CITY OF COOS BAY

Transportation System Plan

VOLUME 2

August 2020

VOLUME 2

> *The inclusion of an improvement in the TSP does not represent a commitment by the City of Coos Bay or ODOT to fund, allow, or construct the project. Projects on the state highway system that are contained in the TSP are not considered "planned" projects until they are programmed into the Statewide Transportation Improvement Program (STIP). As such, projects proposed in the TSP that are located on a State highway cannot be considered for future development or land use actions until they are programmed into the STIP, or ODOT provides written statement that a project is Reasonably Likely to be funded in the STIP. Highway projects that are programmed to be constructed may have to be altered or cancelled at a later time to meet changing budgets or unanticipated conditions such as environmental constraints.*

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Title VI and Environmental Justice Memorandum

TITLE VI/ENVIRONMENTAL JUSTICE OUTREACH MEMORANDUM

Date: July 20, 2018

To: City of North Bend
City of Coos Bay
Oregon Department of Transportation, Region 3

From: Brooke Jordan, Jacobs
Drew DeVitis, Jacobs

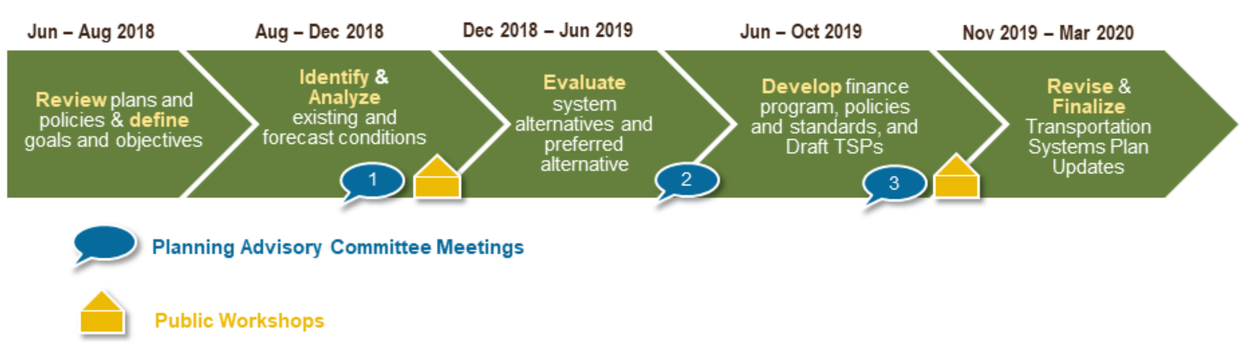
Subject: Cities of Coos Bay and North Bend Transportation System Plan Updates

This memorandum describes the proposed Title VI/Environmental Justice (EJ) outreach strategy to guide the Coos Bay/North Bend Transportation System Plan Updates. The Title VI/EJ outreach strategy is intended to review affected populations and propose methods of outreach to protected population groups, as defined by the U.S. Department of Transportation and Oregon Department of Transportation Title VI (1964 Civil Rights Act) Plan guidance. The Title VI/EJ outreach strategy also describes the broader public involvement opportunities and decision-making process. Additionally, it details outreach activities with assignments of responsibility between the City and consultant team and timelines for completion. The Title VI/EJ outreach strategy may be updated during the project to reflect changes in approaches or the project schedule.

Project Overview

The project schedule below (Figure 1.) outlines the timeline for both the technical work and public outreach processes for the Coos Bay and North Bend Transportation System Plan Update, which is expected to be completed by April 2020. Each TSP will contain policies, strategies, and projects that address the transportation needs of both Coos Bay and North Bend. The Cities, along with ODOT and the consultant team, will provide public involvement opportunities throughout the project, with a focus on key milestones. All meetings will be held in an accessible facility open and welcome to the Coos Bay/North Bend community at large.

Figure 1. Coos Bay/North Bend TSP Schedule



Public and Stakeholder Involvement Goals

In accordance with federal and state Title VI/EJ guidance, the Cities of Coos Bay and North Bend and ODOT are committed to an approach that:

- Provides early and ongoing opportunities for the community to fully engage in the planning process and raise issues and concerns that can be considered through equitable and constructive two-way communication between the project team and the public.
- Encourages the participation of all stakeholders regardless of race, ethnicity, age, disability, income, or primary language by offering alternative accommodations (e.g. translation services, transportation).
- Promotes fair treatment so that no group of people (e.g. racial, ethnic, or socioeconomic group), should bear a disproportionate share of the negative environmental consequences from programs and policies.
- Ensures that public contributions have an appropriate opportunity to participate in the decision-making process, can influence the regulatory agency's decision; the concerns of all participants involved will be considered in the decision-making process; and the decision makers seek out and facilitate the involvement of those potentially affected in development of the Transportation System Plan updates.

Decision Making

In all public communications, it is important to be clear on who is making decisions for the project and how public comments will be used. At each step, stakeholders should clearly understand:

- Who will make the decisions?
- How they can influence the decisions?
- When they will have an opportunity to participate?
- How their input will be considered?

The project decision structure includes the Coos Bay and North Bend City Council, Coos Bay and North Bend Planning Commission, Project Management Team, and Planning Advisory Committee. The project decision-making structure is shown in Figure 2 and is described below.

Decide: Coos Bay and North Bend City Council

The Coos Bay and North Bend City Council will adopt the final Transportation System Plan updates.

Recommend: Coos Bay and North Bend Planning Commission

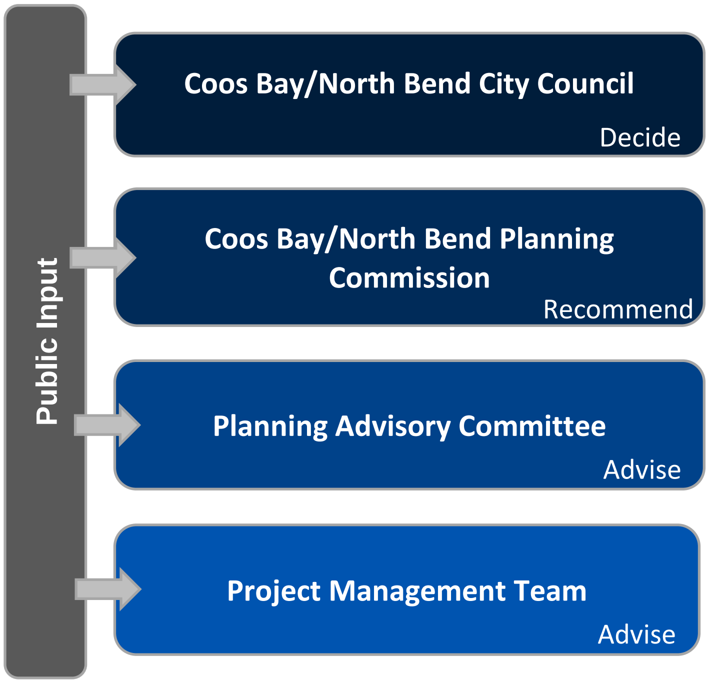
The Coos Bay and North Bend City Planning Commission will make a recommendation to City Council on the Transportation System Plan and will provide direction to City staff during the development of the TSP.

Advise: Project Management Team and Planning Advisory Committee (PAC)

The Project Management Team, comprised of staff from the Cities of Coos Bay and North Bend, ODOT, and the consultant team will make recommendations to the Planning Commission and City Council.

The Project Management Team will use Planning Advisory Committee input in developing recommendations. The Project Management Team will also provide day-to-day guidance to the project manager and consultant team to ensure coordination with related planning efforts.

Figure 2. Decision Making Structure



Title VI/EJ Demographics Overview

Table 1. provides demographic information from the American Community Survey from 2012-2016 for the City of Coos Bay, City of North Bend, and the state of Oregon to facilitate comparisons and inform the development of outreach strategies to reach low-income, minority, elderly, and limited-English proficient residents.

Table 1. Population Demographics by Geography

Subject	Coos Bay	North Bend	Oregon
Total Population	16,129	9,635	3,982,267
Median Age	43.3	41.4	39.1
Population Under 18 Years	20%	24%	22%
Population Over 65 Years	21%	21%	16%
African American[1]	3.7%	0.5%	1.9%
American Indian And Alaska Native	1.7%	2.5%	1.1%
Asian American	2.4%	1.1%	4%
Caucasian	85.5%	87.1%	85%
Native Hawaiian And Other Pacific Islander	0.1%	0%	0.4%
Two Or More Races	5.4%	7.7%	4.4%
Other	1.1%	1.0%	3.1%

Subject	Coos Bay	North Bend	Oregon
Hispanic Or Latino (Of Any Race)	8.2%	9.1%	12.4%
Median Household Income	$39,750	$46,974	$51,243
All People Living Below The Poverty Level In Last Year	22%	12%	16%
People Over 16 Unemployed	10%	9%	8%
Households With Food Stamp/SNAP Benefits In Last Year	27%	22%	19%
Speak A Language Other Than English At Home	6%	5%	15%
Of Which, % That Are Fluent English Speakers	68%	73%	60%
Of Which, % That Are Non-Fluent English Speakers	32%	27%	40%

Source: American Community Survey 2012-2016

Coos Bay Demographics

Based on the American Community Survey from 2012-2016 (estimated numbers), Coos Bay had the following demographics as compared to the state of Oregon:

- Older residents than the state average (average age is 43.3 and 21% of residents are over 65 years old).
- A similarly diverse population compared to the state average (85.5% Caucasian), though higher African American population (3.7%) and American Indian and Native Alaska population (1.7%).
- Population that makes less income than the state average ($39,750 median household income and 22% living below the poverty level) and relies more on Food Stamps/SNAP (27%), and with a slightly higher unemployment rate (10%) which indicates that more residents are considered “working poor”.
- More people speak English at home compared to the state average but of those people that speak another language 32% are not fluent English speakers. The majority of Limited English Proficiency households speak Spanish at home.

North Bend Demographics

Based on the American Community Survey from 2012-2016 (estimated numbers), North Bend had the following demographics as compared to the state of Oregon:

- Older residents than the state average (average age is 41.4 and 21% of residents are over 65 years old).
- A slightly less diverse population than the state average (87% Caucasian), though higher percentage American Indian and Alaskan Native population (2.5%).
- Population that makes slightly less income than the state average ($46,974 median household income) but a lower percentage of people living below the poverty level (12%) and similar unemployment rate (9%) which indicates that slightly more residents are considered “middle class”.
- More people speak English at home compared to the state average (10% speak another language), but of those people that speak another language 27% are not fluent English speakers. The majority of Limited English Proficiency households speak Spanish at home.

Title VI/EJ Outreach Strategy

Based on the project team's review of area demographics, the Cities could conduct targeted activities to reach low-income, minority, aging adults, limited-English proficient residents and other transportation disadvantaged populations. These activities should make availabe reasonable accommodations —such as translation services, targeted mailings, and public notices—to encourage their participation. To engage these communities, the project team could employ the following strategies:

- Planning Advisory Committee (PAC) meetings: involve the PAC in execution of the Title VI/EJ outreach strategy and consider outreach to and inclusion of members from organizations that advocate for or serve low-income, minority, aging adults, limited-English proficient residents, and other transportation disadvantaged communities, as well as, tribal representation from the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians, Confederated Tribes of Siletz Indians, and Coquille Indian Tribe.
- Targeted outreach: identify partner organizations that can co-host or promote public workshops to traditionally underserved communities, including those that serve low income, elderly, and minority populations. Collect demographic information (anonymously) at all public events to be added to the final report.
- Translation or special accommodations: translation services and other special accommodations will be provided at all meetings upon request.

Targeted Outreach to Environmental Justice/Title VI Communities

The Cities could conduct targeted outreach to notify Title VI/EJ communities about public events and other opportunities to provide public input on the TSP, involving methods such as a targeted mailing/postcard, fact sheet, poster, press release or newsletter advertisement (online or print). Table 2 and 3 below provides a summary of targeted outreach tasks, and outlines responsibility. The Cities could include a Spanish language message providing instruction on how to request a translator on communication materials about the two public workshops.

As part of targeted outreach, the Cities could work with and provide information to social service agencies and community-based organizations (CBOs) that serve low-income, minority, aging adults, limited-English proficient residents, and other transportation disadvantaged populations. Such organizations may include, but are not limited to the following:

- Oregon Coast Community Action,
- Oregon Department of Human Services–Area Agency on Aging,
- South Coast Head Start,
- South Coast Food Share,
- Coos-Curry Housing Authority,
- Coos Elderly Services,
- North Bend Senior Activity Center,
- NeighborWorks Umpqua,
- Coos Hispanic Leadership Committee,
- SAFE Project, and
- Devereaux Center.

As capacity allows, the Cities could consider conducting focused events during the project to share information with the public and Title VI/EJ communities. These events might include tabling at a public event, such as the Downtown Coos Bay Farmers Market or Bay Area Fun Festival, riding the CCAT Bay Area Loop to circulate postcard ads about public involvement opportunities, or meeting with social service providers.

Table 2. Targeted Outreach Tasks for PAC Meetings

Task	Responsibility	Schedule	Review
Draft outreach materials for targeted distribution to Title/VI communities and CBOs	Cities	3 weeks before meeting	Cities
Draft meeting announcement for website	Consultant	2 weeks before meeting	Cities
PAC agenda and other materials	Consultant	1 week before meeting	Cities
Distribute materials to PAC and post to website	Consultant	3 days before meeting	Cities
Compile PAC summary and share feedback	Consultant	2 weeks after meeting	Cities

Table 3. Targeted Outreach Tasks for Public Workshops

Task	Responsibility	Schedule	Review
Draft event announcement for targeted distribution to Title/VI communities and CBOs	Cities	6 weeks before event	Cities
Translate materials as needed	Cities	4 weeks before event	Cities
Distribute event announcement and target distribution to Title/VI communities and CBOs	Cities	4 weeks before event	Cities
Draft meeting announcement for website	Consultant	3 weeks before event	Consultant
Conduct focused outreach events	Cities	3 weeks before event	
Collect and compile demographic information from public events	Consultant	At Event	Cities
Compile event summary and share feedback	Consultant	2 weeks after event	Cities

Stakeholder Categories

The table below summarizes key stakeholders for the TSP, with a focus on Title VI/EJ communities, along with agencies and institutions that serve them.

Table 4. TSP Stakeholders

Stakeholder Category	Examples
Low-income, minority, elderly and limited English proficient (LEP) communities	• Oregon Coast Community Action • Oregon Department of Human Services–Area Agency on Aging • South Coast Food Share • Coos-Curry Housing Authority • Coos Elderly Services, • North Bend Senior Activity Center • NeighborWorks Umpqua • Coos Hispanic Leadership Committee • SAFE Project • Devereaux Center
Government agencies and institutions	• Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians • Coquille Indian Tribe • Confederated Tribes of Siletz Indians • Coos Bay and North Bend City Council • Coos Bay and North Bend Planning Commission • Coos County • ODOT/ODOT Rail • Department of Land Conservation and Development
Schools and Youth	• Southwestern Oregon Community College • Coos Bay and North Bend School Districts • Boys & Girls Club of SW Oregon • South Coast Head Start
Transportation stakeholders	• Coos County Area Transit • Port of Coos Bay/Port Rail • Southwest Oregon Regional Airport
Employers and businesses	• Coos Bay North Bend Chamber of Commerce • South Coast Development Council • Coos Bay and North Bend Downtown Associations • Bay Area Hospital • North Bend Medical Center
Media	• The World • Oregon Today • KSBA • KSOR • KCBY • KEZI • KMTR

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Public Meetings Summary

MEETING SUMMARY

Coos Bay / North Bend
Transportation System Plan Updates
KICK-OFF MEETING
Coos Bay City Council Chambers

June 7, 2018

2:30 PM – 4:30 PM

Attendees:

Angela Rogge, David Evans and Associates, Inc. (Consultant Project Manager)
Brooke Jordan, Jacobs (Consultant)
Jim Hossley, City of Coos Bay
Jennifer Wirsing, City of Coos Bay
Chelsea Schnabel, City of North Bend
Derek Windham, City of North Bend
Virginia Elandt, ODOT
Jennifer Groth, Southwest Oregon Regional Airport
Dick Leshley, Chamber Transportation Committee /Yellow Cab
Diana Schab, North Bend Planning Commission
Tom Burdett, Chamber Transportation Committee/BnT
Rick Skinner, Chamber Transportation Committee /SCCS
John Whitty, Chamber Transportation Committee
Todd Tripp, Coquille Indian Tribe
Jamie Fereday, Citizen (Bicycle)
Jeffrey Stump, Confederated Tribes of Coos, Lower Umpqua and Siuslaw
Jim Berg, Coos Bay Planning Commission
Sergio Gamino, Coos County Area Transit

Introductions/Background

The meeting began with a round of introductions. The Consultant Project Manager (Angela Rogge) explained that the TSP Updates are a chance to revisit the 20-year plan for funding and confirm the list of planned transportation projects is in alignment with forecasted land use and population/employment data.

- TSPs are Mandated by the Oregon Transportation Planning Rule (TPR)
- Once the TSP is adopted, it will become the Transportation element of each City's comprehensive plan
- It is a blueprint for the transportation system
- Coos Bay and North Bend data collection, analysis, public involvement will be done concurrently
- There will be separate project lists, revenue forecasts, code/policy and each city will have their own TSP document

The consultant team explained that all modes of transportation would be considered.

Process/Schedule

The TSP plan development process is expected to last through April 2020.

The technical process for updating the plan will follow these general steps:

- Review Existing Plans/Policies
- Update Goals and Objectives

- Forecast Reasonable Funding through the Planning Horizon (2040)
- Document Needs of Existing Transportation System
- Forecast Traffic Growth for the Planning Horizon Year (2040)
- Document Needs of the Future Transportation System
- Alternatives to Address Needs (Preferred vs. Revenue Forecast)
- Develop Implementation Ordinances
- Adoption

Public and Stakeholder Involvement

The TSP Update process will have opportunities for the public to follow the process and provide input. There will be two public workshops: (1) to review the existing and future system and collect feedback on identified deficiencies, and (2) Review and comment on the draft plans. There will also be a project website where documents, meeting summaries and project updates will be posted.

Brooke Jordan, of the Consultant team, explained the roles and responsibilities of the Planning Advisory Committee (PAC):

- Provide technical review of key deliverables and analyses (2 week review period)
- Guide development of policies
- Review and comment on draft plan and projects
- Attend 3 PAC meetings (dates to be finalized closer to the meetings, but tentative plan for January 2019, June 2019 and November 2019)
- Review information before meetings
- Express concerns and issues clearly and early on
- Consider issues with a broad perspective

Common Transportation Terms

Angela reviewed common transportation terms/jargon that PAC members are likely to encounter when reviewing technical memoranda. The analysis will be guided by published methods that are widely accepted by the transportation industry.

Functional classification: Is the grouping of highways, roads and streets by the character of the service they provide.

Level of Service (A-F): Measures the level of delay a driver experiences traveling in a vehicle

Volume-to-Capacity: Measures how well a road or intersection that handle the traffic that wants to use it. Answers the question of whether there is enough capacity to serve the cars.

Bicycle and Pedestrian Level of Traffic Stress: Measures how comfortable a bicyclist or pedestrian is when using a facility.

Travel Demand Model: Helps traffic engineers forecast traffic and is based on land use (household/employment), the existing and planned transportation network, and is based on the City's zoning and comprehensive plan.

Where are the existing areas of concern?

The Consultant team asked the PAC and Cities for their thoughts on where they see hotspots in their transportation system.

- Safety issue in N. Bend - north bound lane? Sherman and Virginia - traveling east on Virginia and making a right turn
- New schools going in. Will need adequate pedestrian access
- Potential for safe routes to school
- Parking - downtown filling up
- Congestion on 10th street near school - people aren't taking bus
- Incentive money to ride public transit
- Want a taxi stand at the airport, and more transit
    - Major development at mental health, health, but there's no bus stop near there
- **Want a way to address facilities that are technically outside of jurisdiction** - coordinate with local partners
- Recommendations to redraw boundary lines?
- Head to east side: Bunker Hill
- US 101 speed variation
- Ocean Blvd - 4 lane to 2 lane slower speeds, now new development
- East Side Bridge with shared bike/vehicles - slower speeds
- Bunker Hill Bridge - Coos County owner jurisdiction

Miscellaneous

- Derek has buildable land, zoning and potential development
- Planning commission meetings to affect schedule for DLCD notification
- Scoped to provide/identify ADA needs - we'll have it for state roads; Derek has it for N. Bend
- Identify where pavement is degraded and needs maintenance
- Ballot measure for transportation improvement - gas tax - it failed. Looking at franchise fees, URA tax, transportation utility fee
- Would like to see before and after traffic analysis on implemented changes on Ocean Blvd. Is it safer? Does it smooth out traffic? Yes, it is safer, but delay and congestion has increased in the past two years.
- Want more attention on Tech memos 1-3 at first PAC meeting – Consultant team suggested a quick survey to get priorities from PAC.
- Port of Coos Bay - got TIGER funding
- ODOT evaluated Bunker Hill

Action Items and General Notes for Project Coordination:

- Send list of study intersections to PAC/City
- Wednesday afternoons for PMT meetings
- Comments from PAC will come through city staff
- Website should have a way to send a comment
- Invite planning commission and city council to open houses and to view website

https://drive.google.com/open?id=1pPZQjvhJNPzXu8n8us5zDDJhzE4K3bEb&usp=sharing

Analysis intersections. Developed during project development with ODOT, City of North Bend and City of Coos Bay staff. Traffic counts were collected during the summer of 2017.

NORTH BEND

1. Arthur Street at Colorado Loop
2. Oak Street/W Airport Way at Colorado Avenue/Maple Leaf
3. Maple Leaf at E Airport Way
4. US 101 at Florida Avenue
5. Virginia Avenue at Arthur Street
6. Virginia Avenue at Oak Street
7. Virginia Avenue at Maple Street
8. Virginia Avenue at Broadway Street
9. Virginia Avenue at Pony Village Main Driveway
10. Virginia Avenue at Harrison Avenue
11. Virginia Avenue at Meade Avenue
12. Virginia Avenue at US 101 South
13. Virginia Avenue at US 101 North
14. Marion Avenue at Safeway Driveway
15. Washington Avenue at US 101 South/Sherman Avenue
16. Pony Creek Road at Crowell Lane
17. Oak Street at 16th/17th Street
18. Broadway Street at 16th Street
19. Broadway Avenue at 17th Street
20. US 101 at Mill Casino Entrance
21. Newmark Avenue at Oak Street
22. Broadway Street at Newmark Avenue
23. Newmark Street at Edgewood Drive
24. Newmark Avenue at Brusells Street
25. Newmark Street at Sherman Avenue
26. US 101 at Newmark Street

COOS BAY

1. Morrison Street at Lakeshore Drive
2. Newmark Avenue at Cape Arago Highway/Empire Boulevard
3. Newmark Avenue at Morrison Street
4. Newmark Avenue at Ocean Boulevard
5. Newmark Avenue at Laclair Street
6. Empire Boulevard at Pacific Avenue
7. Thompson Road at Woodland Drive
8. Koosbay Boulevard at Thompson Road
9. Ocean Boulevard at Woodland Drive
10. Ocean Boulevard at Butler Road
11. Koosbay Boulevard at 10th Street
12. Us 101 at Koosbay Blvd
13. 7th Street at Commercial Avenue
14. Commercial Avenue at US 101 South
15. Commercial Avenue at US 101 North
16. 10th Street at Central Avenue
17. Central Avenue at 7th Street
18. 7th Street at Anderson Avenue
19. Elrod Avenue at 10th Street
20. 11th Street at Ingersoll Avenue
21. 7th Street at Ingersoll Avenue
22. Hall Avenue at US 101 South
23. Hall Avenue at US 101 North
24. Johnson Avenue at US 101 South
25. Johnson Avenue at US 101 North
26. 7th Street at Lockhart Avenue/Southwest Boulevard
27. 6th Avenue at D street / Coos River Highway
28. Coos River Road at Ross Inlet Road

AGENDA

Coos Bay / North Bend
Transportation System Plan Updates
KICK-OFF MEETING
Coos Bay City Council Chambers

June 7, 2018

2:30 PM – 4:30 PM

2:30 PM – 2:45 PM	**Introductions** Project Team PAC	All
2:45 PM – 3:15 PM	**Background** TSP Purpose Concurrent Updates Typical TSP Elements	Consultant
3:15 PM – 3:45 PM	**Process/Schedule** Plan development Review draft Schedule	Consultant
3:45 PM – 4:00 PM	**Public and Stakeholder Involvement**	Consultant
4:00 PM – 4:30 PM	**Group Discussion** Where are existing areas of concern? What do you hope the TSP Update will accomplish? (Safety, multi-modal connectivity, congestion, etc.)	All

Coos Bay/North Bend Transportation System Plan Updates

Kick-Off Meeting

June 7, 2018 2:30 PM – 4:30 PM

Overview

- Team Introduction
- Purpose of a TSP
- Common Elements
- TSP Development Process
- Roles and Responsibilities
- Group Input

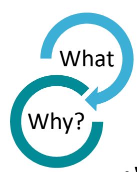
Project Team

- City of Coos Bay
- City of North Bend
- Oregon Department of Transportation (ODOT)
- Planning Advisory Committee (PAC)
  - Coos Bay
  - North Bend
  - County
  - Tribes

Consultant Team

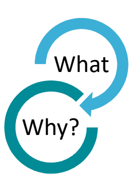
- David Evans and Associates, Inc. (Prime)
  - Jacobs
  - Angelo Planning Group
  - Civil West

TSP Background and Purpose



- Community's multi-modal blueprint for their transportation system
  - Element of a local comprehensive plan
  - Establishes a system of transportation facilities and services to meet state, regional, and local needs
  - Sets priorities for available and anticipated funding in the planning period
- Walking and biking system improvements
- Consideration for tourism impacts (seasonal peaks)

What a TSP Shall Include



- Consistency with the Oregon Transportation Plan and its modal and topic plans is required
- Mandated by the Oregon Transportation Planning Rule (TPR) documented in Oregon Administrative Rule (OAR) 660-012-0015
- Document the needs, functions, and general location of planned improvements for applicable modes/elements

Concurrent Updates

- Last updated together in 2004
- Current updates are under a single contract
  - Efficiencies in data collection and analysis
  - Schedules linked
  - PAC and public meetings
- Shared history and ongoing connection with unique character
  - Project needs/desires
  - Revenue
  - Code and policy

Process will result in two separate TSPs

Study area
- Bay Area
- Bound by Urban Growth Boundaries
- 54 intersections

Common Elements of a TSP

• Goals and Objectives • Existing plans and policy	• Safety • Bicycle • Pedestrian • Transit • Motor Vehicle • Air • Marine • Freight • Other	• 20-year forecast • Planned land use and development • Programmed projects	• Revenue Forecast • Finance plan	• Evaluation criteria • Implementing codes and ordinances

Review Existing Plans/Policies → Update Goals and Objectives → Forecast Reasonable Funding through the Planning Horizon (2040)

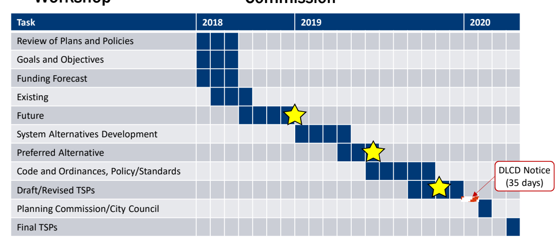
Document Needs of Existing Transportation System → Forecast Traffic Growth for the Planning Horizon Year (2040) → Document Needs of the Future Transportation System

Alternatives to Address Needs (Preferred vs. Revenue Forecast) → Develop Implementation Ordinances → Adoption

Technical Process

Draft Schedule

- Contract end date: April 30, 2020
- ☆ PAC Meeting/Public Workshop
- Important Assumptions:
  - 2 week review periods on most deliverables
  - Coordinate with City Council and Planning Commission



Public and Stakeholder Involvement

- 3 Planning Advisory Committee (PAC) Meetings
- 2 Public Workshops
- Project Website
  - Project documents, announcements, and ability to submit comments
- Planning Commission Presentations with City Staff
- City Council Presentations with City Staff

PAC Role and Responsibilities

Role
- Provide technical review of key deliverables and analyses
- Guide development of policies
- Review and comment on draft plan and projects

Responsibilities
- Attend 3 PAC meetings
- Review information before meetings
- Express concerns and issues clearly and early on
- Consider issues with a broad perspective

Planning Advisory Committee (PAC)

- Vision, Goals, and Objectives
- Identifying system needs
- Developing solutions
- Prioritization/Evaluation of solutions
- Endorse the Plan

PAC Meeting Topics

Meeting #1 Dec/Jan 2019	Meeting #2 June 2019	Meeting #3 November 2019
• PAC to provide input on existing and future conditions analysis • Materials to be presented include Tech Memos 4-7: System Inventory, Methodology & Assumptions, Existing Deficiencies, and Future Deficiencies & Needs	• PAC to review and evaluate network alternatives • Materials to be presented include Tech Memos 8 & 9: System Alternatives and Preferred Alternative Selection	• PAC to review and comment on Draft TSP and individual projects prioritized • Materials to be presented include Draft TSP, including Finance Programs, Policies and Standards, and Code Provision and Ordinance Amendments

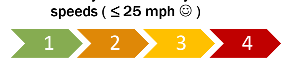
Public Workshop Topics

Public Workshop #1 December/January 2019	Public Workshop #2 November 2019
• **Purpose:** Provide the public with an opportunity to learn about the TSP and provide input on existing and future conditions analysis. • **Format:** Open House with a brief presentation and substantial time for the public to review existing and future conditions through boards, maps, and graphical materials. • **Input:** comment cards provided to public; responses will be recorded into a comment log and incorporated into deliverables	• **Purpose:** Provide the public with an opportunity to review the Draft TSP and prioritized project list. • **Format:** Open House with a brief presentation and substantial time for the public to review TSP priorities through boards, maps, and graphical materials. • **Input:** Comment cards will be provided to the public; responses collected will be recorded into a comment log and incorporated into final deliverables

Common Transportation Terms

- Functional Classification
  - Explains how a particular roadway serves traffic

- Vehicular mobility is commonly measured by…
  - Delay (Level of Service A – F)
  - Percent of capacity: volume-to-capacity (v/c) ratio
- Bicycle and Pedestrian Level of Traffic Stress
  - Measures effects of traffic stress on users
  - Heavily influenced by traffic speeds (≤ 25 mph ☺)



- Travel Demand Model
  - Land use (household / employment)
  - Existing and planned network
  - City's zoning and comp plan

Where are the existing areas of concern?

Pedestrian
- Sidewalks & Trails
- Out of direction travel?
- Safe crossings
- Access to parks, schools, shopping

Bicycle
- Bike parking
- Well defined routes
- Separate facilities?

Safety
- All modes
- Crash history/near misses

Vehicular
- Congestion/delay
- Future development
- Connectivity

Marine
- Industry access
- Recreation

Freight / Rail?

AGENDA

Coos Bay / North Bend
Transportation System Plan Updates
PAC Meeting #1
North Bend Public Library

December 12, 2018

2:00 PM – 4:00 PM

2:00 PM – 2:10 PM	**Welcome & Agenda Review** Review agenda Meeting objectives	Angela Rogge Brooke Jordan
2:10 PM – 2:20 PM	**Status Update** Work completed to date	Angela Rogge
2:20 PM – 2:45 PM	**Policy Background** Review goals, objectives, and evaluation criteria Discussion	Brooke Jordan
2:45 PM – 3:10 PM	**Transportation Inventory & Existing Conditions** System inventory, conditions and existing deficiencies Discussion	Angela Rogge
3:10 PM – 3:25 PM	**Future Transportation Needs** Future deficiencies and needs Funding forecast	Angela Rogge
3:25 – 3:55 PM	**Small Group Discussion**	Angela Rogge Brooke Jordan
3:55 PM – 4:00 PM	**Next Steps**	

MEETING SUMMARY

Coos Bay / North Bend
Transportation System Plan Updates
Public Advisory Committee (PAC) Meeting #1
North Bend Public Library

December 12, 2018

2:00 PM – 4:00 PM

Attendees:

Angela Rogge, David Evans and Associates, Inc.
Brooke Jordan, Jacobs
Jim Hossley, City of Coos Bay
Chelsea Schnabel, City of North Bend
Derek Windham, City of North Bend
Virginia Elandt, ODOT
John Whitty, CTC
Rick Skinner, CTC/SCCS
Jamie Fereday, Citizen (Bicycle)
Jeff Stump, Confederated Tribes of Coos, Lower Umpqua and Siuslaw
Sergio Gamino, Coos County Area Transit
Jenna Marmon, ODOT (Bike/Ped)
Jennifer Boardman, ODOT (Transit)

Introductions/Background

The purpose of the meeting was share major findings from the technical work done to date related to existing and future conditions, and transportation system needs.

The PAC was asked to provide feedback on preliminary findings related to transportation system needs to support the ongoing development of the TSP update. Specifically, the PAC reviewed goals, objectives, and evaluation criteria, transportation inventory, existing conditions, and future transportation needs. Key points and feedback from the discussion with the PAC is summarized in the sections below.

Goals

General Comments

- Ensure we include tsunami/evacuation route in objectives (currently captured in Goal #2 objectives)
- Goal #2: Provide a transportation system that enhances the safety and security of all transportation modes.
  - Unsure about “enhance”; acknowledge that the system is safe, and connect to resiliency
- Goal #5: Provide a transportation system that supports existing industry and encourages economic development in the city.
  - There was discussion on whether or not there was language that was not going to preclude future economic development. The objective that discusses facilitating development of desired land uses captures this concern.
- Goal #7: Provide a sustainable transportation system through responsible stewardship of financial resources

    - Consider adding practical design language to the objectives

Specific Comments

North Bend

- Goal #1: How do we make what we have more resilient?
- Goal #3/Criteria #3: May need to move
- Goal #5: Criteria #1 seems a little disconnected from goal

Coos Bay

- Goal #5: Maintain what we've got
- Add language to address future economic development
- Need to take into account Coos Bay Village, existing and planned land use

<u>Transportation Inventory, Existing Conditions, Future Deficiencies and Needs</u>

Angela walked through the work and data collection that was done in order to establish a baseline for the existing transportation system. Throughout the presentation, we paused to gather feedback/comments from the PAC.

PAC Feedback:

- Functional classification:
    - Current classification of Arthur Street (collector) seems incorrect. Road serves residences on east side and is zoned for Airport on the west.
    - Meade experiences a lot of cut-through traffic
    - May want to include a map or table of the ADT estimates to confirm roadway functional classification
- Pedestrian/Bike
    - 6th/Coos River Highway/D St is a priority for improving pedestrian system
    - Woodland Drive provides access to medical center
    - There are no parallel facilities to Virginia Ave
    - Areas with high pedestrian activity
        - Virginia
        - Empire/Morrison
        - Newmark/Schoneman
        - Devereux Center
        - Newmark/Ocean
        - Sherman
    - Pedestrian LTS results: Revisit results at Ocean from Woodland to Central. Should be better than LTS 4.
    - Consider restriping options for Sherman and Ocean to provide bicycle facilities
- Transit
    - Concern with calling transit service "good" when the hours may not accommodate "shift workers"
    - Identify potential partnerships with Tribes
    - In order to increase funding opportunities, TSP should include language in the TSP for desired projects, recognizing that CCAT would take the lead on implementation/funding
        - Regional transit hub
        - Accessible transit

        - Transit pull outs
- Vehicular
    - Fix the existing system (potholes)
    - Maintain and strengthen what we have
    - Consider a traffic calming "toolbox" for the Cities to offer potential neighborhood treatments
    - The PAC wants to be sure the TSP captures all of the needs, even if they are unlikely to be funded in the planning horizon.

Priorities of the PAC

At the end of the meeting, we went around the room to identify what the PAC thinks should be priorities for the TSP. They are summarized below:

- Identify additional/new funding sources.
- Refine the broad priorities for the bicycle and pedestrian improvements to a targeted, prioritized list.
- Maintenance and improving resiliency of existing infrastructure.
- Develop a Safe Routes to School project list within a mile buffer of the schools.
    - *Post PAC follow-up: This information is not currently available through ODOT or existing data. The TSP may be able to identify projects that could be eligible for SRTS funding and include them in the final documentation, but if a robust and detailed SRTS is desired, it may need to be completed outside the scope of the TSP.*
- Calm neighborhood traffic speeds.
- ADA (ODOT noted that all ODOT facilities are planned to have ADA improvements)
- Fix the potholes.
- Capture ALL the transportation needs somewhere in the TSP, even if they are unlikely to have funding.
- CCAT: Support Cities' priorities and collaborate on funding opportunities to improve transit
- Tribes: Support Cities' priorities and identify potential for teaming to capitalize on available funding

Next Steps

The next phase of the project is to begin developing transportation alternatives to address identified deficiencies. The next PAC meeting is scheduled for early summer, but will likely be moved to early spring in order to engage the PAC in alternatives development.

Remember, all materials will be posted to the project website: http://www.bayareatsps.com

Coos Bay/North Bend Transportation System Plan Updates

PAC Meeting

December 12, 2018 2:00 PM – 4:00 PM

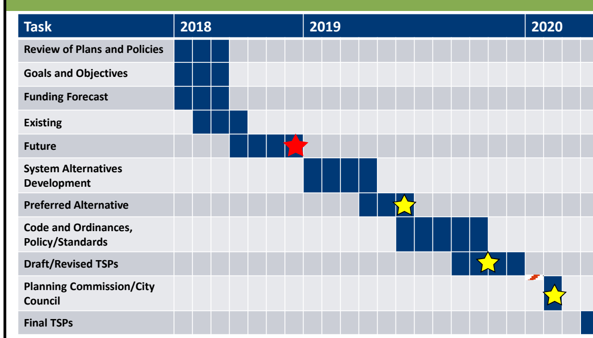
Overview
Agenda Review

- Agenda and meeting objectives
- Project update
- Policy background
- Inventory and existing conditions
- Future needs and small group discussion
- Next steps

Overview
Meeting Objectives

- Review and discuss key elements of work completed by project team
  - Plan goals, objectives, and evaluation criteria
  - Transportation system inventory and existing conditions
  - Future transportation needs

Project Update
Project Schedule



Policy Background
TSP Goals, Objectives, and Evaluation Criteria

North Bend & Coos Bay TSP Goals

- **Goal #1:** Continue development of an interconnected, multimodal transportation network that connects all members of the community to destinations within and beyond the city.
- **Goal #2:** Provide a transportation system that enhances the safety and security of all transportation modes.
- **Goal #3:** Optimize the performance of the transportation system for the efficient movement of people and goods.
- **Goal #4:** Provide an equitable, balanced and connected multi-modal transportation system.

Policy Background
TSP Goals, Objectives, and Evaluation Criteria

North Bend & Coos Bay TSP Goals

- **Goal #5:** Provide a transportation system that supports existing industry and encourages economic development in the city.
- **Goal #6:** Develop and maintain a Transportation System Plan that is consistent with the goals and objectives of the city, Coos County, and the state.
- **Goal #7:** Provide a sustainable transportation system through responsible stewardship of financial resources.
- **Goal #8:** Provide a transportation system that enhances the health of residents and users and that minimizes impacts to the environment.

Policy Background
TSP Goals, Objectives, and Evaluation Criteria

Goal	Evaluation Criteria
#1	• Improves or creates access to community destinations • Improves facilities for those using mobility devices • Enhances the active transportation or transit network
#2	• Improves transportation safety (crossings, intersections, visibility, all modes) • Enhances emergency preparedness/community resiliency
#3	• Addresses known access issues on state highways or major arteria • Reduces reliance on highway system for shorter, local trips • Improves efficiency of transportation system
#4	• Enhances public transportation services (e.g., new routes, shelters) • Improves bicycle and pedestrian connections to public transportation stops • Enhances transportation options to underserved areas
#5	• Preserves or maintains existing transportation facilities • Minimizes negative impacts to existing land use • Improves or maintains freight access/connectivity
#6	• Is consistent with local, state, and federal plans and policies • Supports the City's land use vision
#7	• Alternative measure to increasing capacity • Provides significant increase in mobility/accessibility • Preserves existing systems
#8	• Increases active transportation options • Minimizes impacts to natural resources

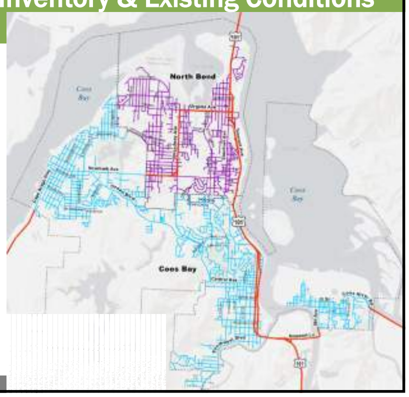
Discussion

- Is there anything missing?
- Do the objectives support the goals?
- Do they evaluation criteria make sense to you?

Transportation Inventory & Existing Conditions

North Bend & Coos Bay

- Street system
- Pedestrian system
- Bicycle system
- Public Transportation system
- Rail, Air, Water, Pipeline system



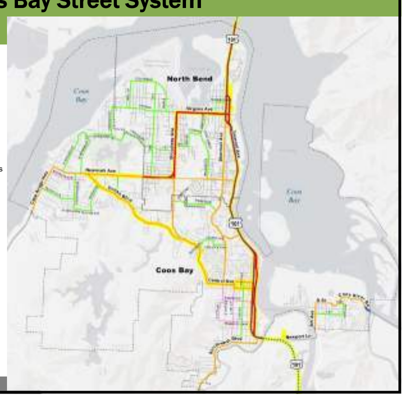
Transportation Inventory & Existing Conditions
North Bend & Coos Bay Street System

Coos Bay and North Bend have 5 roadway classifications within their Transportation Systems:

- **Principle Arterials:** Freeways and state highways
- **Arterials:** Interconnect and support principle arterials
- **Collectors:** Provide access and circulation within residential and commercial/industrial areas
- **Neighborhood Routes (Coos Bay):** Longer local streets that provide connectivity to collectors or arterials
- **Local Streets:** Provide access to immediate adjacent land

Transportation Inventory & Existing Conditions
North Bend & Coos Bay Street System

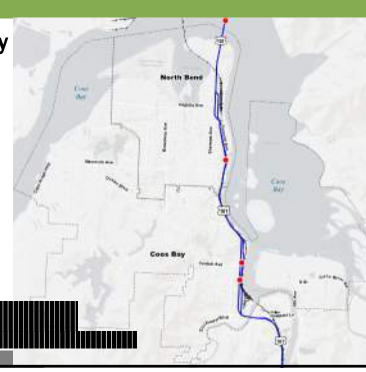
Urban Growth Boundary (UGB)
National Highway System Facilities
Oregon Scenic Byway



Transportation Inventory & Existing Conditions
North Bend & Coos Bay Street System

North Bend & Coos Bay Primary Truck Freight Routes

- US 101 (North Bend and Coos Bay)
- North Bend:
  - OR 540 – Cape Arago Hwy
- Coos Bay:
  - Newmark Ave
  - Empire Blvd
  - Ocean Blvd



Transportation Inventory & Existing Conditions
North Bend & Coos Bay Street System

Roadway Design and Geometry

- Railroad Crossings: 15 at-grade crossings in Coos Bay and North Bend
- Pavement Conditions:
  - North Bend rated 'good'
  - Coos Bay rated 'fair'
- On Street Parking: Widely available in both cities, and most utilized in downtown areas on US 101

Transportation Inventory & Existing Conditions
North Bend Pedestrian Network

- The majority of North Bend's street system has sidewalks
- A need for sidewalks exists on 6 collector streets:
  - 17th Street
  - Arthur Street
  - Colorado Ave
  - Crowell Lane
  - Lakeshore Drive
  - Oak Street

Transportation Inventory & Existing Conditions
Coos Bay Pedestrian Network

Sidewalk Inventory

Roadway Name	Classification	Existing Sidewalks
US 101	Principal Arterial	No
S Front St	Principal Arterial	No
S Empire Blvd	Arterial	Yes
Newmark Ave	Arterial	Yes
Ocean Blvd	Arterial	Yes
Woodland Dr	Arterial	No
Coos River Hwy	Arterial	No
6th Ave	Arterial	No
Southwest Blvd	Arterial	Yes
Lockhart Ave	Arterial	No
Koosbay Blvd	Arterial	Varies
N 7th St	Arterial	Varies
N 10th St	Arterial	Yes

Transportation Inventory & Existing Conditions
Coos Bay Pedestrian Network

Sidewalk Inventory

Roadway Name	Classification	Existing Sidewalks
Blanco Ave	Collector	Varies
Radar Rd	Collector	No
S Morrison St	Collector	No
Pacific Ave	Collector	North Side
Lakeshore Dr	Collector	No
N Morrison St	Collector	No
N Schoneman St	Collector	No
N Wasson St	Collector	Varies
Laclair St	Collector	Varies (North Side)
Thompson Rd	Collector	Yes
D St	Collector	No
F St	Collector	No
Butler Rd	Collector	Yes
Hemlock Ave	Collector	Yes
N 13th St	Collector	Yes
S 4th St	Collector	Yes
N 4th St	Collector	Yes
14th Ave	Collector	No
Juniper Ave	Collector	Yes
Fulton Ave	Collector	Yes
Virginia St	Collector	No
N 13th St	Collector	Yes

Transportation Inventory & Existing Conditions
Coos Bay & North Bend Pedestrian Network

TSP update will focus on arterial and collector street intersections.

- North Bend – 26 study intersections.
- Coos Bay – 28 study intersections.

Transportation Inventory & Existing Conditions
Coos Bay & North Bend Pedestrian Network

Highest Pedestrian Volumes at Study Intersections

North Bend:
- Virginia Ave between Broadway Ave and US 101

Coos Bay:
- US 101 at Johnson Ave and at Commercial Ave
- 7th Street and Anderson Ave

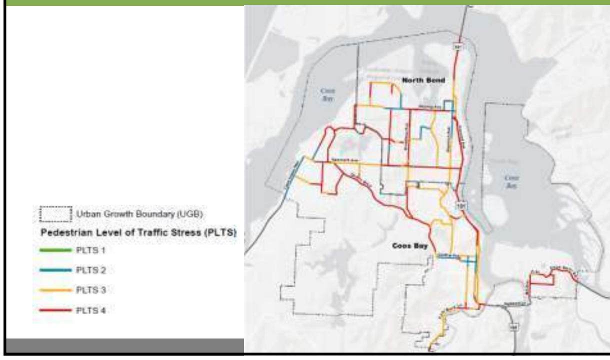
Transportation Inventory & Existing Conditions
Coos Bay & North Bend Pedestrian Network

Pedestrian Level of Traffic Stress

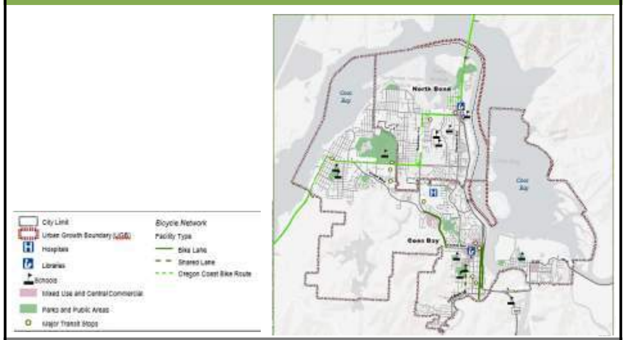
- **PLTS 1**: - Little to no traffic stress; - Sidewalk or shared-use path with buffer; - Suitable for all ages and users
- **PLTS 2**: - Little traffic stress but requires paying attention to traffic; - Suitable for ages over 10
- **PLTS 3**: - Moderate stress; - Suitable for adults; -Higher speed roadway with limited buffer
- **PLTS 4**: - High traffic stress; - Narrow or no facilities; - May serve able-bodied adults with limited route choices

- No PLTS 1 facilities in North Bend or Coos Bay
- Many arterial and collector streets have speeds greater than 25 mph or limited sidewalk buffers.
- Many PLTS 4 facilities are due to 2 categories:
  - There is no sidewalk
  - There is a sidewalk, but the sidewalk has little or no buffer from traffic

Transportation Inventory & Existing Conditions
Coos Bay & North Bend Pedestrian Network



Transportation Inventory & Existing Conditions
Coos Bay & North Bend Bicycle Network



Transportation Inventory & Existing Conditions
North Bend Bicycle Network

- Limited bicycle facilities, and minor improvements since 2004 TSP.
- Existing bicycle network overlaps with Oregon Coast Bike Route (OCBR) that runs from Astoria to Brookings.
- Current standards require minimum 5-6 foot bike lane on arterial and collector streets.

Roadway Name	Classification	Existing Bike Facility	Planned Bike Facility
US 101	Principal Arterial	Yes[1,2]	Yes
Virginia Ave	Minor Arterial/Urban Collector	Yes[1]	Yes
Broadway Ave	Minor Arterial	Yes[1]	Yes
Sherman Ave	Minor Arterial	No	Yes
Newmark St	Minor Arterial	Yes[1]	Yes
16th St	Urban Collector	No	Yes
17th St	Urban Collector	No	Yes
Arthur St	Urban Collector	No	Yes
Colorado Ave	Urban Collector	No	Yes
Connecticut Ave	Urban Collector	No	Yes
Crowell Lane	Urban Collector	No	Yes
Harrison Ave	Urban Collector	No	No
Lakeshore Dr	Urban Collector	No	Yes
Maple Leaf St	Urban Collector	No	No
Maple St	Urban Collector	No	Yes
Oak St	Urban Collector	No	Yes
Pacific St	Urban Collector	No	Yes
Pony Creek St	Urban Collector	No	Yes
Thompson Ave	Urban Collector	No	Yes

Transportation Inventory & Existing Conditions
Coos Bay Bicycle Network

- Limited bicycle facilities, and minor improvements since 2004 TSP.
- Oregon Coast Bike Route (OCBR) shares the roadway with vehicles or has a shoulder that varies from 0 to 4 feet wide.
- Ocean Boulevard has 7 to 8 foot wide bike lanes between N 19th St and Central Ave.

