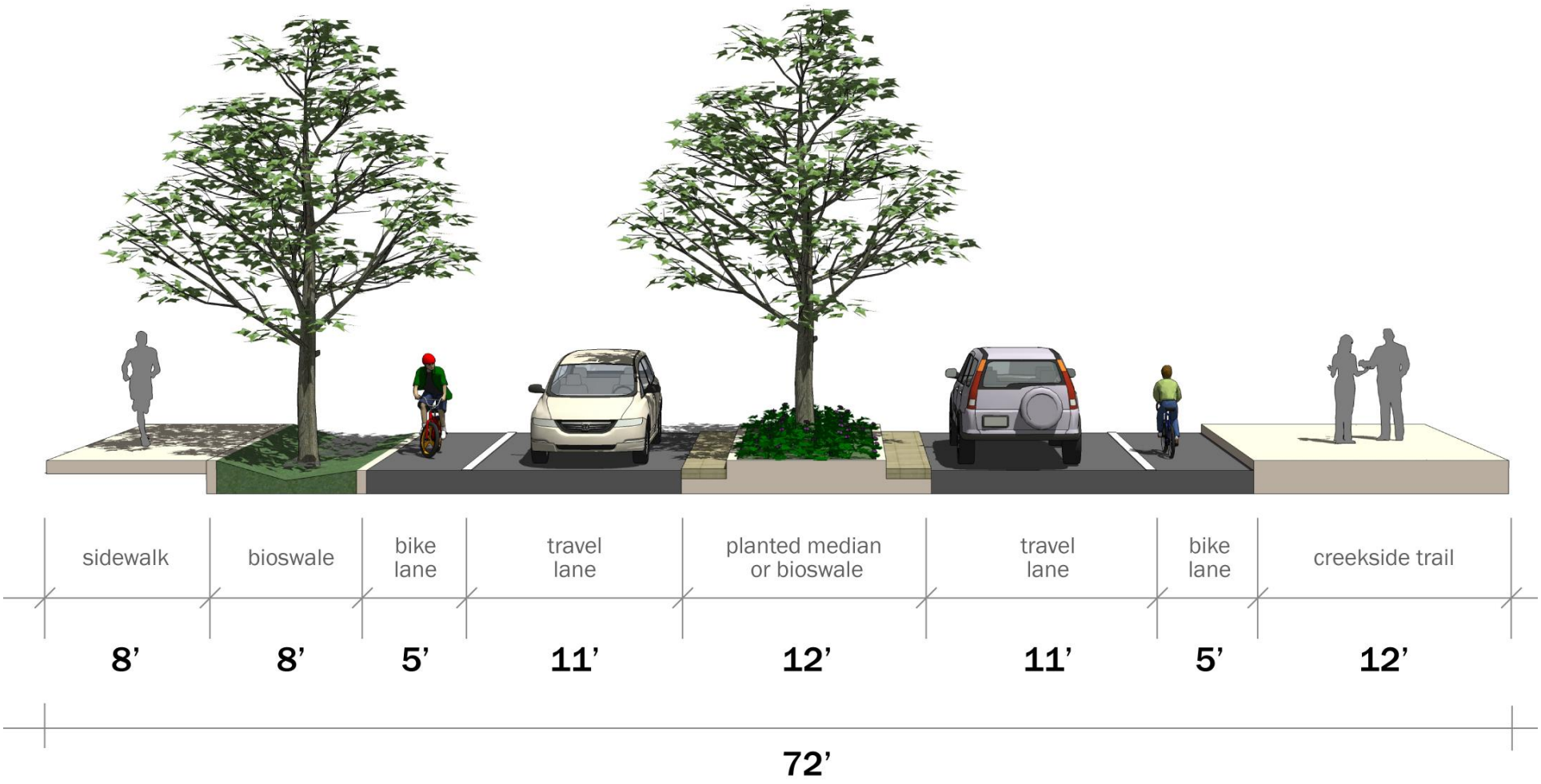


GRAPHIC SAMPLES: Cross Sections

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

GRAPHIC SAMPLES: Cross Sections

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.