Roadway Name	Classification	Existing Bike Facility	Planned Bike Facility
US 101	Principal Arterial	Yes[1]	Yes
S Front St	Principal Arterial	No	No
S Empire Blvd	Arterial	Yes	Yes
Newmark Ave	Arterial	Yes	Yes
Ocean Blvd	Arterial	Yes	Yes
Woodland Dr	Arterial	No	Yes
Coos River Hwy	Arterial	No	Yes
6th Ave	Arterial	No	Yes
Southwest Blvd	Arterial	No	Yes
Lockhart Ave	Arterial	No	Yes
Koosbay Blvd	Arterial	No	Yes
N 7th St	Arterial	No	Yes
N 10th St	Arterial	No	Yes
Blanco Ave	Collector	No	No
Radar Rd	Collector	No	No
S Morrison St	Collector	No	Yes
Pacific Ave	Collector	No	Yes
Lakeshore Dr	Collector	No	Yes
N Morrison St	Collector	No	Yes
N Schoneman St	Collector	No	Yes
N Wasson St	Collector	No	No
Laclair St	Collector	No	No
Thompson Rd	Collector	No	Yes
D St	Collector	No	No
F St	Collector	No	No
Butler Rd	Collector	No	No
Hemlock Ave	Collector	No	Yes
N 13th St	Collector	No	No
S 4th St	Collector	No	Yes
N 4th St	Collector	No	Yes
14th Ave	Collector	No	No
Juniper Ave	Collector	No	Yes
Fulton Ave	Collector	No	No
Virginia St	Collector	No	Yes

Transportation Inventory & Existing Conditions
Coos Bay & North Bend Bicycle Network

Highest Bicycle Volumes at Study Intersections

North Bend

- Bicycle volumes range between 0 and 5 during peak hour
- Most of the volumes were recorded crossing Virginia Avenue between Broadway Street at US 101
- **Coos Bay**
  - Bicycle volumes range between 0 and 5 during peak hour
  - Highest Volume Intersections
    - Newmark Avenue at Ocean Boulevard
    - US 101 at Koosbay Boulevard
    - Elrod Avenue at 10th Street

Transportation Inventory & Existing Conditions
Coos Bay & North Bend Bicycle Network

Bicycle Level of Traffic Stress

- BLTS 1: - Minimal traffic stress; - Easily navigable by cyclests of low skill level; - Low traffic speeds
- BLTS 2: - Little traffic stress but requires paying attention to traffic; - Suitable for teens/adults
- BLTS 3: - Moderate stress; - Suitable for most observant adults; -Moderate traffic speeds
- BLTS 4: - High traffic stress; - For skilled cyclists; - Higher traffic speeds; - Narrow or no bike lanes

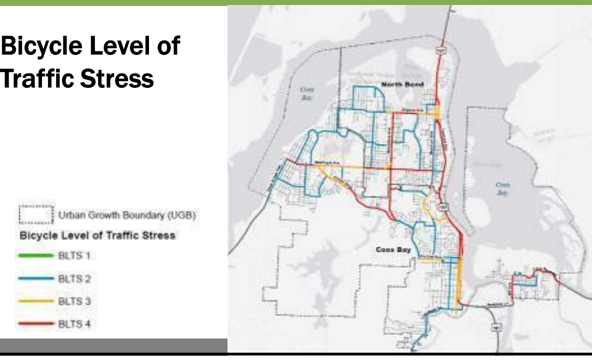
- The project team evaluated most of the roadway network for bicycle feasibility in the Cities using the Urban/Suburban Mixed Traffic LTS Criteria.

Urban/Suburban Mixed Traffic BLTS Criteria

Prevailing Speed or Speed Limit (mph)	Unmarked Centerline	1 Lane per Direction	2 lanes per direction	3+ lanes per direction
<25	BLTS 1	BLTS 2	BLTS 3	BLTS 4
30	BLTS 2	BLTS 3	BLTS 4	BLTS 4
>35	BLTS 3	BLTS 4	BLTS 4	BLTS 4

Transportation Inventory & Existing Conditions
Coos Bay & North Bend Bicycle Network

Bicycle Level of Traffic Stress



Transportation Inventory & Existing Conditions
Coos Bay & North Bend Transit Network

Local Services

- Coos County Area Transit (CCAT) provides local service to Coos Bay and North Bend and Intercity Service to outlying communities.

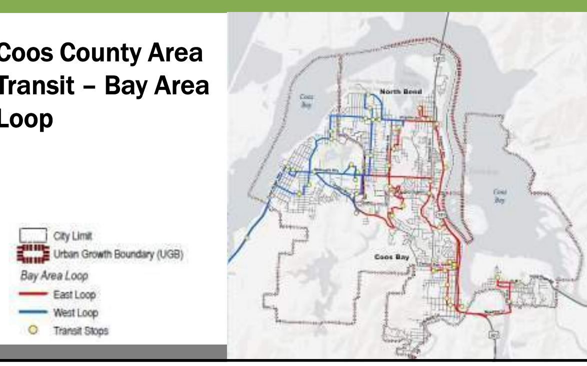
Regional Connections

- Curry Public Transit – Coastal Express
- UTrans
- Pacific Crest Bus Lines

Route Name	Service	Frequency
Bay Area Loop– East Loop	Local fixed-route	• Monday through Friday • 1.5-hour headways • First bus at 7:05 am; last bus at 4:05 pm
Bay Area Loop— West Loop	Local fixed-route	• Monday through Friday • 1.5-hour headways • First bus at 7:20 am; last bus at 4:20 pm
Lakeside/Hauser Connector	Intercity service	• Twice a day to Lakeside and Hauser, Friday service only • Morning: Bus at 7:00 am from VA Clinic • Afternoon: Bus at 2:30 pm from VA Clinic
Myrtle Point/Coquille Connector	Intercity service	• Three times a day to Myrtle Point and Coquille, Monday through Friday • Morning: Bus at 6:55 am from W. Central and N. Laurel • Mid-Day: Bus at 11:00 am from W. Central and N. Laurel • Afternoon: Bus at 3:30 pm from W. Central and N. Laurel • Powers Stage runs to Myrtle Point, Coquille, North Bend, and Coos Bay every Thursday

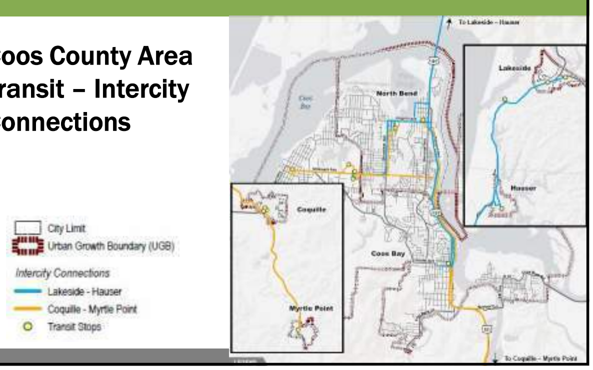
Transportation Inventory & Existing Conditions
Coos Bay & North Bend Transit Network

Coos County Area Transit – Bay Area Loop



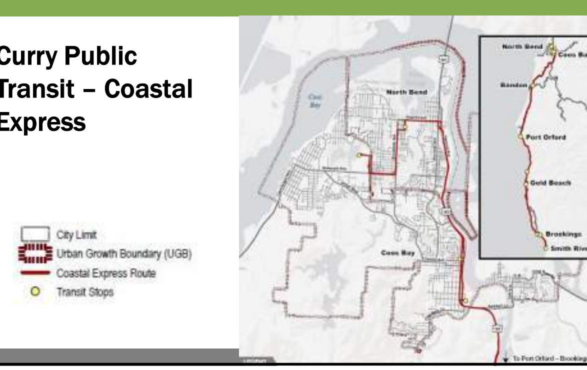
Transportation Inventory & Existing Conditions
Coos Bay & North Bend Transit Network

Coos County Area Transit – Intercity Connections



Transportation Inventory & Existing Conditions
Coos Bay & North Bend Transit Network

Curry Public Transit – Coastal Express



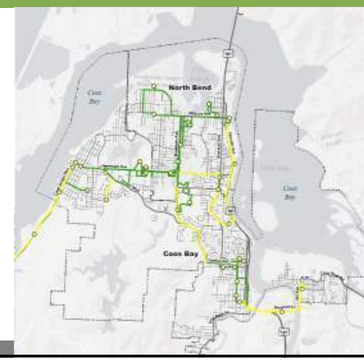
Transportation Inventory & Existing Conditions
Coos Bay & North Bend Transit Network

Transit Qualitative Assessment

- A Qualitative Multimodal Assessment (QMA) methodology to provide a context-based rating.
  - Frequency and on-time reliability
  - Schedule speed/travel times
  - Transit stop amenities
  - Connecting pedestrian/bike network
- The QMA for both cities rates as 'Good' for a majority of the Bay Area Loop and 'Fair' for only a few segments.

Transportation Inventory & Existing Conditions
Coos Bay & North Bend Transit Network

Transit Qualitative Multimodal Assessment



Transportation Inventory & Existing Conditions
Air and Rail Facilities

Air Facilities

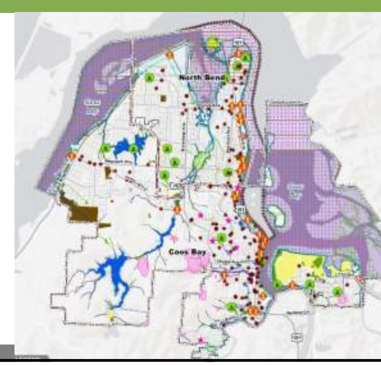
- Southwest Oregon Regional Airport (OTH) is located on approximately 620 acres of land.
- Only commercial service airport on the Oregon Coast.
  - May 2017 and April 2018 – OTH served 25,000 passengers and 1.5 million pounds of freight and mail.

Rail Facilities

- Coos Bay Rail Link - freight line that passes through North Bend and Coos Bay.
- 99 percent of the product moved is related to the timber industry.
- No passenger rail service is provided.

Transportation Inventory & Existing Conditions
Air and Rail Facilities

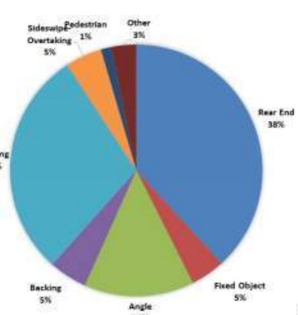
Environmental Resources



Transportation Inventory & Existing Conditions
Safety Evaluation

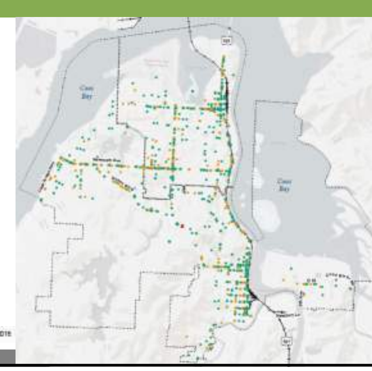
Crash History

- 1,744 documented crashes in North Bend and Coos Bay UGBs between 2012-2016.
  - 49% in North Bend
  - 51% in Coos Bay
- 5 fatalities
  - US 101, south Johnson Ave
  - Virginia Ave at Meade Ave
  - Virginia Ave at Oak Street
  - US 101 at Florida Ave
  - Ocean Boulevard at 19th St



Transportation Inventory & Existing Conditions
Study Area Crashes

Study Area Crashes



ODOT Crash Analysis and Reporting Unit - January 1, 2012 and December 31, 2016

Transportation Inventory & Existing Conditions
Safety Evaluation

North Bend:
- Virginia Avenue at US 101 South
- Washington Avenue at US 101 South/Sherman Avenue
- Pony Creek Road at Crowell Lane
- Broadway Street at Newmark Avenue
- US 101 at Newmark Street

Coos Bay:
- Thompson Avenue at Woodland Drive
- Koosbay Boulevard at 10th Street
- 7th Street at Ingersoll Avenue
- Johnson Avenue at US 101 North
- 6th Avenue at D Street / Coos River Highway

Transportation Inventory & Existing Conditions
Safety Evaluation

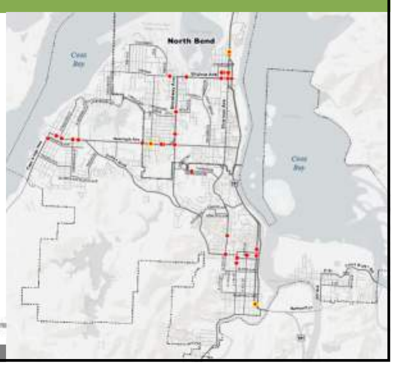
Pedestrian Crash Trends (2012 -2016)
- 36 crashes involving pedestrian documented in study area.
- Most common reason for crash, **vehicle not yielding**.
- Most crashes occur in commercial or downtown areas.
- **North Bend**
  - 21 documented crashes involving pedestrians, resulting in 2 fatalities.
- **Coos Bay**
  - 15 documented crashes involving pedestrians, resulting in 1 fatality.

Transportation Inventory & Existing Conditions
Safety Evaluation

Five Year Pedestrian Crashes

Urban Growth Boundary (UGB)
Severity
Non-Fatal
Fatal

ODOT Crash Analysis and Reporting Unit - January 1, 2012 and December 31, 2016



Transportation Inventory & Existing Conditions
Safety Evaluation

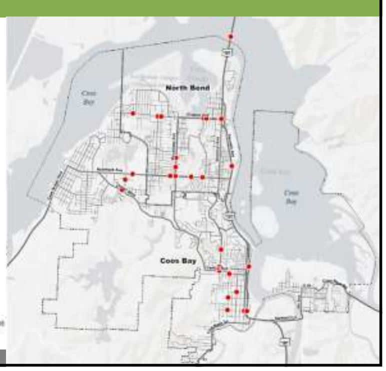
Bicycle Crash Trends (2012 -2016)
- 36 crashes involving bicyclists documented in study area.
- **North Bend**
  - 18 documented pedestrian involved crashes, resulting in 0 fatalities.
  - High incidence of bicycle crashes around Broadway Avenue and Newmark Avenue.
- **Coos Bay**
  - 18 documented pedestrian involved crashes, resulting 0 fatalities.
  - High incidence of bicycle crashes in downtown, around Central Avenue.

Transportation Inventory & Existing Conditions
Safety Evaluation

Five Year Bicycle Crashes

Urban Growth Boundary (UGB)
Bicycle Crashes (Non-Fatal)

ODOT Crash Analysis and Reporting Unit - January 1, 2012 and December 31, 2016

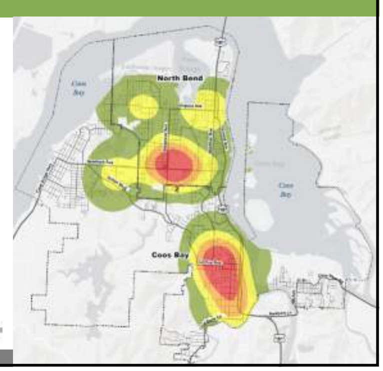


Transportation Inventory & Existing Conditions
Safety Evaluation

Five Year Bicycle Crash Pattern

Urban Growth Boundary (UGB)
Five Year Bicycle Crash Pattern Frequency
Low
Medium
High
Very High

ODOT Crash Analysis and Reporting Unit - January 1, 2012 and December 31, 2016



Future Deficiencies and Needs

Future Population

- Coos Bay and North Bend will see minor, but steady population growth by 2040.
  - Coos Bay: 1,026 increase
  - North Bend: 650 increase
- To predict future vehicular traffic volumes and impacts due to population growth, the Coos Bay/North Bend Travel Demand Model will be used.

Future Deficiencies and Needs
Pedestrian System

Pedestrian

- **Deficiencies:** Certain streets do not have adequate pedestrian facilities or connectivity options for pedestrians.
- **Need:** Expand the City's system of pedestrian facilities, with the objective of sidewalks or pedestrian pathways on all collectors and arterial streets.

Future Deficiencies and Needs
Pedestrian System

North Bend

- **Priority:** facilities that provide access to key community destinations.

Facility Name	Approximate Location
Priority	
Colorado Ave (one side)	Arthur St to Oak St
Oak St	Newmark St to 17th St
17th St	W. City Limits to Broadway St
Arthur St	Connecticut Ave to Colorado Ave
Sheridan Ave	Sherman Ave to SE of Sherman Ave
Connecticut Ave	Meade Ave to McPherson
Pony Creek Rd/Brussels St (one side)	Virginia Ave to Newmark St
Crowell Ln (one side)	Pony Creek Rd to Pacific Ave
Pacific Ave (one side)	Crowell Ln to 16th St
Newmark Ave (one side)	Sherman Ave to Broadway St
Newmark Ave	Sherman Ave to US 101

Future Deficiencies and Needs
Pedestrian System

North Bend

- **Secondary:** facilitates that provide less direct access to key community destinations and/or provide north-south and east-west routes where there is a gap in coverage.

Facility Name	Approximate Location
Secondary	
Colorado Ave (one side)	Oak St to Maple St
Oak St	17th St to Colorado Ave
17th St	Broadway St to Myrtle St
Arthur St (one side)	Connecticut Ave to Virginia Ave
Virginia Ave (one side)	Crocker St to Arthur St

Future Deficiencies and Needs
Pedestrian System

Coos Bay

- **Priority:** facilities that provide access to key community destinations.

Facility Name	Approximate Location
Priority	
Southwest Blvd	Libby Dr to Montana Ave
Shoneman-Morrison St	Harris Ave to Lakeshore Dr
Morrison St	Pacific Ave to Newmark Ave
Pacific Ave (one side)	Wasson St to Fillmore St
Pacific Ave	Fillmore St to Morrison St
17th St	Newmark Ave to Lakeshore Dr
17th St	East City Limits to Grant St
Newmark Ave	Ocean Blvd to LaClair St
Newmark Ave (one side)	East City Limits to LaClair St
Koosbay Blvd	10th St to 8th St
10th St (one side)	Teakwood Ave to Hemlock Ave
Koosbay Blvd (one side)	North City Limits to Vine St
Coos River Hwy	"H" St to Applewood
7th St	Hall Ave to Johnson Ave
7th St	Kruse Ave to Lockhard Ave
11th St	S. of Ferguson Ave to Ingersoll Ave
Lockhart	10th St to 4th St
Ingersoll Ave (one side)	10th St to 7th St
5th St	Johnson Ave to Lockhart Ave

Future Deficiencies and Needs
Pedestrian System

Coos Bay

- **Secondary:** facilitates that provide less direct access to key community destinations and/or provide north-south and east-west routes where there is a gap in coverage.

Facility Name	Approximate Location
Secondary	
Ocean Blvd (between)	Norman Ave to LaClair St
Ocean Blvd	West of Woodland to West of Woodland
Woodland Ave	North City Limits to Thompson Road
Woodland Ave	Thompson Rd to Ocean Blvd
4th St	Commercial Ave to Curtis Ave
2nd St	Anderson Ave to Golden Ave
Lockhart Ave	4th St to US 101
Front St	Lockhart Ave to US 101
4th St	Kruse Ave to Lockhart
Ingersoll	2nd St to Broadway Dr
Newmark St	Ocean Blvd to Wallace St
Wallace St	Ocean Blvd to Newmark Ave

Future Deficiencies and Needs
Bicycle System

Bicycle

- **Deficiencies:** Existing bicycle transportation network include few dedicated bicycle facilities, with minimal signage and markings throughout the street system.
- **Need:** Develop bicycle facilities that connect key community destinations and activity centers

Future Deficiencies and Needs
Bicycle System

North Bend

- **Priority:** facilities that provide access to key community destinations.
- **Secondary:** facilitates that provide less direct access to key community destinations and/or provide north-south and east-west routes where there is a gap in coverage.

Facility Name	Approximate Location
Priority	
Virginia Avenue	Ocean Blvd to Empire Ave
Broadway Avenue	US 101 to 7th St
Newmark Avenue	US 101 to 5th St; 7th St to Ocean Blvd
Sherman Avenue	US 101 to 7th St
7th Street	Commercial Ave to Lockhart Ave
Secondary	
Pony Creek Road	Newmark Ave to Virginia Ave
Virginia Avenue	Broadway Ave to City Limits
Broadway Avenue	Newmark Ave to City Limits
Lakeshore Drive	Fir St to City Limits
17th St	Fir St to Broadway Ave
Coos River Road	10th Ave to eastern City Limits

Bicycle Deficiencies and Needs
Bicycle System

Coos Bay

- **Priority:** facilities that provide access to key community destinations.

Facility Name	Location
Newmark Street	Ocean Blvd to Empire Ave
Commercial Avenue	US 101 to 7th St
Central Avenue	US 101 to 5th St; 7th St to Ocean Blvd
Anderson Avenue	US 101 to 7th St
7th Street	Commercial Ave to Lockhart Ave
10th Street	Commercial Ave to south of Ferguson Ave
Southwest Boulevard	Lockhart Ave to City Limits
Ocean Boulevard	Laclair St to Woodland Dr
Morrison Street	Pacific Ave to Newmark Ave
Pacific Avenue	Empire Blvd to Morrison St

Bicycle Deficiencies and Needs
Bicycle System

Coos Bay

- **Secondary:** facilitates that provide less direct access to key community destinations and/or provide north-south and east-west routes where there is a gap in coverage.

Facility Name	Location
US 101	Central Ave to Fir St
4th Street	Commercial Ave to Lockhart Ave
US 101/Newport Ln	Johnson Ave to City Limits
6th Avenue	US 101/Newport Ln to D St
D Street	2nd Ave to 6th Ave
Coos River Road	10th Ave to eastern City Limits
Woodland Drive	Ocean Blvd to City Limits
Lakeshore Drive	Taylor Ave to City Limits
Wasson Street	Taylor Ave to Newmark Ave

Bicycle Deficiencies and Needs
Bicycle System

Bicycle Deficiencies and Needs

Future Deficiencies and Needs
Transit System

Transit

- Coos County Area Transit (CCAT) provides good level of transit service in the area.
- As population growth occurs, transit deficiencies and needs are focused on enhancing existing service coverage and frequency, ensuring transit accessibility, and continuing coordination between CCAT and intercity transportation providers as their services evolve.

Future Deficiencies and Needs
Transit System

Route	Category of Need	Description
Bay Area Loop	Service Frequency	Add weekend service on Saturday and Sunday as funding allows for East and West loop routes.
Bay Area Loop	Service Frequency	Provide earlier morning and/or later evening service for East and West Loop routes. Past community outreach from Coordinated Human Services Plan identified this as a need for service sector employees, in particular, such as people with jobs at the The Mill and Three Rivers Casinos, Pony Village Mall, etc.
Coquille-Myrtle Point	Service Frequency	Consider restoring twice-weekly service from North Bend and Coos Bay to Coquille and Myrtle Point.
Lakeside-Hauser	Service Coverage	Consider restoring service to Winchester Bay and Reedsport in Douglass County via Lakeside/Hauser.
N/A	Service Coverage	Consider adding a third Bay Area Loop to serve heavily-trafficked areas in North Bend and Coos Bay.

Future Deficiencies and Needs
Transit System

Route	Category of Need	Description
N/A	Service Frequency	Consider supplementing existing transit service between Bandon and North Bend/Coos Bay which are currently served by the Coastal Express route operated by Curry Public Transit.
N/A	Service Frequency	Consider expanding dial-a-ride/demand response service to provide transportation options for seniors and mobility-limited residents to medical appointments and key community destinations.
N/A	Inter-Agency Coordination	Coordinate with Curry Public Transit, Pacific Crest, and other inter-city transportation providers to ensure ongoing alignment with CCAT schedules and stop locations in North Bend and Coos Bay.
N/A	Accessibility	Consider providing additional transit shelters at stops with higher ridership and near key community destinations.
N/A	Accessibility	Work with the Cities of North Bend and Coos Bay to guide strategic investments for improving access to bus stops.

Future Deficiencies and Needs
Traffic Impacts

Traffic

- Future projects that are funded that will impact the future roadway network:
- **Coos Bay**
  - US 101: Bunker Hill sidewalks and Flanagan signal (2018-2021)
  - US 101: Johnson Ave. Intersections (2018-2021)
- **North Bend**
  - OR 540: Broadway at Newmark realign (2018-2021)

Discussion

- Did we capture all the deficiencies and needs?
- Is there anything missing?

Funding Forecast

Federal Funding

- **Federal Highway Trust Fund:** Sourced by Federal gas tax ($.184 per gallon) and is distributed through Oregon's Surface Transportation Block Grant (STBG) program.
- **Surface Transportation Program (STP) Funds:** Flexible transportation funds, administered through ODOT.
- **Federal Enhancement Funds and Other Grants:** Funds from Federal programs that can be used for capital improvements, multimodal projects, safety, and historic preservation projects.

Funding Forecast

State Funding

- **State Highway Fund:** Comprised of motor vehicle taxes, drivers license fees, motor vehicle registration and title fees, and weight-mile tax.
  - Coos Bay: $1.05 million FY18
  - North Bend: $600,000 FY18
- **State Transportation Grants:** Competitive grants for a broad range of transportation activities, i.e. Safe Routes to School, Immediate Opportunity Fund, Oregon Parks and Rec Fund.
- **Transportation Growth Management (TGM) Grant:** Competitive funds to be used for studies related to managing growth and reducing single-occupant vehicle (SOV) travel.

Funding Forecast

Local Funding

- **Franchise Fees:** Fees collected from public utility and service providers that use public right-of-way.
  - Coos Bay: $2.1 million FY17
  - North Bend: $1.2 million FY17
- **Local Improvement Districts (LIDs):** Neighboring property owners working together to improve public facilities by paying over time through individual assessments.
  - Often used to complete local streets, sidewalks, business district improvements.

Funding Forecast

Local Funding

- **Local Fuel Tax:** $.01 to $.10 cents per gallon tax paid by the fuel distributors, to be used on local street and transportation maintenance.
  - In 2016 Coos Bay and North Bend defeated a local fuel tax measure.
- **Transportation System Development Charges (SDCs):** Fees collected from developers as new development occurs that will impact the transportation network.
  - Coos Bay and North Bend currently do not levy transportation SDCs.

Funding Forecast – Coos Bay

Key Findings:

- Two primary revenue sources: State Highway Fund and PacifiCorp franchise fees.
  - In FY17, Coos Bay received approximately $990,000 in State Highway Fund distributions and allocated $350,000 in collected franchise fees for street maintenance and improvements.
- Transportation revenues have not kept pace with operations, maintenance, and construction costs.
- $20 million dollars needed to bring City streets up to "good."
- Passage of HB17 will increase Coos Bay's State Highway Fund to more than $1.2 million in FY19.

Funding Forecast – North Bend

Key Findings:

- State Highway Fund primary revenue source.
  - In FY18, North Bend received approximately $620,000 in State Highway Fund distributions.
- Transportation revenues have not kept pace with operations, maintenance, and construction costs.
- $16.5 million dollars needed to bring City streets up to "very good."
- Passage of HB17 will increase North Bend's State Highway Fund to more than $700,000 in FY19.

Small Group Discussion

- Break into two discussion groups: one for North Bend and one for Coos Bay
  - Which needs should be prioritized given the goals and objectives of the TSPs and constrained funding levels? (20 mins)
  - Report back (10 mins)

You're Invited!

Attend the North Bend and Coos Bay **Transportation System Plan (TSP) Updates Open House** to learn about the plans, ask questions, and talk with staff. ***Light snacks will be provided.***

Open House #1
5:00-7:00 p.m., Wednesday, December 12
North Bend Public Library
1800 Sherman Ave., North Bend, OR

Representatives from the Cities of North Bend and Coos Bay will be available to share project updates and answer questions. Help shape the future transportation systems of North Bend and Coos Bay.

5:00 – 5:30 p.m. Staff presentation

5:30 – 7:00 p.m. Open workshop

About the TSPs

North Bend and Coos Bay's respective Transportation System Plans (TSPs) consider the needs of those travelling by foot, bike, car, and bus, as well as trucks, trains, and airplanes.

On **Wednesday, December 12**, the Cities of North Bend and Coos Bay will host an open house to gather feedback on the update to their TSPs. Your participation is essential to creating a plan that benefits all residents and visitors.

At the open house, you can:

- Learn about transportation issues
- Ask questions of the project team
- Provide feedback on TSP goals, transportation issues, and opportunities

Oregon Department of Transportation

Can't make the open house? Participate online!

You can still learn about the plan and provide feedback even if you can't attend the open house. Visit www.bayareatsps.com for more information.

¡Está Invitado!

Asista a la reunión abierta para recibir Información actualizada sobre el **Plan del Sistema de Transporte (TSP siglas en inglés) para North Bend y Coos Bay** y conocer los planes, hacer preguntas y hablar con el personal. ***Se proporcionarán refrigerios ligeros.***

Reunión Abierta #1
5:00-7:00 p.m., Miércoles Diciembre 12
Biblioteca Pública North Bend
1800 Sherman Ave., North Bend, OR

Representantes de las ciudades de North Bend y Coos Bay estarán disponibles para compartir información actualizada del proyecto y para contestar preguntas. Ayude a diseñar los sistemas futuros de transporte de North Bend y Coos Bay.

5:00 – 5:30 p.m. Presentación del Personal

5:30 – 7:00 p.m. Taller

Acerca de TSPs

Los planes del Sistema de Transporte (TSPs) de North Bend y Coos Bay respectivamente, toman en consideración las necesidades de aquellos que viajan a pie, en bicicleta, en automóvil y en autobús, así como en camiones, trenes y aviones.

El **Miércoles 12 de Diciembre,** las ciudades de North Bend y Coos Bay, tendrán una reunión abierta para recabar comentarios sobre la actualización de sus TSPs. Su participación es esencial para crear un plan que beneficie a todos los residentes y a los visitantes.

En la recepción abierta usted puede:

- Enterarse acerca de los problemas de transporte
- Hacerle preguntas al equipo del proyecto
- Proporcionar sus comentarios sobre las metas TPS, los problemas de transporte y las oportunidades.

Oregon Department of Transportation

¿No puede asistir a la reunión? Participe en línea!

Usted puede enterarse del plan y proporcionar sus comentarios, aun si no asiste a la reunión. Para más información visite www.bayareatsps.com

Coos Bay/North Bend Transportation System Plan Updates

Open House #1

December 12, 2018 5:00 PM – 7:00 PM

Welcome
Introduction

Agenda:

5:00 – 5:10: Welcome and Introductions

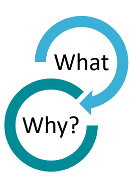
5:10 – 5:30: Project Background

5:30 – 7:00: Existing and Future Needs Interactive Workshop

Welcome
Introduction

- **Project Team:**
- **Planning Advisory Committee (PAC)**
  - Coos Bay representatives
  - North Bend representatives
  - County
  - Tribes
- **Residents of Coos Bay and North Bend**

Transportation System Plan 101
Introduction



- Community's multi-modal blueprint for their transportation system
  - Element of a local comprehensive plan
  - Establishes a system of transportation facilities and services to meet state, regional, and local needs
  - Sets priorities for available and anticipated funding in the planning period
- Consideration for tourism impacts (seasonal peaks)

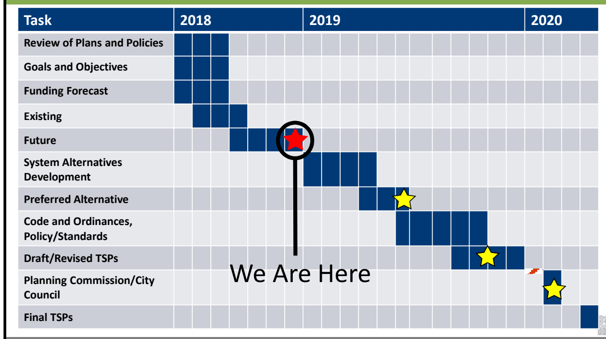
TSP Updates
Introduction

- North Bend and Coos Bay TSPs were last updated in 2004
- Current update process is being conducted together to reflect the communities' shared history and ongoing connections
- TSP updates will reflect the communities' vision and priorities for the transportation system over the next 20 years

Process will result in separate TSPs for each community

Project Background

Project Background
Schedule

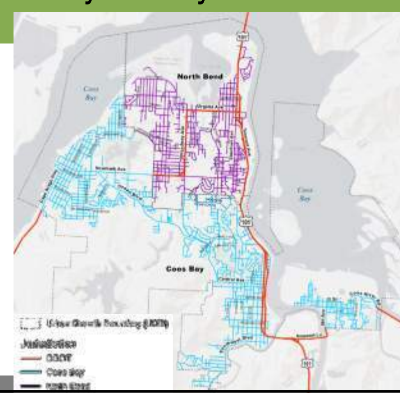


Project Background
TSP Goals

- Eight goals have been developed to reflect North Bend and Coos Bay's visions for the TSP update
- Includes goals about:
  - Safety and security for all transportation modes
  - Responsible stewardship of financial resources
  - Support for existing industry and encouragement of economic development
  - Health of residents and users and impacts to the environment

Project Background
North Bend & Coos Bay Street System

North Bend & Coos Bay
- Street system
- Pedestrian system
- Bicycle system
- Public Transportation system
- Rail, Air, Water, Pipeline system



Project Background
North Bend & Coos Bay Street System

Coos Bay and North Bend have 5 roadway classifications within their Transportation Systems:

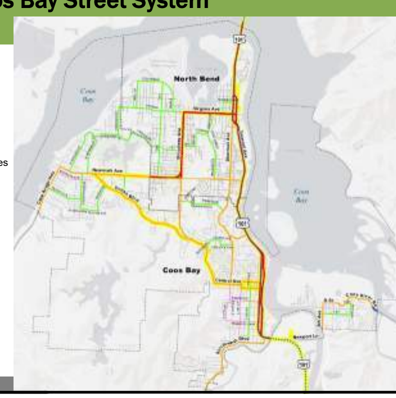
- **Principal Arterials:** Freeways and state highways
- **Arterials:** Interconnect and support principle arterials
- **Collectors:** Provide access and circulation within residential and commercial/industrial areas
- **Neighborhood Routes (Coos Bay):** Longer local streets that provide connectivity to collectors or arterials
- **Local Streets:** Provide access to immediate adjacent land

Project Background
North Bend & Coos Bay Street System

Urban Growth Boundary (UGB)
National Highway System Facilities
Oregon Scenic Byway

ODOT Functional Classification
Principal Arterial
Minor Arterial

City Functional Classification
Arterial
Collector
Neighborhood
Local



Project Background
Transportation Inventory

TSP update focuses on arterial and collector street intersections.

- North Bend – 26 study intersections.
- Coos Bay – 28 study intersections.

Project Background
Safety Evaluation

North Bend:

- Virginia Avenue at US 101 South
- Washington Avenue at US 101 South/Sherman Avenue
- Pony Creek Road at Crowell Lane
- Broadway Street at Newmark Avenue
- US 101 at Newmark Street

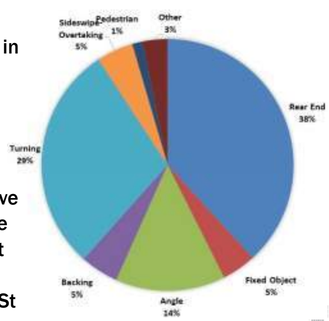
Coos Bay:

- Thompson Avenue at Woodland Drive
- Koosbay Boulevard at 10th Street
- 7th Street at Ingersoll Avenue
- Johnson Avenue at US 101 North
- 6th Avenue at D Street / Coos River Highway

Project Background
Safety Evaluation

Crash History

- 1,744 documented crashes in North Bend and Coos Bay between 2012-2016.
  - 49% in North Bend
  - 51% in Coos Bay
- 5 fatalities
  - US 101, south Johnson Ave
  - Virginia Ave at Meade Ave
  - Virginia Ave at Oak Street
  - US 101 at Florida Ave
  - Ocean Boulevard at 19th St



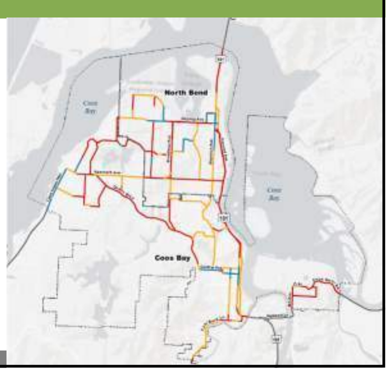
Project Background
Traffic Operations

- North Bend
  - Limited east-west connectivity between Broadway Avenue and Sherman Avenue
  - Local cut-through traffic use Meade instead of US 101 to access Virginia Ave
- Coos Bay
  - The Bunker Hill area and Newport Lane/Slough bridge are the only connection to east Coos Bay
- Intersections where drivers experience delays during the PM Peak Hour include:
  - Broadway St at Newmark Ave
  - 7th St at Anderson Ave
  - Hall Ave at US 101 North
  - Johnson Ave at US 101 South

Project Background
Coos Bay & North Bend Pedestrian Network

Pedestrian Level of Traffic Stress

Urban Growth Boundary (UGB)
Pedestrian Level of Traffic Stress (PLTS)
PLTS 1
PLTS 2
PLTS 3
PLTS 4



Project Background
Coos Bay & North Bend Bicycle Network

Bicycle Level of Traffic Stress

Urban Growth Boundary (UGB)
Bicycle Level of Traffic Stress
BLTS 1
BLTS 2
BLTS 3
BLTS 4

Project Background
Future Deficiencies and Needs

Future Population

- Coos Bay and North Bend will see minor, but steady population growth by 2040.
  - Coos Bay: 1,026 increase
  - North Bend: 650 increase
- To predict future vehicular traffic volumes and impacts due to population growth, project team will use the Coos Bay/North Bend Travel Demand Model.

Project Background
Traffic Operations – Deficiencies and Needs

- Similar to existing conditions
- Growth in traffic could increase congestion, specifically along US 101 and Newmark
- Two study area intersections expected to exceed mobility targets in the future:
  - US 101 at Newmark St
  - Newmark Ave at Morrison St — side street delays

Project Background
Pedestrian System – Deficiencies and Needs

Pedestrian

- **Deficiencies:** Certain streets do not have adequate pedestrian facilities or connectivity options for pedestrians.
- **Need:** Expand the City's system of pedestrian facilities, with the objective of sidewalks or pedestrian pathways on all collectors and arterial streets.

Project Background
Bicycle System – Deficiencies and Needs

Bicycle

- **Deficiencies:** Existing bicycle transportation network include few dedicated bicycle facilities, with minimal signage and markings throughout the street system.
- **Need:** Develop bicycle facilities that connect key community destinations and activity centers

Existing Conditions and Needs Workshop

Existing Conditions and Needs Workshop

Station 1:

- Discuss the TSP updates with project staff and learn more about the work to date

Station 2:

- Identify transportation needs and issues on a map
- Indicate the most important needs to address

Additional project info at bayareatsps.com

MEETING SUMMARY

Coos Bay / North Bend
Transportation System Plan Updates
Public Advisory Committee (PAC) Meeting #2
Coos Bay Public Library

June 4, 2019

1:00 PM – 4:00 PM

Attendees:

Angela Rogge, David Evans and Associates, Inc. (Consultant Project Manager)
Brooke Jordan, Jacobs (Consultant)
Jim Hossley, City of Coos Bay
Derek Windham, City of North Bend
Jeff Stump, Confederated Tribes of Coos, Lower Umpqua and Siuslaw
Diana Schab, North Bend Planning Commission
Randy Dixon, City of Coos Bay
Dick Leshley, Chamber Transportation Committee/Yellow Cab
Jenna Marmon, ODOT
Matt Jensen, Coquille Indian Tribe
John Whitty, Coos Bay

Introductions/Background

Angela, Consultant Project Manager, began the meeting with a round of self-introductions of Public Advisory Committee (PAC) members. Angela reviewed the meeting agenda and objectives. The primary objective of the second PAC meeting is to review and solicit feedback on all draft alternatives. Feedback from the PAC will help prioritize projects and comments will be incorporated into the Preferred Alternatives Memo (TM #9).

Process/Schedule

The project is in the development of alternatives phase and we are a little over half-way through the project. In the coming months, the project team will work on the following tasks:

- Draft Preferred Alternatives Selection Technical Memorandum (TM #9) incorporating PAC feedback
- Draft Transportation Improvement Finance Programs (TM #10)
- Draft Policies and Standards Memorandums (TM #11)
- Draft Code Provisions & Ordinance Amendments Memorandums (TM #12)
- Draft TSPs
- TSP Adoption

PAC #2 Feedback and Participation

Overall, PAC members emphasized a need for road maintenance in the form of pothole repair, improvement to the City-wide pedestrian and bicycle network for both communities, and a strong desire to link improvements with tourism and community amenities. Below is a compiled list of comments received for both North Bend and Coos Bay on various alternatives presented in TM #8. Projects without additional comments are listed to emphasize the PAC's interest in them being considered. Attendees were also asked to vote for projects by placing dot stickers on a large printed project list. The votes will help the project team understand which projects are most important to PAC members. A total of approximately 135 votes were tallied.

North Bend Flip Chart Notes:

- **North Bend Priorities**
    - Pedestrian improvements (Newmark Ave/St, connecting the boardwalk) are important. Community members desire a more comfortable environment rather than a busy traffic roadway.
    - Community desire to build upon the Boardwalk by improving waterfront access and promoting a more active pedestrian space.
    - Prioritize projects with multimodal benefits, city-wide:
        - Citywide trails, wayfinding signage with walk times to highlight trails, recreation, and other attractions.
    - Maintenance is a key priority as congestion increases, as well as transit investments and ITS strategies to improve traffic flow.
    - Interest in considering an app or coordination effort with the tourism office to manage parking for visitors.
    - Pedestrian and bicycle connectivity is important to the community – and individuals' health and willingness to choose active transportation options.
    - Consider pedestrian crossing improvements on US 101 between Florida and the bridge to reduce pedestrian/driver conflicts.

Draft Alternatives:

- **North Bend Pedestrian Projects**
    - Newmark Ave by Bi-Mart – from west side of city limits to Broadway Ave
        - Would like to consolidate access/driveways
        - It can be difficult to turn out of shopping center onto Broadway
    - NB-19: Pedestrian crossing at US 101 north of Florida Ave
        - Locate at visitor center
        - Connect to Simpson Park
    - NB-20: Connect Boardwalks
        - Community supports this project but there likely needs to be private funding
    - Consider adding a pedestrian project along Broadway between Virginia and Newmark (currently a bicycle project).

- **North Bend Bicycle Projects**
    - NB-26: Newmark Bicycle Facility
        - Consider narrowing travel lanes and widening sidewalks where parallel route is challenging – on Virginia, Broadway, and Newmark.
    - NB-28: Oregon Coast Bike Route
        - Keep main system the same and considering adding "scenic" or "supply" alternatives on US 101
        - Looking at a campaign targeted at bikers/drivers to get them into cities/downtowns.

- **North Bend Transit Projects**
  - Extend service hours for transit

- **North Bend Safety Projects**
  - NB-34: Virginia Ave/Meade Ave traffic calming
    - Not willing to implement turn restrictions here yet
    - Intent is to cut back on the cut-through traffic
  - NB-38: Washington Ave/US 101 Pedestrian Crossing Enhancements
    - Not enough ROW for median
    - New/enhanced signage most likely option
  - NB-27: Newmark St Lane Reconfiguration (add bicycle facilities)

- **North Bend Roadway Projects**
  - NB-45: Extending local street connectivity across Pony Creek Estuary -- Not feasible
  - NB-46: Pavement Maintenance
    - Add more specific language to address potholes
    - Explain cause of potholes/importance of maintenance
    - This is critical. City will have a hard time justifying other projects to public until this is addressed.
  - Include CCAT's transit master plan and new pedestrian crossing at Broadway Ave/ Maine Ave

<u>Coos Bay Flip Chart Notes:</u>

- **Coos Bay Priorities**
  - All projects for Coos Bay are worthwhile in the opinion of PAC members.
  - Maintenance and repair of the street pavement and transportation network is a key priority among Coos Bay members.
  - Transit is important – service, shelters, transit hub.
  - Pedestrian projects around the hospital and on Woodland are of interest to the community.
  - There is a desire to increase access to North Bend Medical Center because access options are not widely known by public.
  - Consider improving pedestrian safety and access with RRFB/pedestrian activated crossings and additional lighting at crossings/intersections.
  - The community is generally pleased with City of Coos Bay's effort on Empire Blvd, Newmark Ave, and Ocean Blvd – repaving, sidewalks, drainage, gutter.
    - Support what the City of Coos Bay is interested in prioritizing.
    - Consider innovation for wayfinding.
  - There is a desire to develop more multimodal projects throughout the City and connect the Boardwalk with another trail
  - Concentrate on connection between transportation and economic development

Draft Alternatives:

- **Coos Bay Pedestrian Projects**
  - CB-11: Koosbay Blvd Traffic Calming

        - Low priority for City to improve Koosbay Blvd
        - Providing a parallel route via 14th may be a more appropriate option to provide bicycle facilities
    - Wayfinding should be included on trails and other informative material
        - Partner with Parks and Recreation, Travel Oregon, and other groups
    - Prioritize CB-16 Hospital Way sidewalk
    - Consider adding a crossing a Curtis Ave and US 101
    - Railroad crossings present some crossing challenges – some locations are private, but some are public.
    - CB-29: US 101 Southern Bicycle lanes:
        - What is the timeline for the Slough Bridge for ODOT? Connectivity across the bridge?
            - The Oregon Coast Bike Route project is looking at barriers and the McCollough Bridge is one
    - Newport Ln/Isthmus Slough Bridge:
        - Include language about widening specifically to include bicycles and pedestrians
    - Look at Hall Ave as safety concern for bike/ped/vehicle interactions

- **Coos Bay Transit Projects**
    - Bus pull outs
        - Would likely require removing parking or additional right-of-way

- **Coos Bay Safety Projects**
    - CB-38: Ocean Blvd/19th St Access Management
        - Improve channelization
    - CB-39: Thompson Ave/Woodland Dr Safety Enhancements
        - Could be related to sight distance. When in westbound right-turn lane, drivers can't see well.
        - Project could be as simple as removing the westbound right-turn bay and making the movement a shared thru/right.

- **Coos Bay Roadway Projects**
    - CB-46: Newmark Ave/Ocean Blvd Realignment
        - Could start by shortening up pedestrian crossing distance
    - CB-51: S Front St Street Upgrade
        - Upgrade to facilitate connections. Currently classified as an arterials but is a gravel road near US 101.
    - CB-52: Pavement Maintenance
        - Add more specific language to address potholes
        - Explain cause of potholes/importance of maintenance
        - This is critical. City will have a hard time justifying other projects to public until this is addressed.
    - CB-53: Newport Ln/Isthmus Slough Bridge Widening
        - Include note that this would be to accommodate bicycles and pedestrians.

North Bend Draft Alternatives Project List

Alternatives that impact and improve pedestrian, bicycle, transit, and safety received the most votes from PAC members. Projects that received the most votes included building out a pedestrian oriented environment, improving conditions for cyclists, expanding transit service, maintaining the current roadway network, and ensuring the system is safe for all road users.

In North Bend, connecting the boardwalks to create an uninterrupted five-mile boardwalk was voted as the most important pedestrian project. Among bicycle projects, people thought that providing bicycle facilities along Broadway Ave was most important, while adding additional transit service, extending service hours, and adding shelters and stops near community destinations were all identified equally as top priority transit projects.

Improving transportation safety by repaving and restriping along Newmark St is of top priority among safety projects, while maintaining/fixing/strengthening the existing pavement system was selected as the most important roadway project.

Recognizing freight as an important element within the City's transportation system, PAC participants indicated that making modifications to accommodate high heavy vehicle volumes along US 101 and Florida Ave is the most important rail/truck freight project. Lastly, direct commercial passenger service between Southwest Regional Airport and northwest hubs (Portland) was voted as the most important project among the marine/airport projects.

ID	Location	Description	PAC Votes
	PEDESTRIAN		
NB-9	Sheridan Ave: Florida Ave to Bayview Ave	Add sidewalk on Sheridan Ave and upgrade RR crossing to connect Simpson Heights to downtown	
NB-10	16th St/17th: Broadway Ave to Oak St	Add sidewalk to provide connectivity to schools east of Broadway Ave via 16th St	
NB-11	Oak St: Colorado Ave to Newmark Ave	Establish Neighborhood Greenway (traffic calming measures and wayfinding) to improve pedestrian environment	
NB-12	Pacific St: Crowell Ln to 16th St	Sidewalk on west side and enhanced crossings (visibility)	2
NB-13	Virginia Ave: US 101 to Broadway Ave	Identify opportunities for access consolidation (with redevelopment/change of use); traffic calming (landscaping, street furniture)	
NB-14	Newmark Ave: Broadway Ave to West City Limits	Access consolidation and medians	2
NB-15	Newmark St: US 101 to Sherman Ave	Half street improvement Sherman Ave to US 101 to provide bicycle and pedestrian facilities	3
NB-16	North Bend Senior Center	Marked crossing of Colorado Avenue and sidewalks from transit stop to Activity Center	
NB-17	Boynton Park	Marked crossing of Sherman Avenue at Exchange Street transit stop	1
NB-18	Airport Heights Market	Improve crossing for pedestrians	1
NB-19	US 101 north of Florida Ave	Identify preferred location for pedestrian crossing of US 101	2

ID	Location	Description	PAC Votes
NB-20	North Bend, Mill Casino and Coos Bay Boardwalks	Connect the area boardwalks to create a five-mile uninterrupted boardwalk.	4
BICYCLE			
NB-21	City Wide	Create a Bicycle Transportation Plan that connects Arterials, Collectors (neighborhood calming, parallel routes, signing, formal striping)	2
NB-22	Broadway Ave (Cape Arago Hwy)	Provide bicycle facilities through coordination with the OCBR (Priority Virginia Ave to 16th St)	3
NB-23	Maple Leaf/Colorado	Stripe bicycle facilities (with repaving project)	1
NB-24	Sheridan Ave: Florida Ave to Bayview Ave	Provide bicycle facilities through signing/striping	2
NB-25	City Wide	Establish Neighborhood Greenway (traffic calming measures and wayfinding): Harrison, Pony Creek, Crowell, 16th, Myrtle, 17th, Oak, Lakeshore, Virginia Ave	1
NB-26	Newmark Ave: Broadway Ave to West City Limits	Provide bicycle facilities (OCBR) through lane diet or parallel routes/wayfinding. Parallel route options: Oak St, 16th/17th, Myrtle St, Commercial St.	2
NB-27	Newmark St: Sherman Ave to Broadway Ave	Provide bicycle facilities restriping (with repaving project)	1
NB-28	US 101	Provide bicycle facilities (OCBR priority) through parallel routes	1
TRANSIT			
NB-29	Bay Area Loop	Add weekend service	2
NB-30	All Transit Routes	Extend service hours	2
NB-31	US 101 & Sherman Ave	Increase frequency & add additional route	2
NB-32	All Transit Routes	Add shelters and stops near community destinations	2
NB-33	All Transit Routes	Improve bicycle and ped connectivity to stops	1
SAFETY CONCERN			
NB-34	Virginia Ave at Meade Ave	Traffic calming along Meade and Connecticut: Narrow up street feeling (bulb outs, speed humps, formalize on street parking) -- Mimic aspects of Downtown Streetscape.	1
NB-35	Newmark Ave at Oak St	Enhance visibility of signal and pavement paint/crossings -- recent improvements may improve conditions.	
NB-36	US 101 at Florida Ave	Monitor crash history in future -- recent improvements may improve conditions.	1
NB-37	US 101 South at Virginia Ave	Monitor crash history in future -- recent improvements may improve conditions.	
NB-38	Washington Ave at US 101 South/Sherman Ave	Explore options to provide safer pedestrian crossing of highway (curb bulb outs, RRFB, median refuge, lighting, signage). Pedestrian signage is most viable option.	1

ID	Location	Description	PAC Votes
NB-39	Pony Creek Rd at Crowell Ln	Tighten radius of western curbs, pavement markings, formalize striping on Pony Creek Rd and consider all-way stop control	2
NB-40	US 101 at Newmark St	Monitor crash history in future -- recent timing improvements may improve conditions.	1
NB-41	US 101 near California Ave	Monitor crash history in future -- recent improvements may improve conditions.	
NB-42	OR 540 near State St	Explore enhanced striping/channelization/overhead signage to improve sight distance and driver expectancy.	2
NB-43	Newmark St near Brussels St	Improve visibility by repave and restripe	2
NB-44	Newmark St at Sherman Ave	Improve visibility by repave and restripe	2
ROADWAY			
NB-45	Between Broadway Ave and Sherman Ave	Identify future connections in functional classification plan of Clark St, State St, Wall St, Lombard St for local street connectivity	1
NB-46	City wide	Maintain/fix/strengthen existing pavement system, account for maintenance in funding plan. Critical: Arterials and collectors with fair or worse pavement conditions	3
RAIL/TRUCK FREIGHT			
NB-47	Coos Bay Rail Line	Make improvements to bridges, spurs, tracks, transload sidings, at grade crossings and tunnels as identified in the OFP to create or improve multimodal business opportunities	1
NB-48	US 101 at Lewis Street/Mill Casino	Address Highway Over-Dimension Load Pinch Point by raising signal head	1
NB-49	California Ave between Sherman Ave, US 101 and the Dock Facility/North Bend Boardwalk	Address poor pavement condition (2015) data, widen roadway, improve safety at rail crossing, improve turning movements for one-way portion per OFP	
NB-50	US 101 at Florida Ave	Make modifications to accommodate high heavy vehicle volumes per OFP	2
MARINE/AIRPORT			
NB-51	City Dock: Virginia Ave/Harbor Ave	Construct a new city dock at the eastern terminus of Virginia Ave (per *Downtown Waterfront District Master Plan*)	
NB-52	Charleston boatyard	Improvements that include the Marine Ways	1
NB-53	Oregon Gateway	North Spit improvements to accommodate a multi-modal marine facility to handle bulk cargo, containers and an LNG export facility	1
NB-54	Coos Bay	Federal channel widening and deepening to accommodate larger ships and ensure safer operations	1
NB-55	Charleston boatyard	Dock replacements	1
NB-56	Airport	Add direct commercial passenger service between Southwest Regional Airport and northwest hubs (Portland)	2

ID	Location	Description	PAC Votes
NB-57	Airport	Provide transit service to airport if air passenger service increases	

Coos Bay Draft Alternatives Project List

Alternatives that impact and improve transit, bicycle, pedestrian, safety, and street network received the most votes from PAC members. Projects that received the most votes included supporting CCAT in their pursuit of building a regional transit hub, building pedestrian safety infrastructure, developing a City Bicycle Transportation Plan, maintain current roadway pavement condition, and consider rail/freight treatments where necessary.