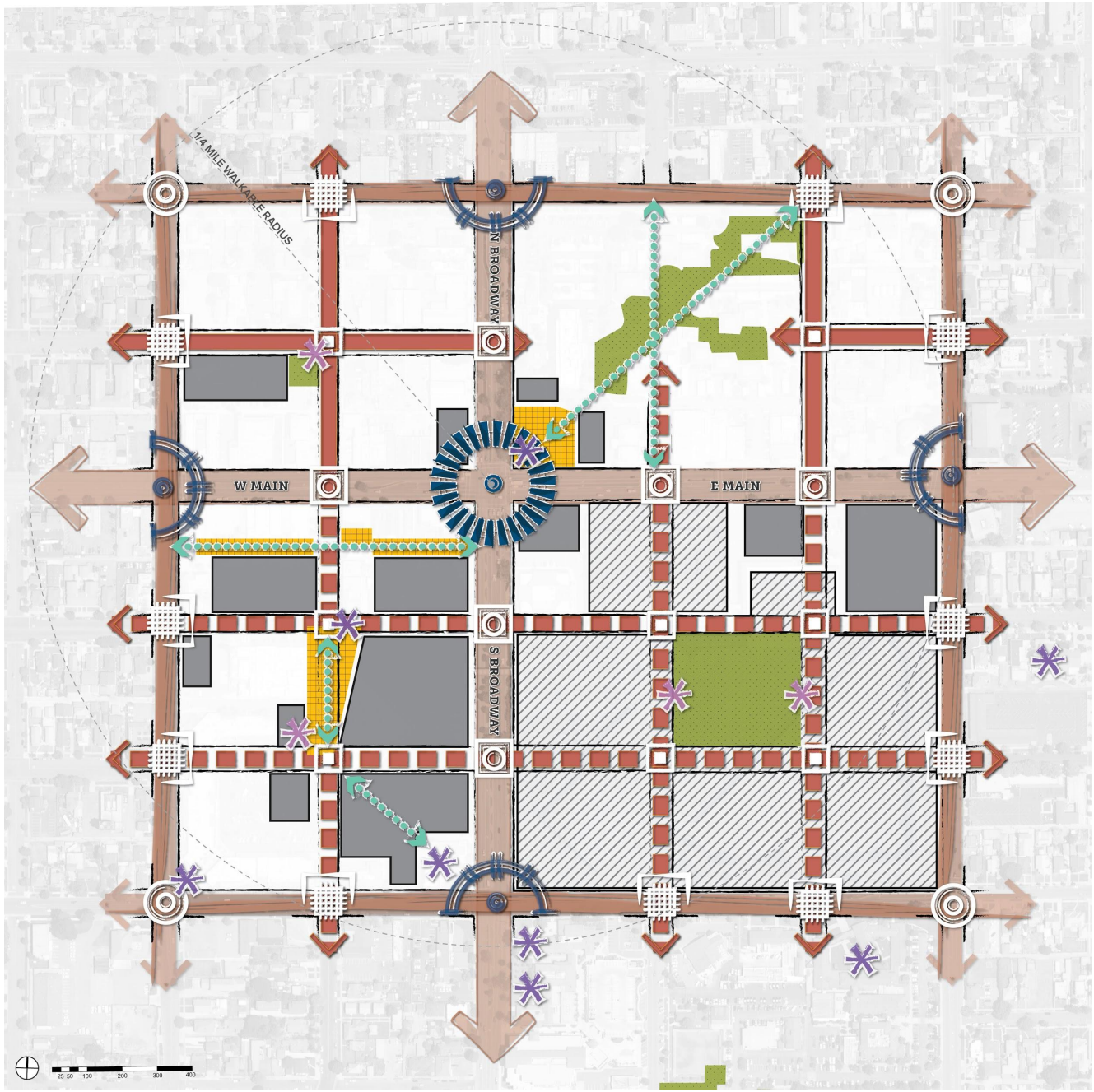
GRAPHIC SAMPLES: Cross Sections

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

GRAPHIC SAMPLES: Circulation and Centers Framework

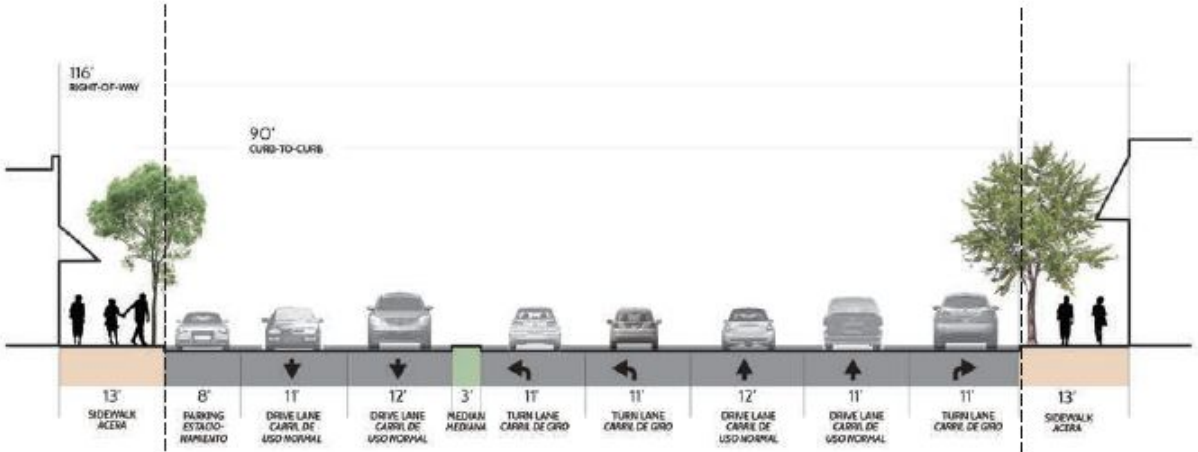
*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

- Major Streets/Arterials
- Perimeter Streets
- Local Streets
- Pedestrian Paths
- Existing Destinations
- Proposed Destinations
- Plazas
- Open Space/Parks