In Coos Bay, connecting the boardwalks to create an uninterrupted five-mile boardwalk was voted as the most important pedestrian project. Among bicycle projects, people thought that implementing a road diet on Ocean Blvd and developing a City-wide bicycle transportation plan that connects arterials and collectors were equally important to their transportation future.

Meeting participants indicated that supporting CCAT in their efforts to develop a regional transit hub for the Bay Area was the most important transit project, and at 7th St at Ingersoll Ave, curb bump outs were identified as the most important safety project.

Maintaining/fixing/strengthening the existing pavement system (at Central Ave, Southwest Blvd, Koosbay Blvd, Blanco Ave, Radar Rd, Schoneman St, LaClair St, F St, Butler Rd, Juniper Ave and Fulton Ave) was selected as the most important roadway project.

The highest ranked freight project included, making improvements to bridges, spurs, tracks, transload sidings, at grade crossings and tunnels to create or improve multimodal business opportunities, along with an at-grade rail active warning device at Market Ave at Front St. Lastly, direct commercial passenger service between Southwest Regional Airport and northwest hubs (Portland), and making improvements that include the Marine Ways at the Charleston Boatyard were voted as the most important project among the marine/airport projects.

ID	Location	Description	PAC Votes
	Pedestrian		
CB-10	Morrison St: Newmark Ave to Pacific Ave	Upgrade sidewalks on both sides	
CB-11	Sherman Ave/Koos Bay Blvd: North City Limits to US 101	Infill sidewalk to provide pedestrian access on at least one side of street. Establish Neighborhood Greenway (traffic calming measures and wayfinding)	1
CB-12	Mingus Park	Wayfinding signs to park	1
CB-13	Newmark Ave: Empire Blvd to Fir St	Improve PLTS score through access consolidation, median islands, mid-block ped crossing	1
CB-14	Woodland Dr: North City Limits to Ocean Blvd	Add sidewalks on Woodland Dr, marked ped crossing (access to Hospital/Medical Park)	3
CB-15	Thompson Road near Bay Area Hospital	Add marked crossing and mid-block crossing of Thompson Road to access hospital transit stop	1
CB-16	Hospital Way near Medical Center (Immediate Care Clinic)	Add sidewalk to connect to medical facilities	2
CB-17	Ocean Blvd at Wallace St (Three Rivers Casino)	Construct sidewalk along Wallace St and add RRFB crossing of Ocean Blvd at Wallace St to connect to transit	1

ID	Location	Description	PAC Votes
CB-18	Coos Bay Boardwalk (near Anderson Ave and Market Ave)	Construct at-grade multimodal improvements (pavement)	
CB-19	US 101: Commercial Ave and Alder Ave	Improved bike/pedestrian crossings across US 101 to be consistent with Front Street Action Plan	1
CB-20	Ocean Blvd at LcClair St	Construct a pedestrian crossing with RRFB and median refuge	2
CB-21	Front St near Coos History Museum and Maritime Collection	North-south pedestrian pathway along the eastern side of Front St	
CB-22	North Bend, Mill Casino and Coos Bay Boardwalks	Connect the area boardwalks to create a five-mile uninterrupted boardwalk.	3
		BICYCLE	
CB-23	City Wide	City create a Bicycle Transportation Plan that connects Arterials, Collectors (neighborhood calming, parallel routes, signing, formal striping)	3
CB-24	Ocean Blvd	Extend road diet west from Woodland Dr to Newmark Blvd and provide mid-block ped crossing at Wallace St and LaClair St	3
CB-25	Newmark Ave: Ackerman Ave to Cammann St	Restripe road to provide bicycle facilities (road diet)	1
CB-26	Woodland Dr: North City Limits to Ocean Blvd	Add bicycle facilities (add sharrows if ROW acquisition not feasible)	2
CB-27	Newport Ln	Improve bicycle LTS through enhanced signage & wayfinding to connect Coos Bay UGB	1
CB-28	D St/Coos River Rd: 6th Ave to East City Limits	Widen paved shoulder and provide enhanced signage & wayfinding	
CB-29	US 101: South couplet to Coalbank Slough Bridge	Restripe to accommodate bicycle lane (options for additional signing/striping/ramp at bridge)	
CB-30	US 101	Provide bicycle lanes (OCBR priority) through road widening or lane diet.	
		TRANSIT	
CB-31	Bay Area Loop	Add weekend service	1
CB-32	All Transit Routes	Extend service hours	2
CB-33	US 101 & Ocean Blvd Routes	Increase frequency & add additional route	1
CB-34	All Transit Routes	Add shelters and stops near community destinations	1
CB-35	All Transit Routes	Improve bicycle and ped connectivity to stops	2
CB-36	Bay Area	Support CCAT in their pursuit of regional transit hub	4
CB-37	Coos Bay	Work with CCAT to identify locations for transit pull outs on busier streets	

ID	Location	Description	PAC Votes
		SAFETY CONCERN	
CB-38	Ocean Blvd at 19th St	Enhanced channelization of side street to improve safety	3
CB-39	Thompson Ave at Woodland Dr	Evaluate safety improvements: Signalization or advanced warning signage	3
CB-40	Koosbay Blvd at 10th St	Realign intersection to "T" to improve visibility and safety	2
CB-41	US 101: near Kruse Ave	Access management/channelization	
CB-42	S 10th St: near Central Ave	Curb bump outs (consistent through downtown)	
CB-43	Ingersoll St: near S 2nd St	Curb bump outs (consistent through downtown)	
CB-44	7th St at Ingersoll Ave	Curb bump outs	4
		ROADWAY	
CB-45	Schoneman Ave: Lakeshore Dr to Newmark Ave	Upgrade to collector standard (storm/curb/gutter/sidewalk) and connect to trail system in John Topits Park	2
CB-46	Newmark Ave at Ocean Blvd	Realign Ocean Blvd at Newmark Ave to "T", shorten ped crossing, improve connectivity to Transit	2
CB-47	Newmark Ave at Morrison St	Operations expected to exceed City mobility target (LOS F) but low volumes do not warrant traffic control. Monitor.	
CB-48	7th St at Anderson Ave	Channelization/access management of local streets	1
CB-49	Hall Ave at US 101 N	Monitor traffic congestion	1
CB-50	US 101 South: Johnson Ave to Kruse Ave	Provide landscaping or pedestrian buffer to reduce large, underutilized pavement area on east side of US 101 South.	
CB-51	US 101 South: Kruse Ave to S Front St	Upgrade S Front St to its arterial standard cross-section and limit access to right-in/right out at Kruse Ave/S 1st St	
CB-52	City wide	Maintain/fix/strengthen existing pavement system, account for maintenance in funding plan. Critical: Central Ave, Southwest Blvd, Koosbay Blvd, Blanco Ave, Radar Rd, Schoneman St, LaClair St, F St, Butler Rd, Juniper Ave and Fulton Ave	4
CB-53	Newport Ln/Isthmus Slough Bridge	Widen structure to accommodate all modes	
		RAIL/TRUCK FREIGHT	
CB-54	Coos Bay Rail Line	Make improvements to bridges, spurs, tracks, transload sidings, at grade crossings and tunnels as identified in the OFP to create or improve multimodal business opportunities	2
CB-55	Market Ave at Front St	Install at-grade rail active warning device	2
CB-56	US 101 at US plywood-Central Dock Rd	Install at-grade rail active warning device	1

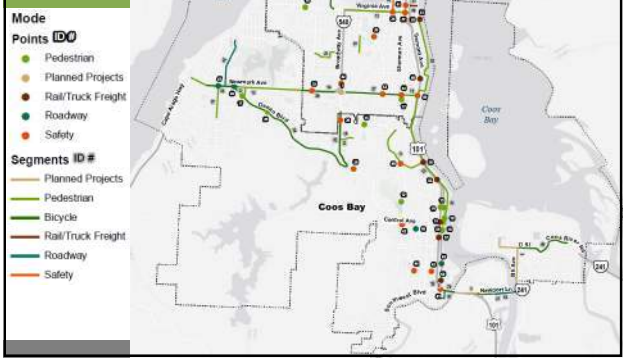
ID	Location	Description	PAC Votes
CB-57	US 101 at Curtis Ave	Address Highway Over-Dimension Load Pinch Point by raising signal head	1
CB-58	US 101 at Koosbay Blvd	Make modifications to accommodate high heavy vehicle volumes per OFP	
CB-59	US 101 South at Commercial Ave	Make modifications to accommodate high heavy vehicle volumes per OFP	
CB-60	US 101 North at Johnson Ave	Make modifications to accommodate high heavy vehicle volumes per OFP	
		MARINE/AIRPORT	
CB-61	Charleston boatyard	Improvements that include the Marine Ways	2
CB-62	Oregon Gateway	North Spit improvements to accommodate a multi-modal marine facility to handle bulk cargo, containers and an LNG export facility	1
CB-63	Coos Bay	Federal channel widening and deepening to accommodate larger ships and ensure safer operations	
CB-64	Charleston boatyard	Dock replacements	1
CB-65	Airport	Add direct commercial passenger service between Southwest Regional Airport and northwest hubs (Portland)	2
CB-66	Airport	Provide transit service to airport if air passenger service increases	

Next Steps

The next phase of the project is to refine the draft alternatives list to a preferred alternative. The next PAC meeting is scheduled for late fall.

Remember, all materials will be posted to the project website: http://www.bayareatsps.com

Draft System Alternatives



North Bend Planned Projects

ID	Project Name	Location	Cost Estimate	Primary Funding Source	Source
NB-1	STIP: Broadway St/Newmark Ave Intersection Realignment	Broadway St at Newmark Ave	N/A	ODOT	STIP
	• Upgrade signal poles and hardware • Convert the 4-Lane roadway to 3-lane roadway on Newmark St/Ave with center turn lane • Dual eastbound left-turn lanes • Bicycle lanes • Curb extensions and advance warning signs to improve pedestrian safety • Access control in SW quadrant				

North Bend Plans

ID	Project Name	Location	Cost Estimate	Primary Funding Source
NB-2	North Bend Trail Map	City Wide	N/A	North Bend
	Develop formalized trail map and continue to connect sidewalk system to trails or shared-use paths			
NB-3	Safe Routes to School Plan	North Bend Schools	N/A	North Bend
	Develop a Safe Routes to School Project List (Assess all connections to school, draft plan to connect safe routes to school)			
NB-4	Functional Classification Updates	City Wide	N/A	North Bend
	Change "Collector" term into "Major Collector" and the "Neighborhood Route" into "Minor Collector" to align with State Classification			
NB-5	Colorado Ave Functional Class.	Colorado Ave: Arthur St to West End	N/A	North Bend
	Update functional classification from "Local" to "Major Collector"			
NB-6	Arthur St Functional Class.	Arthur St	N/A	North Bend
	Update functional classification from collector to "Minor Collector"			
NB-7	Capital Improvement Plan	City Wide	N/A	North Bend
	Establish Capital Improvement Plan (CIP) and plan for annual/bi-annual update			
NB-8	Evacuation Routes	City Wide	N/A	North Bend
	Include evacuation routes in TSP (DOGAMI Beat the Wave)			

North Bend Pedestrian Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
NB-9	Sheridan Ave Pedestrian Improvements	Sheridan Ave: Florida Ave to Bayview Ave	$1.4M	North Bend
	Add sidewalk on Sheridan Ave and upgrade RR crossing to connect Simpson Heights to downtown			
NB-10	16^{th} St/17^{th} St Sidewalks	16^{th} St/17^{th} St: Broadway Ave to Oak St	$2.1M	North Bend
	Add sidewalk to provide connectivity to schools east of Broadway Ave via 16th St			
NB-11	Oak St Neighborhood Greenway	Oak St: Colorado Ave to Newmark Ave	TBD	North Bend
	Establish Neighborhood Greenway (traffic calming measures and wayfinding) to improve pedestrian environment			
NB-12	Pacific St Pedestrian Improvements	Pacific St: Crowell Ln to 16th St	$730k	North Bend
	Sidewalk on west side and enhanced crossings (visibility)			
NB-13	Virginia Ave Pedestrian Improvements	Virginia Ave: US 101 to Broadway Ave	TBD	ODOT
	Identify opportunities for access consolidation (with redevelopment/change of use); traffic calming (landscaping, street furniture)			
NB-14	Newmark Ave Access Management	Newmark Ave: Broadway Ave to West City Limits	$175k	ODOT
	Consolidate driveway accesses and construct a median on Broadway Ave			

North Bend Pedestrian Alternatives (cont'd)

ID	Project Name	Location	Cost Estimate	Primary Funding Source
NB-15	Newmark St Half Street Improvement	Newmark St: US 101 to Sherman Ave	$1M	North Bend
	Half street improvement on Newmark St from Sherman Ave to US 101 to provide bicycle (westbound bicycle lane) and pedestrian facilities (sidewalk, curb and gutter)			
NB-16	North Bend Senior Activity Center Pedestrian Improvements	Colorado Avenue near North Bend Senior Activity Center	$375k	North Bend
	Marked crossing of Colorado Avenue and sidewalks from transit stop to North Bend Senior Activity Center			
NB-17	Boynton Park Pedestrian Crossing	Sherman Ave/Exchange St Transit Stop	$65k	North Bend
	Marked crossing of Sherman Avenue at Exchange Street transit stop			
NB-18	Airport Heights Market Pedestrian Crossing	Lincoln St/Virginia Ave	TBD	North Bend
	Improve pedestrian crossing visibility of Virginia Ave at Lincoln St			
NB-19	North US 101 Pedestrian Crossing	US 101 north of Florida Ave	TBD	ODOT
	Identify preferred location for pedestrian crossing of US 101 north of Florida Ave			
NB-20	Connect the Boardwalks	North Bend, Mill Casino and Coos Bay Boardwalks	TBD	North Bend; Coos Bay; Private
	Connect the area boardwalks to create a five mile uninterrupted boardwalk.			

North Bend Bicycle Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
NB-21	Bicycle Transportation Plan	City Wide	TBD	North Bend
	Create a Bicycle Transportation Plan that connects Arterials, Collectors (neighborhood calming, parallel routes, signing, formal striping)			
NB-22	Broadway Ave Bicycle Facilities	Broadway Ave (Cape Arago Hwy)	TBD	North Bend
	Provide bicycle facilities through coordination with the Oregon Coast Bicycle Route (Priority Virginia Ave to 16th St)			
NB-23	NW North Bend Bicycle Facilities	Maple Leaf St/Colorado Ave	$1.6M	North Bend
	Stripe bicycle facilities (with repaving project) between Virginia Ave and the western terminus of Colorado Ave			
NB-24	Sheridan Ave Bicycle Facilities	Sheridan Ave: Florida Ave to Bayview Ave	$25k	North Bend
	Provide bicycle facilities through signing/striping (Could be paired with NB-9 for more substantial improvements)			
NB-25	Neighborhood Greenway Plan	Varies	TBD	North Bend
	Establish Neighborhood Greenway (traffic calming measures and wayfinding): Harrison, Pony Creek, Crowell, 16th, Myrtle, 17th, Oak, Lakeshore, Virginia Ave			
NB-26	Newmark Ave Bicycle Facilities	Newmark Ave (Cape Arago Hwy)	$32k	ODOT
	Provide bicycle facilities (OCBR) through lane diet or parallel routes/wayfinding. Parallel route options: Oak St, 16^{th}/17^{th}, Myrtle St, Commercial St.			
NB-27	Newmark St Road Diet	Newmark St: Sherman Ave to Broadway Ave	$6.1M	North Bend
	Provide bicycle facilities through restriping (with repaving project)			
NB-28	US 101 Bicycle Facilities	Varies	TBD	ODOT
	Provide bicycle facilities (OCBR priority) through parallel routes			

North Bend Transit Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
NB-29	Bay Area Loop Weekend Service	Bay Area Loop	N/A	CCAT
	Add weekend service			
NB-30	Transit Service Hours	All Transit Routes	N/A	CCAT
	Extend service hours			
NB-31	Transit Frequency	All routes and US 101/Sherman Ave	N/A	CCAT
	Increase frequency & add additional route along US 101 and Sherman Ave			
NB-32	Shelters and Stops	Community Destinations	N/A	CCAT
	Add shelters and stops near community destinations			
NB-33	Bike/Ped Transit Connectivity	All Transit Stops	N/A	CCAT
	Improve bicycle and pedestrian connectivity to transit stops			

North Bend Safety Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
NB-34	Virginia Ave/Meade Ave Traffic Calming	Virginia Ave at Meade Ave	TBD	North Bend (Urban Renewal)
	Traffic calming along Meade and Connecticut: Narrow up street feeling (bulb outs, speed humps, formalize on street parking) -- Mimic aspects of Downtown Streetscape.			
NB-35	Newmark Ave/Oak St Visibility	Newmark Ave at Oak St	N/A	ODOT
	Enhance visibility of signal and pavement paint/crossings -- recent improvements may improve conditions.			
NB-36	US 101/Florida Ave Safety Improvements	US 101 at Florida Ave	N/A	ODOT
	Monitor crash history in future -- recent improvements may improve conditions. *Note: 2015 pedestrian fatality was north of Florida on US 101.*			
NB-37	US 101 South/Virginia Ave Safety Improvements	US 101 South at Virginia Ave	N/A	ODOT
	Monitor crash history in future -- recent improvements may improve conditions.			
NB-38	Washington Ave/US 101 Pedestrian Crossing Enhancements	Washington Ave at US 101 South/Sherman Ave	\$5-30k	ODOT
	Explore options to provide safer pedestrian crossing of highway (curb bulb outs, RRFB, median refuge, lighting, signage). Pedestrian signage is most viable option.			
NB-39	Pony Creek Rd/Crowell Ln Intersection Modification	Pony Creek Rd at Crowell Ln	\$50k	North Bend
	Tighten radius of western curbs, pavement markings, formalize striping on Pony Creek Rd and consider all-way stop control.			

North Bend Safety Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
NB-40	US 101/Newmark St Safety Improvements	US 101 at Newmark St	N/A	ODOT
	Monitor crash history in future -- recent timing improvements may improve conditions.			
NB-41	US 101/California Safety Enhancements	US 101 at California Ave	N/A	ODOT
	Monitor crash history in future -- recent improvements may improve conditions.			
NB-42	State St Visibility	Broadway Ave (OR 540) at State St	N/A	ODOT
	Explore enhanced striping/channelization/overhead signage to improve sight distance and driver expectancy.			
NB-43	Newmark St/Brussels St Visibility	Newmark St at Brussels St	\$850k	North Bend
	Improve visibility by repaving and restriping.			
NB-44	Newmark St/Sherman Ave Visibility	Newmark St at Sherman Ave	\$850k	North Bend
	Improve visibility by repaving and restriping.			

North Bend Roadway Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
NB-45	Local Street Connectivity	Varies	TBD	North Bend
	Identify future connections in functional classification plan of Clark St, State St, Wall St, Lombard St for local street connectivity **Pony Creek Estuary Plan preserves space.**			
NB-46	Pavement Maintenance	City Wide	\$16.5M (2014 \$)	North Bend
	Maintain/fix/strengthen existing pavement system, account for maintenance in funding plan. Critical: Arterials and collectors with fair or worse pavement conditions			

North Bend Rail/Truck Freight Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
NB-47	Infrastructure improvements	Coos Bay Rail Line	N/A	ODOT; Coos Bay Rail
	Make improvements to bridges, spurs, tracks, transload sidings, at grade crossings and tunnels as identified in the OFP to create or improve multimodal business opportunities.			
NB-48	Lewis Street/Mill Casino Signal Head	US 101 at Lewis Street/Mill Casino	\$250k	ODOT
	Address Highway Over-Dimension Load Pinch Point by raising signal head			
NB-49	California Ave Upgrades	California Ave between Sherman Ave, US 101 and the Dock Facility/North Bend Boardwalk	\$2M	ODOT; North Bend (pavement)
	Address poor pavement condition (2015) data, widen roadway, improve safety at rail crossing, improve turning movements for one-way portion per OFP			
NB-50	US 101 at Florida Ave Pavement Upgrade	US 101 at Florida Ave	N/A	ODOT
	Make modifications to accommodate high heavy vehicle volumes per OFP. **Information provided by ODOT suggested this is no longer a deficiency.**			

North Bend Marine/Airport Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
NB-51	North Bend City Dock	City Dock: Virginia Ave/Harbor Ave	TBD	North Bend
	Construct a new city dock at the eastern terminus of Virginia Ave (per Downtown Waterfront District Master Plan)			
NB-52	Marine Ways Enhancements	Charleston boatyard	TBD	Port of Coos Bay
	Improvements that include the Marine Ways			
NB-53	North Spit Improvements	North Spit (Oregon Gateway)	TBD	Port of Coos Bay
	North Spit improvements to accommodate a multi-modal marine facility to handle bulk cargo, containers and an LNG export facility			
NB-54	Channel Widening/Deepening	Coos Bay	TBD	Port of Coos Bay
	Federal channel widening and deepening to accommodate larger ships and ensure safer operations			
NB-55	Charleston Boatyard Dock Replacements	Charleston Boatyard	TBD	Port of Coos Bay
	Dock replacements			
NB-56	Expanded Passenger Service	Airport	TBD	Coos County Airport District
	Add direct commercial passenger service between Southwest Regional Airport and northwest hubs (Portland)			
NB-57	Airport Transit Service	Airport	TBD	CCAT
	Provide transit service to airport if air passenger service increases			

Coos Bay Planned Projects

ID	Project Name	Location	Cost Estimate	Primary Funding Source	Source
CB-1	Millicoma Middle School Safe Routes to School	D St/Coos River Hwy: 6th Ave to Ross Inlet Rd	$2M grant	Safe Routes to School	SRTS
	Add sidewalks to both sides of roadway (safe routes to school).				
CB-2	Johnson Ave Signal Timing	Johnson Ave at US 101 North	N/A	ODOT	STIP
	STIP project planned to adjust timing (signal phasing and coordination)				
CB-3	Bunker Hill Sidewalks and Flanagan Signal	Newport Ln: Flanagan Rd to Mullen Rd	N/A	ODOT	STIP
	STIP project planned to provide sidewalk from Flanagan Rd to Mullen Rd and provide static pedestrian crossings.				

Coos Bay Plans

ID	Project Name	Location	Cost Estimate	Primary Funding Source
CB-4	Coos Bay Trail Map	City Wide	N/A	Coos Bay
	Develop formalized trail map and continue to connect sidewalk system to trails or shared-use paths			
CB-5	Safe Routes to School Plan	Coos Bay Schools	N/A	Coos Bay
	Develop a Safe Routes to School Project List (Assess all connections to school, draft plan to connect safe routes to school)			
CB-6	Functional Classification Updates	City Wide	N/A	Coos Bay
	Change "Collector" term into "Major Collector" and the "Neighborhood Route" into "Minor Collector" to align with State Classification			
CB-7	Koosbay Blvd Functional Class.	Koosbay Blvd: 10th St to US 101	N/A	Coos Bay
	Update functional classifications - Classification between 10th Street and US 101 (arterial) differs from the State's classification as an urban collector.			
CB-8	Evacuation Routes	City Wide	N/A	Coos Bay
	Include evacuation routes in TSP (DOGAMI Beat the Wave)			
CB-9	Front St Traffic Safety Plan	Front St	N/A	Coos Bay
	Traffic Safety Plan in support of future development of Front St			

Coos Bay Pedestrian Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
CB-10	Morrison St Sidewalks	Morrison St: Newmark Ave to Pacific Ave	$2.5M	Coos Bay
	Provide sidewalks on both sides of Morrison St (pedestrian connectivity near Madison Elementary School)			
CB-11	Koosbay Blvd Traffic Calming	Koos Bay Blvd: North City Limits to US 101	TBD	Coos Bay
	Infill sidewalk to provide pedestrian access on at least one side of street. Establish Neighborhood Greenway (traffic calming measures and wayfinding).			
CB-12	Mingus Park Wayfinding	Mingus Park	$20-50k	Coos Bay
	Wayfinding signs to park			
CB-13	Newmark Ave Pedestrian Improvements	Newmark Ave: Empire Blvd to Fir St	TBD	Coos Bay
	Improve pedestrian comfort (PLTS score) through access consolidation, median islands, mid-block ped crossing			
CB-14	Woodland Dr Pedestrian Improvements	Woodland Dr: North City Limits to Ocean Blvd	$3.2M	Coos Bay
	Add sidewalks on Woodland Dr and a marked pedestrian crossing to access to Hospital/Medical Park.			
CB-15	Thompson Rd Pedestrian Crossing	Thompson Road near Bay Area Hospital	$50k	Coos Bay
	Add marked crossing and mid-block crossing of Thompson Road to access hospital transit stop.			
CB-16	Hospital Way Sidewalk	Hospital Way near Medical Center (Immediate Care Clinic)	$560k	Coos Bay
	Add sidewalk on north side of Hospital Way to connect to medical facilities.			

Coos Bay Pedestrian Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
CB-17	Wallace St Pedestrian Improvements	Wallace St at Ocean Blvd	$400k	Coos Bay
	Construct sidewalk along Wallace St and add RRFB crossing of Ocean Blvd at Wallace St to connect to transit.			
CB-18	Coos Bay Boardwalk RR Crossing Pedestrian Improvements	Coos Bay Boardwalk (near Anderson Ave and Market Ave)	$500k	Coos Bay; Coos Bay Rail
	Construct at-grade multimodal improvements (pavement)			
CB-19	US 101 Downtown Pedestrian Crossings	US 101: Commercial Ave and Alder Ave	$100k	ODOT
	Improved bike/pedestrian crossings across US 101 to be consistent with Front Street Action Plan			
CB-20	LaClair St Pedestrian Crossing	Ocean Blvd at LaClair St	$200k	Coos Bay
	Construct a pedestrian crossing of Ocean Blvd at LaClair St with RRFB and median refuge.			
CB-21	Front Street Multi-Use Path	Front St near Coos History Museum and Maritime Collection	N/A	Coos Bay; Private
	North-south pedestrian pathway along the eastern side of Front St			
CB-22	Connect the Boardwalks	North Bend, Mill Casino and Coos Bay Boardwalks	TBD	North Bend; Coos Bay; Private
	Connect the area boardwalks to create a five mile uninterrupted boardwalk.			

Coos Bay Bicycle Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
CB-23	Bicycle Transportation Plan	City Wide	TBD	Coos Bay
	Create a Bicycle Transportation Plan that connects Arterials, Collectors (neighborhood calming, parallel routes, signing, formal striping)			
CB-24	Ocean Blvd Road Diet (Phase II)	Ocean Blvd: Newmark Blvd to Woodland Dr	$115-300k	Coos Bay
	Extend road diet west from Woodland Dr to Newmark Blvd and provide mid-block ped crossing at Wallace St and LaClair St.			
CB-25	Newmark Ave Road Diet	Newmark Ave: Ackerman Ave to Cammann St	$25k	Coos Bay
	Restripe road from 5-lanes to 3-lanes to provide bicycle facilities on Newmark Ave.			
CB-26	Woodland Dr Bicycle Facilities	Woodland Dr: North City Limits to Ocean Blvd	$40k	Coos Bay
	Add bicycle facilities to Woodland Dr (add sharrows if ROW acquisition not feasible).			
CB-27	Newport Ln Bicycle Signage/Wayfinding	Newport Ln Between Coos Bay UGB	TBD	Coos County
	Improve bicycle comfort (BLTS) through enhanced signage & wayfinding to connect Coos Bay UGB.			
CB-28	D St/Coos River Rd Shoulder Widening	D St/Coos River Rd: 6th Ave to East City Limits	$690k	Coos Bay
	Widen paved shoulder and provide enhanced signage & wayfinding.			
CB-29	US 101 Southern Bicycle Lanes	US 101: South couplet to Coalbank Slough Bridge	$20-75k	ODOT
	Restripe to accommodate bicycle lane (options for additional signing/striping/ramp at bridge)			
CB-30	US 101 Bicycle Facilities	Varies	TBD	ODOT
	Provide bicycle facilities (OCBR priority) through parallel routes			

Coos Bay Transit Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
CB-31	Bay Area Loop Weekend Service	Bay Area Loop	N/A	CCAT
	Add weekend service			
CB-32	Transit Service Hours	All Transit Routes	N/A	CCAT
	Extend service hours			
CB-33	Transit Frequency	All routes and US 101/Ocean Blvd	N/A	CCAT
	Increase frequency & add additional route along US 101 and Ocean Blvd			
CB-34	Shelters and Stops	Community Destinations	N/A	CCAT
	Add shelters and stops near community destinations			
CB-35	Bike/Ped Transit Connectivity	All Transit Stops	N/A	CCAT
	Improve bicycle and pedestrian connectivity to transit stops			
CB-36	Regional Transit Hub	Bay Area	N/A	CCAT
	Support CCAT in their pursuit of a regional transit hub.			
CB-37	Bike/Ped Transit Connectivity	TBD	N/A	CCAT
	Work with CCAT to identify locations for transit pull outs on busier streets.			

Coos Bay Safety Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
CB-38	Ocean Blvd/19th St Access Management	Ocean Blvd at 19th St	TBD	Coos Bay
	Enhanced channelization of side street to improve safety.			
CB-39	Thompson Ave/Woodland Dr Safety Enhancements	Thompson Ave at Woodland Dr	$300k	Coos Bay
	Evaluate safety improvements: Signalization or advanced warning signage			
CB-40	Koosbay Blvd/10th St Realignment	Koosbay Blvd at 10th St	TBD	Coos Bay
	Realign intersection to "T" to improve visibility and safety.			
CB-41	US 101/Kruse Ave Access Management	US 101: near Kruse Ave	$100k	ODOT
	Limit access into 1st St from Kruse and upgrade S Front Street and W Lockart Ave to standard.			
CB-42	S 10th St Curb Extensions	S 10th St: near Central Ave	$40k	Coos Bay
	Curb bump outs (consistent through downtown)			
CB-43	Ingersoll St Curb Extensions	Ingersoll St: near S 2nd St	$40k	Coos Bay
	Curb bump outs (consistent through downtown)			
CB-44	7th St Curb Extensions	7th St at Ingersoll Ave	$40k	Coos Bay
	Curb bump outs at 7th St/Ingersoll Ave.			

Coos Bay Roadway Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
CB-45	Schoneman Ave Street Upgrade	Schoneman Ave: Lakeshore Dr to Newmark Ave	$1.4M	Coos Bay
	Upgrade to collector standard (storm/curb/gutter/sidewalk) and connect to trail system in John Topits Park			
CB-46	Newmark Ave/Ocean Blvd Realignment	Newmark Ave at Ocean Blvd	TBD	Coos Bay
	Realign Ocean Blvd at Newmark Ave to "T", shorten ped crossing, improve connectivity to Transit			
CB-47	Newmark Ave/Morrison St Upgrades	Newmark Ave at Morrison St	N/A	Coos Bay
	Operations expected to exceed City mobility target (LOS F) but low volumes do not warrant traffic control. No alternative identified; continue to monitor intersection as volumes do not warrant traffic control			
CB-48	7th St/Anderson Ave Access Management	7th St at Anderson Ave	TBD	Coos Bay
	Channelization/access management of local streets.			
CB-49	Hall Ave/US 101 N Upgrades	Hall Ave at US 101 N	N/A	Coos Bay
	No alternative identified; continue to monitor intersection as expected to meet ODOT mobility targets.			
CB-50	South Coos Bay Pavement	US 101 South: Johnson Ave to Kruse Ave	$25k	ODOT; Coos Bay
	Provide landscaping or pedestrian buffer to reduce large, underutilized pavement area on east side of US 101 Southbound.			
CB-51	S Front St Street Upgrade	US 101 South: Kruse Ave to S Front St	$1-2M	Coos Bay
	Upgrade S Front St to its arterial standard cross-section and limit access to right-in/right out at Kruse Ave/S 1st St.			

Coos Bay Roadway Alternatives (cont'd)

ID	Project Name	Location	Cost Estimate	Primary Funding Source
CB-52	Pavement Maintenance	City wide	$66M (2015 $)	Coos Bay
	Maintain/fix/strengthen existing pavement system, account for maintenance in funding plan. Critical: Central Ave, Southwest Blvd, Koosbay Blvd, Blanco Ave, Radar Rd, Schoneman St, LaClair St, F St, Butler Rd, Juniper Ave and Fulton Ave			
CB-53	Newport Ln/Isthmus Slough Bridge Widening	Newport Ln/Isthmus Slough Bridge	N/A	ODOT
	Replace Newport Ln/Isthmus Slough Bridge with modernized structure. Include connections for			

Coos Bay Rail/Truck Freight Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
CB-54	Infrastructure improvements	Coos Bay Rail Line	N/A	ODOT; Coos Bay Rail
	Make improvements to bridges, spurs, tracks, transload sidings, at grade crossings and tunnels as identified in the OFP to create or improve multimodal business opportunities.			
CB-55	Market Ave/Front St RR Crossing Upgrade	Market Ave at Front St	See CB-18	Coos Bay Rail
	Install at-grade rail active warning device			
CB-56	Market Ave/Front St RR Crossing Upgrade	US 101 at US plywood-Central Dock Rd	$500k	Coos Bay Rail
	Install at-grade rail active warning device			
CB-57	US 101/Curtis Ave Signal Head Upgrade	US 101 at Curtis Ave	$50-100k	ODOT
	Address Highway Over-Dimension Load Pinch Point by raising signal head			
CB-58	US 101/Koosbay Blvd Upgrades	US 101 at Koosbay Blvd	TBD	ODOT
	Make modifications to accommodate high heavy vehicle volumes per OFP			
CB-59	US 101/Commercial Ave Upgrades	US 101 South at Commercial Ave	TBD	ODOT
	Make modifications to accommodate high heavy vehicle volumes per OFP			
CB-60	US 101 North/Johnson Ave Upgrades	US 101 North at Johnson Ave	TBD	ODOT
	Make modifications to accommodate high heavy vehicle volumes per OFP			

Coos Bay Marine/Airport Alternatives

ID	Project Name	Location	Cost Estimate	Primary Funding Source
CB-61	Marine Ways Enhancements	Charleston boatyard	TBD	Port of Coos Bay
	Improvements that include the Marine Ways			
CB-62	North Spit Improvements	North Spit (Oregon Gateway)	TBD	Port of Coos Bay
	North Spit improvements to accommodate a multi-modal marine facility to handle bulk cargo, containers and an LNG export facility			
CB-63	Channel Widening/Deepening	Coos Bay	TBD	Port of Coos Bay
	Federal channel widening and deepening to accommodate larger ships and ensure safer operations			
CB-64	Charleston Boatyard Dock Replacements	Charleston Boatyard	TBD	Port of Coos Bay
	Dock replacements			
CB-65	Expanded Passenger Service	Airport	TBD	Coos County Airport District
	Add direct commercial passenger service between Southwest Regional Airport and northwest hubs (Portland)			
CB-66	Expanded Passenger Service	Airport	TBD	Coos County Airport District
	Add direct commercial passenger service between Southwest Regional Airport and northwest hubs (Portland)			

MEETING SUMMARY

Coos Bay / North Bend
Transportation System Plan Updates
Public Advisory Committee (PAC) Meeting #3
Coos Bay Council Chambers

January 23, 2020

1:00 PM – 4:00 PM

Attendees:

Angela Rogge, David Evans and Associates, Inc.
Jim Hossley, City of Coos Bay
Carolyn Johnson, City of Coos Bay
Chelsea Schnabel, City of North Bend
Derek Windham, City of North Bend
Virginia Elandt, ODOT
Diana Schab, North Bend Planning Commission
Glen Pederson, ODOT
Jenna Marmon, ODOT

Introductions/Background

The purpose of the meeting was to share the preferred project lists and solicit feedback for inclusion in the Draft TSPs.

North Bend

- Reviewed planned **Safe Routes to School Project**, likely design features, and location: on Broadway near Maine Ave and 14th St
- **Virginia Avenue/Marion Avenue Pedestrian Crossing:** Presented potential design features for a ODOT approved pedestrian crossing of Virginia Ave at Marion Ave (near Safeway)
    - Would provide median island refuge in the center turn-lane on the west leg of the intersection.
    - Design should consider freight/delivery trucks that turn at this intersections
    - In the project sheets and TSP, want to make sure to capture the “need” of pedestrian crossings of Virginia between Broadway and Pony Village
- **Broadway Avenue Lane Reconfiguration:** The project team took a closer look at project NB-14b (Cape Arago Highway Bicycle Lanes – Broadway Ave section) to understand possible cross-sections and the benefits/impacts
    - ODOT is planning on ADA and pavement projects on Broadway and would like to explore the opportunity to combine those projects with a lane reconfiguration on Broadway Ave between Virginia and Newmark
    - Initial Analysis results:

        - An analysis was conducted using available traffic data. The initial analysis indicates that operations are acceptable for a 3-lane section.
        - Further detailed analysis is recommended at intersections along this corridor to determine intersection delay and queuing.
        - An increase in travel time of approximately 5 seconds is expected through the corridor.
        - ***Further analysis is needed to understand impacts to side streets and appropriate lane configurations at Broadway/Virginia and near Broadway/Newmark***
    - General Benefits of Lane Reconfigurations
        - Improve safety/reduced conflicts
        - Reduce speed differentials and outlier speeds
        - Improved business access and exposure
        - Entering and exiting business approaches is enhanced by reducing the number of turning conflict points
        - Eliminate passing within the business district
        - Store fronts/signs are more easily seen
        - Slower speeds=safer environment
        - Eliminate "double threat" crossing
        - Allow for curb extensions/bulb-outs
        - Provide buffer for sidewalks
        - Provide width to designate bike lanes
    - Tradeoffs of Lane Reconfigurations
        - Additional delay entering the highway at stop controlled intersections
        - Additional travel time for vehicles traveling through the corridor (estimated at approximately 5 seconds)
        - Increase in time spent following other vehicles
        - Seasonal peaks (holidays)
        - Potential diversion to local streets?
    - Discussion:
        - Most people heading north on Broadway get into the right lane anyway (left lane is underutilized)
        - Would need to better understand impacts during seasonal fluctuations and at the Virginia/Broadway intersection
        - Could we look at a 4-lane cross-section?
- **Bicycle Route map:**
    - Updated Tiers to Tier 1: Separated (physical buffer or barrier), Tier II: Striped (your standard bicycle lane), Tier III: Neighborhood Route (traffic calming and sharrrows)
    - Could we include Union on the bike route map
- **Pedestrian Projects:**
    - Add in a project for sidewalks on north side of Newmark St where currently missing
    - Add a pedestrian project that compliments the bicycle project CB-18 (D St/Coos River Rd Shoulder Widening)
- **Bicycle Projects:**
    - Preferred project is not a cycle track, but a buffered bike lane.
    - To facilitate the connect the boardwalk project, code amendment needed to reflect an access easement

  - Revisit potential for lane restriping or lane reconfiguration on Newmark Ave (OR 540) to provide bicycle lanes. With ODOT's new Blueprint for Urban Design (BUD) guidelines, it may be feasible.
- **Roadway Classification:** Look to updating Union Ave to a collector instead of local road
- **All other modal plans:** No concerns discussed
- **Revised funding plan:**
  - Through the planning horizon, North Bend will have approximately **$8 million to $10 million** available for capital projects.
  - Implementation is to focus on relieving maintenance and rehabilitation backlog before new investment in larger capital projects

Coos Bay

- Reviewed planned **Safe Routes to School Project**, expected to go to bid early spring.
- **Front Street Plan/Blueprint:** This project will be the next step to realizing components of the larger Front Street Action Plan.
- **Development pre-applications:** City continues to see new development pre-applications for:
  - Hollering Place
  - Housing development off of Ocean Blvd near Lindy Ln
  - TSP should document the future development potential near the Hollering Place and how that could impact safety on Empire/Newmark
- **Bicycle Route map:**
  - Updated Tiers to Tier 1: Separated (physical buffer or barrier), Tier II: Striped (your standard bicycle lane), Tier III: Neighborhood Route (traffic calming and sharrrows)
  - We need to note the potential for a bike facility on Front Street – nothing specific but want it included
- **Pedestrian Projects:**
  - Any crossings of US 101 would need Statewide traffic engineer approval (to ensure appropriate design features/location)
  - Add in a project for sidewalks on north side of Newmark St where currently missing
- **Bicycle Projects:**
  - Need to update CB-12 (Front Street Multi-Use Path) with proper extents: the funded portion is only from Greenwood to Hemlock
  - To facilitate the connect the boardwalk project, code amendment needed to reflect an access easement
  - Coos Bay would like shared-use path typical sections/standards
  - CB-15 (Newmark Road Diet) should be extended east to the City limits. Historically, this was the plan.
- **All other modal plans:** No concerns discussed
- **Revised funding plan:**
  - Through the planning horizon, Coos Bay will have approximately **$32 million to $34 million** available for capital projects.
  - Implementation is to focus on relieving maintenance and rehabilitation backlog before new investment in larger capital projects

Both Cities: Draft TSPs should have a project list that captures how it impacts/benefits EACH MODE **AND** whether it has safety benefits. Suggest a table format that includes columns for each mode and a check mark to indicate impact.

Next Steps

The next phase of the project is to solidify the funding/implementation memo (Tech Memo 10) and draft the TSPs. Both cities have voiced concern over the contract end date of April 30, 2020. The consultant team will work with ODOT in the coming days to determine an appropriate schedule for carrying the plans through adoption for each city. There are currently no more consultant-led PAC meetings scheduled at this time.

Remember, all materials will be posted to the project website: http://www.bayareatsps.com

Coos Bay/North Bend Transportation System Plan Updates

Public Advisory Committee #3

January 23, 2020 1:00 PM – 4:00 PM

Welcome
Introduction

→ North Bend 1:15 – 2:30 PM → Coos Bay 2:45 – 4:00 PM

Status Update

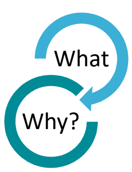
Preferred Alternatives

Code & Policy

Funding

Implementation

Transportation System Plan 101
Introduction

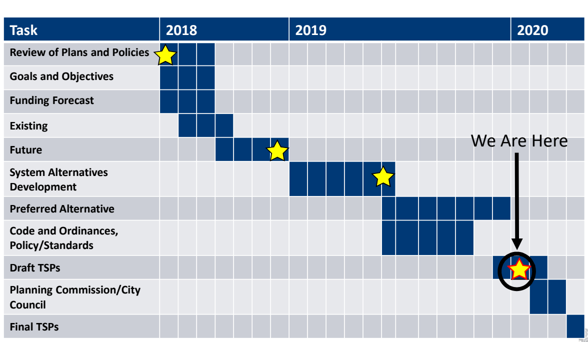


- Community's multi-modal blueprint for their transportation system
  - Guides all modes of our transportation system
  - Establishes a system of transportation facilities and services to meet the needs over the next 20 years
  - Sets priorities for available and anticipated funding in the planning period

Process will result in separate TSPs for each community

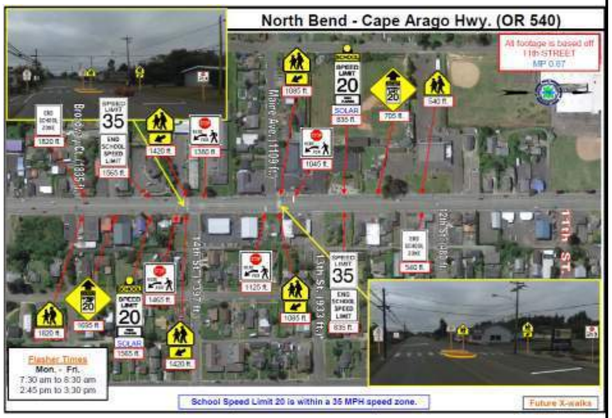
NORTH BEND

Schedule



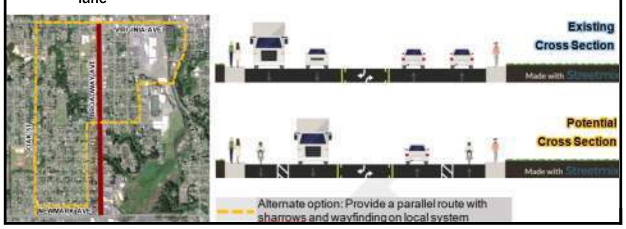
Ongoing Work

- Safe Routes to School Project
- Virginia Avenue Pedestrian Project
- Broadway Lane Reconfiguration (Project NB 14b in TSP list)
- North Bend City Code amendments



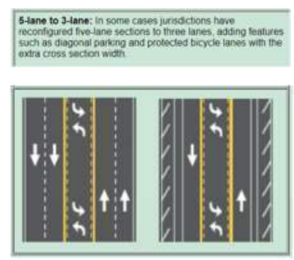
Broadway (OR 540) Potential Improvements

- Existing Conditions
  - AADT: 11,400 - 15,200 vehicles (2018)
  - Projected AADT: 11,700 – 15,500 vehicles (2038)
  - Heavy Vehicles: ~3%
  - Roadway Width: ~60 feet; 5-lane
- Crashes (2009-2018)
  - 3 severe injury, 14 moderate injury, 60 minor injury, 76 property damage only
- **Purpose:** Provide designated bicycle facilities on the Oregon Coast Bike Route (OCBR) on Broadway Avenue
- **Description:** Repurpose the available pavement to add bicycle lanes with a striped buffer between vehicular travel and bicycle travel.



ROAD RECONFIGURATIONS - THE BASICS

- Repurposing existing space on a roadway to achieve goals (i.e. improving safety, access, economic development, etc.) through restriping



BENEFITS OF ROAD RECONFIGURATIONS

Safety & Operational Benefits—Driving

- **Improve safety/reduced conflicts**
  - Approximate 19 to 47% reduction in total crashes are expected following a conversion from a 4-lane/5-lane section to a 3-lane section
  - Fewer conflict points for vehicles entering, exiting, or crossing the highway
- **Reduce speed differentials and outlier speeds**
  - Average speed expected to drop by <1 mph along Broadway
  - Consistent traffic flows for all vehicles

BENEFITS OF ROAD RECONFIGURATIONS

Community/Economic Development Benefits

- Business Access and Exposure
- Entering and exiting business approaches is enhanced by reducing the number of turning conflict points
- Eliminate passing within the business district
- Store fronts/signs are more easily seen

Walking and Biking: Safety & Operational Benefits

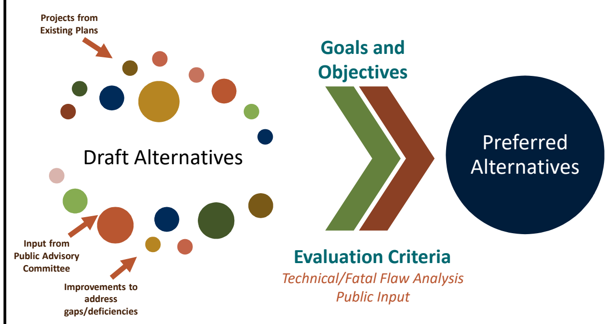
- Slower speeds=safer environment
- Eliminate “double threat” crossing
- Allow for curb extensions/bulb-outs
- Provide buffer for sidewalks
- Provide width to designate bike lanes

TRADE-OFFS OF ROAD RECONFIGURATIONS

Delay

- Additional delay entering the highway at stop controlled intersections
- Additional travel time for vehicles traveling through the corridor (estimated at approximately 5 seconds)
- Increase in time spent following other vehicles
- Seasonal peaks (holidays)

Project Development and Evaluation



North Bend Bicycle Routes

- **Type I Bike Routes (Separated):**
  - Physical barrier or extra striped buffer
  - In North Bend, primarily multi-use paths
- **Type II Bike Routes (Striped):**
  - Facilitate bicycle circulation within North Bend
  - Primarily on collector and arterial streets.
- **Type III Bike Routes (Neighborhood):**
  - Located mostly on residential and collector streets with low traffic volumes and speeds
  - Low-stress for individuals of all bicycling confidence levels
  - Bicycle-specific infrastructure could consist of painted markings and wayfinding signage
- **Oregon Coast Bike Route**
  - Coos Bay supports the update of the OCBR and supports providing local connections to the route

North Bend Safe Routes to School

- Sidewalk infill, enhanced street crossings, and dedicated bicycle facilities create safer routes between neighborhoods and schools
- To highlight the one-mile radius of a school, a boundary will be added to the modal plan maps in the TSP
  - Helps identify projects/locations for grant funding

North Bend Pedestrian Projects

NB ID	Project Name	Primary Funding Source
1	Sheridan Ave Pedestrian Improvements	North Bend
2	16th St/17th St Sidewalks	North Bend
3	Oak St Neighborhood Greenway	North Bend
4	North Bend High School Pedestrian Crossings	North Bend
5	Virginia Ave Pedestrian Improvements a. Access consolidation b. Pedestrian crossing between Pony Village and Broadway	ODOT
6	Newmark Ave Access Management	ODOT
7	Newmark St Half Street Improvement	North Bend
8	North Bend Senior Activity Center Pedestrian Improvements	North Bend
9	Boynton Park Pedestrian Crossing	North Bend
10	North US 101 Pedestrian Crossing	ODOT
11	Connect the Boardwalks	North Bend; Coos Bay; Private
12	Broadway Ave Pedestrian Facilities	ODOT
13	North Bend Middle School Safe Routes to School	Safe Routes to School

North Bend Bicycle Projects

NB ID	Project Name	Primary Funding Source
14	Cape Arago Highway Bicycle Lanes a. Virginia Ave Alternate Route b. Broadway Ave Lane Reconfiguration c. Newmark Ave Alternate Route	ODOT
15	NW North Bend Bicycle Facilities	North Bend
16	Sheridan Ave Bicycle Facilities	North Bend
17	Newmark St Bicycle Facilities	North Bend
18	US 101	ODOT

18 Provide bicycle facilities (OCBR priority) through parallel routes

Transit Projects

NB ID	Project Name	Primary Funding Source
19	Bay Area Loop Weekend Service	CCAT
20	Transit Service Hours	CCAT
21	Transit Frequency	CCAT
22	Shelters and Stops	CCAT
23	Bike/Ped Transit Connectivity	North Bend

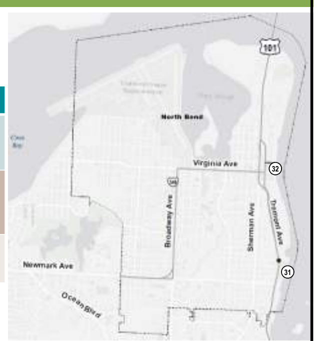
- Transit projects are funded through the Transit District
- Projects are suggested as opportunities for North Bend to collaborate/provide input
- North Bend can support future transit viability by designing and building streets accessible by pedestrian and bicycle modes.