- Near Term Development Opportunities
- Long Term Development Opportunities
- 4 Corners
- Gateways
- Perimeter Streets Intersection
- Local Streets Intersection
- Local/Perimeter Streets Intersection
- Arterial/Local Streets Intersection

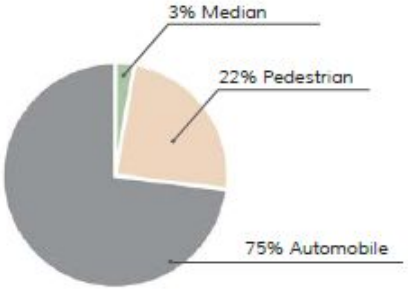


GRAPHIC SAMPLES: Cross Sections and Spatial Analysis

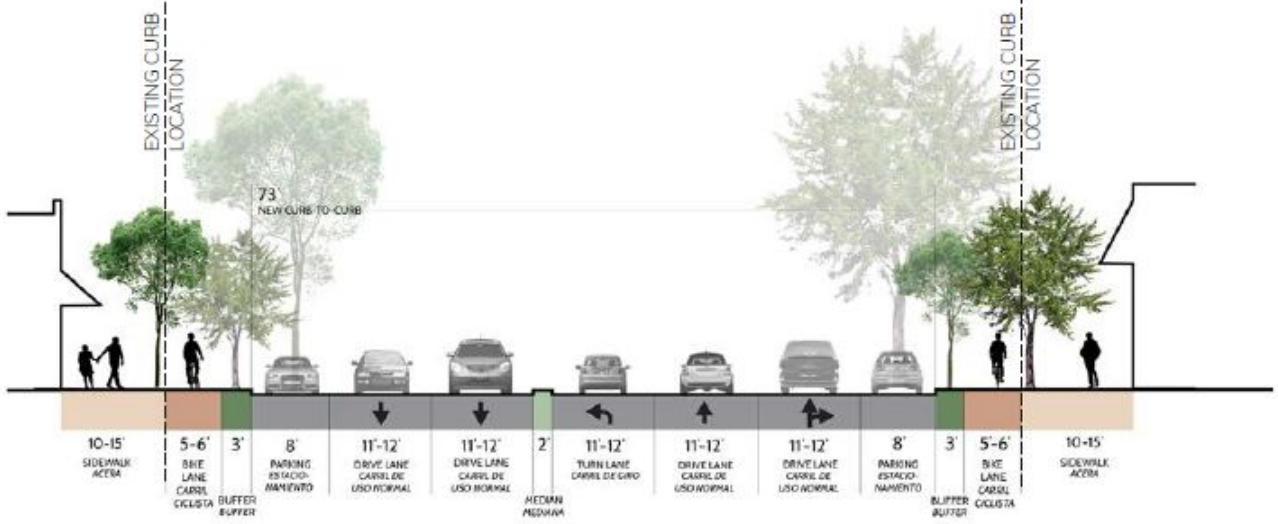
*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.

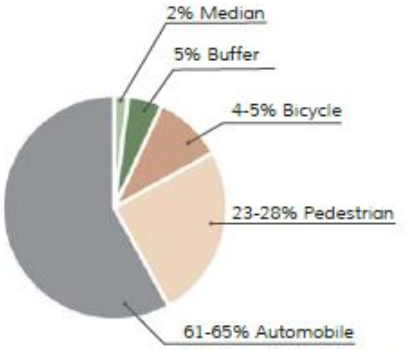


EXISTING SECTION LOOKING EAST
SECCIÓN EXISTENTE VIENDO AL ESTE



DISTRIBUTION PER USER MODE
DISTRIBUCIÓN POR USUARIO

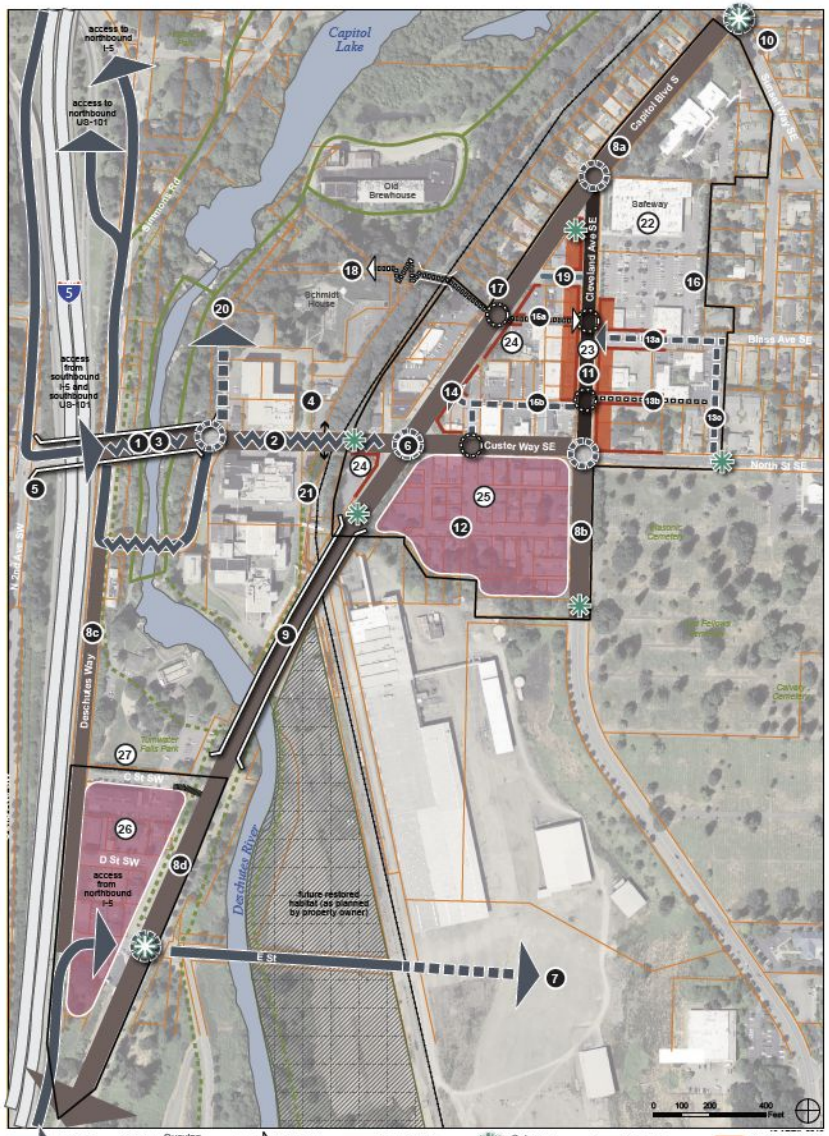




DISTRIBUTION PER USER MODE
DISTRIBUCIÓN POR USUARIO

GRAPHIC SAMPLES: Detailed Opportunities and Constraints

*Samples are intended to depict various styles and substance of graphics; the quantity and refinement of graphics for Newport TSP will be determined within scope and budget to deliver the necessary online open house content.