North Bend Safety Projects

NB ID	Project Name	Primary Funding Source
24	Virginia Ave/Meade Ave Traffic Calming	North Bend (Urban Renewal)
25	Washington Ave/US 101 Pedestrian Crossing Enhancements	ODOT
26	Pony Creek Rd/Crowell Ln Intersection Modification	North Bend
27	State St Visibility	ODOT
28	Newmark St/Brussels St Visibility	North Bend
29	Newmark St/Sherman Ave Visibility	North Bend

North Bend Roadway/Freight Projects

NB ID	Project Name	Primary Funding Source
30	Fix Potholes	North Bend
31	Lewis Street/Mill Casino Signal Head	ODOT (OFP)
32	California Ave Upgrades	ODOT (OFP); North Bend (pavement)



30 Prioritizing Fixing the Potholes throughout the City (pavement maintenance)
Arterials and collectors with fair or worse pavement conditions, such as 16th St, 17th St, Arthur St, Brussels St, Colorado Ave, Crowell Ln, Harrison Ave, Pacific St, Pony Creek St.

Marine/Airport Projects

NB ID	Project Name	Primary Funding Source
33	North Bend City Dock	North Bend
34	Marine Ways Enhancements	POCB
35	North Spit Improvements	POCB
36	Channel Widening/Deepening	POCB
37	Charleston Boatyard Dock Replacements	POCB
38	Expanded Passenger Service	CCAD
39	Airport Transit Service	CCAT

- The majority of the projects in this section are opportunities for the City to collaborate with, or otherwise support, the lead agency

North Bend City Code Recommendations

- **Identified recommended modifications to the North Bend City Code to:**
  - Ensure consistency with the requirements of the Oregon Transportation Planning Rule (OAR 660-012, the "TPR")
  - Implement the updated TSP (Code is not in conflict with any recommendations in the TSP)
  - Update to reflect current best practices in transportation industry

North Bend Municipal Code Recommendations

Recommendation	Citation
Amend street design standards to be consistent with the updated TSP	TPR -0045(7)
Enhance connectivity by requiring non-motorized connections through cul-de-sacs	TPR -0045(3)(b) and -0045(6)
Ensure pedestrian access to transit corridors through parking lots	TPR -0045(3)(b) and -0045(6)
Implement a fee-in-lieu process for street improvements	City recommendation
Establish transit-supportive development requirements for development other than single-family residential development	TPR -0045(4)(a) and (b) and -0045(4)(f)
Require notification to transportation agencies for land use applications requiring public hearings. Require that transportation agencies be included in pre-application conferences and that agencies are notified of proposed subdivisions.	TPR -0045(2)(d) and (f)
Update definitions for terms introduced in new or updated code text	City Recommendation

Recommendation	Citation
Include preferential location provisions for rideshare (e.g., carpool and vanpool) parking	TPR -0045(4)(d)
Provide allowances for redevelopment of parking areas for transit uses.	TPR -0045(4)(e) and (g)
Require pedestrian walkways through parking areas over a certain size; add to parking provisions currently proposed for adoption.	TPR -0045(3)(b) and -0045(6)
Add bicycle parking requirements for multifamily developments of four units or more and transit stops to bicycle parking provisions that are currently proposed for adoption.	TPR -0045(3)(a)
Modify the "use permitted outright" in zoning districts to permit transportation improvements outright that are consistent with the adopted TSP.	TPR -0045(1)(a) and (b)
Augment existing criteria for plan amendments and zone changes to specifically refer to TPR "significant effect" criteria	TPR 660-12-0060
Allow any federal, state or local government entity to initiate applications for development approval when land use permitting is necessary related to public works projects Can't they do that already?	Agency recommendation

North Bend Funding Forecast

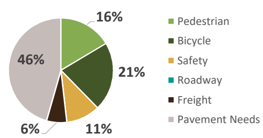
City of North Bend	2019-2040
Revenue (Case A)	
St Hwy Fund - Allocated to City	$17,559,412
Surface Transportation Program	$2,530,000
Total	**$20,089,412**
Revenue (Case B)	
St Hwy Fund - Allocated to City	$19,010,165
Surface Transportation Program	$2,530,000
Total	**$21,540,165**
Expense	
Operations and Maintenance	$11,594,000
Total	**$11,594,000**
Funding Forecast:	***$8.5M - $9.9M***

Source: ODOT and City of North Bend
All Figures in 2018 dollars.

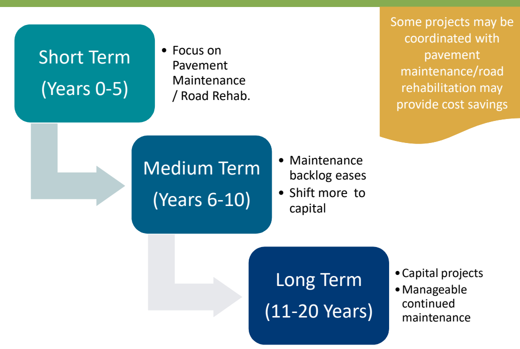
Through the planning horizon, North Bend will have approximately **$8 million to $10 million** available for capital projects.

- "Preferred Project" list totals over $35 million
- Indicates need for new or supplemental funding sources and strategic investment
- Use TSP goals and community input to guide project selection

Projects by Mode

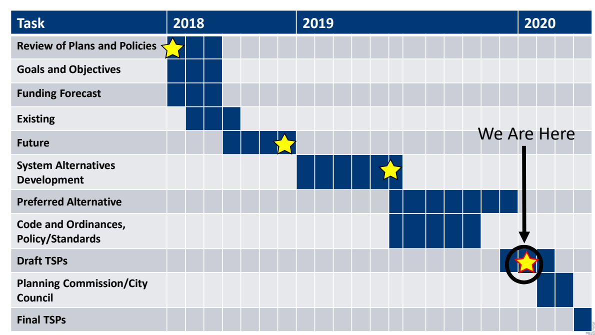


North Bend Implementation



COOS BAY

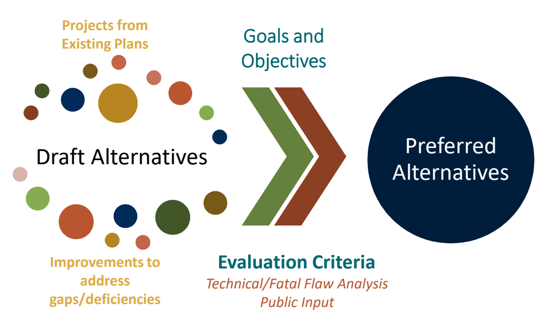
Coos Bay/North Bend Schedule



Coos Bay Ongoing Work

- Safe Routes to School Project
- Front Street Plan
- Development preapplications/applications

Project Development and Evaluation

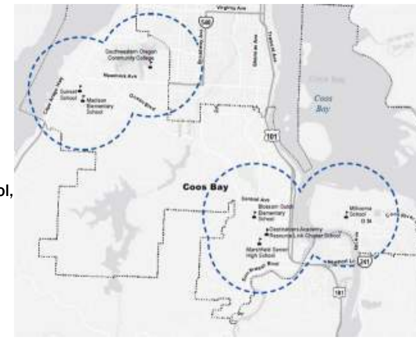


Coos Bay Bicycle Routes

- **Type I Bike Routes (Separated):**
  - Physical barrier or extra striped buffer
  - In North Bend, primarily multi-use paths
- **Type II Bike Routes (Striped):**
  - Facilitate bicycle circulation within North Bend
  - Primarily on collector and arterial streets.
- **Type III Bike Routes (Neighborhood):**
  - Located mostly on residential and collector streets with low traffic volumes and speeds
  - Low-stress for individuals of all bicycling confidence levels
  - Bicycle-specific infrastructure could consist of painted markings and wayfinding signage
- **Oregon Coast Bike Route**
  - Coos Bay supports the update of the OCBR and supports providing local connections to the route

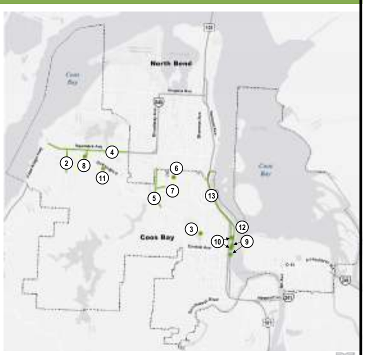
Coos Bay Safe Routes to School

- Sidewalk infill, enhanced street crossings, and dedicated bicycle facilities create safer routes between neighborhoods and schools
- To highlight the one-mile radius of a school, a boundary will be added to the modal plan maps in the TSP
  - Helps identify projects/locations for grant funding



Coos Bay Pedestrian Projects

CB ID	Project Name	Primary Funding Source
2	Morrison St Sidewalks	Coos Bay
3	Mingus Park Wayfinding	Coos Bay
4	Newmark Ave Pedestrian Improvements	Coos Bay
5	Woodland Dr Pedestrian Improvements	Coos Bay
6	Thompson Rd Pedestrian Crossing	Coos Bay
7	Hospital Way Sidewalk	Coos Bay
8	Wallace St Pedestrian Improvements	Coos Bay
9	Coos Bay Boardwalk RR Crossing Pedestrian Improvements	Coos Bay; Coos Bay Rail
10	US 101 Downtown Pedestrian Crossings	ODOT
11	LaClair St Pedestrian Crossing	Coos Bay
12	Front Street Multi-Use Path	City/ Private
13	Connect the Boardwalks	North Bend; Coos Bay; Private



Coos Bay Bicycle Projects

CB ID	Project Name	Primary Funding Source
14	Ocean Blvd Road Diet (Next Phase)	Coos Bay
15	Newmark Ave Road Diet	Coos Bay
16	Woodland Dr Bicycle Facilities	Coos Bay
17	Newport Ln Bicycle Signage/Wayfinding	Coos County
18	D St/Coos River Rd Shoulder Widening	Coos Bay
19	US 101 Southern Bicycle Lanes	ODOT
20	US 101 Bicycle Facilities	ODOT
21	N 14th St Bicycle Facilities	Coos Bay

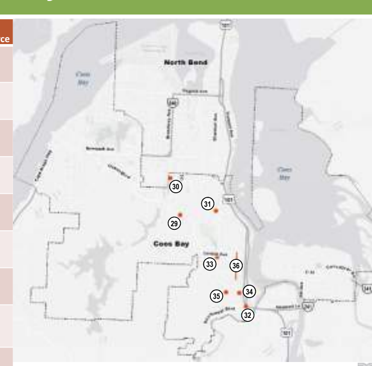
Transit Projects

CB ID	Project Name	Primary Funding Source
22	Bay Area Loop Weekend Service	CCAT
23	Transit Service Hours	CCAT
24	Transit Frequency	CCAT
25	Shelters and Stops	CCAT
26	Bike/Ped Transit Connectivity	Coos Bay
27	Regional Transit Hub	CCAT
28	Transit Pull Outs	Coos Bay / CCAT

- Most transit projects are funded through the Transit District
- Projects are suggested as opportunities for Coos Bay to collaborate/provide input
- Coos Bay can support future transit viability by designing and building streets accessible by pedestrian and bicycle modes

Coos Bay Safety Projects

CB ID	Project Name	Primary Funding Source
29	Ocean Blvd/19th St Access Management	Coos Bay
30	Thompson Ave/Woodland Dr Safety Enhancements	Coos Bay
31	Koosbay Blvd/10th St Realignment	Coos Bay
32	US 101/Kruse Ave Access Management	ODOT
33	S 10th St Curb Extensions	Coos Bay
34	Ingersoll St Curb Extensions	Coos Bay
35	7th St Curb Extensions	Coos Bay
36	4th Street Safety	Coos Bay
1	*Front St Traffic Safety Plan*	*Funded*



Coos Bay Roadway/Freight Projects

CB ID	Project Name	Primary Funding Source
37	Schoneman Ave Street Upgrade	Coos Bay
38	Newmark Ave/Ocean Blvd Realignment	Coos Bay
39	South Coos Bay Pavement	ODOT; City
40	S Front St Street Upgrade	City
41	Fix Potholes	Coos Bay
42	Newport Ln/Isthmus Slough Bridge Widening	County; ODOT
43	Market Ave/Front St RR Crossing Upgrade 55	Coos Bay Rail
44	Central Dock Rd RR Crossing Upgrade	Coos Bay Rail
45	US 101/Curtis Ave Signal Head Upgrade	ODOT (OFP)
46	US 101/Koosbay Blvd Upgrades	ODOT (OFP)
47	US 101/Commercial Ave Upgrades	ODOT (OFP)
48	US 101 North/Johnson Ave Upgrades	ODOT (OFP)

41 Prioritizing Fixing the Potholes throughout the City (pavement maintenance)
Central Ave, Southwest Blvd, Koosbay Blvd, Blanco Ave, Radar Rd, Schoneman St, LaClair St, F St, Butler Rd, Juniper Ave and Fulton Ave

Marine/Airport Projects

CB ID	Project Name	Primary Funding Source
49	Marine Ways Enhancements	POCB
50	North Spit Improvements	POCB
51	Channel Widening/Deepening	POCB
52	Charleston Boatyard Dock Replacements	POCB
53	Expanded Passenger Service	CCAD
54	Airport Transit Service	CCAT

- The majority of the projects in this section are opportunities for the City to collaborate with, or otherwise support, the lead agency

Coos Bay Municipal Code Recommendations

- **Identified recommended modifications to the Coos Bay Municipal Code to:**
  - Ensure consistency with the requirements of the Oregon Transportation Planning Rule (OAR 660-012, the "TPR")
  - Implement the updated TSP (Code is not in conflict with any recommendations in the TSP)
  - Update to reflect current best practices in transportation industry

Coos Bay Municipal Code Recommendations

Recommendation	Citation
Invite transportation agencies to pre-application conferences and require receive hearing notices.	TPR -0045(2)(d)
Projects that are consistent with the TSP are permitted outright in each zoning district.	TPR -0045(1)(a) and (b)
Update definitions for terms introduced in new or updated code text.	City recommendation
Expand the purpose and intent statements in key land use districts in the city to refer to safe and secure travel. (TSP Goals)	City recommendation
Address ROW dedications necessary to provide sufficient ROW in the development standards for the Industrial-Commercial District.	City recommendation
Reconcile TIA requirements with Engineering design standards	City recommendation
Provisions for pedestrian access to the waterfront and along the waterfront (e.g., boardwalk opportunities)	City recommendation
Allow for redevelopment of parking areas for transit uses (e.g., park-and-rides)	TPR -0045(4)(e), City recommendation
Include preferential location provisions for rideshare (e.g., carpool) parking	TPR -0045(4)(d)
Require "crosswalks" (pedestrian connections) through parking areas over a certain size	TPR -0045(3)(d) and (6)

Recommendation	Citation
Add bicycle parking requirements for transit transfer stations and park-and-ride lots	TPR -0045(3)(a), City recommendation
Require pedestrian access to the street (sidewalk), adjacent properties, and existing and planned transit stops	City recommendation, TPR -0045(3)(d) and (6)
Establish requirements related to transit stops	TPR -0045(3)(d) and (6)
Add transit facilities requirements to the Supplementary Development Standards	TPR -0045(3)(d) and (6)
Add consistency with TPR Section -0060 as a specific approval criterion for plan amendments and zone changes	TPR -0045(2)(g) and -0060
Ensure that mobility standards in the code are consistent with Draft TSP	TPR -0045(2)(b)
Institute block size standards according to street functional classification	TPR -0045(3)(d) and (6)
Consider narrower paved widths standards	TPR -0045(7)
Add access spacing standards in the code	TPR -0045(2)(a) - 0045(7)
Add requirements for non-motorized connections from cul-de-sacs	TPR -0045(3)(d) and (6) and -0045(2)(a)

Coos Bay Funding Forecast

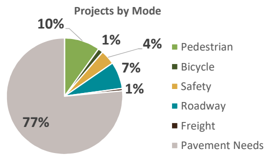
City of Coos Bay	2019-2040
Revenue (Case A)	
St Hwy Fund - Allocated to City	$30,001,000
Franchise Fees	$8,800,000
Transportation Utility Fee	$20,000,000
Total	**$58,801,000**
Revenue (Case B)	
St Hwy Fund - Allocated to City	$32,230,000
Franchise Fees	$8,800,000
Transportation Utility Fee	$20,000,000
Total	**$61,030,000**
Expense	
Operations and Maintenance	$22,000,000
Capital Expenditures	$4,400,000
Total	$26,400,000
Funding Forecast:	***$32.4M - $34.6M***

Source: ODOT and City of Coos Bay
All Figures in 2018 dollars.

Through the planning horizon, Coos Bay will have approximately **$32 million to $34 million** available for capital projects.

- "Preferred Projects" list total over $86 million (most is pavement needs)
- Indicates need for new or supplemental funding sources and strategic investment
- Use TSP goals and community input to guide project selection

Projects by Mode



Coos Bay Implementation

Short Term (Years 0-5)
- Focus on Pavement Maintenance / Road Rehab.
- Gas Tax and TUF

Medium Term (Years 6-10)
- Maintenance backlog eases
- Shift more to capital

Long Term (11-20 Years)
- Capital projects
- Manageable continued maintenance

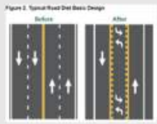
Some projects may be coordinated with pavement maintenance/road rehabilitation may provide cost savings

Next Steps

- Draft TSPs
- PAC Review
- Staff Report
- Planning Commission
- City Council
- Goal: TSP adoption late spring 2020
  - *Code/Policy could adopted separately from the TSP if necessary, but this is not preferred.*

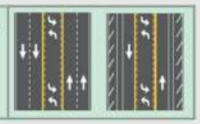
ROAD RECONFIGURATIONS- THE BASICS

- Repurposing existing space on a roadway to achieve goals (i.e. improving safety, access, economic development, etc.) through restriping



Source: FHWA, Road Diet Informational Guide

5-lane to 3-lane: In some cases jurisdictions have reconfigured five-lane sections to three lanes, adding features such as diagonal parking and protected bicycle lanes with the extra cross section width.



Oregon Department of Transportation

BROADWAY AVE OR540 CHARACTERISTICS

- MP 0.78 – 1.70
- AADT: 11,400 - 15,200 vehicles (2018)
- Projected AADT: 11,700 – 15,500 vehicles (2038)
- Heavy Vehicles: ~3%
- Roadway Width: ~60 feet; 5-lane
- Crashes (2009-2018)
  - 3 severe injury
  - 14 moderate injury
  - 60 minor injury
  - 76 property damage only

Oregon Department of Transportation

INITIAL ANALYSIS RESULTS

- An analysis was conducted using available traffic data. The initial analysis indicates that operations are acceptable for a 3-lane section.
- Further detailed analysis is recommended at intersections along this corridor to determine intersection delay and queuing.
- A increase in travel time of approximately 5 seconds is expected through the corridor.

Oregon Department of Transportation

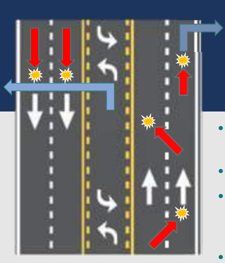
BENEFITS OF ROAD RECONFIGURATIONS

Safety & Operational Benefits—Driving

- Improve safety/reduced conflicts
  - Approximate 19 to 47% reduction in total crashes are expected following a conversion from a 4-lane/5-lane section to a 3-lane section
  - Fewer conflict points for vehicles entering, exiting, or crossing the highway
- Reduce speed differentials and outlier speeds
  - Average speed expected to drop by <1 mph along Broadway
  - Consistent traffic flows for all vehicles

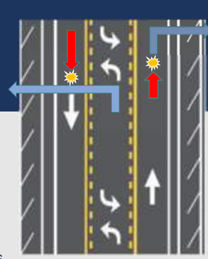
Oregon Department of Transportation

Safety & Operational Benefits



Before

- Reduced conflict points
- Reduced crashes
- Reduced speed differential between vehicles
- Smoother operations

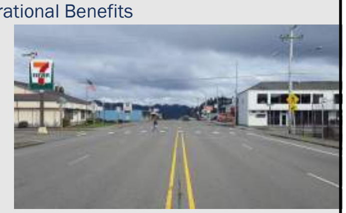


After

BENEFITS OF ROAD RECONFIGURATIONS

Walking and Biking: Safety & Operational Benefits

- Slower speeds=safer environment
- Eliminate "double threat" crossing
- Allow for curb extensions/bulb-outs
- Provide buffer for sidewalks
- Provide width to designate bike lanes



Oregon Department of Transportation

BENEFITS OF ROAD RECONFIGURATIONS

Community/Economic Development Benefits

- Business Access and Exposure
- Entering and exiting business approaches is enhanced by reducing the number of turning conflict points
- Eliminate passing within the business district
- Store fronts/signs are more easily seen

Oregon Department of Transportation

TRADE-OFFS OF ROAD RECONFIGURATIONS

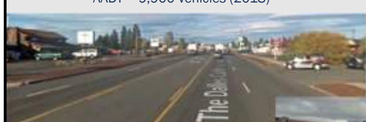
Delay

- Additional delay entering the highway at stop controlled intersections
- Additional travel time for vehicles traveling through the corridor (estimated at approximately 5 seconds)
- Increase in time spent following other vehicles
- Seasonal peaks (holidays)

Oregon Department of Transportation

ROAD RECONFIGURATIONS- EXAMPLES

- La Pine
  - Previously a 5-lane section, converted to 3-lanes- 2016
  - AADT = 9,900 vehicles (2018)



Oregon Department of Transportation

ROAD RECONFIGURATIONS- EXAMPLES

- Cave Junction
  - Previously a 4-lane section, converted to 3-lanes
  - AADT = 10,100 vehicles (2018)

Oregon Department of Transportation

ADDITIONAL EXAMPLES OF ROAD RECONFIGURATIONS IN OREGON COMMUNITIES

- Ashland
  - 4-lane to 3-lane
  - AADT = 16,400
- Reedsport
  - 4-lane to 3-lane
  - AADT = 12,200
- Talent
  - 4-lane to 3-lane
  - AADT = 8,700
- Phoenix
  - 2-lane to 1-lane (couplet)
  - Voted to revert to 2-lane couplet for SB traffic (NB to remain 1-lane)
- Port Orford
  - 4-lane to 3-lane
  - AADT = 5,200
- Milton-Freewater
  - 4-lane to 3-lane
  - AADT = 8,200/12,400

Oregon Department of Transportation

RESOURCES

Videos:

- Road Diets: A Proven Safety Countermeasure
  FHWA
- 4 to 3 Lane Conversion
  Iowa DOT
- Low-Cost Safety Improvements for Walking and Biking
  USDOT/FHWA (featuring Milton Freewater @2:37)

Websites/articles:

- FHWA resources for Roadway Reconfigurations
  - Myth busters
  - Road Diet FAQ
  - Road Diets & Emergency Response
  - Road Diets' Economic Impacts
  - Road Diet Evaluation Metrics
- Roads & Bridges article, *Diet Exercise*
- Iowa DOT Traffic & Safety
- City of Medford White Paper

Oregon Department of Transportation

Coos Bay/North Bend Transportation System Plan Updates

Open House #2

January 23, 2020 5:00 PM – 7:00 PM

Agenda

Welcome and Introductions

Project Background

Summary of Needs and Opportunities

Preferred Alternatives

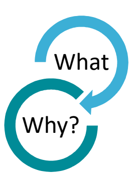
Code & Policy

Funding & Implementation

Welcome
Introduction

- **Project Team:**
- **Planning Advisory Committee (PAC)**
  - Coos Bay representatives
  - North Bend representatives
  - Coos County
  - Tribes
- **Residents of Coos Bay and North Bend**

Transportation System Plan 101
Introduction



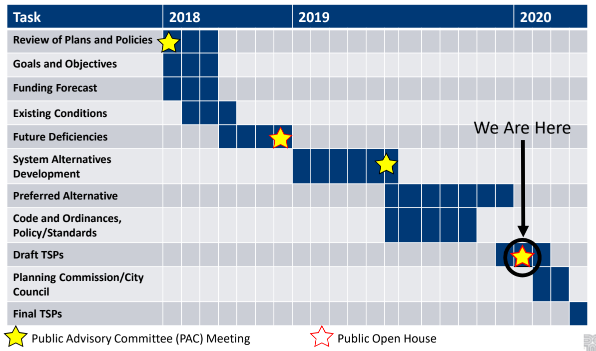
- Community's multi-modal blueprint for their transportation system
  - Guides all modes of our transportation system
  - Establishes a system of transportation facilities and services to meet the needs over the next 20 years
  - Sets priorities for available and anticipated funding in the planning period
  - Attract and secure funds (Statewide Transportation Improvement Program, grants)

TSP Updates
Introduction

- North Bend and Coos Bay TSPs were last updated in 2004
- Current update process is being conducted together to reflect the communities' shared history and ongoing connections
- TSP updates will reflect the communities' vision and priorities for the transportation system over the next 20 years

Process will result in separate TSPs for each community

Project Timeline



Project Background

Eight goals have been developed around the following themes to reflect North Bend and Coos Bay's visions for the TSP update

1. Multimodal Accessibility and Connectivity
2. Safety and Security
3. Efficient movement of people and goods (Mobility)
4. Equitable and balanced transportation system
5. Community and Economic Vitality
6. Communication, Collaboration and Coordination
7. Strategic Investment
8. Health of residents and users and impacts to the environment

Needs and Deficiencies

- Future population
  - Bay area expected to see manageable, steady population growth
  - Continued seasonal variations due to tourism
- Pedestrian
  - Existing physical barriers in sidewalk
  - Lack of protected crossings of busy roads
  - Conflict points with driveways and side streets
- Bicycle
  - Limited number of striped bike lanes
  - US 101 lacks continuous bike lanes
  - East-west connectivity
  - Proper wayfinding and signage
  - Oregon Coast Bike Route on OR 540

Pedestrian Level of Traffic Stress

Bicycle Level of Traffic Stress

Traffic Operations

- North Bend
  - Limited east-west connectivity between Broadway Avenue and Sherman Avenue
  - Local cut-through traffic use Meade instead of US 101 to access Virginia Ave
  - Broadway St at Newmark Ave
  - US 101 at Newmark St (future)
- Coos Bay
  - The Bunker Hill area and Newport Lane/Slough bridge are the only connection to east Coos Bay
  - 7th St at Anderson Ave
  - Hall Ave at US 101 North
  - Johnson Ave at US 101 South
  - Newmark Ave at Morrison St (future)
  - Intersections near Hollering Place
- Growth in traffic could increase congestion, specifically along US 101 and Newmark Ave/St

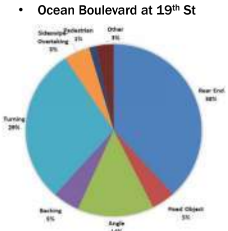
Crash History

1,744 documented crashes in North Bend and Coos Bay between 2012-2016.

- 49% in North Bend
- 51% in Coos Bay

5 fatalities

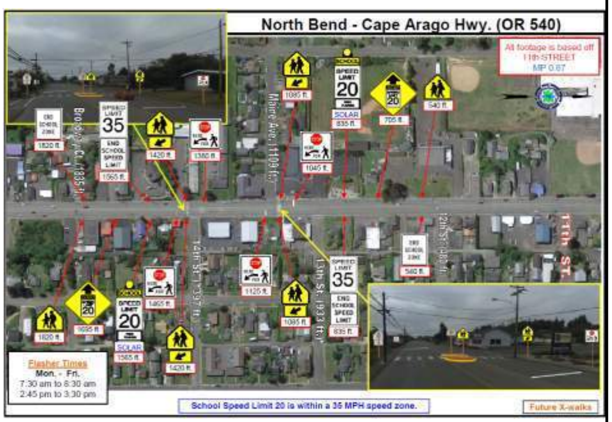
- US 101, south Johnson Ave
- Virginia Ave at Meade Ave
- Virginia Ave at Oak Street
- US 101 at Florida Ave
- Ocean Boulevard at 19th St



NORTH BEND

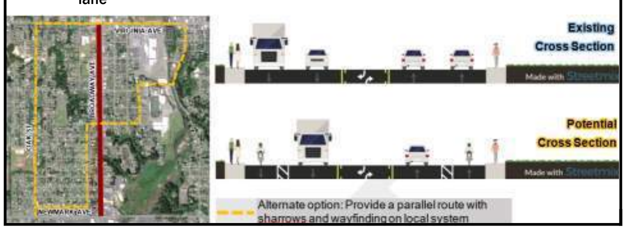
Ongoing Work

- Safe Routes to School Project
- Virginia Avenue Pedestrian Project
- Broadway Lane Reconfiguration (Project NB 14b in TSP list)
- North Bend City Code amendments



Broadway (OR 540) Potential Improvements

- Existing Conditions
  - AADT: 11,400 - 15,200 vehicles (2018)
  - Projected AADT: 11,700 – 15,500 vehicles (2038)
  - Heavy Vehicles: ~3%
  - Roadway Width: ~60 feet; 5-lane
- Crashes (2009-2018)
  - 3 severe injury, 14 moderate injury, 60 minor injury, 76 property damage only
- **Purpose:** Provide designated bicycle facilities on the Oregon Coast Bike Route (OCBR) on Broadway Avenue
- **Description:** Repurpose the available pavement to add bicycle lanes with a striped buffer between vehicular travel and bicycle travel.



Project Development and Refinement

Basis for Selection

The proposed TSP project list is based on the following factors:

- Stakeholder Feedback via in-person meetings with the PAC, conference calls with technical Agency staff, comments received on technical memoranda, and project team communications
- Previous Plans (such as 2004 TSPs)
- Fatal Flaw Analysis against adopted standards and plans

North Bend Bicycle Routes

- **Type I Bike Routes (Separated):**
  - Physical barrier or extra striped buffer
  - In North Bend, primarily multi-use paths
- **Type II Bike Routes (Striped):**
  - Facilitate bicycle circulation within North Bend
  - Primarily on collector and arterial streets.
- **Type III Bike Routes (Neighborhood):**
  - Located mostly on residential and collector streets with low traffic volumes and speeds
  - Low-stress for individuals of all bicycling confidence levels
  - Bicycle-specific infrastructure could consist of painted markings and wayfinding signage
- **Oregon Coast Bike Route**
  - Coos Bay supports the update of the OCBR and supports providing local connections to the route

North Bend Safe Routes to School

- Sidewalk infill, enhanced street crossings, and dedicated bicycle facilities create safer routes between neighborhoods and schools
- To highlight the one-mile radius of a school, a boundary will be added to the modal plan maps in the TSP
  - Helps identify projects/locations for grant funding

North Bend Pedestrian Projects

NB ID	Project Name	Primary Funding Source
1	Sheridan Ave Pedestrian Improvements	North Bend
2	16th St/17th St Sidewalks	North Bend
3	Oak St Neighborhood Greenway	North Bend
4	North Bend High School Pedestrian Crossings	North Bend
5	Virginia Ave Pedestrian Improvements a. Access consolidation b. Pedestrian crossing between Pony Village and Broadway	ODOT
6	Newmark Ave Access Management	ODOT
7	Newmark St Half Street Improvement	North Bend
8	North Bend Senior Activity Center Pedestrian Improvements	North Bend
9	Boynton Park Pedestrian Crossing	North Bend
10	North US 101 Pedestrian Crossing	ODOT
11	Connect the Boardwalks	North Bend; Coos Bay; Private
12	Broadway Ave Pedestrian Facilities	ODOT
13	North Bend Middle School Safe Routes to School	Safe Routes to School

North Bend Bicycle Projects

NB ID	Project Name	Primary Funding Source
14	Cape Arago Highway Bicycle Lanes a. Virginia Ave Alternate Route b. Broadway Ave Lane Reconfiguration c. Newmark Ave Alternate Route	ODOT
15	NW North Bend Bicycle Facilities	North Bend
16	Sheridan Ave Bicycle Facilities	North Bend
17	Newmark St Bicycle Facilities	North Bend
18	US 101	ODOT

18 Provide bicycle facilities (OCBR priority) through parallel routes

Transit Projects

NB ID	Project Name	Primary Funding Source
19	Bay Area Loop Weekend Service	CCAT
20	Transit Service Hours	CCAT
21	Transit Frequency	CCAT
22	Shelters and Stops	CCAT
23	Bike/Ped Transit Connectivity	North Bend

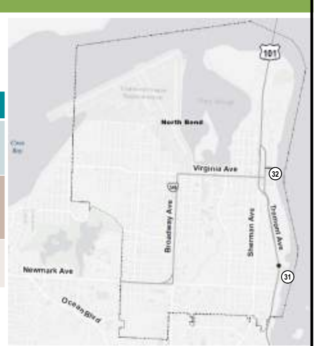
- Transit projects are funded through the Transit District
- Projects are suggested as opportunities for North Bend to collaborate/provide input
- North Bend can support future transit viability by designing and building streets accessible by pedestrian and bicycle modes.

North Bend Safety Projects

NB ID	Project Name	Primary Funding Source
24	Virginia Ave/Meade Ave Traffic Calming	North Bend (Urban Renewal)
25	Washington Ave/US 101 Pedestrian Crossing Enhancements	ODOT
26	Pony Creek Rd/Crowell Ln Intersection Modification	North Bend
27	State St Visibility	ODOT
28	Newmark St/Brussels St Visibility	North Bend
29	Newmark St/Sherman Ave Visibility	North Bend

North Bend Roadway/Freight Projects

NB ID	Project Name	Primary Funding Source
30	Fix Potholes	North Bend
31	Lewis Street/Mill Casino Signal Head	ODOT (OFP)
32	California Ave Upgrades	ODOT (OFP); North Bend (pavement)



30 Prioritizing Fixing the Potholes throughout the City (pavement maintenance)
Arterials and collectors with fair or worse pavement conditions, such as 16th St, 17th St, Arthur St, Brussels St, Colorado Ave, Crowell Ln, Harrison Ave, Pacific St, Pony Creek St.

Marine/Airport Projects

NB ID	Project Name	Primary Funding Source
33	North Bend City Dock	North Bend
34	Marine Ways Enhancements	POCB
35	North Spit Improvements	POCB
36	Channel Widening/Deepening	POCB
37	Charleston Boatyard Dock Replacements	POCB
38	Expanded Passenger Service	CCAD
39	Airport Transit Service	CCAT

- The majority of the projects in this section are opportunities for the City to collaborate with, or otherwise support, the lead agency

North Bend City Code Recommendations

- **Identified recommended modifications to the North Bend City Code to:**
  - Ensure consistency with the requirements of the Oregon Transportation Planning Rule (OAR 660-012, the "TPR")
  - Implement the updated TSP (Code is not in conflict with any recommendations in the TSP)
  - Update to reflect current best practices in transportation industry

North Bend Funding Forecast

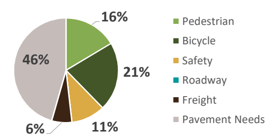
City of North Bend	2019-2040
Revenue (Case A)	
St Hwy Fund - Allocated to City	$17,559,412
Surface Transportation Program	$2,530,000
Total	**$20,089,412**
Revenue (Case B)	
St Hwy Fund - Allocated to City	$19,010,165
Surface Transportation Program	$2,530,000
Total	**$21,540,165**
Expense	
Operations and Maintenance	$11,594,000
Total	**$11,594,000**
Funding Forecast:	***$8.5M - $9.9M***

Source: ODOT and City of North Bend
All Figures in 2018 dollars.

Through the planning horizon, North Bend will have approximately **$8 million to $10 million** available for capital projects.

- "Preferred Project" list totals over $35 million
- Indicates need for new or supplemental funding sources and strategic investment
- Use TSP goals and community input to guide project selection

Projects by Mode



North Bend Implementation

Short Term (Years 0-5)
- Focus on Pavement Maintenance / Road Rehab.

Medium Term (Years 6-10)
- Maintenance backlog eases
- Shift more to capital

Long Term (11-20 Years)
- Capital projects
- Manageable continued maintenance

Some projects may be coordinated with pavement maintenance/road rehabilitation may provide cost savings

COOS BAY

Coos Bay Ongoing Work

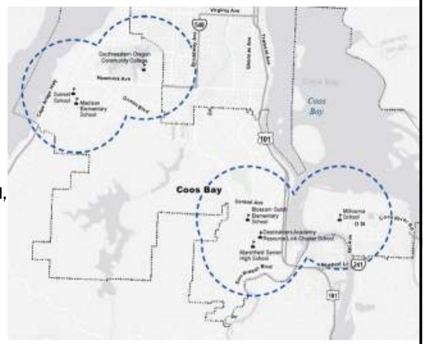
- Safe Routes to School Project
- Front Street Plan
- Development preapplications/applications

Coos Bay Bicycle Routes

- **Type I Bike Routes (Separated):**
  - Physical barrier or extra striped buffer
  - In North Bend, primarily multi-use paths
- **Type II Bike Routes (Striped):**
  - Facilitate bicycle circulation within North Bend
  - Primarily on collector and arterial streets.
- **Type III Bike Routes (Neighborhood):**
  - Located mostly on residential and collector streets with low traffic volumes and speeds
  - Low-stress for individuals of all bicycling confidence levels
  - Bicycle-specific infrastructure could consist of painted markings and wayfinding signage
- **Oregon Coast Bike Route**
  - Coos Bay supports the update of the OCBR and supports providing local connections to the route

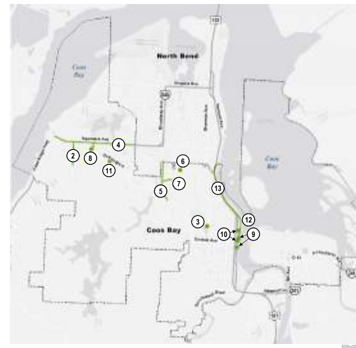
Coos Bay Safe Routes to School

- Sidewalk infill, enhanced street crossings, and dedicated bicycle facilities create safer routes between neighborhoods and schools
- To highlight the one-mile radius of a school, a boundary will be added to the modal plan maps in the TSP
  - Helps identify projects/locations for grant funding



Coos Bay Pedestrian Projects

CB ID	Project Name	Primary Funding Source
2	Morrison St Sidewalks	Coos Bay
3	Mingus Park Wayfinding	Coos Bay
4	Newmark Ave Pedestrian Improvements	Coos Bay
5	Woodland Dr Pedestrian Improvements	Coos Bay
6	Thompson Rd Pedestrian Crossing	Coos Bay
7	Hospital Way Sidewalk	Coos Bay
8	Wallace St Pedestrian Improvements	Coos Bay
9	Coos Bay Boardwalk RR Crossing Pedestrian Improvements	Coos Bay; Coos Bay Rail
10	US 101 Downtown Pedestrian Crossings	ODOT
11	LaClair St Pedestrian Crossing	Coos Bay
12	Front Street Multi-Use Path	City/ Private
13	Connect the Boardwalks	North Bend; Coos Bay; Private



Coos Bay Bicycle Projects

CB ID	Project Name	Primary Funding Source
14	Ocean Blvd Road Diet (Next Phase)	Coos Bay
15	Newmark Ave Road Diet	Coos Bay
16	Woodland Dr Bicycle Facilities	Coos Bay
17	Newport Ln Bicycle Signage/Wayfinding	Coos County
18	D St/Coos River Rd Shoulder Widening	Coos Bay
19	US 101 Southern Bicycle Lanes	ODOT
20	US 101 Bicycle Facilities	ODOT
21	N 14th St Bicycle Facilities	Coos Bay

Transit Projects

CB ID	Project Name	Primary Funding Source
22	Bay Area Loop Weekend Service	CCAT
23	Transit Service Hours	CCAT
24	Transit Frequency	CCAT
25	Shelters and Stops	CCAT
26	Bike/Ped Transit Connectivity	Coos Bay
27	Regional Transit Hub	CCAT
28	Transit Pull Outs	Coos Bay / CCAT

- Most transit projects are funded through the Transit District
- Projects are suggested as opportunities for Coos Bay to collaborate/provide input
- Coos Bay can support future transit viability by designing and building streets accessible by pedestrian and bicycle modes

Coos Bay Safety Projects

CB ID	Project Name	Primary Funding Source
29	Ocean Blvd/19th St Access Management	Coos Bay
30	Thompson Ave/Woodland Dr Safety Enhancements	Coos Bay
31	Koosbay Blvd/10th St Realignment	Coos Bay
32	US 101/Kruse Ave Access Management	ODOT
33	S 10th St Curb Extensions	Coos Bay
34	Ingersoll St Curb Extensions	Coos Bay
35	7th St Curb Extensions	Coos Bay
36	4th Street Safety	Coos Bay
1	*Front St Traffic Safety Plan*	*Funded*

Coos Bay Roadway/Freight Projects

CB ID	Project Name	Primary Funding Source
37	Schoneman Ave Street Upgrade	Coos Bay
38	Newmark Ave/Ocean Blvd Realignment	Coos Bay
39	South Coos Bay Pavement	ODOT; City
40	S Front St Street Upgrade	City
41	Fix Potholes	Coos Bay
42	Newport Ln/Isthmus Slough Bridge Widening	County; ODOT
43	Market Ave/Front St RR Crossing Upgrade 55	Coos Bay Rail
44	Central Dock Rd RR Crossing Upgrade	Coos Bay Rail
45	US 101/Curtis Ave Signal Head Upgrade	ODOT (OFP)
46	US 101/Koosbay Blvd Upgrades	ODOT (OFP)
47	US 101/Commercial Ave Upgrades	ODOT (OFP)
48	US 101 North/Johnson Ave Upgrades	ODOT (OFP)

41 Prioritizing Fixing the Potholes throughout the City (pavement maintenance)
Central Ave, Southwest Blvd, Koosbay Blvd, Blanco Ave, Radar Rd, Schoneman St, LaClair St, F St, Butler Rd, Juniper Ave and Fulton Ave

Marine/Airport Projects

CB ID	Project Name	Primary Funding Source
49	Marine Ways Enhancements	POCB
50	North Spit Improvements	POCB
51	Channel Widening/Deepening	POCB
52	Charleston Boatyard Dock Replacements	POCB
53	Expanded Passenger Service	CCAD
54	Airport Transit Service	CCAT

- The majority of the projects in this section are opportunities for the City to collaborate with, or otherwise support, the lead agency

Coos Bay Municipal Code Recommendations

- **Identified recommended modifications to the Coos Bay Municipal Code to:**
  - Ensure consistency with the requirements of the Oregon Transportation Planning Rule (OAR 660-012, the "TPR")
  - Implement the updated TSP (Code is not in conflict with any recommendations in the TSP)
  - Update to reflect current best practices in transportation industry

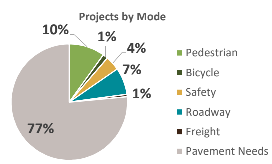
Coos Bay Funding Forecast

City of Coos Bay	2019-2040
Revenue (Case A)	
St Hwy Fund - Allocated to City	$30,001,000
Franchise Fees	$8,800,000
Transportation Utility Fee	$20,000,000
Total	**$58,801,000**
Revenue (Case B)	
St Hwy Fund - Allocated to City	$32,230,000
Franchise Fees	$8,800,000
Transportation Utility Fee	$20,000,000
Total	**$61,030,000**
Expense	
Operations and Maintenance	$22,000,000
Capital Expenditures	$4,400,000
Total	**$26,400,000**
Funding Forecast:	$32.4M - $34.6M

Source: ODOT and City of Coos Bay
All Figures in 2018 dollars.

Through the planning horizon, Coos Bay will have approximately **$32 million to $34 million** available for capital projects.

- "Preferred Projects" list total over $86 million (most is pavement needs)
- Indicates need for new or supplemental funding sources and strategic investment
- Use TSP goals and community input to guide project selection



Coos Bay Implementation

Short Term (Years 0-5)
- Focus on Pavement Maintenance / Road Rehab.
- Gas Tax and TUF

Medium Term (Years 6-10)
- Maintenance backlog eases
- Shift more to capital

Long Term (11-20 Years)
- Capital projects
- Manageable continued maintenance

Some projects may be coordinated with pavement maintenance/road rehabilitation may provide cost savings

Next Steps

- Draft TSPs
- PAC Review
- Staff Report
- Planning Commission
- City Council
- Goal: TSP adoption late spring 2020
  - *Code/Policy could adopted separately from the TSP if necessary, but this is not preferred.*

MEETING SUMMARY

Coos Bay / North Bend — **April 4, 2019**
Transportation System Plan Updates — **10:00 AM - Noon**
Alternatives Development Meeting — Coos Bay: 10:00-11:15 AM
Conference Call/Zoom Meeting: See Outlook appointment for details — North Bend: 10:45-Noon

Attendees:

Angela Rogge, David Evans and Associates, Inc. (Consultant PM)
Jim Hossley, City of Coos Bay (Public Works)
Randy Dixon, City of Coos Bay (Public Works)
Chelsea Schnabel, City of North Bend (Planning)
Derek Windham, City of North Bend (Engineering)
Ralph Dunham, City of North Bend (Public Works)
Virginia Elandt, ODOT (Agency PM)
Ron Hughes, ODOT (Access Management)
Aaron Brooks, ODOT (Traffic)
Brian Banta, ODOT (Roadway)

Introduction

- Angela kicked off the call by explaining the purpose of the call, which is to brainstorm and refine alternatives. This is an opportunity to have open communication between the Cities and ODOT to share ideas, ask questions and understand how alternatives can be improved to meet standards and expectations.
- After this meeting, DEA will revisit draft TM #8 to prepare a document to distribute to the PAC.
- Comments on the draft TM #8 are due Friday, April 12th.

Coos Bay Alternatives (10:00 AM – 11:45 AM)

The team walked through projects that likely would require coordination between ODOT and the City:

- US 101/Johnson STIP project
  - Project in design. This will modify lane configurations on Johnson Ave (ODOT has sent DEA the exhibit)
  - The access changes that are a part of this project will likely have a benefit to safety
  - US 101 SB has bicycle lanes in this section, but not further south. There appears that right of way is available to stripe a southbound bicycle lane.

> Actions for TSP:
>
> ➢ Include project to add bicycle lanes on US 101 from City limits to existing bicycle lanes south of Johnson Ave. Support ODOT and County in identifying opportunities for bicycle lanes outside of UGB
> ➢ Include low priority project to increase green space at south end of couplet in order to reduce large area of pavement

- US 101/Kruse Ave channelization/turn restrictions (SPIS site)

  - This intersection is included in the top 10% SPIS segment on US 101 and will likely benefit from the STIP project

Action for TSP: Include low priority/long-term project to consider diverting traffic from 1st Street South to S Front Street. Would require modernization/upgrade of S Front Street.

- US 101/Front St bicycle facilities and coordination with Rail
  - City is responsible for Front Street and maintenance of crossings within couplet; north of Fir Street is not as clear.
  - City mentioned the boardwalk is not an ideal location to provide bicycle access, but future development of Front Street could include a wider sidewalk that is striped for both bicycle and pedestrian traffic.

Actions for TSP:

- ➢ Keep crossing draft alternatives at Market Ave and Anderson Ave (pavement)
- ➢ Add alternative for "Improved Bike/Pedestrian Crossings across US 101" to be consistent with Front Street Action Plan (Commercial Ave and Alder Ave)
- ➢ Add alternative for traffic safety plan in support of future development of Front Street

- 7th/Anderson access management/channelization
  - Jim explained that this location has been of concern to residents in the past, but is not a current high priority. Would like to keep it as a draft alternative.

Action for TSP: Keep draft alternative

- Ocean Boulevard "road diet" – Phase 2
  - This project is still of interest to the City
  - Discussion about this project included identification of mid-block crossing locations. Midblock crossing would include RRFB treatment.
    - Crossing at Wallace St, roadway geometry does not lend itself to median refuge
    - Crossing at LaClair St, crossing would include pedestrian refuge

Action for TSP: Keep draft alternatives for road diet and the two crossings

- Ocean Boulevard/Newmark Ave realignment
  - City recognizes the non-standard geometry of this intersection is of concern.
  - There have been no previous exhibits/sketches for design at this intersection

Action for TSP: Keep draft alternative for intersection realignment

- Ped x-ing opportunities (Ocean Blvd, Woodland Dr, Thompson Rd)
  - The group discussed Ocean Blvd crossings (see road diet discussion) but did not have a chance to talk about the remaining locations. However, the City has already expressed a need to connect pedestrians to the medical facilities near Woodland Dr & Thompson Rd
- Bunker Hill (SPIS site, bike/ped, how City can support ODOT/County)
  - Angela noted that this is outside the UGB but that the PAC mentioned this area early on as a point of interest. In addition, the TSP would like to support connectivity to east Coos Bay.

- ODOT noted that providing exclusive bicycle facilities across the Isthmus Slough Bridge is not feasible without widening.
- ODOT explained the STIP project identified at this originally had a larger scope, but needed to reduce project limits due to budget constraints.
- STIP project provides pedestrian sidewalk from Flanagan Road to Mullen Road and provides crossings.