Opportunities and Constraints
TUMWATER BREWERY DISTRICT PLANNING PROJECT
19 April 2013
City of Tumwater • Thurston Regional Planning Council • SERA Architects • J Robertson and Company • SCJ Alliance • ECONorthwest

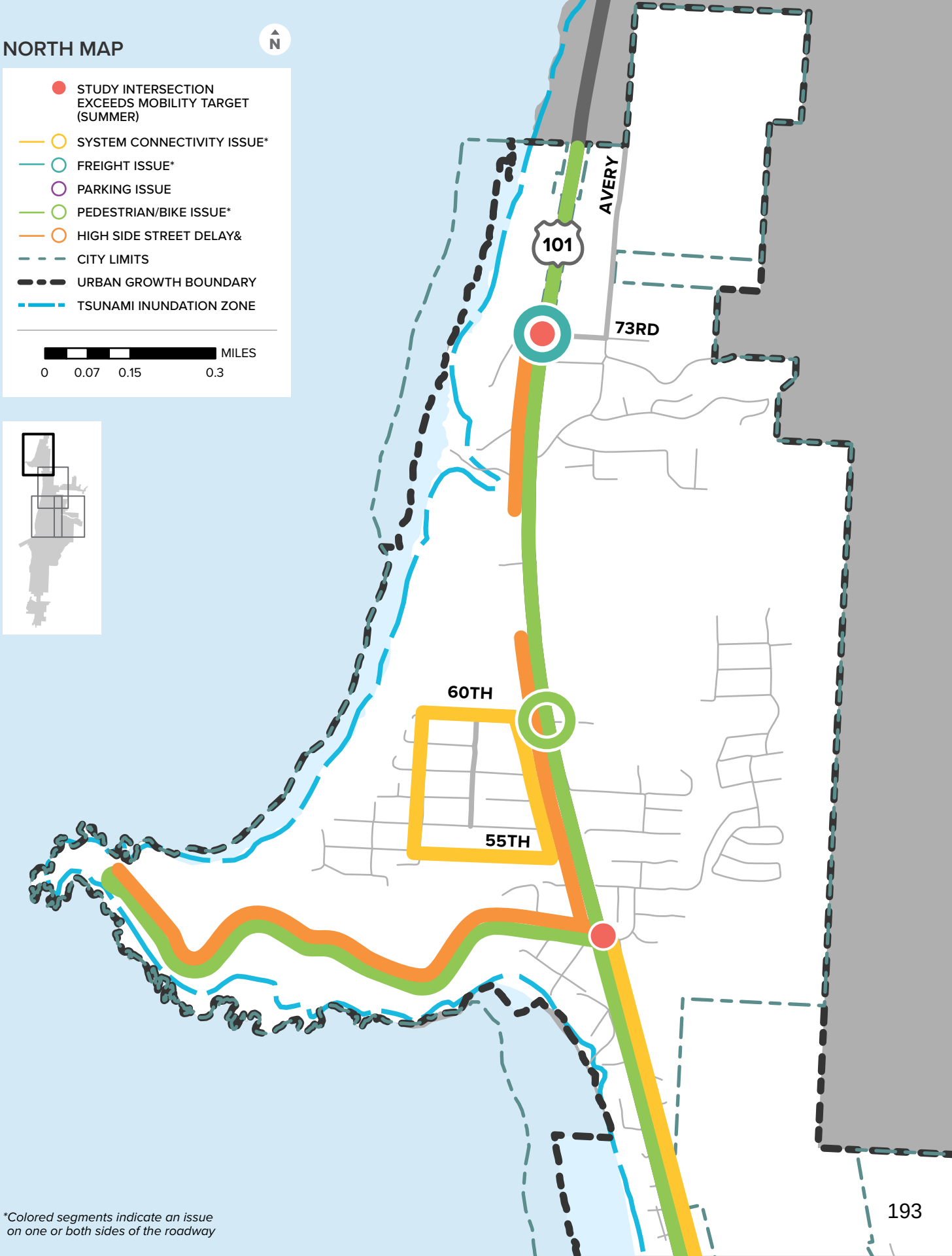
MULTI-MODAL TRANSPORTATION AND STREETSCAPE OPPORTUNITIES AND CONSTRAINTS

1. Access to / from I-5 is limited, and most traffic travelling to / from the interstate is funneled to the Custer Bridge, contributing to queuing backups in this segment.
2. Significant queuing constraints on Custer between Capitol Blvd. and I-5, and between Capitol and Cleveland.
3. Sidewalk on south side of bridge only, with sidewalk immediately adjacent to vehicular traffic. Pedestrian / bicycle enhancements constrained by bridge width.
4. Opportunity to take advantage of existing pedestrian tunnel.
5. Existing stairs provide important pedestrian connection to surrounding neighborhoods (opportunity to provide public art in the way of painted murals on the vertical face of the steps).
6. Opportunity to consider series of roundabouts to relieve pressure on congested intersections and queuing on the Custer Bridge (subject to community discussion, feasibility analysis, and potential physical constraints).
7. Opportunity to extend E Street to Cleveland Avenue to help relieve pressure on intersections at Capitol / Custer and Cleveland / North.
8. Opportunity to improve pedestrian / bicycle facilities and introduce aesthetic improvements to streetscapes.
9. Pedestrian / bicycle improvements constrained by width of existing bridge. Historic status may further constrain redesign opportunities.
10. Opportunity to address safety concerns at Sunset / Carlyon with roundabout.