Action for TSP: Add additional details to description of STIP project (pedestrian project)

Joint Discussion (10:45 AM – 11:15 AM)

The team walked through projects that likely would require coordination between ODOT and the City:

- Sherman Ave/Koos Bay Boulevard bike/ped improvements
  - There was a discussion on the history of Koos Bay Blvd and the difference of cross sections of Sherman Ave (North Bend) and Koos Bay Blvd (Coos Bay)
  - The subgrade of Koos Bay Boulevard and the topography limit ability to widen.
  - When asked about desire for upgrades to bicycle and pedestrian along this route, City response is that most complaints about the road are about road condition.
  - Suggested an alternate bicycle route for Koos Bay Blvd is cutting west to 14th St.
  - Angela asked about potential for grant/special funding opportunities for emergency routes/alternate routes to US 101. *Note: Following the meeting, ODOT let us know while there is no dedicated funding for alternate emergency routes (i.e. Koos Bay Blvd), listing improvements in the TSP makes it eligible for any funding that may become available.*

  Actions for TSP:

  - Keep Koos Bay Blvd bicycle facilities as part of long-term action plan, but suggest bicycle route/wayfinding off Koos Bay Blvd
  - Include importance of Koos Bay Blvd/Sherman Ave in the TSP as alternate to US 101
- US 101 Bike plan
  - TSP would like to see bicycle facilities on US 101, but recognizes the barriers to implementation (right of way)
  - Coos Bay noted it would like provide bicylce connectivity to downtown
  - Discussed the draft Oregon Coast Bicycle Route options, which are still in development. Draft improvement options through Coos Bay/North Bend include shuttles, narrow or shift travel lanes, shift off of US 101.
  - Per ODOT, alternate/parallel routes are TPR compliant.

  Action for TSP: Continue to support findings/outcome of OCBR and keep draft alternative to provide a bike plan connecting arterials and collectors
- Newmark Ave/St bike/ped facilities
  - Newmark Avenue is under Coos Bay jurisdiction in Coos Bay, and is under ODOT's jurisdiction as OR 540 in North Bend. Newmark St is under North Bend jurisdiction from Broadway to US 101.
  - The Coos Bay portion has bicycle lanes
  - Expressed thoughts on how to provide consistent bicycle lanes for entire extent.
  - There could be design/safety issues traversing a bicycle lane through the channelized SBR from Broadway to Newmark

- Alternate route option could utilize Oak St, 16th/17th, Myrtle St, Commercial St, if striping bicycle lanes between Broadway and the western city limits of North Bend is infeasible
- During the North Bend discussion, group discussed keeping an option for a road diet on Newmark St as a long-term possibility. Implementation would likely require support from the community.

Actions for TSP:

- ➢ Include local streets identified as potential alternate routes to OR 540
- ➢ Keep Newmark St bicycle facilities as a possibility (pending support from community)

- Lakeshore Dr bike/ped facilities
  - Lakeshore Dr has portions that are under Coos Bay, North Bend and Coos County jurisdiction.
  - Widening is not likely a near-option, but providing sharrows and wayfinding to connect to the park system is supported (Sawmill Tribal Trail)

Action for TSP: Note that County may need to be a stakeholder in providing consistency of bicycle facilities on Lakeshore Dr

- Access management
  - In general, Angela asked about how Cities can encourage access management on property that is privately owned, and how that has worked in the past. Not a lot that can be done other than cooperation and coordination, unless there is a significant change of use/redevelopment. On ODOT facilities, can implement turn restrictions into a facility (median barrier) as long as there is reasonable alternate access.

North Bend Alternatives Discussion (11:15 AM – Noon)

The team walked through projects that likely would require coordination between ODOT and the City:

- Access management and pedestrian opportunities (Newmark Ave, Virginia Ave)
  - In order to improve pedestrian comfort and PLTS score, access management (Newmark) or providing landscaping/street furniture (Virginia) are potential strategies.
  - City noted that when considering access management, need to consider the impacts to emergency response vehicles. On Virginia, it is one of the primary routes emergency vehicles use.
  - Discussed feasibility of consolidating accesses at Pony Village but group determined that the adequate alternate routes to business access are not feasible at this time.
  - Discussed feasibility of a road diet and determined the traffic volumes are too high for the corridor the operate efficiently with reduced capacity.
  - If there were wide enough shoulder, wider sidewalks or landscape buffer may be possible.

Actions for TSP:

- ➢ Note right-of-way constraints to access consolidation and bicycle facilities on Virginia
- ➢ Revise draft pedestrian alternative for Virginia to just include landscaping and street furniture that could improve PLTS, with access management if redevelopment occurs.

- Newmark Ave at Oak St (enhance visibility)
  - Group discussed the proposed alternative at this location to improve safety. It was determined that new signage was posted here in response to the fatality (fatality in 2014).
  - Angela asked if this project to enhance visibility was warranted if a project had already been implemented. The response was probably not.

> Action for TSP: Change text for alternative to note recent improvements and "No alternative identified; continue to monitor intersection recent changes were made to improve safety"

- Washington Ave/US 101 SB/Sherman Ave (safety/crossing)
  - City expressed desire to improve the safety of this crossing for pedestrians
  - Angela explained that closing the west leg (cul-de-sac) to reduce the number of conflict points for vehicles was dropped as an option due to lack of community support.
  - Options for improving pedestrian crossing:
    - Curb bulb outs: Not enough space to maintain adequate space for vehicular movements
    - Median refuge: Looked at street-view and did not believe adequare space to provide a proper refuge
    - Improved lighting: Looks like an existing streetlight is already present
    - Signage: Providing signage to indicate there is a pedestrian crossing appears to be most feasible option at this time.

> Action for TSP: Update text for alternative to reflect signage as preferred option.

- Broadway Ave (Cape Arago) alternate bicycle route
  - See prior notes to alternate routes on local facilities.
- Bike/ped enhancements to Sheridan Ave, California Ave (coordination with rail?)
  - North Bend pointed out that Sheridan Ave serves the North Bend Jubilee route and is an important route and access for bike/ped in the community
  - The draft alternative suggests bicycle facilities on Sheridan and accessing downtown via Florida Ave. ODOT pointed out Florida has a very steep grade and may not be the best choice for bicycles.

> Action for TSPs:
>
> - Update draft alternative to clarify bicycle facilities are on Sheridan, not Florida
> - Keep project to enhance safety and improve pavement conditions on California Ave. Note that pavement is City responsibility but coordination with ODOT rail may be explored for other improvements since California is designated as an intermodal connector

- Virginia (Cape Arago) at Meade Ave (safety, traffic diversion)
  - The group discussed the history of why residents cut through at Meade/Connecticut instead of staying on US 101 to OR 540 (Virginia). It used to be the primary route, and from a traffic perspective, there are less traffic signals to travel through.
  - Angela explained the intention of a project here is to reduce cut-through traffic to improve safety at Meade/OR 540 (Virginia). The area is a top 10% SPIS site, meaning it is identified by ODOT as a safety concern.
  - Short of turn restrictions, group discussed other options:

- Adjust signal timing at McPherson to provide gap: Discussion with group did not think this would work without degrading conditions at McPherson.
- Curb bulb outs: This route is preferred by school buses because they need the turning radius
- All-way stop at Connecticut/Meade: Could discourage some cut-through
- Traffic calming measures and “narrowing” the feeling of the road: Keep in mind emergency vehicles and buses.

Action for TSP: Keep project on the draft alternatives for comment by the PAC and further refinement.

Next Steps

DEA will review the comments from ODOT and the Cities and revise the draft TM #8 for distribution to the PAC. The revised memo will include a comprehensive list of planned projects (both feasible and aspirational). The revised memo will also include the traffic analysis results for alternatives that are likely to impact capacity (traffic control changes, lane diets, turn restrictions).

DEA will send out a draft list of projects that will be first priority for planning level cost opinions and conceptual exhibits.

The next PAC meeting will be scheduled for after they have a chance to review the revised memorandum. Right now, this is looking like late May or early June, which is on track with our project schedule.

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Technical Memorandum #1:
Existing Plans and Policies Review

TECHNICAL MEMORANDUM #1

Existing Plans and Policies Review (Task 3.1)

Date: October 30, 2018

To: City of Coos Bay
City of North Bend
Oregon Department of Transportation, Region 3

From: Darci Rudzinski, Shayna Rehberg, and Courtney Simms, Angelo Planning Group
Angela Rogge, PE, David Evans and Associates, Inc.

Subject: Cities of Coos Bay and North Bend Transportation System Plan Updates

The cities of Coos Bay and North Bend, in partnership with the Oregon Department of Transportation (ODOT), is updating their respective Transportation System Plans (TSPs) to guide future investments in transportation operations, maintenance, and facilities. Assisting the cities and ODOT with the TSP is the team of consulting firms of David Evans and Associates (DEA) and Angelo Planning Group (APG). The purpose of this memorandum is to assemble and distill important plans, policies and regulations that affect (and may be affected by) the TSP update process and outcomes.

Table of Contents

State Plans and Policies

Transportation Planning Rule (Oregon Administrative Rules 660-012)

The Transportation Planning Rule (TPR) implements Oregon Statewide Planning Goal 12, which supports transportation facilities and systems that are safe, efficient, and cost-effective and are designed to reduce reliance on single-occupancy vehicles. The objective of the TPR is to reduce air pollution, congestion, and other negative impacts to livability and to maximize investments made in the transportation system. The following subsections of the TPR will guide the TSP update.

660-012-0020 – Elements of Transportation System Plans

Section -0020 of the TPR specifies required plan elements, including an inventory and assessment of existing conditions; forecasts of transportation needs; a road system plan; a public transportation plan; a bicycle and pedestrian plan; air, rail, water, and pipeline plans as applicable; transportation system and demand management plans; a financing program; and implementing policies and land use regulations.

660-012-0035 – Evaluation and Selection of Transportation System Alternatives

Section -0035 describes standards and alternatives available to agencies evaluating and selecting transportation projects, including benefits to different modes, land use alternatives, and environmental and economic impacts.

660-012-0045 – Implementation of the Transportation System Plan

The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors and sites for their identified functions." This is achieved through a variety of measures, including locally adopting access control measures and mobility and development standards based on roadway classification. Development requirements play an important role in implementation, specifically notice requirements and coordinated review procedures for land use applications; processes to apply conditions of approval to development proposals to mitigate transportation-related impacts; and regulations ensuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities, and performance standards of facilities identified in the TSP.

660-012-0050 – Transportation Project Development

Section -0050 requires that transportation projects be reviewed for compliance with local and regional plans and, when applicable, undergo a NEPA environmental review process. Amendments to Section -0050 made since adoption of the 2004 Coos Bay and North Bend TSPs protect determinations of need, mode, function and general location for projects identified in TSPs.

660-012-0060 – Plan and Land Use Regulation Amendments

Section -0060 specifies a category of facilities, improvements, and services that can be assumed to be "in-place" or committed and available to provide transportation capacity over a 20-year planning horizon. The TPR guides local jurisdictions in determining what transportation improvements are "reasonably likely to be provided by the end of the planning period" when considering amendments to local plans and land use regulations.

Amendments made to Section -0060 are among the most significant changes that have been made to the TPR since adoption of the cities' 2004 TSPs. The amendments require local jurisdictions to balance the need for development with the need for transportation improvements, establish the end of the planning period as the measure for determining "significant effect," define the transportation improvements that a local government can consider in determining significant effect, and identify methods to determine whether a needed transportation facility is reasonably likely to be provided within the planning horizon.

Project Relevance: **Requirements in TPR Sections -0020 and -0035 will guide the development of the updated TSPs, including the evaluation of alternatives and project prioritization. Requirements in Sections -0045 and -0060 will help reviewers identify and facilitate potential changes to Coos Bay's Development Code and North Bend's City Code. Potential amendments to development code requirements will be addressed in detail in Technical Memorandum #12 (Proposed Code Amendments).**

Access Management Rule (OAR 734-051)

Oregon Administrative Rule (OAR) 734-051 defines the state's role in managing access to highway facilities in order to maintain functional use and safety and to preserve public investment. Oregon Highway Plan (OHP) Policy 3A and OAR 734-051 set access spacing standards for driveways and approaches to the state highway system.[1] The most recent amendments presume that existing driveways with access to state highways have written permission from the Oregon Department of Transportation (ODOT) as required by Oregon Revised Statutes (ORS) 734. The standards are based on state highway classification and differ depending on posted speed and average daily traffic volume.

Project Relevance: **Analysis for the TSP updates and final project recommendations will need to reflect State requirements for State facilities; the updated TSPs will comply or move in the direction of meeting access management standards for State facilities. Implementation measures related to the updated TSPs may entail amendments to the development code or city code to ensure that they are consistent with state access management requirements, as well as local TSP recommendations related to access management.**

Oregon Transportation Plan (2006)

The Oregon Transportation Plan (OTP) is the state's long-range multi-modal transportation plan that addresses the future transportation needs of the State of Oregon through the year 2030. The primary function of the OTP is to establish goals, policies, strategies, and initiatives that are translated into a

[1] ODOT Access Management Standards – OHP Appendix C Revisions to Address Senate Bill 264 (2011): http://www.oregon.gov/ODOT/TD/TP/docs/ohp_am/apdxc.pdf

series of modal plans, such as the OHP and Oregon Bike and Pedestrian Plan. The OTP considers all modes of Oregon's transportation system, including Oregon's airports; bicycle and pedestrian facilities; highways and roadways; pipelines, ports and waterway facilities; public transportation; and railroads. It assesses state, regional, and local public and private transportation facilities. In addition, the OTP provides the framework for prioritizing transportation improvements based on varied future revenue conditions, but it does not identify specific projects for development.

The OTP provides broad policy guidance and sets seven overarching goals for the state.[2] Through these goals and associated policies and strategies, the OTP emphasizes:

- Maintaining and maximizing the assets in place.
- Optimizing the performance of the existing system through technology.
- Integrating transportation, land use, economic development, and the environment.
- Integrating the transportation system across jurisdictions, ownerships, and modes.
- Creating sustainable funding.
- Investing in strategic capacity enhancements.

The Implementation Framework section of the OTP describes the implementation process and how state multimodal, modal/topic plans, regional and local TSPs and master plans will further refine the OTP's broad policies and investment levels. Local TSPs can further OTP implementation by defining standards, instituting performance measures, and requiring that operational strategies be developed.

The final chapter of the OTP provides implementation and investment frameworks and key initiatives to be consulted in developing TSP projects and implementation measures.

Project Relevance: **The OTP's Key Initiatives will guide the TSP updates, specifically in the areas of system management, maximizing performance of the existing transportation system using technology and creative design solutions, pursuing sustainable funding sources, and investing strategically in capacity projects. Consistent with a central OTP policy, the TSP updates will seek to maximize the performance of existing local transportation systems by the use of technology and system management before considering larger and costlier additions to the system.**

Oregon Highway Plan (1999, Last Updated 2015)

The OHP is a modal plan of the OTP that guides ODOT's Highway Division in planning, operations, and financing. Policies in the OHP emphasize the efficient management of the highway system to increase safety and to extend highway capacity, partnerships with other agencies and local governments, and the

[2] The seven goals are Goal 1 – Mobility and Accessibility; Goal 2 – Management of the System; Goal 3 – Economic Vitality; Goal 4 – Sustainability; Goal 5 – Safety and Security; Goal 6 – Funding the Transportation System; and Goal 7 – Coordination, Communication, and Cooperation.

use of new techniques to improve road safety and capacity. These policies also link land use and transportation, set standards for highway performance and access management, and emphasize the relationship between state highways and local road, bicycle, pedestrian, transit, rail, and air systems.

The following policies are applicable to the TSP update process.

Policy 1A: State Highway Classification System

The OHP classifies the state highway system into four levels of importance: Interstate, Statewide, Regional, and District. ODOT uses this classification system to guide management and investment decisions regarding state highway facilities. The system guides the development of the facility plans, as well as ODOT's review of local plan and zoning amendments, highway project selection, design and development, and facility management decisions including road approach permits.

US 101 (Oregon Coast Highway 009) and OR 540 (Cape Arago Highway 240) are classified in the State Classification System as a Statewide Highway and District Highway respectively. The purpose and management objectives of these highways are provided in Policy 1A, as summarized below.

- Statewide highways (US 101) typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, and continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal. Inside Special Transportation Areas (STAs), local access may also be a priority.
- District highways (OR 540) are facilities of countywide significance and function largely as county and city arterials or collectors. They provide connections and links between small-urbanized areas, rural centers, and urban hubs, and serve local access and traffic. The management objective is to provide for safe and efficient, moderate to high-speed continuous-flow operation in rural areas reflecting the surrounding environment and moderate to low-speed operation in urban and urbanizing areas for traffic flow and for pedestrian and bicycle movements. Inside STAs, local access is a priority. Inside Urban Business Areas, mobility is balanced with local access.[3]

The highways also have the following designations in addition to the State Classifications. The classifications are discussed in more detail under associated policies.[4]

- US 101 in North Bend and Coos Bay – National Highway System (NHS); National Network (NN), a federal truck/freight route designation; state Freight Route (FR); Reduction Review Route (RRR); and Scenic Byway (SB).
- OR 540 in North Bend – (from mile point -0.05 to 2.24) National Highway System (NHS); from mile point -0.05 to 0.27, Special Transportation Area (STA); from mile point 0.27 to 0.77, Commercial Center (CC); and from mile point 0.77 to 2.24, Urban Business Area (UBA).

[3] OR 540 is a district highway from mile point -0.05 to 2.24 in North Bend and from mile point 4.49 to 10.94 in Coos Bay.
[4] Highway 241 briefly enters the Coos Bay UGB (which delineates the study area); however, it is a Coos Bay facility for this section and the OHP standards do not apply.

Policy 1B: Land Use and Transportation

The purpose of this policy is to facilitate coordination of land use and transportation decision making to efficiently use public infrastructure investments to:

- Maintain the mobility and safety of the highway system;
- Foster compact development patterns in communities;
- Encourage the availability and use of transportation alternatives;
- Enhance livability and economic competitiveness; and
- Support acknowledged regional, city and county transportation system plans that are consistent with this Highway Plan.

OR 540, features three different state land use/transportation designations. As it branches off US 101 in North Bend the highway is designated an STA, which is described as a “district of compact development located on a state highway within an urban growth boundary in which the need for appropriate local access outweighs the considerations of highway mobility… Direct street connections and shared on-street parking are encouraged. Local auto, pedestrian, bicycle and transit movements to the area are generally as important as the through movement of traffic.”

The highway designation changes to UBA, which signifies “existing areas of commercial activity or future nodes or various types of centers of commercial activity within urban growth boundaries… where vehicular accessibility is important to continued economic viability. Highways that have posted speeds of 35 miles per hour or less are permitted access spacing standards that reflect the dual objectives of providing local access… while maintaining existing speeds to move through traffic. For highways posted greater than 35 miles per hour, the designation is recognition that vehicular accessibility and circulation are often as important as pedestrian, bicycle and transit accessibility, but a management plan is required to ensure that these objectives are balanced. Safe and regular street connections are encouraged. Transit turnouts, sidewalks and bicycle lanes are accommodated.”

The remainder of OR 540 in North Bend is designated CC. This designation represents “large, regional centers or nodes with limited access to the state highway… The primary objective of the state highway adjacent to a Commercial Center is to maintain through traffic mobility in accordance with its function. Commercial Centers include a high level of regional accessibility and connections to the local road network. The Commercial Center accommodates pedestrian and bicycle access and circulation and, where appropriate, transit movements.”

Policy 1C: State Highway Freight System

The primary purpose of the State Highway Freight System is to facilitate efficient and reliable interstate, intrastate, and regional truck movement. This system, made up of the Interstate Highways and select Statewide, Regional, and District Highways, includes routes that carry significant tonnage of freight by truck and serve as the primary interstate and intrastate highway freight connection to ports, intermodal terminals, and urban areas. Highways included in this designation have higher highway mobility standards than other statewide highways. US 101 is a federally and state-designated freight route.

US 101 in North Bend and Coos Bay also carries a special freight-related state designation – Reduction Review Route (RRR). OAR 731-012-0010, adopted in 2013 to implement ORS 366.215, requires review of all potential actions that will alter, relocate, change, or realign a RRR and could result in permanent reductions in vehicle-carrying capacity. Reduction of vehicle-carrying capacity means a permanent reduction in the horizontal or vertical clearance of a highway section, by a permanent physical obstruction located in usable right-of-way. If ODOT identifies that an action may result in a reduction of vehicle-carrying capacity, a Stakeholder Forum will be convened to advise ODOT regarding the effect of and response to the proposed action.

Policy 1D: Scenic Byways

Several highways throughout the state have been designated Scenic Byways, which have exceptional scenic value. To protect the scenic assets of its Scenic Byways, ODOT has developed guidelines for aesthetic and design elements within the public right-of-way that are appropriate for Scenic Byways. US 101 is designated as a state Scenic Byway.

Policy 1E: Lifeline Routes

The State designates routes for emergency response in the event of an earthquake. These routes are categorized as Tier 1, 2 and 3, with Tier 1 considered the most significant and necessary to ensure a functioning statewide transportation network. A functioning Tier 1 lifeline system provides traffic flow through the state and to each region. The Tier 2 lifeline routes provide additional connectivity and redundancy to the Tier 1 lifeline system. The Tier 2 system allows for direct access to more locations and increased traffic volume capacity, and it provides alternate routes in high-population regions in the event of outages on the Tier 1 system. The Tier 3 lifeline routes provide additional connectivity and redundancy to the lifeline systems provided by Tiers 1 and 2. In Coos Bay and North Bend, Highway 101 is classified as Tier 1 lifeline route, connecting to Highway 38 and I-5, which are Tier 1 routes.[5]

Policy 1F: Highway Mobility Standards Access Management Policy

Policy 1F sets mobility standards for ensuring a reliable and acceptable level of mobility on the state highway system. The standards are used to assess system needs as part of long-range, comprehensive transportation planning projects (such as TSPs), during development review, and to demonstrate compliance with the TPR.

Significant amendments to Policy 1F were adopted in late 2011. The 2011 revisions addressed concerns that state transportation policy and requirements had led to unintended consequences and inhibited economic development. Policy 1F now provides a clearer policy framework for considering measures other than volume-to-capacity (v/c) ratios for evaluating mobility performance. As part of these amendments, v/c ratios established in Policy 1F were changed from being standards to “targets.” These targets are to be used to determine significant effect pursuant to TPR Section -0060.

Table 1 includes the mobility targets for the state facilities in the TSP study area.

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[5] https://www.oregon.gov/ODOT/Planning/Documents/Seismic-Lifelines-Evaluation-Vulnerability-Synthese-Identification.pdf

Table 1: Volume to Capacity Ratio Targets Outside Metro

VOLUME TO CAPACITY RATIO TARGETS OUTSIDE METRO[17A, B, C, D]							
Highway Category	**Inside Urban Growth Boundary**					**Outside Urban Growth Boundary**	
	STA[E]	**MPO**	**Non-MPO Outside of STAs where non-freeway posted speed <= 35 mph, or a Designated UBA**	**Non-MPO outside of STAs where non-freeway speed > 35 mph but < 45 mph**	**Non-MPO where non-freeway speed limit >= 45 mph**	**Unincorporated Communities[F]**	**Rural Lands**
Interstate Highways	N/A	0.85	N/A	N/A	0.80	0.70	0.70
Statewide Expressways	N/A	0.85	0.85	0.80	0.80	0.70	0.70
Freight Route on a Statewide Highway	0.90	0.85	0.85	0.80	0.80	0.70	0.70
Statewide (not a Freight Route)	0.95	0.90	0.90	0.85	0.80	0.75	0.70
Freight Route on a regional or District Highway	0.95	0.90	0.90	0.85	0.85	0.75	0.70
Expressway on a Regional or District Highway	N/A	0.90	N/A	0.85	0.85	0.75	0.70
Regional Highways	1.0	0.95	0.90	0.85	0.85	0.75	0.70
District/Local Interest Roads	1.0	0.95	0.95	0.90	0.90	0.80	0.75

[A] Unless the Oregon Transportation Commission has adopted an alternative mobility target for the impacted facility, the mobility targets in Tables 6 are considered standards for purposes of determining compliance with OAR 660-012, the Transportation Planning Rule.

[B] For the purposes of this policy, the peak hour shall be the 30th highest annual hour. This approximates weekday peak hour traffic in larger urban areas. Alternatives to the 30th highest annual hour may be considered and established through alternative mobility target processes.

[C] Highway design requirements are addressed in the Highway Design Manual (HDM).

[D] See Action 1F.1 for additional technical details.

[E] Interstates and Expressways shall not be identified as Special Transportation Areas.

[F] For unincorporated communities inside MPO boundaries, MPO mobility targets shall apply.

Policy 1G: Major Improvements

This policy requires maintaining performance and improving safety on the highway system by improving efficiency and management on the existing roadway network before adding capacity. The state's highest priority is to preserve the functionality of the existing highway system. Tools that could be employed to improve the function of the existing interchanges include access management, transportation demand management, traffic operations modifications, and changes to local land use designations or development regulations.

After existing system preservation, the second priority is to make minor improvements to existing highway facilities, such as adding ramp signals, or making improvements to the local street network to minimize local trips on the state facility.

The third priority is to make major roadway improvements such as adding lanes to increase capacity on existing roadways. As part of this TSP process, ODOT will work with the Cities and other stakeholders to determine appropriate strategies and tools that can be implemented at the local level that are consistent with this policy.

Policy 2B: Off-System Improvements

This policy recognizes that the State may provide financial assistance to local jurisdictions to make improvements to local transportation systems if the improvements would provide a cost-effective means of improving the operations of the state highway system. As part of this TSP update process, ODOT will work with the Cities and project stakeholders to identify improvements to the local road system that support the planned land use designations in the study area, will help preserve capacity, and will ensure the long-term efficient and effective operation of high functional class facilities.

Policy 2F: Traffic Safety

This policy emphasizes the State's efforts to improve safety of all users of the highway system. Action 2F.4 addresses the development and implementation of the Safety Management System, which targets resources for sites with the most significant safety issues. The TSP update process will include citywide crash analysis to identify sites with a history of fatal and serious injury crashes and identify potential countermeasures to reduce crashes.

Policy 2G: Rail and Highway Compatibility

This policy recognizes the need to increase safety and transportation efficiency through the reduction and prevention of conflicts between railroads and highway users. The Coos Bay Rail Line is the short line railroad operating in the North Bend and Coos Bay region. It was acquired and re-opened by the Port of Coos Bay in 2011 and is currently operated by Coos Bay Rail Link. About 99% of the product moved on the rail line is related to the timber industry. The product travels on the short line to the Union Pacific interchange near Eugene, where it connects with the National Railroad System.

Policy 3A: Classification and Spacing Standards

State policy seeks to manage the location, spacing, and type of road intersections on state highways in a manner that ensures the safe and efficient operation of state highways consistent with their highway classification.

Action 3A.2 calls for spacing standards to be established for state highways based on highway classification, type of area, and posted speed. Tables in OHP Appendix C present access spacing standards, which consider urban and rural highway classification, traffic volumes, speed, safety, and operational needs. The access management spacing standards established in the OHP are implemented by access management rules in OAR 734, Division 51, addressed earlier in this report. The TSP update process will evaluate existing state facilities according to these standards.

Policy 4A: Efficiency of Freight Movement

Policy 4A emphasizes the need to maintain and improve the efficiency of freight movement on the state highway system. It seeks to balance the needs of long distance and through freight movements with local transportation needs on highway facilities in both urban and rural areas. US 101 is a designated Freight Route.

Policy 4B: Alternative Passenger Modes

Policy 4B encourages the development of alternative passenger services and systems as part of broader corridor strategies. The policy promotes the development of alternative passenger transportation services located off the highway system to help preserve the performance and function of the state highway system. Coos County Area Transit (CCAT) currently provides local transit service in North Bend and Coos Bay; Greyhound, Pacific Crest Bus Lines (Amtrak) and Coastal Express (Curry Public Transit) provide regional service. Improving safety, access, and mobility for pedestrians and bicyclists is an objective of this TSP update process.

Policy 4D: Transportation Demand Management

This policy supports the efficient use of the state transportation system through investment in transportation demand management (TDM) strategies. Action 4D.1 calls for reducing peak period single-occupancy vehicle travel and moving traffic demand out of the peak period to improve the flow of traffic on state highways. The TSP update process will review TDM strategies that can be adopted as policy, development requirements, and/or incentive programs instituted by employers and other organizations in the cities.

Project Relevance: **The TSP planning process will consider policies in the OHP that relate to identified improvements or modifications that would affect US 101 and OR 540. OHP policies provide guidance in developing recommendations that would impact the accessibility, mobility, or function of state highways. The TSPs are being developed in coordination with ODOT so that projects, policies, and regulations proposed as part of the local plans will comply with, or move in the direction of meeting, the standards and targets established in the OHP related to safety, access, and mobility.**

Oregon Bicycle and Pedestrian Plan (2016)

The intent of the Oregon Bicycle and Pedestrian Plan (OBPP) is to create a policy foundation for making walking and biking investments and developing strategies and programs that foster an interconnected, robust, efficient, and safe transportation system. The OBPP establishes the role of walking and biking as essential modes of travel within the context of the entire transportation system and recognizes the benefit to the people and places in Oregon.

The OBPP provides direction, namely 20 policies and associated strategies designed to develop, sustain, and improve walking and biking networks. It identifies nine goals based upon the broader goals of the OTP, which reflect statewide values and desired accomplishments relating to walking and biking:

- Goal 1: Safety
- Goal 2: Accessibility and Connectivity
- Goal 3: Mobility and Efficiency

- Goal 4: Community and Economic Vitality
- Goal 5: Equity
- Goal 6: Health
- Goal 7: Sustainability
- Goal 8: Strategic Investment
- Goal 9: Coordination, Cooperation, and Collaboration

The OBPP also provides background information related to state and federal law, funding opportunities, and implementation strategies proposed by ODOT to improve bicycle and pedestrian transportation. It outlines the role that local jurisdictions play in the implementation of the OBPP, including the development of local pedestrian and bicycle plans as stand-alone documents within TSPs.

Project Relevance: The policies and design guidance in the OBPP apply to state highway facilities in Coos Bay and North Bend (US 101 and OR 540). This policy and design guidance will also be considered in developing local street standards and bicycle and pedestrian system components in the updated TSPs. In addition, bicycle and pedestrian system improvements recommended in the updated TSPs should reflect recommended implementation strategies from the OBPP.

Oregon Public Transportation Plan (1997, Updated in 2018)

The Oregon Public Transportation Plan (OPTP) is the modal plan of the OTP that provides guidance for ODOT and public transportation agencies regarding the development of public transportation systems. The guiding vision from the 1997 OPTP was to create a comprehensive, interconnected, and dependable public transportation system, one that has stable funding and provides appropriate service in each area of the state.

The OPTP is being updated; a draft was released for public review in April 2018 and adoption by the Oregon Transportation Commission (OTC) is expected in September 2018. The updated OPTP is intended to establish common understandings for local, regional, and state agencies by addressing the following:

- Vision and goals for public transportation
- Policy and strategy framework to inform decision making
- Possible priorities under different levels of funding for public transportation
- Opportunities and challenges in investment and implementation
- Positioning public transportation as a key part of Oregon's transportation system

The vision stated in the draft OPTP is:

> *In 2045, public transportation is an integral, interconnected component of Oregon's transportation system that makes Oregon's diverse cities, towns, and communities work. Because public transportation is convenient, affordable, and efficient, it helps further the state's*

quality of life and economic vitality and contributes to the health and safety of all residents, while reducing greenhouse gas emissions.

The draft plan establishes and is organized into the following 10 goal areas:

1. Mobility – Public Transportation User Experience
2. Accessibility and Connectivity – Getting from Here to There
3. Community Livability and Economic Vitality
4. Equity
5. Health
6. Safety and Security
7. Environmental Sustainability
8. Land Use
9. Strategic Investment
10. Communications, Collaboration and Coordination

While the draft OPTP does not recommend specific projects or investments, new efforts in planning for transit come with the passage of HB 2017 (Keep Oregon Moving Act) and the establishment of a new dedicated source of funding for expanding public transportation service in Oregon.[6] The Statewide Transportation Improvement Fund, or STIF, provides the impetus for coordinating the prioritization of needed infrastructure. Moneys in the STIF are continuously appropriated to finance investments and improvements in public transportation services and may be used for public transportation purposes that support the effective planning, deployment, operation, and administration STIF-funded public transportation programs. STIF moneys may be also used as the local match for state and federal funds that also provide Public Transportation Service.[7]

Project Relevance: The TSP update process will consider the existing transit system and intracity and intercity needs while developing recommended policies and projects related to improving transit service. Updating the transit element of the TSPs will be guided by direction from the OPTP. The project technical advisory committee includes a representative of CCAT to advise on transit policies and improvements. STIF funding will be identified as a possible funding source for transit-related capital improvements that result from the TSP

Oregon Freight Plan (2011, Amended in 2017)

The Oregon Freight Plan (OFP) is a modal plan of the OTP that implements the state's goals and policies related to the movement of goods and commodities. Its purpose statement identifies the state's intent

[6] https://www.oregon.gov/ODOT/Pages/HB2017.aspx.
[7] https://secure.sos.state.or.us/oard/viewSingleRule.action?ruleVrsnRsn=245662

to "improve freight connections to local, Native America, state, regional, national and global markets in order to increase trade-related jobs and income for workers and businesses." The objectives of the plan include prioritizing and facilitating investments in freight facilities (including rail, marine, air, and pipeline infrastructure) and adopting strategies to maintain and improve the freight transportation system.

The plan defines a statewide strategic freight network. The following facilities in the study area are considered part of the Western Corridor Strategic Corridor in the OFP: the Port of Coos Bay, US 101, Coos Bay Rail Line, and the Southwest Oregon Regional Airport.

The following policy and strategic direction provided in the OFP prioritizes preservation of strategic corridors as well as improvements to the supply chain achieved through coordination of freight and system management planning.

- Strategy 1.2: Support freight access to the Strategic Freight System. This includes proactively protecting and preserving corridors designated as strategic.
- Action 1.2.1. Preserve freight facilities included as part of the Strategic Freight System from changes that would significantly reduce the ability of these facilities to operate as efficient components of the freight system unless alternate facilities are identified or a safety-related need arises.
- Strategy 2.4: Coordinate freight improvements and system management plans on corridors comprising the Strategic Freight System with the intent to improve supply chain performance.

The OFP was amended in 2017 to maintain compliance with federal requirements that came from the FAST Act for state freight plans.

The OFP lists needs that are pertinent to the study area. The categories of freight needs are summarized below:

- Intermodal connector roads
- Vertical clearance
- Port of Coos Bay
- Rail Freight Line condition

Project Relevance: Guided by direction from the OFP, maintaining and enhancing efficiency of the truck and rail freight system in the study area, in line with direction from the OFP, will be a consideration during the TSP update process. The project technical advisory committee includes representatives from ODOT to advise on freight issues. The TSP technical documentation will detail the specific freight needs outlined in the OFP.

Oregon Aviation System Plan (2014)

The Oregon Aviation Plan (OAP) was published in 2007 and updated with an economic impact analysis in 2014. The 2014 analysis of airports in Oregon was developed to measure economic impacts of airport facilities, within regions and throughout the state. The 2007 plan classifies airports based on their functional roles; recommends airside facilities, general/landside facilities, and services according to classification; and provides a statewide perspective relating to airport planning decisions while further refining the goals and policies of the OTP.

The Southwest Oregon Regional Airport in North Bend is classified as a Commercial Service Airport in the OAP. Based on recommended facilities and services, an analysis of the airport conducted for the 2007 plan found the need for improvements including a runway guidance system; designated cargo apron and small handling facility; a parallel taxiway; an extended runway; hangars; and food/drink services.[8]

Project Relevance: The TSP updates will consider goals, policies, and recommendations from the OAP in assessing the existing Air element in the TSPs, incorporating applicable policies and recommendations from the OAP as appropriate. The air transport mode plans in the TSPs will also be informed by representatives from the Southwest Oregon Regional Airport and the most recent master planning done for the airport (see summary of the 2013 Master Plan in this memorandum).

Oregon Rail Plan (2014)

The Oregon State Rail Plan is a modal plan that addresses long-term freight and passenger rail planning in Oregon. The Plan provides a comprehensive assessment of the state's rail planning, freight rail, and passenger rail systems. It identifies specific policies concerning rail, establishes a system of integration between rail (freight and passenger elements) and the land use and transportation planning process, and calls for cooperation between state, regional, and local jurisdictions in planning for rail.

The Coos Bay Rail Line, a short line railroad, operates in the North Bend and Coos Bay region. The line travels to the Union Pacific interchange near Eugene, where it connects with the National Railroad system.

Project Relevance: The TSP updates will consider the needs of the freight rail system in the cities and region while developing recommended policies and projects for improving rail safety and mobility in the cities. The project technical advisory committee includes ODOT and Coos Bay Rail Link representative to advise on rail and freight interests.

[8] Coos County Airport District Staff reports that current conditions at the Airport include: a runway guidance system for the primary runway (4/22), but not the secondary runway (13/31); designated cargo locations on the airfield (FedEx and UPS); an extended primary runway (4/22), but not secondary runway; and T-Hangars and a large 30,000 square foot hangar.

Oregon Transportation Safety Action Plan (2016)

The TSAP is a multi-purpose plan that includes both a 20- year policy plan and a 5-year, federally compliant, Strategic Highway Safety Plan. It envisions no deaths or life-changing injuries on Oregon's transportation system by 2035. The long-term goals of the TSAP are to foster a safety culture, develop infrastructure for safety, support healthy communities, leverage technology, and coordinate agencies and stakeholders to work together, and guide strategic safety investments. The plan bases its 5-year strategic plan on four broad emphasis areas that were identified in the planning process for improving safety: risky behaviors, such as impaired driving, distracted driving, unbelted driving, and speeding; infrastructure such as intersection improvements; protections for vulnerable users, such as pedestrians, bicyclists, and older road users; and improved systems, including data collection, training, enforcement, licensing, and emergency response. The TSAP identifies long-term goals, policies, strategies, and short-term actions to improve transportation safety.

Project Relevance: TSAP can be used to help identify appropriate strategies to improve transportation system safety in the cities. The TSP update process will consider safety in the selection and prioritization of transportation projects, consistent with the TSAP.

Oregon Resilience Plan (2013)

The Oregon Resilience Plan (ORP) provides policy guidance and recommendations to mitigate risks, accommodate emergency response and recovery, and support the resilience of government and business before, during, and after a Cascadia earthquake and tsunami. The plan assesses the seismic integrity of Oregon's multi-modal transportation system, including bridges and highways, rail, airports, water ports, and public transit systems.

The ORP classifies highway lifeline routes as Tier 1, 2, and 3, where Tier 1 Routes make up the transportation backbone system that provides the greatest benefits for short-term rescue and longer-term economic recovery. US 101 in North Bend and Coos Bay is designated as a Tier 1 Route.

The ORP establishes recovery targets according to mode and classifications of facilities by zone, including tsunami inundation zones and coastal zones outside tsunami inundation zones (Figure 5.22 in the plan). Targets for recovery in all mode categories are organized into three levels: minimal, operational, and functional.

The ORP makes the following recommendations regarding transportation and system planning actions, based on a gap analysis and transportation interdependency assessment.

- complete an inventory of local agency transportation assets;
- conduct an evaluation and gap analysis of local streets including transit and as well as ports, railroads, and airports;
- develop a mitigation policy and retrofit plan;
- refine an interdependency strategy;
- improve highway lifeline maps;

- enhance design and maintenance standards for transportation facilities based on lifeline route priority; and
- develop a temporary bridge strategy; and support research.

Project Relevance: The ORP provides guidance and priorities to maintain the seismic integrity of Oregon's multi-modal transportation system. Policies and standards adopted as a result of the TSP should consider additional guidance, concepts, and strategies for design related to facility resiliency in the event of seismic activity.

Statewide Transportation Strategy; a 2050 Vision for Greenhouse Gas Emissions Reduction (2013)

The Statewide Transportation Strategy (STS) examines all aspects of the transportation system, including the movement of people and goods. It identifies transportation system, vehicle and fuel technology, and urban land use pattern strategies designed to support the STS 2050 Vision where GHG emissions (total emissions) are 60% percent lower than 1990 emissions. Emission reductions vary by mode; e.g., higher reductions can be achieved in light vehicles than in freight or air. The strategies focus on prevention and mitigation of climate impacts and not adaptation, which is addressed in other ODOT planning efforts.

The STS is consistent with the OTP and the Governor's 10-Year Energy Action Plan. However, it does not contain specific policies or goals and was not developed to be a policy document like the OTP. It is not part of the suite of adopted statewide plans, yet it is meant to inform the OTP, state modal plans, state topic plans, and metropolitan scenario planning.

The plan is advisory and presents 18 distinct strategies grouped into the following categories: vehicle and engine technology advancements; fuel technology advancements; enhanced system and operations performance; transportation options; efficient land use; and funding and pricing mechanisms. Strategies related to enhanced system and operations performance, transportation options, efficient land use, and funding include the following:

- Strategy 3 – Operations and Technology; optimizing the transportation system through operations and technology.
- Strategy 5 – Parking Management; examples and guidance are provided for small, medium, and large communities.
- Strategy 7 – Transportation Demand Management; make it easier for people to choose transportation options.
- Strategy 9 – Intracity Transit Growth and Improvements; examples and guidance are provided for small and medium communities.
- Strategy 10 – Bicycle and Pedestrian Network Growth; encourage local trips (less than 20 miles) to shift to zero-emission modes.

- Strategy 11 – Car sharing; enhance the availability of car sharing (short-term self-service vehicle rental and/or peer-to-peer) programs.
- Strategy 13 – Compact, Mixed-use Development; reduce travel distances and enhance transportation options.
- Strategy 15 – More Efficient Use of Industrial Land; encourage and incentivize through measures including better access to low-carbon freight modes.

Many of the strategies require further analysis before implementation. The STS calls for a work plan to be developed detailing potential next steps, including collaborative efforts at the federal, state, and local levels as well as with businesses and individuals.

Project Relevance: The STS is an advisory, and not regulatory, document that can be used as a resource for reducing the carbon footprint of policies, program, and projects considered in the TSP update process.

Highway Design Manual (2012)

The 2012 Highway Design Manual (HDM) provides ODOT with uniform standards and procedures for planning studies and project development for the state's roadways. It is intended to provide guidance for the design of new construction; major reconstruction (4R); resurfacing, restoration, and rehabilitation (3R); or resurfacing (1R) projects. It is generally in agreement with the American Association of State Highway and Transportation Officials (AASHTO) document *A Policy on Geometric Design of Highways and Streets - 2011*. Sound engineering judgment will continue to be a vital part in the process of applying the design criteria to individual projects; the flexibility contained in the 2012 HDM supports the use of Practical Design concepts and Context Sensitive Design practices.

The HDM is to be used for all projects that are located on state highways. National Highway System or Federal-aid projects on roadways that are under local jurisdiction will typically use the 2011 AASHTO design standards or ODOT 3R design standards. Table 2 shows which design standards are applicable for certain projects based on project type, and whether or not the project involves a state route.

This manual is used in determining design requirements as they relate to the state highways in TSPs. Although the appropriate ODOT design standards are to be applied on ODOT roadway jurisdiction facilities, local adopted plans and design practices can provide additional guidance, concepts, and strategies related to roadway design.

Table 2: Design Standards Selections Matrix, ODOT Highway Design Manual

Project Type	Roadway Jurisdiction				
	State Highways			Local Agency Roads	
	Interstate (I-5)	Urban State Highways (OR-99E, OR-211, OR-214, OR-219)	Rural State Highways	Urban	Rural
Modernization/ Bridge New/Replacement	ODOT 4R/New Freeway	ODOT 4R/New Urban	ODOT 4R/New Rural	AASHTO	

Project Type	Roadway Jurisdiction				
Preservation/ Bridge Rehabilitation[9]	ODOT 3R Freeway	ODOT 3R Urban	ODOT 3R Rural	AASHTO	ODOT 3R Rural
Preventive Maintenance	1R	1R	1R	NA	NA
Safety- Operations- Miscellaneous/ Special Programs	ODOT Freeway	ODOT Urban	ODOT Rural	AASHTO	ODOT 3R Rural

The HDM includes mobility standards related to project development and design that are applicable to all modernization projects; except for development review projects (see Table 3). The v/c ratios in the HDM are different from those shown in the OHP. The v/c ratio values in the OHP are used to assist in the planning phase to identify future system deficiencies; the HDM v/c ratio values provide a mobility solution that corrects those previously identified deficiencies and provides the best investment for the state over a 20-year design life.

Table 3: 20-Year Design Mobility Standards (Volume/Capacity [V/C]) Ration

Highway Category	Inside UGB / Non-MPO outside of STAs where non-freeway speed limit <45 mph	Inside UGB / Non-MPO where non-freeway speed limit >=45
Interstate Highways and Statewide (NHS) Expressways	0.70	0.65
Statewide (NHS) Non-Freight Routes and Regional or District Expressways	0.75	0.70
Regional Highways	0.75	0.75
District/Local Interest Roads	0.80	0.75

Project Relevance: The HDM governs design standards on state roadways; analysis for the TSP updates and final project recommendations will need to reflect state requirements for state facilities (US 101 and OR 540). Standards and guidelines adopted by the cities may be considered for additional guidance, concepts, and strategies for design.

Statewide Transportation Improvement Program (STIP) (2018-2021)

The State Transportation Improvement Program (STIP) is the four-year programming and funding document for transportation projects and programs on the state and regional transportation systems, including federal land and Indian reservation road systems; interstate, state, and regional highways; bridges; and public transit. The STIP includes state- and federally-funded system improvements.

[9] Local agencies have the choice of using AASHTO's *A Policy on Geometric Design of Highways and Streets - 2011* or ODOT 3R Urban design standards. Local Agencies may use AASHTO for Vertical Clearance requirements on Local Agency Jurisdiction Roads.

The projects and programs considered for the STIP undergo a selection process that is held every two years. Development of the 2021-2024 STIP began in July 2017; ODOT expects to complete the STIP process in 2020.[10] The STIP is adopted by the OTC and is approved by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) as required by federal law.

The following projects are identified in the study area in the 2018-2021 STIP:

- US101: McCullough Bridge painting (Coos Bay) – Key: 18914, applicant: ODOT, construction 2018
- US101: Johnson Avenue intersections, improve signal phasing and coordination (Coos Bay) – Key: 20246, applicant: ODOT, preliminary engineering 2018 to construction 2020
- OR540: Broadway at Newmark realign (North Bend), upgrade signal poles and hardware, convert the 4-Lane roadway to 3-lane roadway with center turn lane – Key: 20219

Project Relevance: The TSP update process will take into account projects that are programmed in the STIP. An expected outcome of this planning process are identified projects and/or programs that are recommended for inclusion in the STIP.

ODOT Transportation System Plan Guidelines (2018)

The Transportation System Plan (TSP) Guidelines are intended to assist local jurisdictions in the preparation and update of city and county TSPs. The guidelines help jurisdictions develop plans that meet local needs and comply with state regulation and policy direction, including applicable elements of the TPR, as well as the OTP and associated mode and topic plans. The TSP Guidelines answer the "What, Why and When" questions surrounding TSP projects and provide detailed direction on scoping, developing, and administering TSPs. The planning guidance is best accessed via a web-based platform (http://staging.apps.oregon.gov/ODOT/Planning/TSP-Guidelines/Pages/default.aspx) and includes helpful information and examples for both citizens and practitioners.

Project Relevance: The TSP Guidelines will be a reference for the project management team to ensure that required plan elements and methodology are employed in the update of the local TSPs. They may also be used by the cities to inform citizens and local decision makers on the required planning steps in the TSP update process and plan implementation.

[10] Indian reservations and transit receive their own funding and are not eligible for inclusion on this list.

Regional Plans and Policies

Coos Bay Estuary Management Plan

The Coos Bay Estuary Management Plan (CBEMP) regulates uses and activities on land and in water within a federally designated estuary area. Coos County is preparing to go through the process to update the plan. The existing CBEMP provides policies to guide development, protection, and conservation activities. All allowed uses and activities are subject to compliance with applicable CBEMP policies.

The plan defines three management units based on conditions and types of uses permitted:

- Natural – protects natural features by limiting development;
- Conservation – permits all Natural uses but also allows some water-dependent recreational uses; and
- Development – permits all Natural and Conservation uses as well as water-dependent industrial and commercial uses.

"Land transportation facilities," which include highways, bridges and associated structures, and railroads, are uses regulated in the management units and shoreland segments designated throughout the estuary area. They are generally allowed outright or with special conditions specified in the plan. Land transportation facilities are prohibited in a few of the shoreland segments with Conservation Shoreland (CS) management classifications, including Shoreland Segments 24 and 45 (Upper Bay – Eastside), Shoreland Segment 52 (Lower Bay – Coos Bay), and Shoreland Segment 53 (Lower Bay – Coos Bay/North Bend).

In terms of specific road projects, CBEMP Policy 71 allowed for the minimum fills necessary for the East Catching Slough Road widening, a project deemed an emergency in order to protect public safety and welfare. The policy established that no administrative reviews or conditional use permits are needed for the project to be found consistent with the CBEMP.

Project Relevance: **Improvements proposed within the CBEMP boundaries during the TSP update process must comply with plan regulations and restrictions regarding transportation facilities.**

Bay Area Comprehensive Economic Analysis (1998)

The Bay Area Comprehensive Economic Analysis assessed employment land needs and formulated a regional economic development strategy comprised of objectives and action plan recommendations.

Commercial and industrial land needs were estimated for both a baseline scenario (based on State of Oregon employment projections) and a "potential" scenario in which a new steel mill and natural gas pipeline would be developed. The land needs assessment found a need for commercial land under both scenarios and in both the short term and long term.

The regional economic development strategy is driven by the following objectives.

- to coordinate, as a region, on issues related to economic development (including land use planning);
- to promote development of the region's traditional natural-resource-based industries as well as tourism, medical facilities, and new industries and commercial businesses;
- to ensure the region is served by public services and transportation that will meet the needs of existing and potential businesses;
- to promote the region's shipping and maritime resources;
- to encourage tourism; and
- to enhance the waterfront areas of downtown North Bend and Coos Bay.

The objectives were used to evaluate local and regional plans and regulations, such as local comprehensive plans, development ordinances, urban renewal plans, and a regional transportation study. Resulting recommendations include proposed amendments to the comprehensive plans and development ordinances as well as ways to build upon direction from the other documents.

Project Relevance: The Bay Area Comprehensive Economic Analysis may be of limited relevance due to the dated projections and land needs assumptions. More recent analysis, such as the industrial and commercial land needs findings in the 2009 Coos Bay Economic Analysis, can provide more updated direction. However, the older economic development strategy objectives may be considered when formulating recommendations for the updated TSPs.