11. Opportunity to provide "Main street" treatments along Cleveland Ave. as one potential design alternative (may include incorporating excess right-of-way into wider sidewalks, signature landscaping, bike lanes, on-street parking, special paving treatments, enhanced pedestrian crossings, etc.)
12. Opportunity for streetscape enhancements and to provide more on-street parking. Opportunity to evaluate existing 1-way circulation pattern and potentially reallocate excess right-of-way.
13. Opportunity to convert existing access drives into public streets (or formalized pedestrian connections), thereby creating new, developable block faces.
14. Opportunity to convert existing public right-of-way into formal streets / access drives, potentially to access new development and / or centralized public parking facilities.
15. Opportunity to formalize existing public right-of-way into mid-block pedestrian routes, or into full access or one-way streets (if ROW width allows), potentially to access new development and / or centralized public parking facilities.
16. Opportunity to formalize existing pedestrian connection behind Safeway into the adjacent neighborhood.
17. Opportunity to provide enhanced pedestrian crossing (potentially pedestrian-activated signal).
18. Slope and active railroad constrain pedestrian / bicycle access to parks and cultural resources. Opportunity to provide a pedestrian / bicycle bridge and switchback, and connect to existing trail network.
19. Opportunity to expand transit center and explore alterntives relocating it to Emerson St. (may take advantage of potential redevelopment opportunities within adjacent parcels for structured park and ride and / or transfer center).
20. Opportunity for roundabout to improve access to Old Brewhouse (subject to community discussion, feasibility analysis, and potential physical constraints).
21. Opportunity for trail connection from pedestrian underpass.