Bikeway Master Plan (1991)

The Bikeway Master Plan covers the Coos Bay/North Bend Bay Area and areas around Coos County parks. It is a comprehensive plan for all bicycle related needs in the Bay Area, as well as a park-centered plan for the rural areas of Coos County. Developed with the assistance of local and statewide government agencies, advisory committees, and advocates, the plan describes the existing bikeway systems within the area, system deficiencies and user concerns, and usage projections. Within the cities, bicycle trips were found to typically be made for utility purposes between core areas such as US 101, Ocean Boulevard, Newmark Street, and other arterial and collector streets. Outside the cities, trips were more recreational in nature. To improve biking experiences, the plan recommends specific cost-effective measures including encouragement, project review, safety, and education measures (Section 5.5). The plan also identifies ways of determining needed improvements and provides a preliminary bicycle network map for the Bay Area (Figure 1).

Plan policies include the following:

- Maintain existing bikeways and assure funds are allocated to continue maintenance of new facilities.

- When improving designated routes, anticipated usage, safety, and construction costs shall be the primary considerations. Safe transportation of vehicles on streets is a higher priority than storage of vehicles on streets.
- Assure facilities satisfy the utilitarian and recreational needs of county residents and visiting bicyclists.
- Emphasize roadway bikeways, due to the construction and maintenance costs of separated paths. Always consider bikeways in future roadway projects.

Assist appropriate agencies with the development of safety and education programs.

Establish a Coos County Bicycle Advisory Committee

The plan recommended the following regulations:

- Accommodate bicyclists on shoulder bikeways on US 101 and State Highway 42
- Designate routes along Cape Arago Highway, Coos River Highway, Powers Highway, and Highway 42 South.

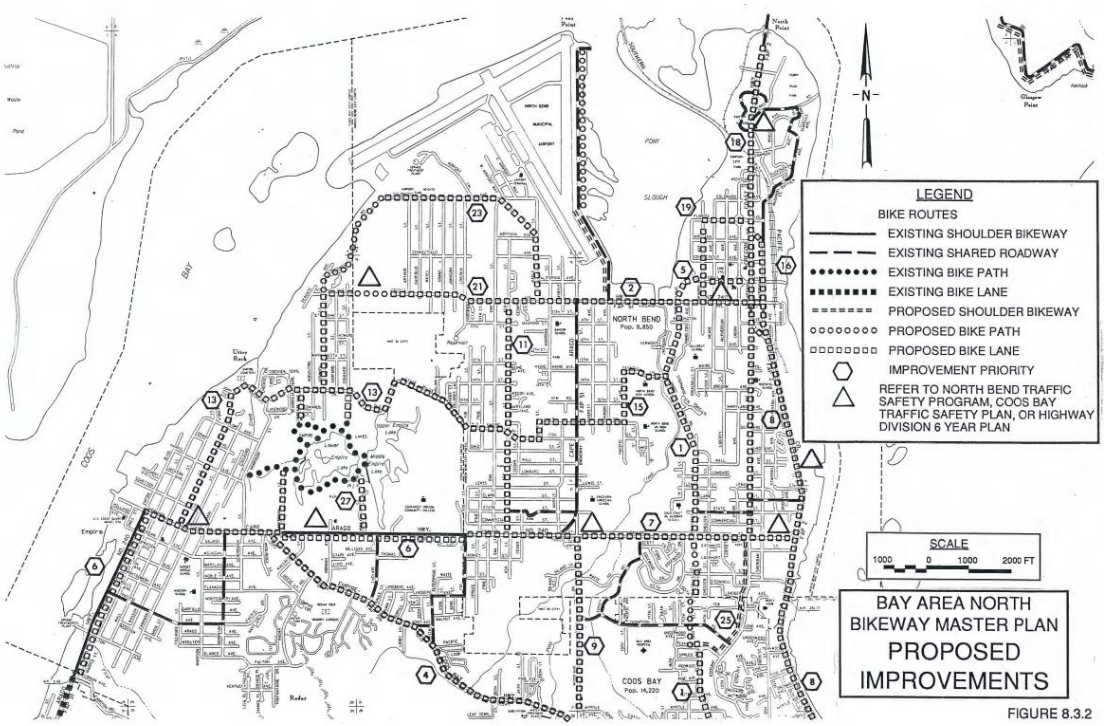
The plan recommends that the cities first establish a route network that will access a variety of destinations and traffic generators. The primary objective behind recommended projects was to link the following routes and locations:

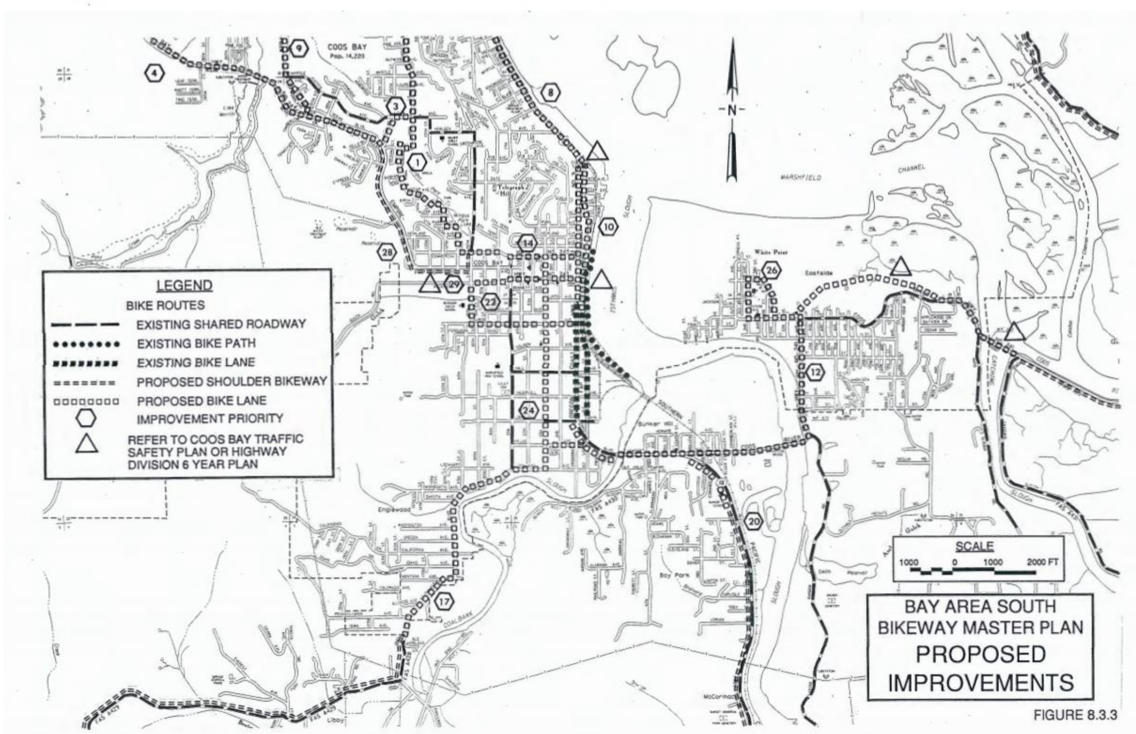
- Oregon Coast Bike Route
- Highway 101
- Downtown Core Areas
- Schools, Parks, Shopping, and Employment Centers
- Empire Lakes Recreation Routes
- Popular out-of-town routes (Cape Arago, Coos River, Libby)

The improvements needed to establish an urban route network within the Bay Area are listed and shown in Figures 8.3.2 and 8.3.3 in the plan (see Figure 1).

Project Relevance: The Bikeway Master Plan provides policy direction and a comprehensive set of planned and prioritized bicycle network improvements. Due to the age of the plan document, the relevance of its policies and projects will be evaluated for relevancy to this TSP update project.

Figure 1. Bay Area Bikeway Master Plan Proposed Improvements





Coos County Transportation System Plan (2011)

The Coos County TSP establishes transportation planning goals and objectives and recommends a multimodal set of plans to address existing and future system deficiencies. The Coos County TSP governs transportation planning in the area outside of UGBs, but also includes policies that address County roadways within urbanizing areas. Such policies include directing the County to work with local jurisdictions to establish cooperative road improvement programs and jurisdictional transfers within urban growth areas. The TSP affirms that construction or reconstruction of County roadways inside UGBs should be consistent with the city's road design standards in order to facilitate a potential jurisdictional transfer in the future. For roadways in a UGB or urban unincorporated community without adopted standards, the County TSP road design standards are applied.

There are a handful of projects on county roads adjacent to or in close proximity to the Coos Bay and North Bend UGBs, including the following:[11]

- Roadway paving projects (R-25 and R-28)
- Bridge rehabilitation/replacement projects (B-14)
- Natural hazard (slide) mitigation projects (NH-1 and NH-18)
- Roadway safety (advance signage) projects (S-34 and S-35)
- Other system improvement (signalization and turn lanes) projects (OS-1, OS-4, OS-5, and OS-7)
- Bicycle/pedestrian (sidewalk) projects (BP-4), in Coos Bay

The County and cities coordinate transit service between cities and other locations in the county through CCAT planning efforts. The County and Port of Coos Bay coordinate on rail, pipeline, and water transportation planning.

Project Relevance: This planning project will consider Coos County TSP policies that relate to both the County and Cities in updating policies for the Coos Bay and North Bend TSPs (e.g., jurisdictional transfer). As needed and appropriate, the TSP updates will coordinate projects, programming, and planning with the Coos County representative on the technical advisory committee.

Coos County Coordinated Human Services Public Transportation Plan (2016)

Coordinated public transportation plans are required by the Federal Transit Administration (FTA) and ODOT for recipients of FTA Section 5310 program funds and State Transportation Funds (STF). They differ from Transit Development Plans[12] in that they focus on engaging public transportation and health service providers in collaboratively identifying and addressing the public transportation needs of special

[11] Note that the TSP update project will verify whether these projects have been completed.

[12] A 2018 Transportation Growth Management grant has been secured for the creation of a Coos County Area Transit Transportation Master Plan. https://www.oregon.gov/LCD/TGM/docs/Grants/2018-TGM-Awards.pdf

needs populations rather than identifying transit service improvements more generally for the population of Coos County.

The Coordinated Human Services Public Transportation Plan documents existing conditions and transit services describes stakeholder outreach conducted during the planning process, and establishes needs, strategies, and priorities for public transportation in Coos County. Based on needs, the plan identified the following strategies, by priority category.

High Priority

- Seek funding to preserve existing levels of public transit services within the County as the highest priority, with expansion of service as additional funding becomes available and demand justifies.
- As funding permits, expand access to and convenience of public transportation.
- Improve freedom of movement and quality of life for transit dependent populations and assure transportation access to jobs, health care, education and other basic services.
- Develop a volunteer driver program to address the increase in demand for services.
- Continually strive to coordinate the planning for and provision of public transportation services with the provision of human and health services.

Medium Priority

- Expand efforts to inform the public of available public transportation services, including low-income and non-English speaking populations.
- Continue to pursue opportunities for regional collaboration and expansion of the regional transportation system.

Low Priority

- Improve public transportation services to rural portions of the county.
- Establish mechanisms for routinely monitoring plan implementation.

Actions to implement these strategies are generally not specified for specific locations. High priority actions that may have greater applicability for the cities and transportation system planning include the following:

- collaborate with the Coquille Tribe on a pilot program for shuttle services for casino employees seeking to access key services (e.g., Fred Meyer) from employee housing;
- consider an additional loop circulator between Coos Bay and North Bend;
- address safety and convenience of transit stops, such as lack of curb ramps (at crossings) and stops without shelters;
- improve pedestrian and bicycle connections to transit stops;
- locate transit stops at senior centers and retirement facilities where feasible; and

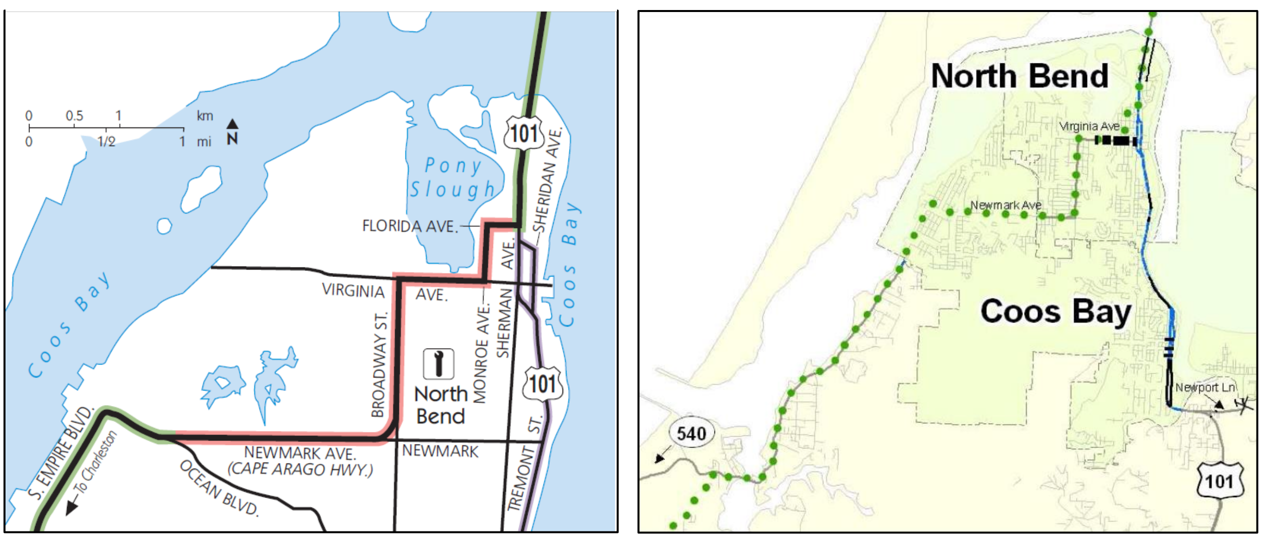
- coordinate with health care facilities regarding providing transportation for their employees.

Project Relevance: The TSP updates will be coordinated with CCAT and other transit service providers at strategic points during the project. High priority actions from the Coordinated Human Services Public Transportation Plan will be considered during the evaluation and prioritization of needed transportation projects. Coordination between the TSP planning process and outcomes and the planned development of the Coos County Area Transit Transportation Master Plan is also important for successful transit planning in the cities. Development and zoning code amendments related to transit access and transit stop improvements is an expected outcome of this planning project.

Oregon Coast Bike Route

The Oregon Coast Bike Route (OCBR) is an approximately 370-mile bike route from Washington to California that was designated by the OTC in the early 1980s. For the most part, the OCBR follows US 101 as a shoulder bikeway. In some areas, the route departs from US 101 and follows county roads or city streets to take advantage of closer proximity to the ocean, scenic views, lower traffic volumes, and slower traffic speeds. Through ridership is estimated to be 6,000-10,000 people annually, with riders predominantly traveling from north to south. The OCBR also serves people taking shorter trips between and within communities along the route.

Figure 2. Oregon Coast Bike Route Maps



Sources:
https://www.oregon.gov/ODOT/Programs/TDD%20Documents/oregon-coast-bike-route-map.pdf and http://www.co.coos.or.us/Portals/0/Planning/cctsp03-28-11.pdf

ODOT has commissioned an OCBR Plan project to ensure the OCBR stays competitive as a bicycle tourism destination and better serves local residents using the route for bike commuting, thereby helping to reduce motorized vehicle demand on US 101. The OCBR and US 101 are currently being evaluated for safety, accessibility, and enjoyment for both local community members and visitors. The planning process includes analysis of the current alignment and identification of opportunities to modify the OCBR alignment, given analysis findings related to traffic speeds, traffic volumes, roadway geometry conditions, aesthetic conditions, bicycle traffic attractors, and bicycle traffic generators. The resulting plan for the OCBR will feature current best practices in bicycle facility design and will propose locations for recommended facility improvements.

The current alignment of the OCBR through North Bend and Coos Bay, on a smaller and larger scale as taken from the OCBR map website and the Coos County TSP, is show in Figure 2.

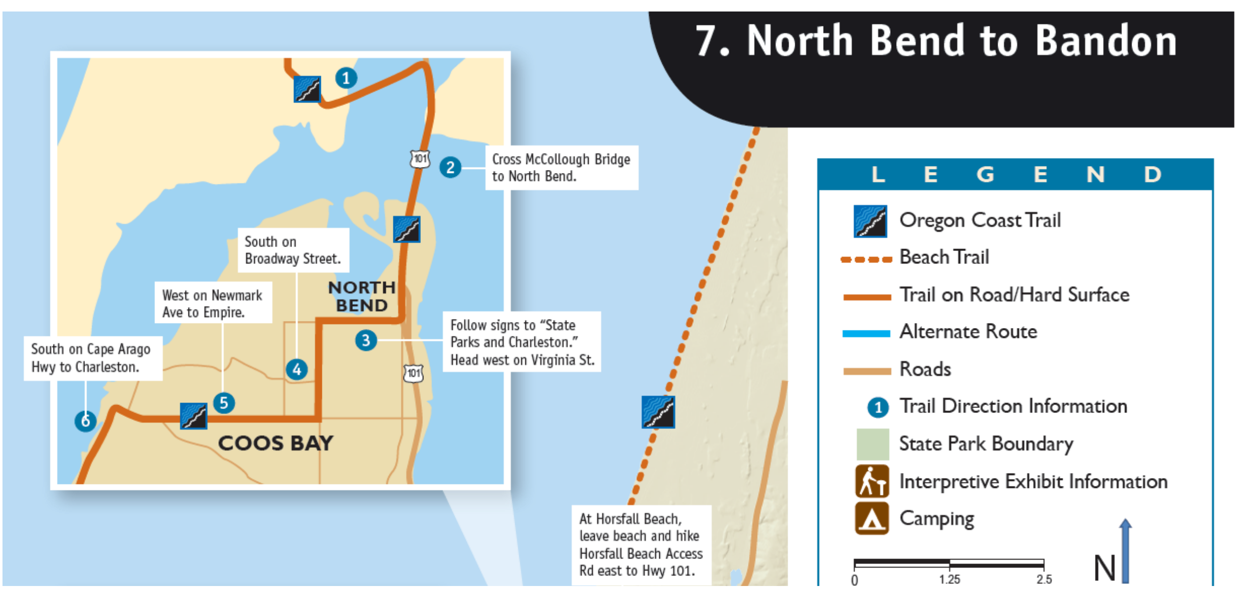
Project Relevance: **The TSP updates will be informed by current OCBR planning and will coordinate new policy, programming, and projects related to biking that result from both planning projects.**

Oregon Coast Trail

The Oregon Coast Trail is a 382-mile hiking route that mostly travels on beaches, with some segments wind through state parks or public lands. Other segments of the trail pass through private property on easements or are located on the shoulders of US 101, county roads, and city streets.

Figure 3 shows the Oregon Coast Trail alignment through North Bend and Coos Bay, which coincides with the OCBR alignment.

Figure 3. Oregon Coast Trail Map



Source: *https://www.oregon.gov/oprd/PARKS/docs/OCT_g.pdf*

Project Relevance: The TSP update project will consider the presence and asset of the Oregon Coast Trail in creating new policy, programming, and projects related to walking in the updated TSPs.

Southwest Oregon Regional Airport (OTH) Master Plan (2013)

The Southwest Oregon Regional Airport (OTH) Master Plan provides a comprehensive look at existing airport facilities and future needs. It describes infrastructure plans that meet future aviation demands and provide the framework needed to guide airport development. As detailed in the plan's Growth Forecast, the projected growth of the airport expects to remain about the same, with the possibility of a 20% increase in based aircraft and about 30% increase in passenger enplanements by 2030 (from 2010). The primary means of ground travel to the Southwest Oregon Regional Airport consists of personal automobiles, taxicabs/shuttle buses, or rental cars. There is no public mass transit available at the airport. Capacity of all the off-airport access roads is considered adequate throughout the 20-year planning period. The on-airport general public access roads (East Airport Way and West Airport Way off Maple Leaf Lane, two-lane interior streets) are currently adequate to serve demand. The plan anticipates that, as new development occurs in the non-aviation area, it may be necessary to modify these access roads to accommodate new tenants and their specific needs.

Project Relevance: **The airport Master Plan will inform the Air element of the updated TSPs. The plan identifies most transportation routes to and from the airport to be adequate for the forecasted growth. Proposed transportation improvements in the updated North Bend TSP that impact airport access will be coordinated with the Airport.**

Local Plans and Policies

Coos Bay Comprehensive Plan 2000 (2010)

The Coos Bay Comprehensive Plan was originally adopted in 1981 and has been subsequently amended several times. It establishes a guide for the growth and development of the City and contains statements of public policy that guide the City's decision-making process. Comprehensive Plan Chapter 7, Identification of Problems, Planning Issues, Goals, and Plan Implementation Strategies, includes Section 7.8, Transportation. This Section was updated in 2004 to incorporate by reference Chapter 2, Goals and Policies, from 2004 Transportation System Plan. Existing Goals and Policies are discussed in detail in Technical Memorandum #2, Goals, Objectives, and Evaluation Criteria.

Project Relevance: TSPs are adopted as the transportation element of a local Comprehensive Plan; updates to North Bend and Coos Bay TSPs will need to be reflected in the respective comprehensive plans. It is expected that recommendations that result from this planning process will necessitate an update to Coos Bay Comprehensive Plan Section 7.8. This can be accomplished by adopting the relevant TSP section(s) by reference, as was done after the 2004 TSP was adopted or by creating separate, but consistent, Comprehensive Plan policies. Transportation policies may be contained in the adopted TSP or the Comprehensive Plan document can be modified to include them.

Coos Bay Transportation System Plan (2004)

The Coos Bay TSP guides the development and management of transportation facilities in the city, reflecting community goals and objectives and providing consistency with state, regional, and local plans. The current plan was adopted in 2004 and is approaching the end of its planning horizon. Recent development and planning efforts, as well as the need for safer and more accessible walking and biking facilities, economic development, and mitigation of tourist season transportation system impacts, are driving the update of the Coos Bay TSP.

The 2004 TSP establishes transportation goals and policies, which were incorporated by reference into Section 7.8, Transportation, of the Coos Bay Comprehensive Plan. These goals and policies are discussed in detail in Technical Memorandum #2, Goals, Objectives, and Evaluation Criteria. The TSP establishes standards for access management and street design, recommends multimodal improvements to address the city's transportation needs, and explores potential funding sources to implement these projects.

Project Relevance: The TSP update process will review goals, policies, standards, and recommended projects from the 2004 TSP to determine what needs to be retained or changed in the updated TSP. This planning process will update recommended transportation improvement projects for all modes, based on existing and projected needs. Updated data, stakeholder and community involvement, and evaluation criteria will be used in making these recommendations.

Coos Bay Development Code

The City of Coos Bay Development Code (CBDC), Title 17 of the Municipal Code, implements the long-range land use vision embodied in the Coos Bay Comprehensive Plan, regulates uses within the city, and establishes standards for development and land divisions. Key existing development standards are summarized below.[13]

Pedestrian and Bicycle Access and Circulation

Pedestrian and bicycle access and circulation are implemented through both required improvements internal to a development site and transportation system (usually roadway design) standards.

> On-site development standards – Pedestrian circulation and connection standards are set in the Industrial-Commercial (I-C) District and Hollering Place (HP) District. Type III site plan submittals are required to show the location and dimensions of proposed pedestrian connections between the street and buildings, between buildings, and between buildings and on-site or off-site parking areas (CBDC 17.320.050).
>
> Transportation system standards – Improvement plans required for subdivisions must demonstrate compliance with City ordinances pertaining to streets, i.e., Engineering Standards, adopted by ordinance (CBDC 17.315.070); the same requirements are not specified for partitions or site plans. Engineering Standards and cross sections (typical minimum street design standards) in the 2004 TSP require sidewalks for all functional classifications of streets and require bike lanes for arterials and collectors but not for commercial/industrial streets and local streets.

Vehicle and Bicycle Parking

Off-street parking standards are established in CBCD 17.340. Vehicle parking standards allow for shared parking when it can be demonstrated that times of parking needs do not overlap and exempt the Downtown Parking District from off-street parking requirements. Bicycle parking requirements are generally established for uses other than single-family dwellings and duplexes (CBDC 17.340.030.4). Bicycle parking requirements for commercial, industrial, institutional, and public uses are scaled to the amount of required vehicle parking, and in some cases vehicle parking is not required (Downtown) or for commercial uses the requirement is low (one space per 50 vehicle parking spaces required).

Traffic Impact Analyses and Performance Standards

Waterfront Heritage (WH) District provisions in the CBDC require a “trip analysis” – a report of the average daily traffic (ADT) estimated for a use proposed in that district (CBDC 17.240.070.16). Traffic impact analysis (TIA) requirements and guidelines are established in the Engineering Standards but are not referenced in the CBDC. Level of service (LOS) is discussed in the 2004 TSP and a standard of LOS D for the PM peak hour is set in the City Engineering Standards.

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[13] Connectivity requirements and access spacing standards are largely absent from the CBDC. To ensure consistency with the updated TSP and to support its implementation, recommended amendments to subdivision and site plan requirements will likely include standards for local street connectivity, maximum block sizes/spacing between streets, and accessways through large blocks.

Application Review and Coordination

Pre-application conferences are required for Type II, III, and IV procedures.[14] Pre-application provisions require the City to notify "interested agencies" of the upcoming pre-application conference (CBDC 17.130.020.4.a). Presumably, notification of proposals that would have an impact on US 101 or OR 540 would be sent to ODOT; potential impacts on the transit system should be noticed to CCAT. Requirements are not established for Type II and III procedures that notice of a complete application or an upcoming hearing be provided to transportation service and facility agencies.

TPR Consistency

Existing criteria related to proposed comprehensive plan amendments or zone changes do not explicitly address compliance with the TPR. Existing criteria require the approval body to consider the "cumulative effects" of the proposed amendment, which includes sufficiency of transportation facilities (CBDC 17.215.010) and to ensure that approval of the amendment will not result in a decrease in the level-of-service for capital facilities identified in City capital improvement plans (CBDC 17.215.060.1.c).

Project Relevance: Amendments to the CBDC regarding connectivity, pedestrian and bicycle access and circulation, bicycle parking, development review coordination, zoning and plan amendments, and other development requirements will be considered as part of implementation of the updated TSPs. Proposed amendments will address consistency with the TPR and will implement recommendations in the updated TSPs. Consistency will need to be ensured between standards in the CBDC, updated TSP, and Engineering

Coos Bay Engineering Standards

Coos Bay Engineering Standards are adopted by ordinance and are contained in Title 18 of the Coos Bay Municipal Code. Section 18.15 addresses transportation facilities and Section 18.40 establishes TIA requirements and guidelines.

The following transportation facility standards are set Section 18.40:

- Level of service (LOS) standards for the PM peak hour
- Minimum street design dimensions (Table 3-1)
- "Walking zone" (curb, planting strip, and sidewalk) minimum requirements (Table 3-3)
- Multi-use pathway design requirements (Table 3-10)
- Requirements for coordination with CCAT for development within 100 feet of existing or planned transit routes and stops

[14] Note that as part of the proposed amendments scheduled to be completed by end of September 2018, City Staff is recommending that Type II application be removed from this requirement. A pre-application is not necessary for this level of review.

Project Relevance: The TSP update needs to either be consistent with existing performance, design, and TIA requirements established in the Coos Bay Engineering Standards or propose amendments to the Engineering Standards so that requirements are consistent between the two documents.

Coos Bay Economic Opportunity Analysis (2009)

The Coos Bay Economic Opportunity Analysis was conducted as an update to the City's Comprehensive Plan consistent with Statewide Planning Goal 9 (Economy). Community economic development objectives developed for the report include the following:

- *Create a more diversified economy.*
- *Become ready for economic opportunities aligned with 21st century trends.*
- *Support the creation of necessary improvements to the Oregon International Port of Coos Bay to attract and stimulate economic opportunities.*
- *Increase the City's short-term availability of industrial and commercial sites.*
- *Serve as a regional hub for commercial and professional support services.*

The report documents transportation concerns heard in interviews conducted for the analysis, including: the Central Oregon & Pacific Railroad (CORP) Coos Bay Line was in need of significant repair, including repairs to the rail bridge across Coos Bay;[15] Coos Bay is far from a major interstate freeway (I-5); and Highways 38 and 42 were considered to have limited capacity and to be constraints to attracting freight-dependent industries to the area.

Target industries for economic development identified through the analysis are listed below and were determined based on research and agency and local stakeholder interviews.

- Water-dependent industries and enterprises
- Industries that don't require access to Interstate 5
- Businesses relating to outdoor recreation
- Wood products and commercial fishing industries
- Solar and metal fabrication
- Technology industries dependent on location near fiber optic lines
- Tourism

The report finds that there are significant shortages of needed industrial land in the short- and long-term and a small shortage of needed commercial land in the long-term. It concludes that rezoning and/or a UGB expansion should be considered to address these needs.

[15] Full service was restored to the 135-mile Coos Bay Rail Line in 2013. Additional funds have been acquired to rehabilitate nine tunnels and repair the Coos Bay Rail Bridge.

Project Relevance: Policy, project, and program recommendations evaluated for the updated TSPs should consider the economic development objectives and target industries identified in the Coos Bay Economic Opportunity Analysis.

Coos Bay Downtown Traffic Plan (2010)

The Coos Bay Downtown Traffic Plan was prepared for the central business district in downtown and the surrounding area to address circulation and operation concerns. The analysis evaluated converting one-way streets to two-way streets and mitigation measures for identified intersections and "hot spots" in the study area.

The plan concludes with the following recommendations:

- Remove existing traffic signal on Anderson Avenue at S. 2nd Street;
- Reconfigure the 7th Street intersection; and
- Institute a road diet on Ocean Boulevard and Central Avenue.

Project Relevance: Recommendations from the Downtown Traffic Plan should be evaluated as to whether they are still needed and should be incorporated into Coos Bay's updated TSP.

Coos Bay Downtown Urban Renewal Plan (1998-2013)

The Coos Bay Urban Renewal District is comprised of the following: lands adjacent to the city's waterfront in its business district; the Eastside industrial and commercial properties, where land has the most potential for industrial expansion; the downtown core area; and land in the south end of the city between the waterfront and US 101, which was experiencing significant commercial expansion at the time the plan was drafted and was indicated as having the potential for commercial and industrial expansion contingent upon infrastructure improvements. See Figure 4.

The plan's goals consist of the following:

1. Develop the city's waterfront to enhance its potential for recreation, tourism and other commercial activities while preserving its alternate role as a working waterfront which supports the area's forest products and marine related economy.

2. Revitalize the downtown core area by repair and change to, but not total elimination of, the pedestrian mall and by other activities which promote the effective utilization of this area for a wide variety of purposes while recognizing its changing role away from high traffic, consumer retail activities.

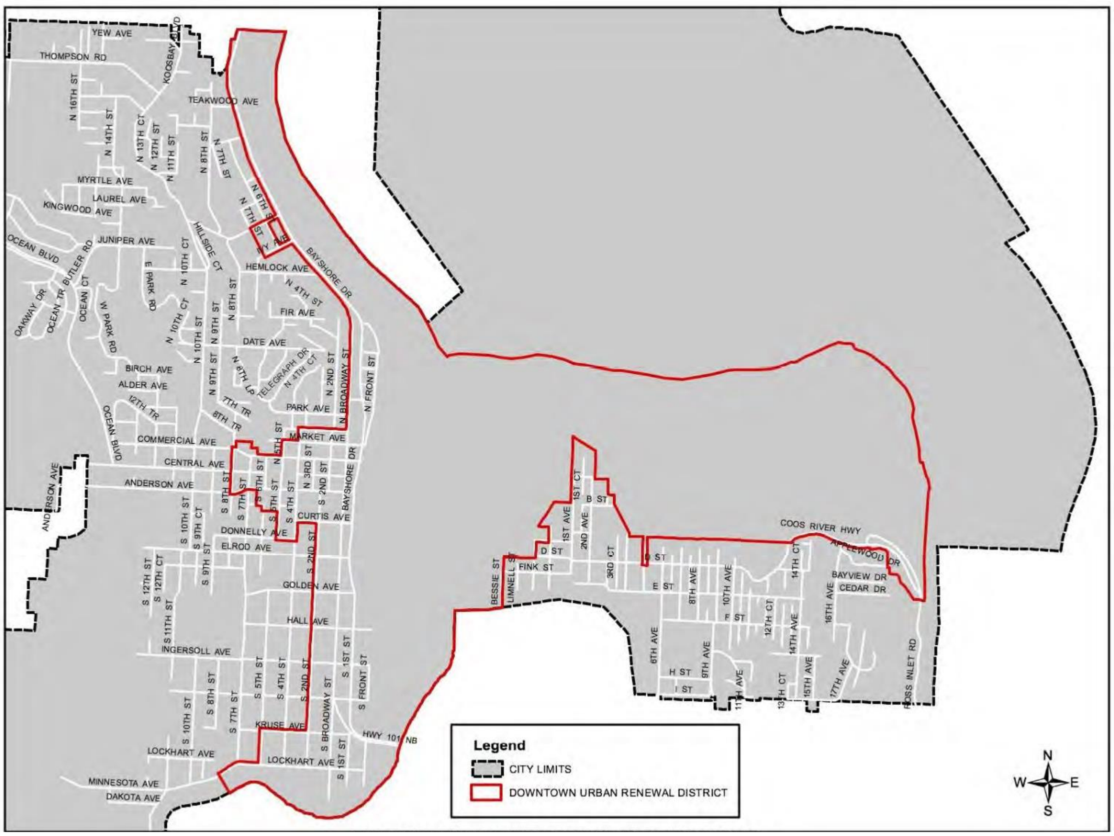
3. Improvement of streets, utilities and other essential infrastructures in areas of the city within the district where they have deteriorated, are non-existent or where modifications are necessary to support and/or encourage the expansion of new commercial and industrial activity.

The plan recommends a set of urban renewal projects in three categories:

- Waterfront development – including a boardwalk and two pedestrian access points across railroad tracks
- Core area revitalization – including a convention/performing arts center and a linear park along the waterfront
- Streets and infrastructure – including a First Street/US 101 connection and a bicycle path along US 101 in the northern part of the urban renewal area

The projects and uses recommended in the plan were found to be consistent with zoning at the time of the plan, which concluded rezoning would not be necessary.

Figure 4. Downtown Urban Renewal District



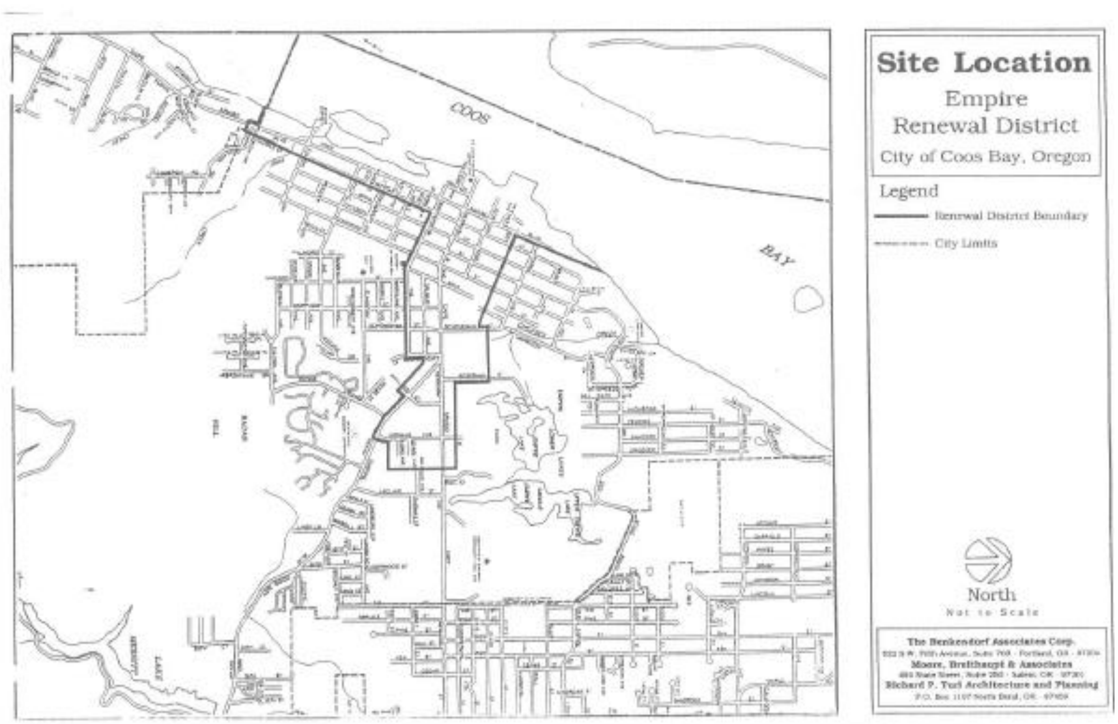
Project Relevance: **Updated transportation policies developed for the updated Coos Bay TSP should reflect or be consistent with goals presented in the Downtown Urban Renewal Plan. Projects recommended in the plan will be reviewed for possible inclusion in the updated Coos Bay TSP.**

Coos Bay-Empire District Urban Renewal Plan (Updated 2012)

The Coos Bay-Empire District Urban Renewal Plan was prepared in order to achieve the vision for the district (see Figure 5). This vision, presented below, was in turn translated into a set of plan objectives, organized by Primary Commercial Area, Waterfront, Empire Boulevard and Bayfront, General Commercial and Residential, and General District.

…provide for a more attractive living, working and shopping environment in the Empire District commercial area and along the waterfront. The commercial area… should be revitalized as a general commercial center and as a commercial area providing services to tourists. The area should be enhanced in order to fulfill a greater role in serving the Empire District residents with a variety of cultural, recreational and social services. The waterfront area should provide the focus for enhanced public and private tourist oriented recreational and commercial uses and activities. By facilitating an attractive waterfront, attention will be drawn to the Bay which will improve the connectivity between the commercial area and the waterfront.

Figure 5. Coos Bay-Empire District Urban Renewal District



The plan called for rezoning of land in the district to General Commercial as well as for projects in three phases reaching from FY 1996-97 to FY 2015-16, including the following:

- Phase I – Improvements to Newmark Avenue (street trees, pedestrian crossing, and street furniture consistent with a district design theme); general public facility improvements sidewalks, open spaces, and restrooms; and development of a major open space/park on the waterfront.
- Phase II – Rehabilitation of the old wharf structure or boardwalk; and completion of Newmark Avenue widening project (including new pavement, bike lanes, curbs, and sidewalks)

- Phase III – Continued improvement of the pier/boardwalk; street improvements (different combinations of pavement, curbs, gutters, and sidewalks) for Main Street, Salmon Avenue, Mill Street, Schetter Street, Wall Street, and Cammann Street; planned improvements for Newmark Avenue and Michigan Street that establish strong pedestrian and vehicular connections between the waterfront and primary commercial area in the district; and development of two tourist facilities that will include a viewing area along Empire Boulevard with interpretive kiosks and restrooms and a parking lot on Newmark Avenue.

The Coos Bay-Empire Urban Renewal Plan is currently undergoing review and revisions and is expected to be updated by the end of 2017.

Project Relevance: Transportation-related objectives from the Coos Bay-Empire Urban Renewal District will be consistent with updated transportation policies for the Coos Bay TSP. Projects recommended in the updated plan will be considered for inclusion in the updated Coos Bay TSP.

Figure 6. Coos Waterfront Walkway

Coos Waterfront Park and Walkway Concept Plan (2012)

The Coos Waterfront Park and Walkway Concept Plan is a draft concept plan for a new waterfront park and walkway that will run along the Bayfront in downtown Coos Bay and North Bend (see Figure 6). The Plan covers fundraising and technical plans for the park and walkway and outlines next steps towards implementation of the concept.

The waterfront plan specifies major objectives for the waterfront listed under the following headings: Recreation; Wildlife, Water Quality and Aquatic Habitat; Public Safety Public Relations, Information and Cooperation; Maintenance; Community Cohesion; and Signage, Interpretation and Education. Most of the objectives, as they apply to the TSP, can be summarized as the community desires to provide a safe, aesthetically pleasing, multi-use corridor for nonmotorized recreation.

One of the main guidelines was to create a non-motorized route connecting North Bend and Coos Bay and generate increased activity along the waterfront. The plan contains safety objectives for the waterfront, including ADA standards and ways to minimize conflicts between diverse users. Long-term possibilities articulated in the plan include the idea of a trolley car on the downtown rails along the waterfront, a water taxi service, and a biking trail along the rail line to Coquille.

> **Project Relevance: The Waterfront Park and Walkway Concept Plan will help with developing the guidelines for any planning along the waterfront, including objectives and potential funding sources and project priority.**

Front Street Action Plan (2017)

The Front Street Action Plan's purpose is to identify implementable actions in the Front Street area that increase connectivity, foster community access to the waterfront, attract private investment, and diversify Coos Bay's economy.

The Action Plan builds upon previous planning efforts aimed at supporting redevelopment on Front Street, including the Waterfront Park and Walkway Plan (2012), the Front Street Master Plan (1998), the Downtown Urban Renewal Plan (1988), and Coos Bay's Comprehensive Plan update (2010). The plan uses financial and market analyses and ideas from community members and stakeholders to determine improvements in the area that will facilitate redevelopment. Improvements are organized into the following components:

- Development framework – A framework map shows potential opportunity sites and pedestrian connections.
- Traffic configuration – A preferred traffic reconfiguration map shows Front Street north of Alder Avenue converted to one-way and allowing for on-street parking, and south of Alder Avenue retaining its two-way configuration.
- Investment framework – This framework discusses partnerships with private, community, and public sector (local and state) entities necessary for spurring redevelopment and recommends the following types of projects:
    - Near-term catalytic projects – including water access improvements and identification of funding sources for priority projects, particularly infrastructure improvements
    - Development-supportive programs and investments – including a wayfinding master plan for the area and a parking management strategy to more efficiently use existing parking resources
    - Infrastructure improvements – including Coos Waterfront Walkway, improved pedestrian/bicycle crossings of US 101, street/traffic reconfiguration, and access/intersection improvements (removal, consolidation, or relocation of driveways in conjunction with sidewalk and roadway improvements)

Project Relevance: Transportation-related improvements recommended in the Front Street Action Plan will be reviewed and considered for inclusion in the updated Coos Bay TSP.

Coos Bay Park Master Plan (2013)

The Coos Bay Park Master Plan addresses all the parks within Coos Bay, based on their typology (active, passive, special use, etc.). The plan provides limited detail about the trails and pathways within the city but does establish design guidelines for developing trails and pathways. The plan includes the following Trail and Pathway Design Guidelines:

- Wherever appropriate recreation pathways and trails should not be part of a street roadway.
- Wherever possible trails should be placed on existing public lands, e.g., parks, undeveloped rights-of-way, easements, etc.
- Trail alignments should take into account soil conditions, steep slopes, surface drainage and other physical limitations. Routes should be located for construction and maintenance cost efficiency while taking into account the need to provide a quality experience for the trail user.

- Trails should be developed in compliance with ADAAG guidelines on trail accessibility.
- Trails should be planned, sized, and designed for non-motorized multiple uses except for dedicated nature trails, and/or areas that cannot be developed to the standard necessary to minimize potential user conflicts.
- Centralized and effective staging areas should be provided for trail access. They should include parking, orientation and information signage, and any necessary specialized unloading features. Primary trailheads should also include restrooms and trash receptacles.
- Trail location, connections, and orientation should encourage users to walk or bicycle to the trail. Depending upon the expected and desired level of use, parking may be required at particular trailheads. Secondary trailheads require 3+ parking spaces, whereas primary trailheads may have 20 or more parking spaces.
- Trails should be looped and interconnected when possible to provide a variety of trail lengths and destinations. They should link various parts of the community as well as existing park sites.
- While off-street routes are preferable, some cases trails may be routed on existing streets. In these cases, the pathway should be designed to minimize potential conflicts between motorists and trail users.
- Trails should be developed throughout the community to provide linkages to schools, parks, and other destination points.
- Developers should be encouraged to provide pathways through proposed developments, where such improvements would provide needed linkages between planned trail routes and other public destinations.

The plan states that pedestrian and bicycle access must be considered the primary transportation modes for accessing neighborhood park and recreation facilities. For facilities with larger service areas, public transit and automobiles would also provide access. When possible, new major facilities should be located accessible to transit to minimize traffic impacts and provide equitable access for all city residents. Path or sidewalks and easy walking/biking access are identified as mandatory amenities for neighborhood parks, community parks, and large urban parks. The plan designated these amenities as optional for linear/trail corridors and natural areas.

Project Relevance: Trail and Pathway Design Guidelines articulate city policy regarding the location and function of trails; the guidelines will be reevaluated and reflected in the pedestrian and bicycle elements of the updated TSP.

North Bend Comprehensive Plan (2017)

The North Bend Comprehensive Plan enacts the State's Land Use Planning Goals, addressing a compliment of urban planning subject areas including recreation and open space, housing, economy, public facilities, and transportation. Goals, policies and implementation strategies in each Comprehensive Plan chapter guide the City's decision-making. Chapter V., Transportation, includes the following Goal and Objectives.

Article 5.4.100 - Goal:

Safe, convenient and economic transportation systems that adequately meet the needs of the residents of North Bend and the entire Bay Area.

Article 5.5.100 - Objectives:

1. Improvement of regional transportation systems, including improvement and expansion of the North Bend Municipal Airport, the waterborne transportation system, the roadway system and the rail system.
2. Improved access to the City's industrial sites and waterfront.
3. To improve and extend the City's street system and transportation system as a whole in accordance with City standards.
4. Improved access with Coos Bay.

In addition, there are 12 transportation policies (Article 5.6.100) and 11 specific implementation strategies (Article 5.7.100). The Comprehensive Plan document was not updated to reflect the 2004 TSP. While not necessarily inconsistent, Chapter V. guidance language is not identical to the 2004 TSP goals and policies.[16]

Project Relevance: TSPs are adopted as the transportation element of a local Comprehensive Plan; updates to North Bend and Coos Bay TSPs will need to be reflected in the respective comprehensive plans. It is expected that recommendations that result from this planning process will necessitate an update to North Bend Comprehensive Plan Chapter V., Transportation. This will entail referencing the updated TSP or modifying Chapter V. existing background information, goals, policies, and strategies for implementation to be consistent with the updated TSP.

North Bend Transportation System Plan (2004, Updated 2018)

The North Bend TSP guides the development and management of transportation facilities in the city, reflecting community goals and objectives and providing consistency with state, regional, and local plans. The current plan was adopted in 2004 and underwent minor amendments in 2018 to update street cross-sections (typical design standards). Like the Coos Bay TSP, it is approaching the end of its planning horizon and its update is driven by recent development and planning and the need for safer and more accessible walking and biking facilities, economic development, and mitigation of tourist season transportation system impacts.

A detailed review of the City's existing goals and policies from the North Bend TSP is included in Technical Memorandum #2, Goals, Objectives, and Evaluation Criteria.

[16] Note that the TSP is considered a Functional Plan, providing detailed planning and development guidelines for transportation planning. Pursuant to the Comprehensive Plan "(w)hile the Comprehensive Plan will be the guiding plan document, it is expected that all special or functional plans will conform to, or be consistent with the Comprehensive Plan."

The TSP establishes standards for access management and street design, recommends multimodal improvements to address the city's transportation needs, and explores potential funding sources to implement these projects.

Project Relevance: **The TSP update process will review goals, policies, standards, and recommended projects from the 2004 TSP and 2018 update in determining what remains relevant to include or reflect in the updated TSP. This planning process will update recommended transportation improvement projects for all modes, based on existing and projected needs. Updated data, stakeholder and community involvement, and evaluation criteria will be used in making these recommendations.**

North Bend Development Code

The City of North Bend City Code (NBCC) implements the policies put forth in the North Bend Comprehensive Plan, regulates uses within the city, and establishes standards for development and land divisions. Key existing development standards are summarized below.[17]

Connectivity and Access Spacing

Block standards are set in subdivision requirements and access ways ("pedestrian ways") through large blocks are allowed for in the code (NBCC 17.24.030). Minimum access spacing standards are established in the 2004 TSP and in code transportation improvements requirements (NBCC 10.12.110).[18]

Pedestrian and Bicycle Access and Circulation

Pedestrian and bicycle access and circulation are implemented through both required improvements internal to a development site and transportation system (usually roadway design) standards.

- On-site development standards – Pedestrian access and circulation standards are established in the code for all development except single-family detached housing on individual lots or parcels (NBCC Title 10, Article V). The standards include requirements for connections within the development and between the development and the street/ sidewalk.
- Transportation system standards – Minimum roadway design standards are established in the code (NBCC 10.12.130, Table 1). These standards require sidewalks on all functional classifications of streets (major 5-lane arterials, secondary 3-lane arterials, service and industrial streets, collectors, and minor (local) streets) and bike lanes on all streets except local streets. Cross sections (typical minimum street design standards) in the 2004 TSP require bike lanes for arterials and collectors (5-lane, 3-lane, and 2-lane) but not for commercial/industrial streets and

[17] The NBCC does not include requirements for notification to transportation facility or service providers, where proposals may have impacts on their facilities or services. To ensure consistency with the updated TSP and support future coordination between the city, county, state and transit provider, recommended amendments to application review and hearing procedures (NBCC 18.60.040) to include notice requirements are a possible outcome of this TSP update.

[18] Subdivision, zoning, and transportation facilities requirements in the CBDC do not refer to the Local Street Connectivity Plan in the 2004 North Bend TSP.

residential streets. Sidewalks are required on all of these streets, pursuant to both the code and 2004 TSP.

Vehicle and Bicycle Parking

Off-street parking standards are established in NBCC Chapter 18.68. Vehicle parking standards allow for shared parking when it can be demonstrated that times of parking needs do not "materially" overlap (NBCC 18.68.030.4). Bicycle parking requirements are not established in the code.

Transportation Impact Studies and Performance Standards

NBCC Chapter 10.12, Transportation Facilities and Improvements, includes requiring a TIS if a proposal "causes traffic impacts that bring a street below acceptable levels of service, or impacts a street that is already operating below acceptable levels of service, or impacts a street that has a documented safety problem (Seciton10.12.070 Mitigation). Transportation impact study (TIS) requirements are set out in Municipal Code Title 10, Article II, and include study thresholds, level of service standards, and mitigation conditions. NBCC 10.12.060 establishes the Level of service (LOS) "D," as defined by the Highway Capacity Manual (2000 Edition) during the p.m. peak hour of the day, for city streets. The level of service standard to determine what is acceptable or unacceptable traffic flow on streets is to be based on a volume to capacity ratio.

TPR Consistency

Requiring findings related to Statewide Planning Goals (which includes Goal 12, Transportation) is indirectly referred to in the procedures for processing plan and text amendments (NBCC 18.84.020).[19]

North Bend Engineering Standards

City of North Bend staff reported that the City uses ODOT guidance for local jurisdictions for roadway engineering standards. These including the Highway Design Manual (reviewed in this memorandum and currently under revision), Standard Details and Drawings,20 and Traffic and Roadway Engineering standards.[21] The updated TSP will include access management standards and street cross-section design standards. Transportation standards that apply to local roadways also may be adopted into the North Bend Development Code. Alternatively, the City's development standards can be updated to reference the standards in the adopted TSP.

Project Relevance: Performance and design standards recommended as an outcome of the TSP update process will be reviewed for consistency with those the city currently uses for local roadway standards. An intended outcome of this project is to ensure that local standards are consistent between the updated TSP and the required engineering standards.

[19] Note that the timeframe for noticing the Department of Land Conservation and Development of proposed text and plan amendments was changed to at least 35 days before the first evidentiary hearing. NBCC 18.84.020 will need to be updated to reflect this change.

[20] https://www.oregon.gov/ODOT/Engineering/Pages/Standards.aspx

[21] https://www.oregon.gov/ODOT/Engineering/Pages/Traffic-Roadway.aspx

North Bend Urban Renewal Plan (1994)

The North Bend Urban Renewal Plan was adopted by ordinance by the North Bend City Council in August 1994 to encourage redevelopment and guide infrastructure for that redevelopment in the North Bend area. The intent was for this redevelopment to stimulate economic development by improving the overall conditions of the downtown and waterfront area, which in this document is centered on the intersection of Sherman Avenue (US 101) and California Avenue (see **Error! Reference source not found.**). Most of the plan is focused on aesthetic improvements or infrastructure improvements that influence aesthetics and public space, including utility undergrounding, upgrading storm drains and sewers, and providing adequate parking. Objectives that apply to the TSP include "provide pedestrian linkages, including sidewalks throughout the area particularly between the waterfront and the downtown."

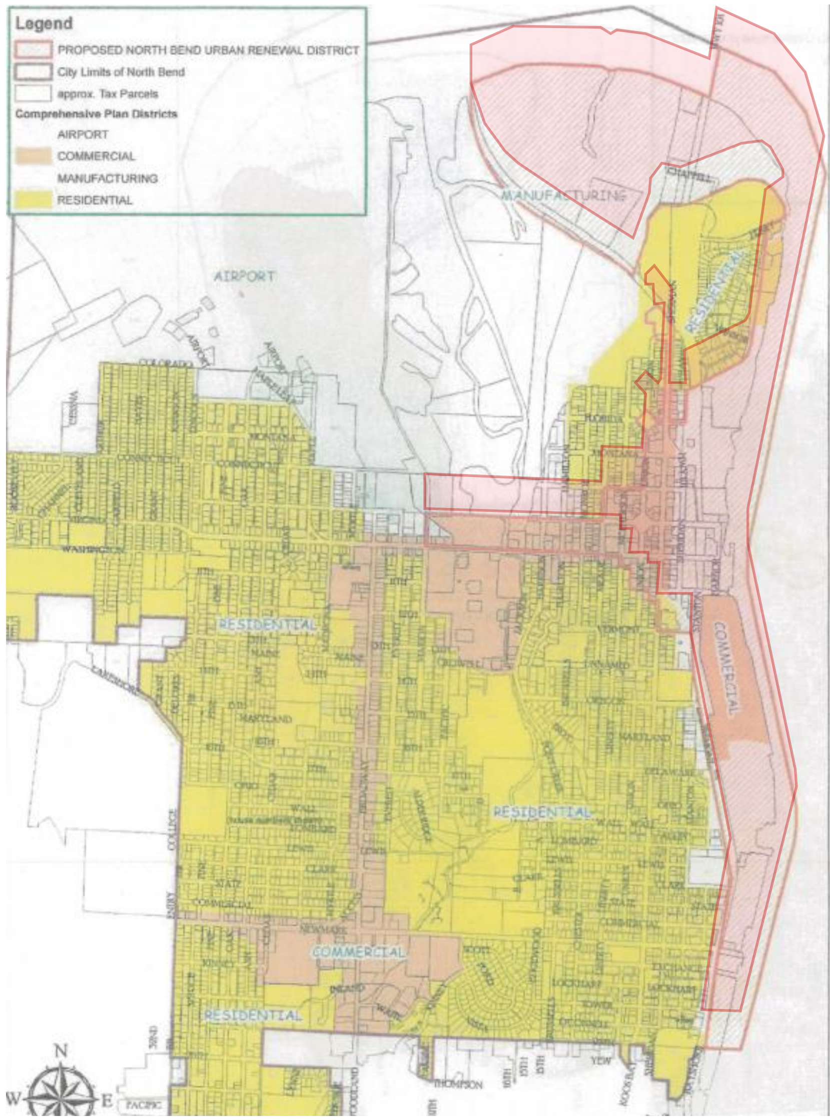


Figure 7. North Bend Urban Renewal District (Resolution No. 40)

Renewal projects are listed in phases based on project funding. Pedestrian improvements entail constructing and/or reconstructing all curbs, gutters and sidewalks and installing pedestrian amenities. In conjunction with such reconstruction, the Urban Renewal Agency may provide appropriate trees, planting beds, irrigation systems, period lighting, benches, drinking fountains, trash receptacles and other street furniture items deemed appropriate to establish a comfortable, safe, and pleasant pedestrian environment with a visual consistency throughout.

Intersection Improvements include redesigning with appropriate base materials and containment curbs and other traffic calming techniques. Pedestrian paths must be clearly defined.

Phase 1

- Improved the entrance to Downton area along each end of HWY 101 as part of the Bay Area 101 Corridor Enhancement Project
- Pedestrian Improvements: Sherman Avenue between Washington and Montana and Virginia between Union and the waterfront.

Phase 2

- Pedestrian Improvements: Sheridan between Washington and Connecticut, Washington between Sheridan and the waterfront, and California between Sherman and the waterfront.
- Improve intersections of California and Sheridan and Virginia and Sherman.

Phase 3

- Pedestrian Improvements: Union between Washington and Connecticut, Washington between Sheridan and Union, and Connecticut between Sheridan and Union.
- Improve intersections of Connecticut and Sherman

Phase 4

- Intersection improvements at California and Union
- Redesign Grant Circle to be more attractive

Phase 5

- Simpson Heights Waterfront Access: Pedestrian connections to the area below Simpson Heights
- North Point Access Improvement: Develop a frontage road that provides access to the North Point Industrial area that is sufficient to accommodate industrial traffic.
- Pedestrian Improvements: Virginia Avenue. Redesign to serve as primary East/West pedestrian route between Pony Village, the downtown and the waterfront.
- Pony Creek improvements at the point where it passes under Virginia Avenue.

Phase 1 – 3 projects were completed with the 2012 Downtown Streetscape improvements and Grant Circle (Phase 4) was completed in 2014.Future amendments to the plan (including adding land to the URA) must be presented to the Urban Renewal Agency or Council with staff and/or North Bend Urban Renewal Advisory Committee recommendations. Minor amendments to the plan must be approved by Resolution of the Renewal Agency. Urban Renewal Agency Resolution No. 40 last modified the plan, which has been amended four times, in 2014. Amendments included adding land to the urban renewal boundary to include land for the construction of a tourist information building. Amendments, as well as the current urban renewal boundary (Urban Renewal Agency Resolution No. 40) can be found on the City's website.[22]

[22] http://www.northbendoregon.us/urbanrenewal/page/urban-renewal-plan

Project Relevance: The North Bend Urban Renewal Plan provides limited improvements to the street network but does identify areas where pedestrian and intersection improvements support the economic and downtown redevelopment efforts within the City. The TSP update process will review and consider recommended improvements that have not yet been completed.

Downtown Waterfront District Master Plan (1998)

As a guiding document for the North Bend Urban Renewal Agency, the Downtown Waterfront District Master Plan was created to provide a successful pedestrian centered waterfront area within North Bend. While most of the recommendations within the Master Plan revolve around design and specific building improvements, some transportation improvement projects are listed. Funding is not identified. The plan identifies several civic parks and plazas along the waterfront, including three new community parks (Ellipse Park, Tower Park, and Depot Park), three public docks connected by a waterfront promenade, an RV park, and enhanced landscaping areas. The Waterfront Master Plan was adopted by the City Council in 1998 and has been supported by each City Council since.

Specific improvement projects include:

- Harborwalk Esplanade after designing and permitting the Harbor Avenue Seawall between Virginia and California St.[23]
- Acquire and develop Railroad Avenue from existing railroad ROW
- Eliminate the Virginia Street entrance on the property (currently state office buildings) fronting on Virginia and Sheridan to create smoother traffic flow; enter and exit from Washington Avenue only.

Project Relevance: The Waterfront District Master Plan will be considered in the development of the bicycle and pedestrian plans in the updated TSP. Improvement projects along the North Bend Waterfront that have not been completed will be considered for inclusion in the updated TSP.

North Point Area Master Plan (2017)

The North Point Area Master Plan (NPAMP) provides a framework for the long-term development of the North Point District in North Bend, a large area of undeveloped industrial land (see Figure 8). The city recently adopted amendments to City of North Bend Comprehensive Plan, TSP, and Parks and Recreation Master Plan to incorporate the North Point Area Master Plan.[24]

[23] Harborwalk Esplanade completed in part in 2010 as North Bend Boardwalk.
[24] North Bend Ordinance 2020;
https://www.northbendoregon.us/sites/default/files/fileattachments/planning_commission/meeting/7601/amd_3-17_staff_report_attachments_final.pdf

Projects are listed in phases, divided up by site:

- Phase 1: Chappell Parkway is extended north to the waterfront, an internal street network provides circulation through the site and street improvements are completed. One or more Highway 101 intersections (Pittum Loop, Ferry Road or Bayview Avenue) are reconfigured to improve safety and circulation. Sidewalks and streetscape improvements provide a safe, pleasant environment for pedestrians and incorporate stormwater treatment. Improved bicycle access, including bike lanes on Highway 101, facilitate safe, multimodal travel to and through the District. A trail along the shoreline extends east from the edge of Site 2, underneath the McCullough Memorial Bridge, to the Sawmill & Tribal Trail in Ferry Road Park and continues to the small existing parking area south of the park.
- Phase 2: Chappell Road is improved as it extends west from Site 3; an internal street network provides circulation through the site as street improvements are completed. Sidewalks and streetscape improvements provide a safe, pleasant environment for pedestrians and cyclists while incorporating stormwater treatment. A new rail spur bisects the south half of the site. Along the shoreline, a trail extends west from the connection at the edge of Site 3, runs south along the edge of the site and crosses the rail line before connecting to the Sawmill & Tribal Trail at Pittum Loop.
- Phase 3: Construction of a street network is unlikely due to the limited development potential. A trail loops around the site, connecting to the Site 2 trail at the bridge and providing access to the fishing amenities at the northwest corner of the District.

Figure 8. North Point Area Master Plan Site Context

NPAMP Table 2, Implementation Matrix, prioritizes the capital projects need to implement the plan, including a number of infrastructure projects. The table includes details about costs, time horizon and funding strategies.

Project Relevance: The NPAMP identifies the phases for an undeveloped section of land within North Bend, with transportation projects tailored to specific sites as envisioned for future development. Phase 1 will have the most development, with Phase 3 being the least likely to develop. The City intends to implement these phases with or without the construction of the pipeline. Transportation projects in the NPAMP will be considered and incorporated into the updated TSP.

Pony Creek Greenway Concept Plan (1998/1999)

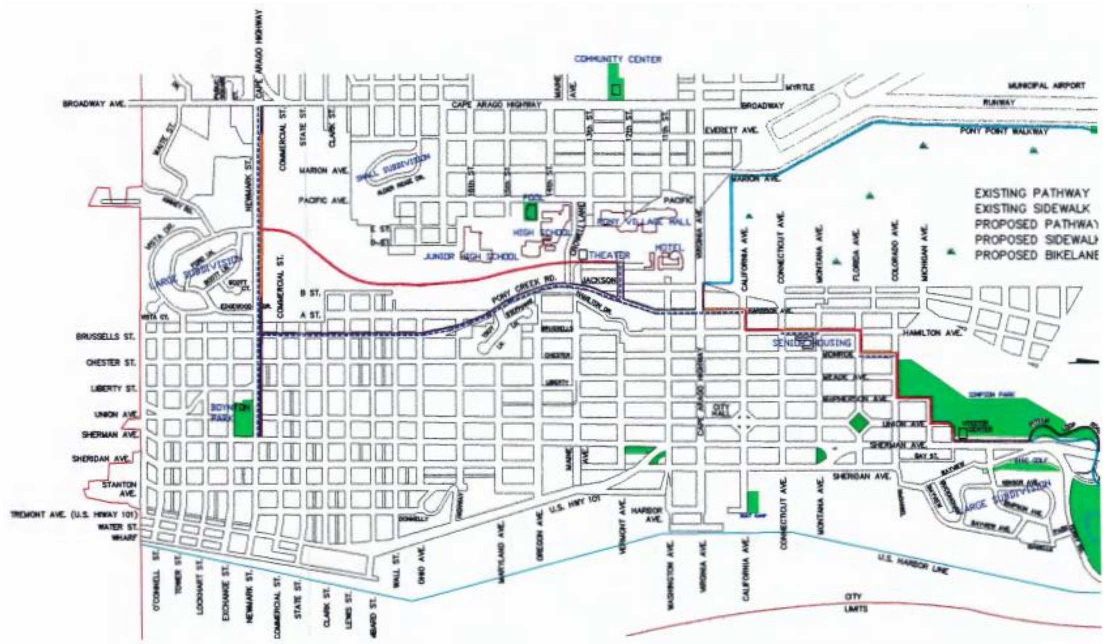
The Pony Creek Greenway Concept Plan was a cooperative effort between the City of North Bend, the North Bend School District, and the National Park Service. The plan presents a concept for developing and managing a greenway corridor along Pony Creek and Pony Slough in North Bend. It establishes numerous goals, including Goal 1, which envisions using the Greenway "for recreation and as a non-motorized transportation link to other parts of the community." Within this goal are the following objectives:

1. Build a pathway from Newmark Street to Virginia Avenue along Pony Creek.
2. Continue the pathway north from Virginia Avenue along Harrison Street to Pony Slough, up through Simpson Park, to the Simpson/Ferry Road Trail where it connects to Highway 101 at the foot of the McCullough Bridge.
3. Continue the pathway east from Newmark to link with Boynton Park.
4. Continue the pathway west from Newmark to Broadway.
5. Provide directional signs along the pathway.
6. Build turnouts with seating for stopping, resting and viewing of the area.

The plan describes the project as phase III of the City's trail system, completing a 2.25-mile linkage from the northern-most city limits at the Simpson/Ferry Road Park pathway to the southern-most city limits at Newmark Avenue (see

Figure 9). The resulting 3-mile pathway will become the designated route for the Oregon Coast Bike Route through North Bend. The construction materials for the multi-use pathway are described as a combination of concrete sidewalk, bike lane striping, asphalt paving, a wooden bridge, and elevated boardwalk over wetlands. The plan identifies potential funding sources, including the Oregon State Lottery, Land and Water Conservation Fund, and multiple foundations.

Figure 9. Pony Creek Pathway Project



Project Relevance: **Proposed Pony Creek Greenway Concept Plan improvements should be considered for inclusion in the North Bend TSP update. While the plan is mostly focused on environment and education, stated objectives are appropriately considered for updating the bicycle and pedestrian plan elements of the TSP. Funding sources listed in the plan may also be relevant to funding desired transportation improvements.**

Hollering Place Master Plan (2008)

Hollering Place is situated at the junction of Newmark Avenue and Empire Boulevard (Cape Arago Highway). The site is comprised of four lots with a total area of 3.68 acres. The existing zoning is General Commercial for the lots located on the bluff and Urban Water Dependent on the lower lots above the high water line and Development Aquatic below the high water mark. The Oregon Downton Development Association created a market-based master plan for Hollering Place and used community feedback to develop a commercial, residential and educational area along the bluffs. The development would be connected via boardwalks to protect the ecosystem below, but otherwise little assumptions are made to the transportation system. The existing street patterns and access points of Empire Boulevard are assumed to remain, and a vehicle turn-around for the terminus of Newmark Avenue is proposed.

Project Relevance: **The potential for a mixed-use development at Hollering Place, as envisioned by the Master Plan, will be considered as part of transportation demand forecasting.**

Jordan Cove Energy Project Traffic Impact Analysis Update (2017)

Jordan Cove Energy Project L.P. proposes to construct a liquefied natural gas export facility on 500 acres of the North Spit across the Coos Bay from the Southwest Oregon Regional Airport.[25] The Jordan Cove Energy Project (JCEP) TIA was prepared to summarize expected traffic impacts associated with two peak phases of construction (years 2021 and 2022) and operation of the proposed Jordan Cove Liquefied Natural Gas (JCLNG) export terminal (year 2024). The TIA found that construction-related trips would be responsible for failure of two intersections to meet applicable operation standards in the study area if mitigation was not provided. Several mitigation measures were evaluated and the following measures were recommended to mitigate construction impacts:

- US 101 at Trans Pacific Parkway improvements
  - Provision of a dedicated eastbound left-turn lane, approximately 600 feet long with 450 feet of queue storage
  - Temporary signalization of the intersection
- Transportation Demand Management measures
  - Two staggered work shifts with start and end times that distribute the commute trips throughout a two-hour arrival and departure period
  - Bussing the majority of the workforce not residing at the workforce housing facility on the North Spit
  - Manual flagging at the intersection of Hauser Depot Road at US 101 during the PM hours when the construction workforce is leaving the Myrtlewood Offsite park-and-ride lot

The TIA also recommended that the JCEP enter into development agreements with ODOT, Coos County, and the City of North Bend to create a mechanism for working through situations that may arise during facility construction.

> Project Relevance: **Transportation improvements proposed in the JCEP TIA should be reflected in the updated North Bend TSP. Note that mitigation measures should only be implemented if triggered by approval of the Jordan**

Pony Village Traffic Impact Analysis (2013)

The Pony Village TIA is a set of findings related to the development of a North Bend commercial development of the same name. The analysis evaluates the operation of the site entrances and the accesses to the Pony Village Mall on Virginia Street along the property frontage and proposes off-site improvement strategies to assist with the impact of the site.

Proposed improvements are:

1. Signalize the proposed access to the site.
2. Restrict the entrance to the mall to Right-In Right-Out only.

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[25] https://www.oregon.gov/deq/Programs/Pages/Jordan-Cove.aspx

3. Coordinate the new signal with the signalized intersection of Virginia and Harrison St.

Project Relevance: The Pony Village TIA identifies off-site improvements needed for the commercial development site, including traffic signals to regulate traffic to and from the mall. Mitigation includes restricting entrance to the site, as well as adding a new signalized intersection on Virginia and Harrison Street. The proposed improvement should be considered for inclusion in the North Bend TSP Update.

North Bend Parks and Recreation Master Plan (1999, Revised 2018)

The North Bend Parks and Recreation Master Plan was prepared with the support and assistance of the entire community and elected officials, advisory board members, and staff. It updates and replaces the Parks Element of the City's 1995 Comprehensive Land Use Plan. It is specifically intended to provide a blueprint for the acquisition, development, and redevelopment of parks and recreational facilities in North Bend. The plan provides documentation of existing park and recreation system conditions, identifies locally expressed needs, builds community support to determine the means to meets these needs, and establishes a program to guide funding strategies for improvements.

Transportation-related projects are listed below; some projects include the level of importance, as related to connecting users to a specific park.

- Oak Street Park: Develop canyon trail.
- Boynton Park: Construct stairs from Sherman Avenue to the park and develop trail along south portion of park, to provide safe access to convenience store (high priority). Construct sidewalk to fill gap on Sherman Avenue (high).
- College Park: Construct raised crosswalk across Ash Street to proposed school ballfield complex, SWOCC, and John Topits (Empire Lakes) Park (high).
- Airport Heights Park: Construct sidewalk along and raised crosswalk across Colorado Avenue to provide safe access to adjacent residential neighborhood (low). Construct path connecting to Senior Center (medium). Explore shared parking with new development in airport industrial area (medium).
- Pony Point Walkway: Acquire new access to and along the existing but no longer used Pony Point Walkway, including but not limited to access over and across Pony Slough (high).
- Pony Creek Greenway Project: Construct Pony Creek Greenway Trail from Newmark to the Visitor Information Center in Simpson Park (Funding Source: TEA-21, City match) (high)
- Hillcrest Elementary: Improved internal pedestrian circulation is needed.
- Bangor Elementary: Develop 5-foot wide concrete pedestrian connection at end of Madrona Street to provide neighborhood access to school.
- Roosevelt Elementary: Build trail/stairway to provide access to Highway 101 and Sheridan neighborhood.

- John Topits Park: Secure dedication/easement and build trail from Airport Heights Park west and south to John Topits (Empire Lakes) Park (medium).
- Waterfront-Ferry Connector: Build path connection along Sheridan Avenue from Waterfront Master Plan area to Ferry Road Loop Trail (high).
- Ferry Road Loop: Build loop trail from Ferry Road Park to Bayfront, up McDaniel Street, along Bayview Street, through Winsor Park and back to Ferry Road Park (high).
- North Point Trails: Secure easement and build semi improved Simpson Park-Railroad Bridge trail along railroad right-of-way to railroad bridge (low). Develop a 12-foot wide multi-use soft trail with stormwater facilities on both sides along the Bayfront, connecting the Sawmill and Tribal Trail near Ferry Road Park to the Chappell Parkway Extension (high). Extend the 12-foot wide trail from the Chappell Parkway Extension to Simpson Park (medium). Develop a loop-trail around the western most part of the North Point area (low).
- On-Street Connections: Connect all off-street path segments via on-street bike lanes and sidewalks, especially along Sherman Avenue, Newmark Street, Colorado Street, Virginia Street, Pony Creek Road, Ash Street, and Highway 101 (high).

Project Relevance: The North Bend Parks and Recreation Master Plan provides recommendations to improve access around the parks and trails in North Bend. Updated TSP pedestrian and bicycle elements, or proposed improvements, should be consistent with these recommendations and with the objectives of the Parks and Recreation Master Plan.

Oregon International Port of Coos Bay Strategic Business Plan (2015)

The Oregon International Port of Coos Bay Strategic Business Plan was developed to articulate the planning, facility, and capital improvement needs of the Oregon International Port of Coos Bay (Port) over a 20-year planning horizon. The document also updated the Port's vision, mission, and guiding principles. The mission of the Port is "promoting sustainable development that enhances the economy of southwest Oregon and the State."

Project Relevance: The Oregon International Port of Coos Bay Strategic Business Plan provides a list of capital improvements and an action plan for the high-priority projects. Updated TSP projects related to the Port should be consistent with the proposed capital improvements.

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Technical Memorandum #2:
Goals, Objectives and Evaluation Criteria

TECHNICAL MEMORANDUM #3

Goals, Objectives and Evaluation Criteria – (Task 3.2)

Date: October 30, 2018

To: City of Coos Bay
City of North Bend
Oregon Department of Transportation, Region 3

From: Darci Rudzinski and Shayna Rehberg, Angelo Planning Group
Angela Rogge, PE, David Evans and Associates, Inc.

Subject: Cities of Coos Bay and North Bend Transportation System Plan Updates

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The cities of Coos Bay and North Bend, in partnership with the Oregon Department of Transportation (ODOT), are updating their respective Transportation System Plans (TSPs) to guide future investments in transportation operations, maintenance, and facilities. Assisting the cities and ODOT with the TSP is the team of consulting firms of David Evans and Associates (DEA) and Angelo Planning Group (APG). This memorandum revisits each city's current TSP's goals and introduces the draft transportation-related goals and objectives that will be used to guide the development of updated TSPs for both jurisdictions. In addition, evaluation criteria are proposed to help prioritize projects developed through this TSP update project.

Evaluation criteria are based on project goals and objectives and provide a method by which to assess and compare the suitability of transportation system alternatives and to prioritize projects, programs, policies, pilot projects, and/or refinement studies to address the communities' identified transportation needs.

Terms applicable to this TSP update project are defined here.

Goals	Broad statements of purpose that reflects community transportation priorities and provide direction for *what* a community seeks to achieve (the 'what' is typically the community's Vision or Mission statement).
Objectives	More specific statements of purpose describing *how* a community will achieve its goal (or articulate desired specific outcomes related to the goal). Objectives should be measurable or quantifiable.
Evaluation Criteria	General (sometimes subjective) or more specific quantitative measures used to assess transportation system options (or prioritize projects) relative to specific objectives.
Policies	Specific statements of *intent* and approach to implement and achieve the community plan goals and objectives. *These will be developed later in the TSP Update process after alternatives development.*

Current TSP (

This section includes the goals and policies as they were written for the current North Bend and Coos Bay TSPs. Transportation goals and policies are found in Chapter 2 of the North Bend TSP and Coos Bay TSPs, which were adopted in 2004. The goals provide context for how these cities had previously established the direction for their future transportation system. A review of these goals and policies indicate that they were created with a focus on the development and maintenance of a multimodal transportation that enhances safety, efficiency, and accessibility to all members of the community. Overall, the 2004 goals remain relevant and can serve as the basis for revised goals and objectives to guide the current TSP update project. The cities also have "action" statements associated with some policies. As used in the current TSPs, the action statements have a similar role as objectives in that they provide direction or articulate specific outcomes related to the associated goal.

Goal #1: Transportation facilities designed and constructed in a manner to enhance [North Bend/Coos Bay]'s livability and meet federal, state, regional, and local requirements.

Policies:

a) Maintain the livability of [North Bend/Coos Bay] through proper location and design of transportation facilities.

> **Action:**[1]
>
> *Design streets and highways to respect the characteristics of the surrounding land uses, natural features, and other community amenities.*
>
> *Recognizing that the magnitude and scale of capital facilities also affect aesthetics and environmental quality, the City will require design plans and impact analyses as specified in the Development Code.*

b) Consider noise attenuation in the design, redesign, and reconstruction of arterial streets immediately adjacent to residential development.

c) Protect neighborhoods from excessive through traffic and travel speeds while providing reasonable access to and from residential areas. Build streets to minimize speeding.

> **Action:**
>
> *Develop and maintain street design standards and criteria for neighborhood traffic management for use in new development and existing neighborhoods*

d) New commercial and industrial development shall identify traffic plans for residential streets where increased cut-through traffic may occur due to the proposed development.

e) Designate major tourist routes for provisions of enhanced streetscape and directional markings.

> **Action:**
>
> *Develop and maintain tourist route standards on major travel routes.*

Goal #2: A balanced transportation system.

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[1] The adopted Coos Bay Goal #1 has the following additional action item: *Potential Urban Growth Boundary areas (e.g., Bunker Hill area) will be integrated into the city system plan to provide adequate service.*

Policies:

a) Implement [North Bend's/Coos Bay's] public street standards that recognize the multi-purpose nature of the street right-of-way for utility, pedestrian, bicycle, transit, truck, and auto use, and recognize these streets as important to community identity as well as providing a needed service.
b) Develop and provide a safe, complete, attractive, efficient, and accessible system of pedestrian ways and bicycle ways, including bike lanes, shared roadways, multi-use paths, and sidewalks according to the pedestrian and bicycle system maps and the Development Code and Engineering Design Manual and Standard Drawings requirements.
c) Provide connectivity to each area of [North Bend/Coos Bay] for convenient multi-modal access. Ensure pedestrian, bicycle, transit, and vehicle access to waterfront, schools, parks, employment and recreational areas by identifying and developing improvements that address connectivity needs.
d) Develop neighborhood and local connections to provide adequate circulation into and out of neighborhoods.
e) The permanent closure of an existing road in a developed neighborhood to through traffic is not recommended and will be considered by the City only under the following circumstances: as a measure of last resort, when the quality of life in the neighborhood is being severely threatened by excessive traffic volumes or the presence of a traffic safety hazard; or as part of a plan reviewed through the City's land use and/or site development process(es), including capital improvement projects. Planned roads that have not been built in neighborhoods should be retained as indicated in the Local Street System Plan maps.
f) Design arterial and collector streets to accommodate pads for public transit and to provide convenient access to transit stops.

> **Action:**
> *Work with Coos County Area Transit (CCAT) to improve transit service, pedestrian facilities leading to transit stop waiting areas, and to make the waiting areas themselves safe, comfortable, and attractive.*

<u>Goal #3:</u> A safe transportation system.

Policies:

a) Improve traffic safety through a comprehensive program of engineering, education, and enforcement.
b) Design streets to serve anticipated function and intended uses as determined by the Comprehensive Plan.

> **Action:**
> *Maintain a functional classification system that meets the City's needs and respects the needs of other agencies including but not limited to Coos County, and ODOT.*

c) Where on-street pedestrian and bicycle facilities cannot reasonably be provided on highways and arterials, identify parallel routes that comply with state and city planning and design standards.
d) Enhance safety by prioritizing and mitigating high collision locations within the City.

> **Action:**
> *Work with ODOT and Coos County to periodically review traffic collision information in an effort to systematically identify, prioritize, and remedy safety problems.*

e) Designate safe routes from residential areas to schools.

> **Action:**
> *The City should work with area schools and the community in developing safe transit, pedestrian, and bicycle routes to schools. Communicate selected safe school route program to community. Improvement projects near schools shall consider school access and safety during project development.*

f) Provide satisfactory levels of maintenance to the transportation system in order to preserve user safety, facility aesthetics, and the integrity of the system as a whole.

Action:
Periodically review pavement maintenance system data to update roadway paving budgets, and prioritize facilities with highest need for services.

g) Maintain access management standards for streets consistent with City, County, and State requirements to reduce conflicts between vehicles and trucks, and between vehicles and bicycles and pedestrians.

Action:
Preserve the functional integrity of the motor vehicle system by limiting access per City standards.

h) Ensure that adequate access for emergency services vehicles is provided throughout the City.

Action:
Develop Neighborhood Traffic Management standards based on functional classification to preserve primary response routes.

i) Meet federal and State safety compliance standards for operation, construction, and maintenance of the rail system.

j) Provide safe routing of hazardous materials consistent with federal guidelines, and provide for public involvement in the process.

Action:
Work with federal agencies, the Public Utility Commission, the Oregon Department of Environmental Quality, public safety providers, and ODOT to assure consistent routes, laws, and regulations for the transport of hazardous materials.

Goal #4: An efficient transportation system that reduces the number and length of trips, limits congestion, and improves air quality.

Policies:

a) Support and implement trip reduction strategies developed regionally, including employment, tourist, and recreational trip reduction programs.

Action:
Continue to implement the following action plan to work toward achieving these targets:

• Encourage development that effectively mixes land uses to reduce vehicle trip generation.

• Develop consistent conditions for land use approval that require future employment related land use developments to agree to reduce peak hour trip making through transportation demand management strategies.

• Implement the bicycle, transit, pedestrian, and motor vehicle master improvement plans [to be developed in this study] to implement a convenient multimodal transportation system.

b) Maintain levels of service consistent with the Oregon Transportation Plan. Reduce traffic congestion and enhance traffic flow through such measures as intersection improvements, intelligent transportation systems, signal synchronization, and other similar measures.

Action:
Adopt level of service standards that are consistent with State and County standards.

c) Maintain levels of service or minimum performance thresholds identified by responsible service providers for non-roadway facilities including rail, air, and marine activities.

Action:
Work with Port of Coos Bay, North Bend Municipal Airport, and Central Oregon Railroad to establish appropriate performance thresholds for their respective facilities.

d) Plan land uses to increase opportunities for multi-purpose trips (trip chaining).
e) Require land use approval of proposals for new or improved transportation facilities. The approval process shall identify and consider the project's identified impacts.
f) Support mixed-use development where zoning allows.
g) Work with Coos County Area Transit to encourage the development of transit improvements, improve access and frequency of service, and increase ridership potential and service area.

<u>Goal #5:</u> Transportation facilities that serve and are accessible to all members of the community.

Policies:

a) Construct transportation facilities to meet the requirements of the Americans with Disabilities Act.
b) Support Coos County Area Transit and other transit service provider's efforts that respond to the transit and transportation needs of the elderly and disabled.

<u>Goal #6:</u> Transportation facilities that provide efficient movement of goods and services.

Policies:

a) Designated arterial streets and highway access are essential for efficient movement of goods. Design these facilities and adjacent land uses to reflect the needs of goods movement.
b) Consider existing railroad and air transportation facilities to be City resources and reflect the needs of these facilities in land use decisions.
c) Develop a freight system that takes advantage of the efficiencies of each transportation mode.

<u>Goal #7:</u> Implement the transportation plan by working cooperatively with federal, State, regional, and local governments, the private sector, and residents. Create a stable, flexible financial system.

Policies:

a) Coordinate transportation projects, policy issues, and development actions with all affected governmental units in the area. Key agencies for coordination include: Coos Bay, Port of Coos Bay, Coos County, ODOT, and Coos County Area Transit.
b) Participate in implementing regional transportation, growth management, and air quality improvement policies. Work with agencies to assure adequate funding of transportation facilities to support these policies.
c) Monitor and update the Transportation Element of the Comprehensive Plan so that issues and opportunities are addressed in a timely manner. Maintain a current capital improvement program that establishes the City's construction and improvement priorities, and allocates the appropriate level of funding.

d) Develop and use the street utility fee as an element of an overall funding program to pay for maintenance on the collector and arterial street system.
e) Establish rights-of-way at the time of site development and, where appropriate, officially secure them by dedication of property.
f) Working in partnership with ODOT, and other jurisdictions and agencies, develop a long-range financial strategy to make needed improvements to the transportation system and support operational and maintenance requirements.

Action:
The financial strategy should consider the appropriate elements such as share of motor vehicle fees, impact fees, property tax levies, and development contributions to balance needs, costs, and revenue. View the process of improving the transportation system as that of a partnership between the public (through fees and taxes) and private sectors (through exactions and conditions of development approval), each of which has appropriate roles in the financing of these improvements to meet present and projected needs.

g) Provide adequate funding for maintenance of the capital investment in transportation facilities.

Action:
Develop a long-term financing program that provides a stable source of funds to ensure cost effective maintenance of transportation facilities and efficient effective use of public funds.

Revising Transportatio

At the most basic level, a TSP provides a blueprint for all modes of travel: motor vehicle (both personal and freight), bicycle, pedestrian, and transit. It is also an opportunity to build on community values and protect what makes the Bay Area a great place to live, work, and visit. The TSP should support a shared vision to be accessible, equitable, and livable communities.

A TSP's goals and objectives serve as the basis of evaluation criteria to assess multimodal plan options and identify plan priorities. For this update, current goals have been augmented to provide a more complete framework for planning for the cities multi-modal transportation system. Objectives associated with each goal guide the development or update of a TSP. Policies and action items in the existing TSPs largely provided this guidance. For this TSP update project, objectives are proposed that are aligned with project expectations.[2] Objectives both reflect direction in the adopted TSPs, where still valid, and provide new direction. Topic areas in the proposed objectives that better reflect today's needs include tourism and recreation, health, agency coordination, and strategic investments.

Table 1. Summary of Existing vs. Proposed Goals

Existing Goal	Proposed Goal
Goal #1: Transportation facilities designed and constructed in a manner to enhance [North Bend/Coos Bay]'s livability and meet federal, state, regional, and local requirements.	Eliminate and retain topics under proposed goals.
Goal #2: A balanced transportation system.	Goal #1: Continue development of an interconnected, multimodal transportation network that connects all members of the community to destinations within and beyond the city.
Goal #3: A safe transportation system.	Goal #2: Provide a transportation system that enhances the safety and security of all transportation modes.
Goal #4: An efficient transportation system that reduces the number and length of trips, limits congestion, and improves air quality.	Goal #3: Optimize the performance of the transportation system for the efficient movement of people and goods.
Goal #5: Transportation facilities that serve and are accessible to all members of the community.	Goal #4: Provide an equitable, balanced and connected multi-modal transportation system.
Goal #6: Transportation facilities that provide efficient movement of goods and services.	Goal #5: Provide a transportation system that supports existing industry and encourages economic development in the city.
Goal #7: Implement the transportation plan by working cooperatively with federal, State, regional, and local governments, the private sector, and residents. Create a stable, flexible financial system.	Goal #6: Develop and maintain a Transportation System Plan that is consistent with the goals and objectives of the city, Coos County, and the state.
	Goal #7: Provide a sustainable transportation system through responsible stewardship of financial resources.
	Goal #8: Provide a transportation system that enhances the health of residents and users and that minimizes impacts to the environment.

[2] Current adopted TSP policies have an implementation focus, rather than plan development focus. The recommendation is to update the cities' policies at the implementation phase of the project.

The following are the recommended goals and objectives to guide the update of the North Bend and Coos Bay TSPs.

<u>Goal #1:</u> Continue development of an interconnected, multimodal transportation network that connects all members of the community to destinations within and beyond the city.

Objectives:

a) Improve, as needed, and retain existing connections between households and schools, parks, transit stops, the waterfront and other essential destinations and recreational areas. Provide a network of arterials, collectors and local streets that are interconnected, appropriately spaced, and reasonably direct in accordance with city and state design standards and the Transportation System Plan.
b) For new development, provide for multi-modal circulation internally on site and externally to adjacent land use and existing and planned multi-modal facilities.
c) Support off roadway walkways and bikeways that help to connect communities, provide options to motorized travel, or promote and support walking and biking tourism.
d) Require sidewalks on all new streets within the Urban Growth Boundary and that these facilities be designed to the standards in the adopted Transportation System Plan.
e) Ensure access to schools, parks, and other activity centers for all members of the community, including children, disabled, low-income, and elderly people.
f) Ensure adequate access to transit facilities and services.
g) Upgrade existing transportation facilities, including retrofitting for American Disability Act (ADA) compliance, and work with public transportation providers to provide services that improve access for all users.
h) Ensure American Disability Act (ADA) compliance for new transportation facility infrastructure.
i) Ensure planned pedestrian throughways are clear of obstacles and obstructions (e.g., utility poles) and continue to identify, and as resources permit, eliminate obstacles and obstructions for existing facilities.

<u>Goal #2:</u> Provide a transportation system that enhances the safety and security of all transportation modes.

Objectives:

a) Address existing safety issues at high collision locations and locations with a history of severe vehicle, bicycle- and/or pedestrian-related crashes.
b) Manage access to transportation facilities consistent with their applicable classification to reduce and separate conflicts and provide reasonable access to land uses.
c) Improve the safety of rail crossings.
d) Identify and improve safe crossings for vehicles, bicycles and pedestrians across Highway 101 and major arterials.
e) Maintain and enhance lifeline and evacuation routes in coordination with local, regional, state and private entities.
f) Coordinate with law enforcement and emergency service providers to increase public safety and security.
g) Consider neighborhood traffic management strategies to improve safety for pedestrians, bicyclist, and vehicles and where certain techniques may be warranted.
h) Identify and designate routes to and around schools that are safe for pedestrians and bicyclists, as well as people in cars and arriving by bus.

<u>Goal #3:</u> Optimize the performance of the transportation system for the efficient movement of people and goods.

Objectives:

a) Maintain, and modify as necessary, street functional classifications, along with operational guidance and cross-sectional and right-of-way standards, to ensure streets are able to serve their intended purpose.
b) Reduce reliance on single-occupancy vehicle trips by planning for bicycle and pedestrian facilities that encourage non-vehicular travel and provide safe passage for pedestrians and bicyclists.
c) Reduce reliance on the state system for making local trips by providing a network of arterials, collectors and local streets that are interconnected, appropriately spaced, and reasonably direct in accordance with city and state design standards and the Transportation System Plan.
d) Preserve and maintain the existing transportation system in a state of good repair.
e) Develop a program to systematically implement improvements for all modes that enhance mobility at designated high-priority locations.
f) Adopt a standard for mobility to help maintain a minimum level of freight and/or motor vehicle travel efficiency and by which land use proposals can be evaluated. State and city mobility standards will be supported on facilities under the respective jurisdiction.
g) Work with [North Bend/Coos Bay], Coos County, and ODOT to develop, operate and maintain intelligent transportation systems and technological solutions that reduce travel delay and improve system efficiency, including coordination of traffic signals and improved traveler information.
h) Coordinate with Coos County Area Transit to develop system enhancements that support the movement of people in high traffic corridors.

<u>Goal #4:</u> Provide an equitable, balanced and connected multi-modal transportation system.

Objectives:

a) Ensure that the transportation system provides equitable access to underserved and vulnerable populations. Prioritize walking and biking investments in underserved areas with transportation disadvantaged populations.
b) Provide connections for all modes that meet applicable city and Americans with Disabilities Act (ADA) standards.
c) Require multi-modal circulation internal to a development site, as well as connecting to adjacent land use and existing and planned multi-modal facilities.

<u>Goal #5:</u> Provide a transportation system that supports existing industry and encourages economic development in the city.

Objectives:

a) Improve the movement of goods and delivery of services throughout the city while balancing the needs of all users with a variety of travel modes and preserving livability in residential areas and established neighborhoods.
b) Prioritize efficient freight movement on identified freight routes and recognize the importance of freight intermodal connectors as the last mile connections between state highways and intermodal freight facilities.
c) Identify lower cost options or provide funding mechanisms for transportation improvements necessary for development to occur.
d) Program transportation improvements to facilitate the development of desired land uses and activities.

e) Encourage recreational tourism by developing connections to and between major recreational locations and destinations and key services in the city.
f) Encourage tourism by promoting and upgrading bicycle and pedestrian recreational routes and services through the city.
g) Designate major tourist routes for provisions of enhanced streetscape and directional markings.
h) Support recreational transit use to boost tourism, enhance economic development, and reduce the environmental impacts of automobile traffic. Explore options to enhance tourist transit use with Coos County Area Transit, including the use of seasonal trolleys, and with businesses that attract tourists, such as local casinos.

Goal #6: Develop and maintain a Transportation System Plan that is consistent with the goals and objectives of the city, Coos County, and the state.

Objectives:

a) Ensure consistency with state, regional and local planning rules, regulations, and standards.
b) Coordinate land use, financial, and environmental planning to prioritize strategic transportation investments.
c) Coordinate land use and transportation decisions to efficiently use public infrastructure investments to:
    - Maintain the mobility and safety of the roadway system
    - Foster efficient development patterns
    - Encourage the availability and use of transportation options such as biking, walking and taking transit
    - Plan for efficient and safe emergency response and evacuation needs
d) Coordinate with [North Bend/Coos Bay], Coos County, and the Oregon Department of Transportation to implement system management and operations strategies on arterials and highways.
e) Coordinate with Coos County Area Transit to strengthen the efficiency and performance of the transit network and to support the multimodal system.

Goal #7: Provide a sustainable transportation system through responsible stewardship of financial resources.

Objectives:

a) Develop and support reasonable alternative mobility targets for motor vehicles that align with economic and physical limitations on state highways and city streets where necessary.
b) Preserve and maintain the existing transportation system assets to extend their useful life.
c) Improve travel reliability and efficiency of existing major travel routes in the city before adding capacity.
d) Pursue grants and collaboration with other agencies to efficiently fund transportation improvements and supporting programs.
e) Identify and maintain stable and diverse revenue sources to meet the need for transportation investments in the city.
f) Identify new and creative funding sources to leverage high priority transportation projects.

Goal #8: Provide a transportation system that enhances the health of residents and users and that minimizes impacts to the environment.

Objectives:

a) Identify and seek funding for programs that encourage walking, bicycling, and transit.
b) Provide convenient and direct pedestrian and bicycle facilities and routes to promote health and the physical and social well-being of residents, to reduce vehicular traffic congestion, to provide community and recreational alternatives, and to support local commerce and economic development.
c) Plan for a multi-modal system that limits users' exposure to pollution and that enhances air quality.
d) Consider noise attenuation in the design, redesign, and reconstruction of arterial streets immediately adjacent to residential development.
e) Relate the design of street capacity and improvements to the intended use of the facility.
f) Minimize impacts to the scenic, natural and cultural resources in the city.
g) Avoid or minimize impacts to natural resources, which may include alternative transportation facility designs in constrained areas.
h) Reduce the number of vehicle-miles traveled.
i) Increase the number of walking, bicycling, and transit trips in the city.
j) Develop transportation standards that preserve and protect the integrity of neighborhoods.
k) Support alternative vehicle types by identifying potential electric vehicle plug-in stations and developing implementing code provisions.
l) Evaluate and implement, where cost-effective, environmentally friendly materials and design approaches (water reduction methods to protect waterways, solar infrastructure, impervious materials).
m) Support technology applications that improve travel mobility and safety with less financial and environmental impact than traditional infrastructure projects.
n) Roadways within the city shall be multi-modal or "complete streets," with each street servicing the needs of the various modes of travel.

Evaluatio

The evaluation criteria will be used to evaluate and prioritize future transportation programs and improvements against the goals and objectives. A broad set of evaluation criteria that represent the proposed set of goals are summarized below.

Table 2. Proposed Evaluation Criteria

Proposed Goal	Criteria
Goal #1: Develop an interconnected, multimodal transportation network that connects all members of the community to destinations within and beyond the city.	• Improves or creates access to community destinations • Improves facilities for those using mobility devices • Enhances the active transportation or transit network
Goal #2: Provide a transportation system that enhances the safety and security of all transportation modes.	• Project is primarily a safety improvement (crossings, intersections, visibility, all modes) • Enhances emergency preparedness/community resiliency • Project improves safe routes to school
Goal #3: Optimize the performance of the transportation system for the efficient movement of people and goods.	• Addresses known access issues on state highways or major arteria • Reduces reliance on highway system for shorter, local trips • Improves efficiency of transportation system
Goal #4: Provide an equitable, balanced and connected multi-modal transportation system.	• Enhances public transportation services (e.g., new routes, shelters) • Improves bicycle and pedestrian connections to public transportation stops • Enhances transportation options to underserved areas
Goal #5: Provide a transportation system that supports existing industry and encourages economic development in the city.	• Preserves or maintains existing transportation facilities • Enhances access to employment and tourist destinations • Improves or maintains freight access/connectivity
Goal #6: Develop and maintain a Transportation System Plan that is consistent with the goals and objectives of the city, Coos County, and the state.	• Is consistent with local, state, and federal plans and policies • Supports the City's land use vision • *Note: No evaluation criteria for Goal 8, this is required for all solutions.*
Goal #7: Provide a sustainable transportation system through responsible stewardship of financial resources.	• Alternative measure to increasing capacity • Provides significant increase in mobility/accessibility • Project involves funding collaboration with other agencies or groups
Goal #8: Provide a transportation system that enhances the health of residents and users and that minimizes impacts to the environment.	• Encourages active living and physical activity • Minimizes impacts to natural resources • Reduces/discourages through travel in residential neighborhoods

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Technical Memorandum #3: Financial Funding Forecast

TECHNICAL MEMORANDUM #3

Financial Funding Forecast – Coos Bay (Task 3.3)

Date: September 7, 2018

To: City of Coos Bay
Oregon Department of Transportation, Region 3

From: Angela Rogge, PE, David Evans and Associates, Inc.
Matt Hartnett, EIT, David Evans and Associates, Inc.

Subject: Cities of Coos Bay and North Bend Transportation System Plan Updates

The purpose of this memorandum is to present the transportation funding that is reasonably expected through the 20-year planning horizon. The information presented will help guide the planning process so that the City and stakeholders have realistic expectations around potential transportation investment options early in the planning process.

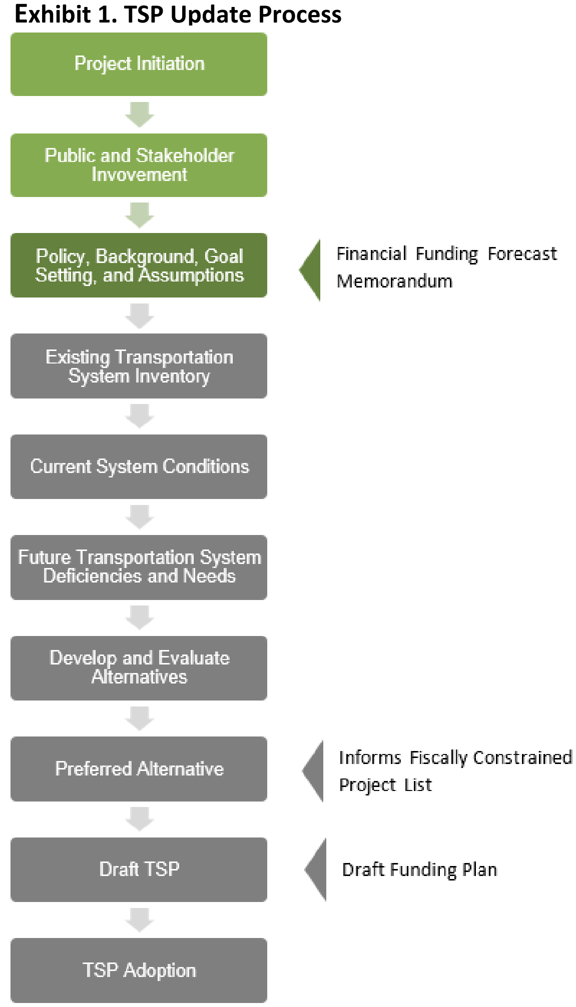
Background and Purpose

Updates of the Coos Bay/North Bend Transportation System Plans (TSP) will guide the future investments in transportation operations, maintenance, and facilities. Each City has its own funding structure and thus separate financial funding forecasts have been prepared.

The recommendations for investments in facilities and services must reflect a plausible estimate of the funding likely to be available. The TSP process will proceed more efficiently if the City and stakeholders have such an estimate before recommending investments.

Exhibit 1 shows how the work on funding fits into the overall work plan for the TSP: it will help the City set goals and objectives, identify and prioritize projects, and set policy to fund the TSP.

Exhibit 1. TSP Update Process



Key Findings

- Coos Bay's transportation revenues come from two primary sources: State Highway Fund apportionments and a portion of collected PacifiCorp franchise fees. In FY17, Coos Bay received approximately $990,000 in State Highway Fund distributions and allocated $350,000 in collected franchise fees for street maintenance and improvements.
- Historically, Coos Bay's total transportation revenues have not kept pace with operations, maintenance, and construction costs. The City estimates bringing its streets up to "good" condition would cost at least $20 Million. The City continues to be proactive in exploring new and additional potential funding sources to address the backlog of deferred maintenance.
- Transportation investments established by House Bill 2017 will effectively increase Coos Bay's State Highway Fund revenues. ODOT projects FY19 State Highway distributions to Coos Bay to total more than $1.2 Million. By FY40, it is estimated that Coos Bay's annual State Highway Fund receipts will total at least $1.4 Million.

Organization

This memorandum includes three major sections:

Methods Overview: Methods used in this document for forecasting funding.

Funding Sources, Mechanisms, and History: Historical and potential funding sources organized by level of government: Federal, State, and local.

City Transportation Revenue and Expense Estimates: Estimates of current levels of transportation revenues and expenses and forecast of future levels (FY19-FY40).

Methods Overview

Levels of Government Funding

Funding for local transportation comes from a mix of federal, state, and local funding mechanisms and programs.

The scope of work for this memorandum is to summarize and analyze existing funding and forecast funding sources. It does not include an evaluation of the performance of funding mechanisms on any other criteria.

Methods Used in this Analysis

The methods used in this analysis match the purpose described previously. As part of the TSP Update process, the City and ODOT want some assurance that the evaluation of potential investments in facilities and services is done within plausible estimates of the funding likely to be available. To accomplish this, the following are contained in this memorandum:

- A comprehensive list of Federal, State, and local funding sources for transportation operations, maintenance and capital projects in Coos Bay, with a description of how revenues are collected and/or distributed.
- Revenue forecasts to year 2040, the planning horizon of the TSP, for those funding sources that Coos Bay currently employs, and a summary of potential revenues from other funding sources and mechanisms.