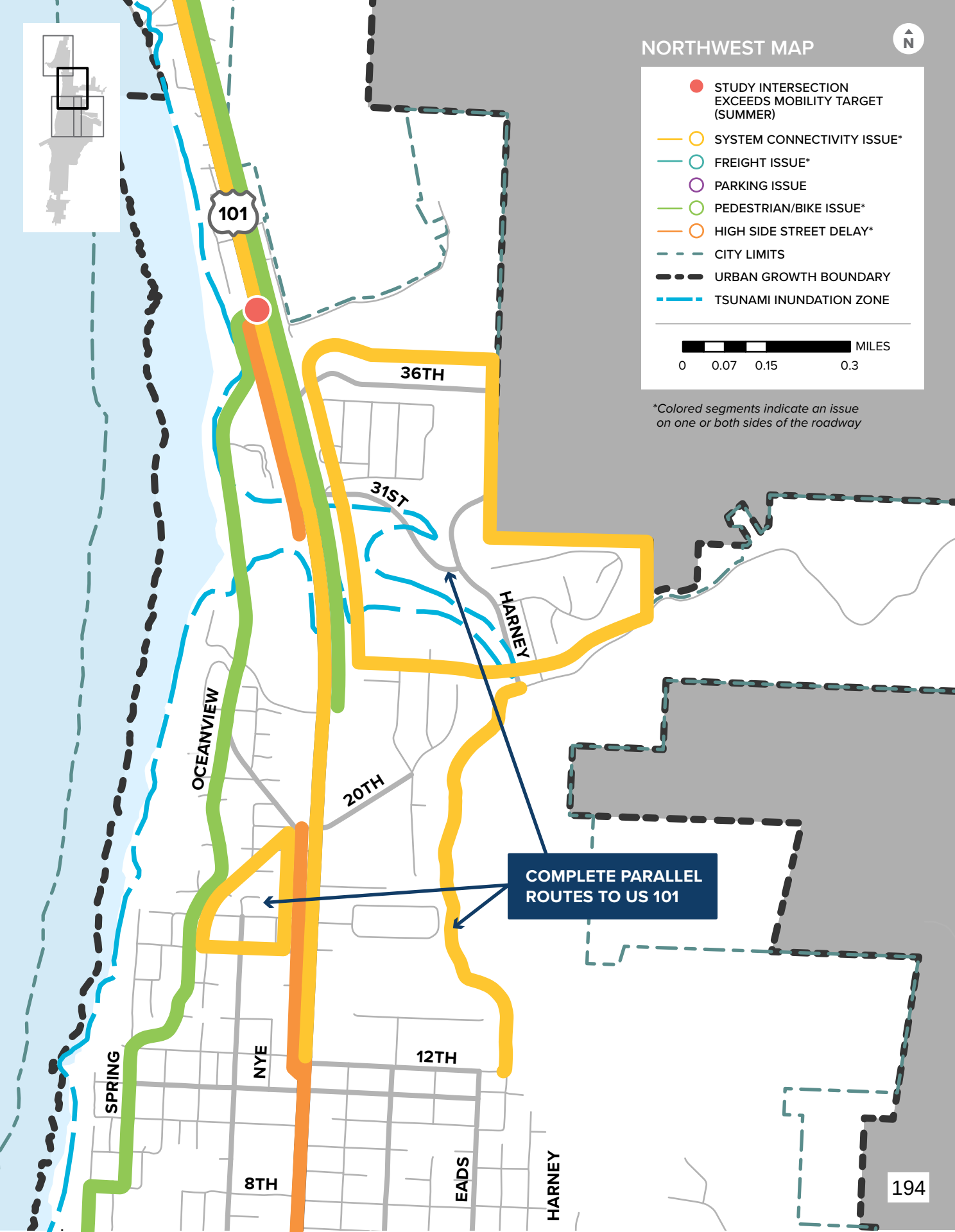
LAND USE OPPORTUNITIES AND CONSTRAINTS

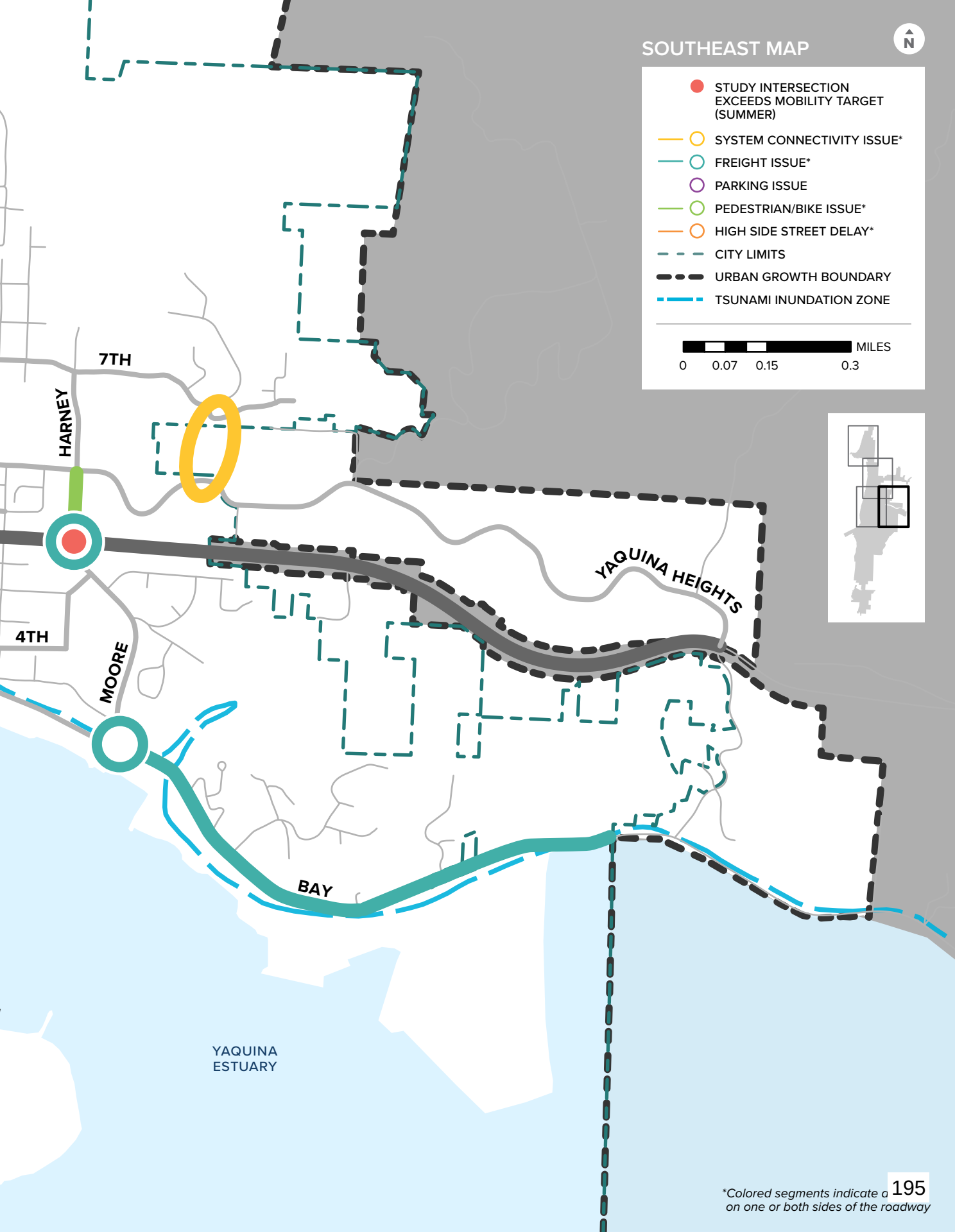
22. Safeway store a strong anchor to the District.
23. Opportunity to encourage pedestrian-oriented commercial frontages along Cleveland Ave.
24. Opportunity for private realm frontage improvements at key intersections and along key streets (may include building and / or landscaping improvements).
25. Small parcels and parcelization a constraint to redevelopment south of Custer.
26. Opportunity to enhance the look and feel of development in this area through design / development standards.
27. Trees and fencing creates a barrier between Tumwater Falls Park and development to the south.

Opportunities and Constraints
TUMWATER BREWERY DISTRICT PLANNING PROJECT
19 April 2013
City of Tumwater • Thurston Regional Planning Council • SERA Architects • J Robertson and Company • SCJ Alliance • ECONorthwest



*Colored segments indicate an issue on one or both sides of the roadway


NORTHWEST MAP
N
STUDY INTERSECTION EXCEEDS MOBILITY TARGET (SUMMER)
SYSTEM CONNECTIVITY ISSUE*
FREIGHT ISSUE*
PARKING ISSUE
PEDESTRIAN/BIKE ISSUE*
HIGH SIDE STREET DELAY*
CITY LIMITS
URBAN GROWTH BOUNDARY
TSUNAMI INUNDATION ZONE
MILES
0 0.07 0.15 0.3
*Colored segments indicate an issue on one or both sides of the roadway
101
36TH
31ST
HARNEY
OCEANVIEW
20TH
COMPLETE PARALLEL ROUTES TO US 101
SPRING
NYE
12TH
8TH
EADS
HARNEY



*Colored segments indicate a
on one or both sides of the roadway


N
CONGESTION FROM SCHOOL TRAFFIC
NYE
101
12TH
SPRING
NW 8TH
COAST
BENTON
EADS
NE 7TH
NW 6TH
HARNEY
NW 3RD
OLIVE
SE 1ST
20
SW 2ND
SW 10TH
4TH
MOORE
NEFF
ELIZABETH
SW 9TH
CANYON
BAY
SOUTHWEST MAP
STUDY INTERSECTION EXCEEDS MOBILITY TARGET (SUMMER)
SYSTEM CONNECTIVITY ISSUE*
FREIGHT ISSUE*
PARKING ISSUE
PEDESTRIAN/BIKE ISSUE*
HIGH SIDE STREET DELAY*
CITY LIMITS
URBAN GROWTH BOUNDARY
TSUNAMI INUNDATION ZONE
MILES
0
0.07
0.15
0.3
*Colored segments indicate an issue on one or both sides of the roadway