To understand current funding levels and estimate future funding levels, DEA has reviewed necessary Federal, State, and local documents.

The assumptions used to develop the revenue forecasts presented in this memorandum are clearly stated throughout. Current trends are used as context for the revenue forecasts estimated in this memorandum, and it should be noted that major changes in trends relating to economics, population, and travel would have a significant impact. Estimates of future revenues and expenses are presented in 2018 dollars.

Funding Sources, Mechanisms, and History

This memorandum organizes transportation funding sources and mechanisms by the level of government that initially collects the funds: Federal, State and local. For each level of government, this section describes (1) existing funding sources, their current levels, and likely levels over the next 20 years, and (2) new potential funding sources or mechanisms the City of Coos Bay may wish to explore.

Coos Bay currently uses two primary revenue sources to fund transportation system expenses: (1) State Highway Fund apportionments and (2) a portion of collected PacifiCorp franchise fees.

Federal Funding

Federal Highway Trust Fund

The Federal Highway Trust Fund is largely sourced by the Federal gas tax ($0.184 per gallon) and is distributed by formula to individual States through the Surface Transportation Block Group (STBG) program. ODOT relies on these distributions to fund many of the safety, highway, and bridge improvement projects identified in the Statewide Transportation Improvement Program (STIP). Any Federal Highway Trust Fund dollars Coos Bay is apportioned are included in the State Highway Fund distributions the City receives.

Surface Transportation Program (STP) Funds

Made available through FAST Act legislation and administered through and by ODOT, STP funds are flexible and can be used for different types of capital improvements and transportation programs. From FY12 to FY17, Coos Bay received a total of approximately $450,000 in STP funds, which was used on street reconstruction and resurfacing projects.

Federal Enhancement Funds and Other Grants and Programs

Federal Enhancement funds and grants administered by other Federal programs may be made available to cities on a competitive basis and can be used for projects including, but not limited to, capital improvements, multimodal transportation projects, safety improvements, and historic preservation. Other programs include the STBG program, which has set-aside funds for transportation alternatives that can be used for multimodal transportation and community improvement projects, and the Highway Safety Improvement Program (HSIP), which contributes funds for improving safety on public roads. Coos Bay has received approximately $440,000 in Federal grant awards from FY12 to FY17.

State Funding

City Allocation of the State Highway Fund

The State Highway Fund is comprised of (1) motor vehicle fuel taxes, (2) driver license fees, (3) motor vehicle registration and title fees, and (4) weight-mile tax. The City's share of these revenues is used in Coos Bay to build, operate and maintain the street system and bike and pedestrian paths as well as to provide for transportation engineering and planning support. The State of Oregon allocates the State Highway Fund to cities based on population and counties based on number of registered motor vehicles. The current formula for the State Highway Fund distribution is shown in Table 1.

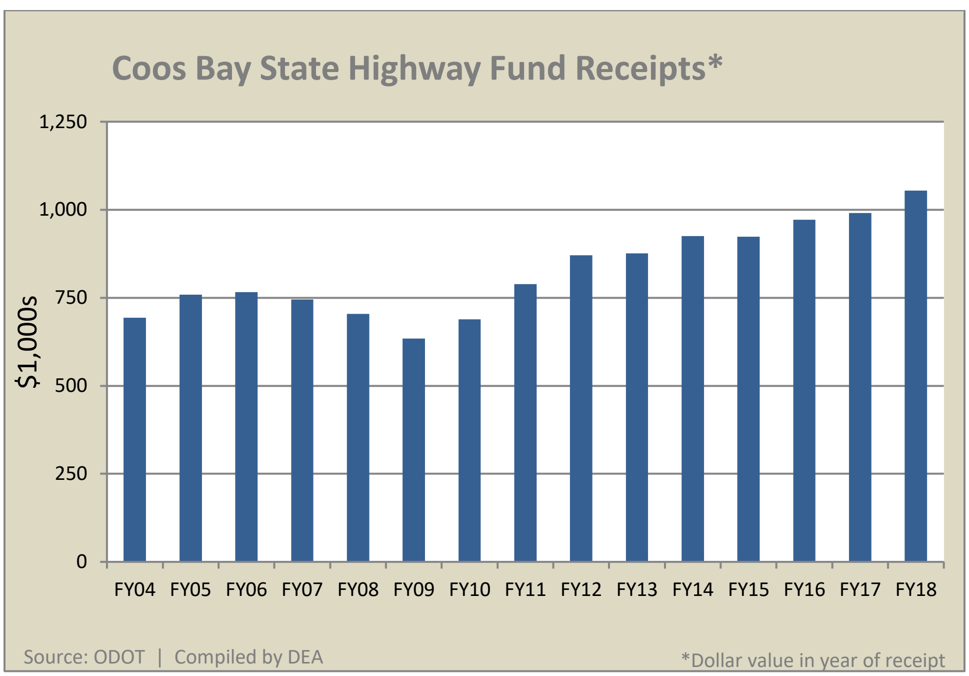
Table 1. Summary of State Highway Fund Distribution

Recipient	Percent	Basis for Distribution
State	59%	
Cities	16%	Population (ORS 366.764)
Counties	25%	Vehicle registration in each County (ORS 366.764)

Coos Bay's portion of the State Highway Fund is based on its population as a share of the total city population in Oregon (16,615 of 2,855,738 in 2018).

Exhibit 2 shows Coos Bay's State Highway Fund annual receipts for FY04 to FY18 as reported by ODOT. In FY18, the City's State Highway Fund distributions totaled approximately $1.05 Million.

Exhibit 2. Coos Bay State Highway Fund Receipts



Coos Bay uses 99% of its State Highway Fund revenues for street maintenance and operations, including personnel services. The remaining one percent of these apportionments is dedicated by State law to be used for pedestrian and bike improvements.

Over the next 20 years, Coos Bay's State Highway Fund receipts are expected to increase with implementation of House Bill (HB) 2017. The major sources of these increased State Highway Fund revenues include (1) increased motor vehicle fuel tax, and (2) increased registration and title fees.

The tax and fee increases from HB 2017 will be introduced in steps, and three of the four increases in the fuel tax are conditioned on ODOT meeting certain accountability requirements. Table 2 shows the schedule identified in HB 2017 for fuel tax increases.

Table 2. HB 2017 Fuel Tax Increases

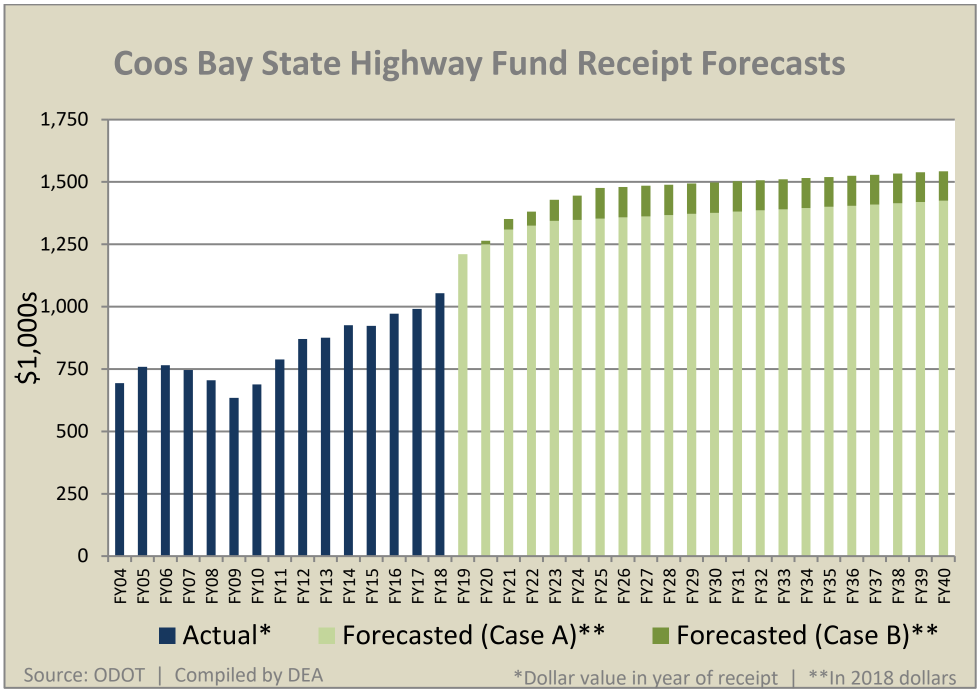
Year	Fuel Tax Increase	Notes
2018	$0.04/gal	Implemented
2020	$0.02/gal	Conditional on accountability requirements
2022	$0.02/gal	Conditional on accountability requirements
2024	$0.02/gal	Conditional on accountability requirements

See ODOT's website[1] for more detail on accountability requirements.

Given that the two cents per gallon fuel tax increases scheduled for each 2020, 2022, and 2024 are conditional, this memo provides two forecasts of the City of Coos Bay's annual State Highway Fund receipts. One forecast assumes that only the 2018 fuel tax increase takes place, and the other that all three conditional increases take place as well. In this memo, these forecasts are called Case A and Case B, respectively. Exhibit 3 shows forecasts of Coos Bay's annual State Highway Fund receipts to year 2040. The forecasts shown are extrapolated from ODOT's FY18 to FY23 projections for Coos Bay revenues.[2]

[1] https://www.oregon.gov/ODOT/Pages/HB2017.aspx
[2] Oregon Department of Transportation. Highway Revenue Apportionment Forecasts. https://www.oregon.gov/ODOT/Data/Pages/Revenue-Forecasts.aspx

Exhibit 3. Coos Bay State Highway Fund Receipt Forecasts



For FY19 to FY40, Coos Bay's total State Highway Fund apportionments will total $30.0 Million and $32.2 Million in Case A and Case B, respectively.

State Transportation Grants

At the State level, a number of programs issue grant funds to local jurisdictions on a competitive basis for a broad range of projects relating to transportation, including, but not limited to, transportation studies, multimodal facilities, and participation in State-sponsored transportation activities. These programs include ODOT's Safe Routes to School and Immediate Opportunity Fund and the Oregon Parks and Recreation Fund. From FY12 to FY17, Coos Bay did not receive any State grant dollars.

Transportation Growth Management (TGM) Grants

The State also awards TGM grants on a competitive basis. The TGM program is jointly administered through the Department of Land Conservation and Development (DLCD) and ODOT. The City of Coos Bay may use these funds to conduct planning and transportation studies related to managing growth and reducing reliance on single-occupant vehicle (SOV) travel.

Local Funding Options

This section identifies a broad range of local funding options that the City may wish to pursue in order to secure more revenue for transportation capital projects and operations and maintenance. This section (1) provides an overview of those local funding strategies that Coos Bay already employs for transportation expenditures, and (2) discusses potential additional sources of local transportation revenues.

Implemented Local Funding Mechanisms

Franchise Fees

Coos Bay continues to collect franchise fees from public utility and service providers that use the public right-of-way to convey their services, as summarized in Table 3. The City assesses a 9% fee on PacifiCorp. Approximately 22% of collected PacifiCorp fees are allocated to the Street Improvement Fund, and the remainder is deposited into the City's general fund. Franchise fees collected from other providers and services are also deposited into the general fund. In FY17, Coos Bay's total annual Franchise Fee revenues totaled $2.1 Million.

Table 3. Franchise Fees Collected in Coos Bay

Franchise/Service	Current Fee[a]
Mobilite Telecommunications	7%
Charter Communications	5%
PacifiCorp	9%
Lightspeed Fiber	7%
Northwest Natural Gas	5%
SAH Cable	$200/yr[b]
Solid Waste	5%
Telecommunications Fiber	5%
Telephone	7%

[a]All fees are a percentage of annual gross revenue collected by the franchise for all business conducted in City limits
[b]Increasing 3% each year the Franchise Agreement remains in effect

Local Improvement Districts (LIDs)

This mechanism allows neighboring property owners to group together in order to improve public facilities, paying for them over time through individual assessments. LIDs are generally used to complete local street improvements, sidewalk improvements, or improvements to business districts.

Coos Bay has two designated LIDs: 22nd Street and Minnesota Ave. The City has a Special Improvement (LID) Fund, which it uses for sewer, storm water, and street maintenance and improvements. Recently, most spending from this fund has provided for pavement maintenance and repair.

Tax Increment Financing (TIF)

TIF is a public financing method used to subsidize redevelopment, infrastructure, and other community-improvement projects. Through use of TIF, a city can divert future property tax revenue increases from a defined area or district (typically termed an urban renewal district) and apply those revenues toward an economic development project or public improvement project in the community.

Coos Bay maintains an Urban Renewal Fund, monies from which are earmarked for capital streetscape improvements in the Downtown and Empire areas. A Downtown Urban Renewal District Special Levy exercised in FY18 is expected to generate about $265,000 in funds to be used for capital projects.

Jurisdictional Exchange Fund

In 2000, Coos Bay assumed ownership of 23 lane miles of formerly State owned and operated roadways along with $4.8 Million to maintain these roads in perpetuity. Coos Bay City Charter dictates that only the interest collected on the monies in this fund can be used for maintenance if the jurisdictional exchange streets or debt service on road maintenance projects. Those streets involved in this transfer include parts of all of the following: Newmark Avenue, Empire Boulevard, Ocean Boulevard, Central Avenue, Commercial Avenue, Anderson Avenue, 6th Avenue, D Street, and Coos River Road.

In recent years, incomes from interest have been very small, and available revenues have been used to pay debt service for the Ocean Boulevard project. In FY19, it is expected the debt for the Ocean Boulevard project will be fully repaid. With the payment of this debt and increasing interest rates, the City anticipates being able to have more resources that are available in this fund in the upcoming years to be used on maintenance of the jurisdictional exchange streets.

Potential Additional Local Funding Mechanisms

Transportation Utility Fees

Transportation utility fees are charges levied on developed properties and/or residents within a city. Revenues from these fees are used to maintain local streets and transportation facilities.

Local Fuel Tax

Over two dozen Oregon cities and counties have adopted local fuel taxes, ranging from one ($0.01) to ten ($0.10) cents per gallon. Distributors of fuel within the city limits pay these taxes to the city monthly. A summary of Oregon cities and counties that collect a local fuel tax is provided in Table 4.

In November 2016, voters in both Coos Bay and North Bend defeated a measure proposing a local fuel tax dedicated to street improvement and maintenance. Leadership in the two cities jointly proposed the measure and conditioned its approval on it passing in both communities.

City officials are interested in reengaging citizens on a local fuel tax. In order to build broader political support for a new measure, Coos Bay and North Bend may want to consider a local fuel tax that is only levied during the summer months, when the area experiences higher visitor volumes. As Table 4 demonstrates, the cities of Newport and Reedsport levy seasonally adjusted local fuel taxes.

Table 4. Oregon Cities and Counties with Local Gas Tax

	Jurisdiction	Local Tax	State	Federal	Total Tax	Administered by
Cities	Astoria	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Canby	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Coburg	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Coquille	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Cottage Grove	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Dundee	$0.02	$0.30	$0.18	$0.50	City
	Eugene	$0.05	$0.30	$0.18	$0.53	ODOT FTG
	Happy Valley	$0.02	$0.30	$0.18	$0.50	City
	Hood River	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Milwaukie	$0.02	$0.30	$0.18	$0.50	ODOT FTG
	Newport					
	Jun 1 - Oct 31	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Nov 1 - May 31	$0.01	$0.30	$0.18	$0.49	ODOT FTG
	Oakridge	$0.03	$0.30	$0.18	$0.51	City
	Portland	$0.10	$0.30	$0.18	$0.58	ODOT FTG
	Pendleton	$0.04	$0.30	$0.18	$0.52	City
	Reedsport					
	May 1 - Oct 31	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Nov 1 - Apr 30	$0.00	$0.30	$0.18	$0.48	ODOT FTG
	Sandy	$0.02	$0.30	$0.18	$0.50	City
	Sisters	$0.03	$0.30	$0.18	$0.51	City
	Springfield	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Stanfield	$0.01	$0.30	$0.18	$0.49	City
	The Dalles	$0.03	$0.30	$0.18	$0.51	City
	Tillamook	$0.02	$0.30	$0.18	$0.50	City
	Tigard	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Troutdale	$0.02	$0.30	$0.18	$0.50	ODOT FTG
	Veneta	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Warrenton	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Woodburn	$0.01	$0.30	$0.18	$0.49	ODOT FTG
Counties	Multnomah	$0.03	$0.30	$0.18	$0.51	ODOT FTG
	Washington	$0.01	$0.30	$0.18	$0.49	ODOT FTG

Transportation System Development Charges (SDCs)

SDCs are collections from developers as new development occurs in the City. These charges are commonly based on trip generation rates associated with different type of development. Where implemented, SDC revenues are typically earmarked for transportation improvements related to the new development.

Coos Bay established SDCs in 2006, but placed a moratorium on them in 2008. The City has approximately $15,000 remaining in its Transportation SDC Fund from the period during which it levied these charges. Reversing this moratorium and reinstituting SDCs could bolster Coos Bay's ability to expand its transportation network, particularly in higher growth areas.

Parking District Assessment

Parking district assessments are taxes levied on property owners in parking districts in order to provide for the operation and maintenance of parking facilities. Coos Bay is interested in exploring this strategy. Currently, resources from the City's State Gas Tax and Street Improvement Funds are used to operate and maintain public parking infrastructure.

Development Exactions

To provide adequate infrastructure in response to site-specific growth, capital improvements can be exacted as conditions of approval for building permits, subdivisions, and zoning actions. Developers may be required to complete frontage street improvements and other off-site transportation improvements to mitigate traffic impacts. Exactions are to be related to the project's measured impact on the infrastructure, known as "rational nexus".

General Obligation Bonds

Bonds are a funding mechanism for constructing capital improvement projects in the City. Voter-approved bonds are sold to fund street improvement projects. Transportation projects are usually grouped in "bond packages" that go before the public for voter approval. Voter-approved General Obligation Bonds are then supported through the City's property tax base.

Coos Bay has one general obligation bond at present – its 2009 fire station bond.

City General Fund Revenues

To secure more funding to build, operate, and maintain transportation facilities, the City may choose to use general property tax dollars or an increasing share of other General Fund revenues. Using this strategy, however, places transportation system funding in direct competition with other City services that may be already obligated, such as police, fire, libraries, and parks.

Other Local Funding Mechanisms

There are several other local taxes and fees that Oregon cities may consider in funding transportation capital and operations. These include, but are not limited to hotel/motel tax, employer payroll tax, and parking in-lieu fees.

City Transportation Revenue and Expense Estimates

Current Estimate of Revenues

In FY17, Coos Bay collected approximately $990,000 in State Highway Fund apportionments. Ninety-nine percent of these dollars is allocated to the City's Gas Tax Fund, and the remaining one percent to the City's Bike/Pedestrian Path Fund.

Coos Bay also dedicates a portion of its PacifiCorp franchise fee revenues to its Street Improvement Fund to be used for operations, maintenance, and capital improvements. In FY17, approximately $350,000 in PacifiCorp franchise fee revenues were allocated into the Street Improvement Fund.

While the State Highway Fund apportionments and PacifiCorp franchise fees noted above represent the majority of Coos Bay's transportation revenues, the City raises additional monies from a number of miscellaneous sources, including collected interest and payments for services.

Also, over the six years from FY12 to FY17, Coos Bay received approximately $890,000 in Federal grant awards and STP funds for select capital improvement projects.

Table 5 shows Coos Bay's average annual revenues for FY12 to FY17.

Table 5. Coos Bay Average Annual Transportation Revenues (FY12 to FY17)

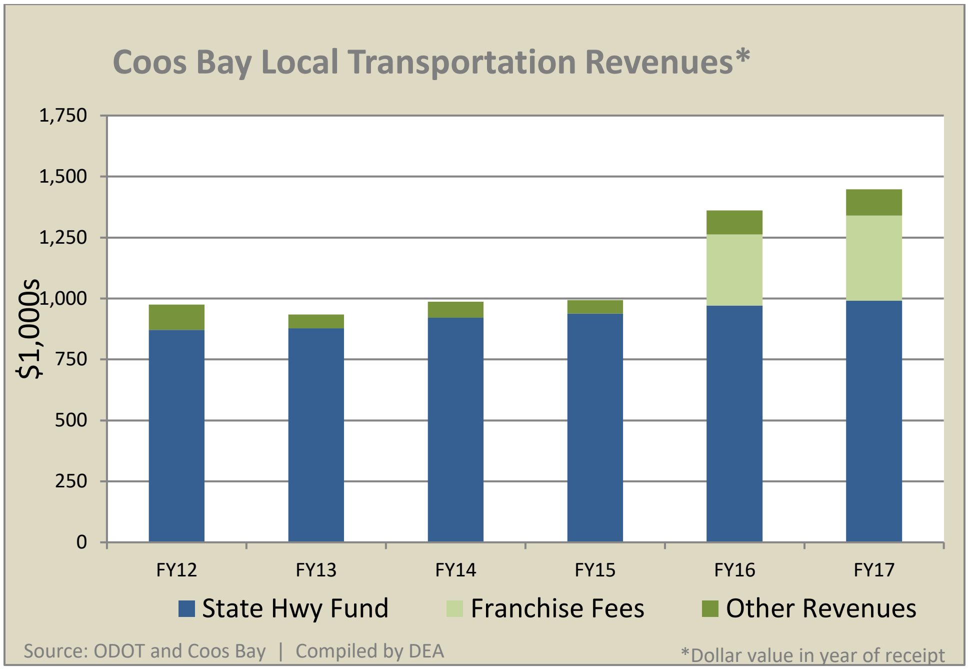
Revenues	*Annual Average*
STATE GAS TAX FUND	
State Highway Fund	$920,195
Federal Grants	$3,949
Miscellaneous	$37,336
TOTAL	**$961,479**
STREET IMPROVEMENT FUND	
Federal Grants	$69,814
STP Funds	$74,639
PacifiCorp Franchise Fees*	$321,091
Miscellaneous	$3,909
TOTAL	**$469,454**
BIKE/PED PATH FUND	
State Highway Fund	$7,829
Miscellaneous	$233
TOTAL	**$8,061**
OTHER MISCELLANEOUS REVENUES	
TOTAL	**$40,063**
GRAND TOTAL	**$1,479,057**

*Average for FY16 and FY17

From FY12 to FY17, Coos Bay collected an average of approximately $1.3 Million annually in local revenues. Over the same period, Coos Bay's Federal grant awards and STP fund receipts averaged about $145,000 per year.

Exhibit 4 summarizes the City's local transportation revenues from FY12 to FY17.

Exhibit 4. Coos Bay Local Transportation Revenues



In FY17, the City's local transportation revenues totaled around $1.4 Million. Coos Bay's primary transportation funding sources, State Highway Fund apportionments and PacifiCorp franchise fee revenues, accounted for 93% of this $1.4 Million.

Current Estimate of Expenses

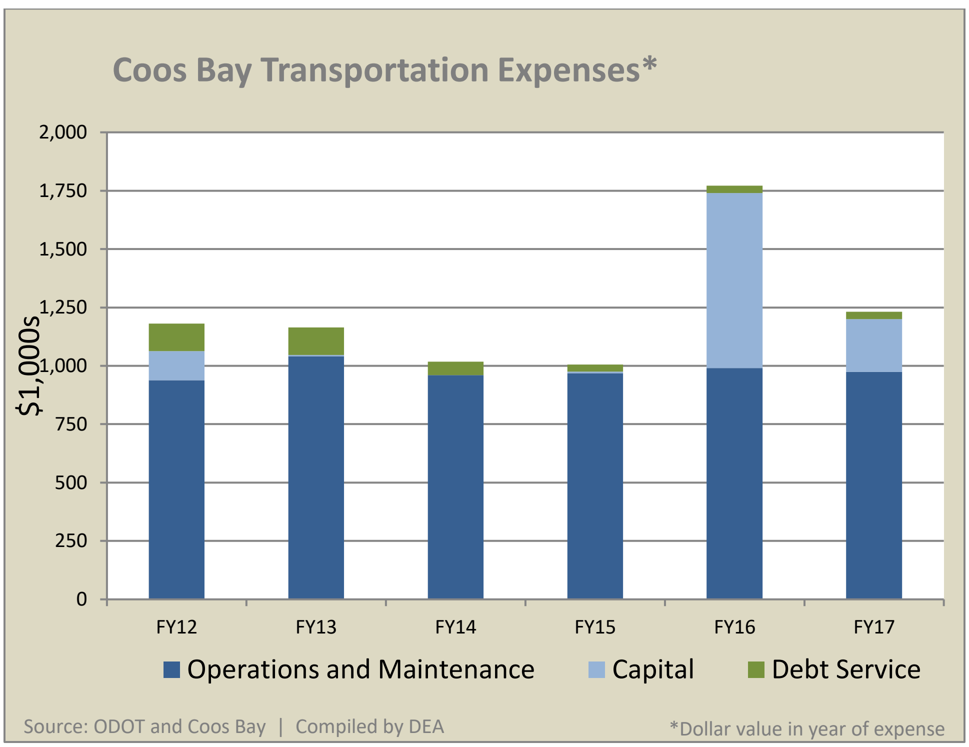
Table 6 shows Coos Bay's average annual transportation expenses for FY12 to FY17.

Table 6. Coos Bay Average Annual Transportation Expenses (FY12 to FY17)

Expenses	*Annual Average*
OPERATIONS AND MAINTENANCE	
Personnel Services	$359,748
Materials and Services	$618,890
TOTAL	**$978,637**
CAPITAL OUTLAY	
TOTAL	**$175,219**
DEBT SERVICE	
TOTAL	**$64,412**
GRAND TOTAL	**$1,218,268**

From FY12 to FY17, Coos Bay's total transportation expenses totaled approximately $1.2 Million annually. Exhibit 5 summarizes the City's transportation expenses for FY12 to FY17.

Exhibit 5. Coos Bay Transportation Expenses FY12 to FY17



Future Transportation Revenues and Expenses: FY19-FY40

The City's estimated, future transportation revenues and expenses are summarized in Exhibit 6.

Exhibit 6. Future Transportation Revenue and Expense Estimates, FY19-FY40

City of Coos Bay

Revenue (Case A)	FY19-FY40
St Hwy Fund - Allocated to City	$30,001,000
Franchise Fees	$8,800,000
Total	**$38,801,000**

Revenue (Case B)	FY19-FY40
St Hwy Fund - Allocated to City	$32,230,000
Franchise Fees	$8,800,000
Total	**$41,030,000**

Expense	FY19-FY40
Operations and Maintenance	$22,000,000
Capital	$4,400,000
Total	**$26,400,000**

Source: ODOT and City of Coos Bay

All Figures in 2018 dollars.

Assumptions

State Highway Fund apportionments – Assumes ODOT projections of both base levels and HB 2017 levels, through FY23, and then a constant annual growth rate applied to base levels consistent with that for ODOT's projections for FY18-FY23: about 0.3%. For HB 2017 levels, ODOT's projections are assumed for FY18-FY23. In Case A, HB 2017 revenues are assumed to trend with base revenues: at a constant annual growth rate of about 0.3%. In Case B, HB 2017 revenues are assumed to grow roughly 4.5% per year for FY24 and FY25, and then to grow at a constant annual growth rate of about 0.3%. Does not account for variation in future population growth rates of Coos Bay relative to other Oregon cities, nor other factors affecting fuel tax revenues (including trends relating to Vehicle Miles Traveled and fuel economy as well as broader economic trends).

Franchise Fees - Assumes constant annual revenues of $400,000 through 2040.

Operations and Maintenance - Assumes constant annual expenses of $1.0 Million through 2040.

Capital - Assumes constant annual expenses of $200,000 through 2040.

Assuming the continuation of ODOT projected trends for the City's State Highway Fund revenues and consistent levels in franchise fees out to 2040, Coos Bay's transportation revenues will total approximately $38.8 Million for FY19 to FY40 in the event that only the four cents per gallon, 2018 fuel tax increase specified in HB 2017 takes place. In the event that all three of the 2020, 2022, and 2024 conditional increases are approved, it is estimated that Coos Bay will receive an additional $2.2 Million in State Highway Fund apportionments from FY19 to FY40.

Coos Bay continues to be proactive in examining and pursuing other funding sources for transportation operations and maintenance and capital. The above estimates do not include revenues from any of the many strategies for which the City has discussed opportunities for implementation in the future. Receipt of grant awards and STP funds could also facilitate the completion of major capital improvement projects, however these monies are not assumed here.

The transportation expenses shown in Exhibit 6 are assumed consistent with average levels for FY12 to FY17. If Coos Bay continues its funding levels for street maintenance, the City will have roughly $12 to $14 Million available for capital projects over the next 22 years. Alternatively, Coos Bay could increase its level of maintenance spending and dedicate the remaining revenues to capital projects.

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Technical Memorandum #4:
System Inventory

Technical Memorandum #4

System Inventory (Task 4.4)

Date: January 11, 2019

To: City of Coos Bay
City of North Bend
Oregon Department of Transportation, Region 3

From: Angela Rogge, PE, and Matt Hartnett, EIT, David Evans and Associates, Inc.
Darci Rudzinski and Shayna Rehberg, Angelo Planning Group
Brooke Jordan and Drew DeVitis, Jacobs

Subject: Cities of Coos Bay and North Bend Transportation System Plan Updates

This memorandum updates the existing transportation system inventory provided in the City of Coos Bay and City of North Bend's current 2004 Transportation System Plans (TSPs). In addition to review of the various modal networks, the inventory includes elements that influence the transportation system, such as land use, population and environmental conditions.

The information summarized in this memorandum is intended to provide a baseline for informing and identifying opportunities and constraints of the current transportation system.

Existing Land Use and Population Inventory

The following is a summary of the permitted land uses in the cities of Coos Bay and North Bend and the associated requirements that govern development and redevelopment. This overview is intended to provide an indication of the type and intensity of land uses that can be expected within the planning horizon, which in turn will have an impact on future traffic generation. The number of trips specific uses generate, and where those uses are located within the community, will have a bearing on planning for appropriate types of transportation solutions. A generalized land use map (Figure 1) shows the location of land uses for both cities.

The urban growth boundary (UGB) for both cities largely coincides with city limits, with some undevelopable water and wetland areas shown outside city limits, but within the UGB.

In North Bend, the land zoned as Airport occupies the bulk of the northern portion of the city. The majority of land in North Bend is zoned as some form of residential, commercial or industrial.

In Coos Bay, the Coos Bay watershed occupies the majority of land in the south of the city. Public and institutional uses occupy significant land in Coos Bay, which is the home to Southwestern Oregon Community College and Bay Area Hospital. Areas of both medium-density residential and industrial land remain undeveloped in Coos Bay.

Both the cities' land use designations are described in more detail in the following sections.

Coos Bay/North Bend TSP

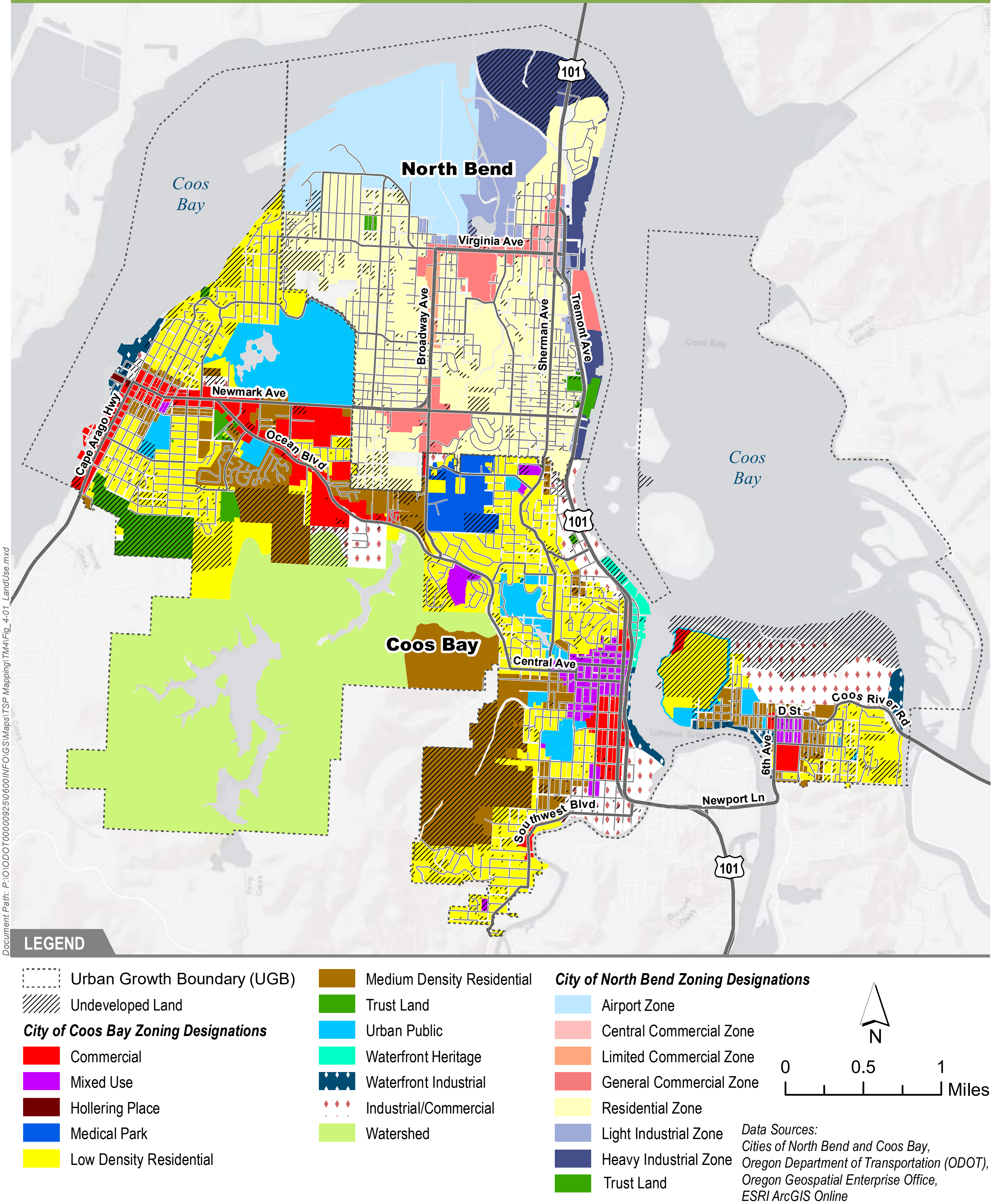


Figure 1. Land Use Summary

Comprehensive Plan and Zoning Designations

The Comprehensive Plan provides a long-term guide for where and how future development will occur. Comprehensive Plan land use designations inform which zoning districts can be applied to an area. The following describes the land use designations in North Bend and Coos Bay.

North Bend

Comprehensive Plan Designations

As shown on Figure 2, there are four principal Comprehensive Plan map designations mapped within the existing North Bend UGB: Airport, Commercial, Manufacturing, and Residential.[1] The northern part of the City is designated for airport uses and is the location of the Southwest Oregon Regional Airport. To the east of the airport, land is designated for manufacturing. Commercially designated land is centered at the intersection of Newmark Avenue and Broadway Avenue and is found along Broadway Avenue and Virginia Avenue. The remainder of the City is designated residential.

Zoning

Figure 3 shows the zoning districts within North Bend city limits. The City's Zoning Ordinance, Title 18 of the Municipal Code, lists allowed uses for each of the City's thirteen zones and includes associated development regulations. Allowed uses and development regulations for each of the City's zones are summarized in Table 1.

The City's zoning is informed by the Comprehensive Plan designations; in the case of residential, commercial and manufacturing, multiple zones implement a single land use designation. Within the existing city limits, zoning is largely consistent with the Comprehensive Plan designations. Land is zoned for commercial uses along major streets and the waterfront, industrial zoning is focused in areas along the waterfront and near the airport, and residential uses are dispersed throughout the City.

Overlay Zones

The North Bend Airport Overlay Zone requires notice to Coos County Airport District and the Department of Aviation regarding land use applications and regulates aspects of development that may have an impact on airport operations (height, noise, pollution, etc.). The airport elevation, the airport noise impact boundary, and the location and dimensions of the runway, primary surface, runway protection zone, approach surface, horizontal surface, conical surface and transitional surface is delineated for the airport by the most current and approved North Bend Municipal Airport master plan and airport layout plan. All lands, waters and airspace, or portions thereof that are located within these boundaries or surfaces are subject to the requirements of the overlay.[2]

In addition to City zoning, North Bend is under the jurisdiction of the Coos Bay Estuary Management Plan (CBEMP), which limits uses and activities on the land and in the water to emphasize conservation or preservation of natural resources. Recreational opportunities are allowed either outright or conditionally, but vary between high/low intensity and if they allow access to the waterway.

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[1] North Bend Comprehensive Plan Article 13.7.100 – Land Use Classifications delineates six general land use classifications: industrial, commercial, low-density residential, high-density residential, Parks / Open Spaces. The Comprehensive Plan is not entirely consistent with the Comprehensive Plan statement that the classifications are illustrated on the official Comprehensive Plan Land Use Map and the official Zone Map.

[2] Coos County Airport District Southwest Oregon Regional Airport Master Plan Update, 2013.

The City of North Bend is also subject to the Federal Emergency Management Area and National Flood Insurance Program (FEMA and NFIP) regulations.

Table 1. Land Use and Zoning Designations for City of North Bend

Zoning District	Zoning District Purpose
Airport Zone (A-Z)	Allows airport and airport related uses and uses permitted outright in Light Industrial zones (M-L).
Residential Zones (R-10, R-7)	Permitted outright: Raising of flowers, fruits and vegetables, not including retail sale, single-family dwellings, parks and open spaces (designated as such by either public or private owners of the land), single-family manufactured homes (subject to specific restrictions) Conditional uses: Church, governmental structures or use, multifamily dwellings (Chapter 18.64 NBCC), School, utility substation or pumping station, neighborhood grocery store, off-street parking for adjacent commercial uses, reconstruction or repair of existing non-conforming use.
Residential Zones (R-6 and R-5)	Permitted outright: A use permitted outright in an R-7 zone and two-family dwellings. Conditional uses: A conditional use permitted in an R-7 zone, and what is commonly known as a "bed and breakfast".
Residential Zone (R-M)	Permitted outright: Allows multifamily dwellings and uses allowed in the R-6 Zones (low density residential and support buildings). Conditional uses: A conditional use permitted in an R-6 zone, boarding, lodging or rooming house, and manufactured home park.
Residential Zone (R-T)	The uses permitted outright and conditional uses an shall be the same as those provided in the R-5 residential zone. On a conditional use basis, low volume traffic generating commercial uses are permitted (subject to review).
Limited Commercial Zone (C-L)	Permitted outright: Business and professional offices, retail sales, service or repair, places of public or private assembly or amusement, their accessory uses, and residential uses (ground floor, street facing restricted). Conditional uses: Reconstruction or repair of an existing non-conforming use, use permitted outright in the R-M zone, church, day nursery, utility substation or pumping station and governmental use or structure.
General Commercial (C-G) and Central Commercial (C-C)	Permitted outright: Business and professional offices, retail sales and services and residential uses (ground floor, street facing restricted). Conditional uses: Improvements to a preexisting, nonconforming use, manufacturing, fabricating or processing of materials or substance for retail sale, and utility substations or pumping stations.

Zoning District	Zoning District Purpose
Light Industrial Zone (M-L)	Permitted outright: Wholesale supply, utility operations and facilities, warehousing, compounding, packaging, processing, repairing, fabricating, marshalling, shipping, light manufacturing, and servicing of materials, equipment, supplies and other personal property, and other compatible uses having similar impacts on traffic and surrounding or adjoining properties. Conditional uses: Governmental structure or use, a use permitted outright in the C-G zone, improvement of an existing dwelling requiring a building permit, areas for the accommodation of recreational vehicles and/or trailers (RV parks or travel parks).
Heavy Industrial Zone (M-H)	Permitted outright: M-L permitted uses and manufacturing, repairing, compounding, fabricating, processing, packing or storage. Conditional uses: Governmental structure or use, junk yard/automobile wrecking yard, the retail sale of items manufactured, compounded, fabricated, process or assembled on the premises, areas for the accommodation of recreational vehicles and/or house trailers, temporary work force housing.
Floodplain Zone (F-P)	Protects areas of special flood hazard identified by the Federal Insurance Administration

Source: North Bend City Code Chapter 18.08, Revised November 2013.

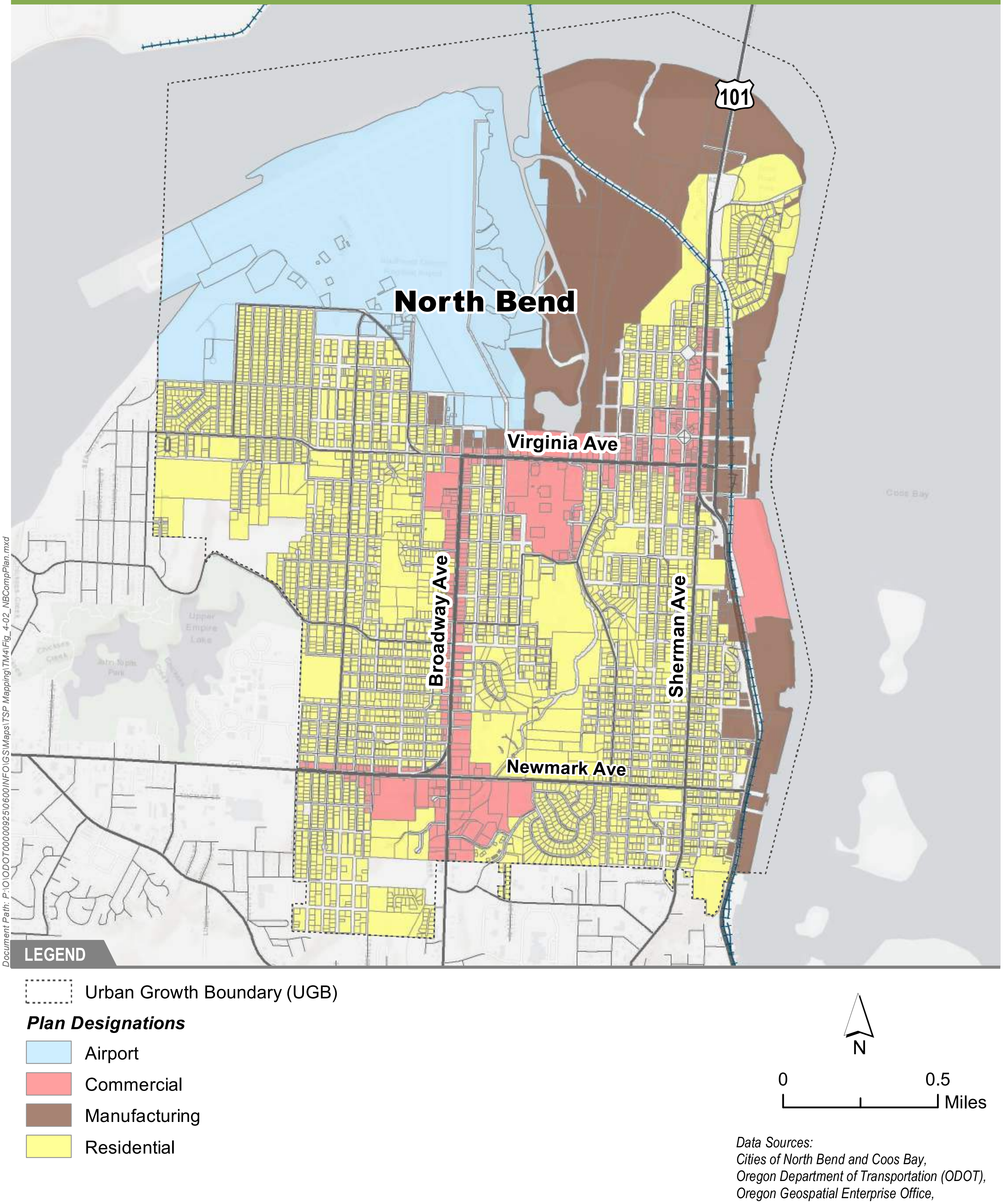
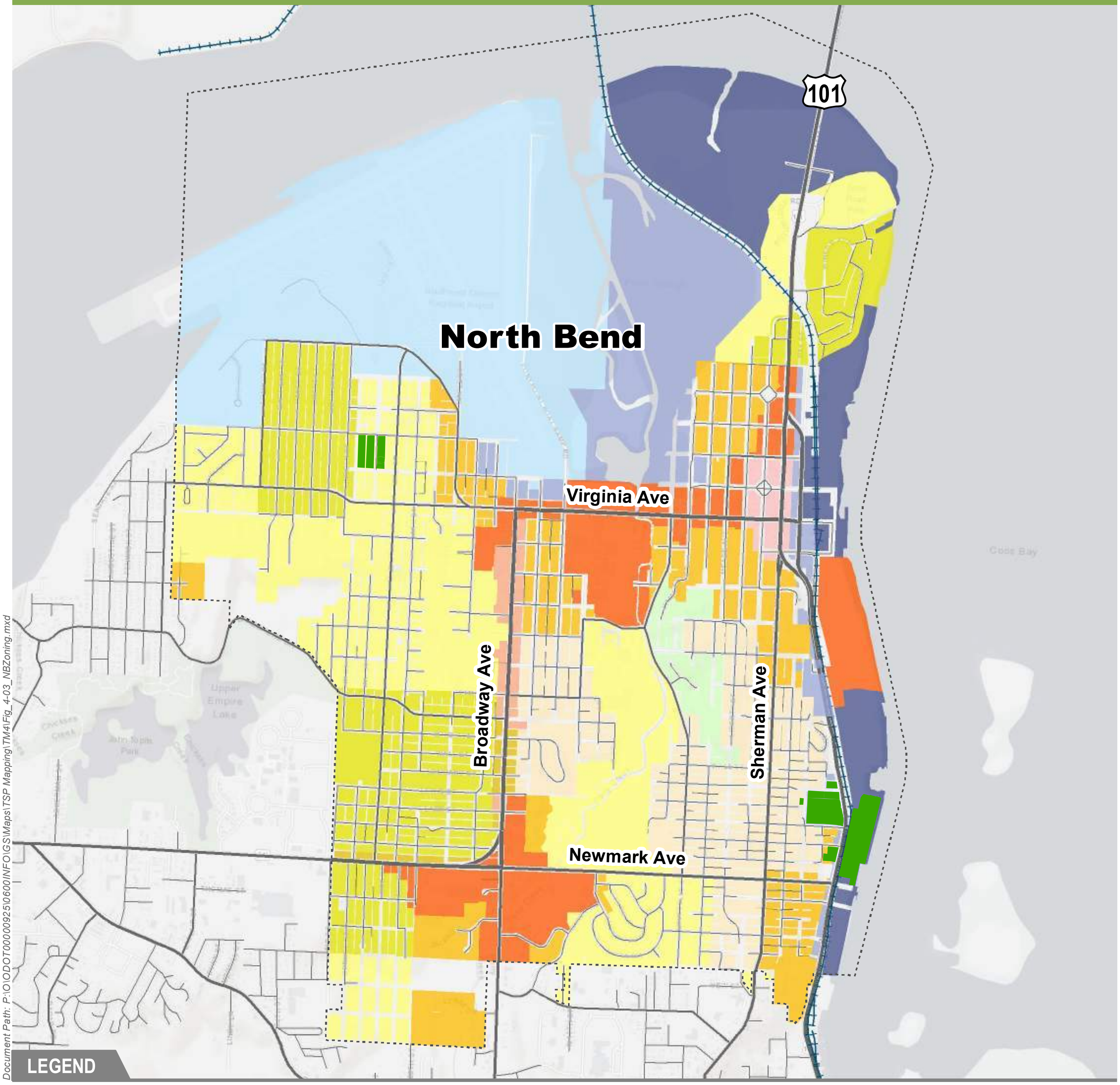


Figure 2. North Bend Comprehensive Plan



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LEGEND

- Urban Growth Boundary (UGB)

City of North Bend Zoning Designations

- Airport Zone (A-Z)
- Central Commercial (C-C)
- Limitedl Commercial (C-L)
- General Commercial (C-G)
- Residential (R-5)
- Residential (R-6)
- Residential (R-7)
- Residential (R-10)
- Residential (R-M)
- Residential (R-T)
- Light Industrial (M-L)
- Heavy Industrial (M-H)
- Trust Land

N

0 0.5 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 3. North Bend Zoning Designations

Coos Bay

Comprehensive Plan

As shown in Figure 4, Coos Bay has eight principal Comprehensive Plan map designations: Low Density Residential, High Density Residential, Commercial, Industrial, Medical Park, Quasi-public, Planned Industrial, and Reserved for Future Planning. The Coos Bay Estuary Management Plan covers an area east of the Bay. The Upper Pony Creek Reservoir dominates the southwest corner of the City and surrounding areas, which are designated Quasi-public. North and west of the Reservoir and along the waterfront and Cape Argo Highway are areas designated for industrial. The commercial designation is concentrated in areas along transportation corridors, including Newmark Avenue, Ocean Boulevard, Bayshore Drive, and, in the easternmost part of the City, along 6th Avenue and D Street. High Density Residential areas are located near these commercial corridors and in the southeast. Along the border of North Bend is the Medical Park, surrounded by Low Density Residential to the east and High Density to the west. Areas of Low Density also lie in the western part of the City, near Madison Elementary School and the cemetery. The southeastern corner of Coos Bay is reserved for future development or planned industrial area.

Zoning

Coos Bay zoning districts are shown on Figure 5. The Coos Bay Development Code, Title 19 of the Municipal Code, includes Section 2, Zoning. This section describes how the City's zones relate to the Comprehensive Plan classifications (Table 17.210.010) and includes the allowed uses and associated requirements for each of the zone districts. Allowed uses and development regulations for each of the City's zones are summarized in Table 2.

The City's zoning is informed by the Comprehensive Plan designations; in the case of residential, commercial and industrial, multiple zones implement a single land use designation. Within the existing city limits, zoning is largely consistent with the Comprehensive Plan designations.[3] Mixed-Use zoning implements the Commercial plan designation and is found predominantly in the downtown. Commercial zoning is located along major streets and the waterfront, industrial uses are on the western edges of the City, and residential uses are dispersed throughout the city.

Management Areas

The entire eastern half of Coos Bay north and areas along the Marshfield Channel and Deep Draft Navigation Channel are under the Coos Bay Estuary Management Plan. Development Code Chapter 17.370 Estuarine and Costal Shoreland Uses and Activities contains development application requirements and decision criteria. Uses and activities permitted by the Coos Bay Estuary Management Plan are subject to general and special conditions and policies to comply with statewide planning goals and the Coos Bay Estuary Plan. The City of Coos Bay is also subject to the Federal Emergency Management Area and National Flood Insurance Program (FEMA and NFIP) regulations.

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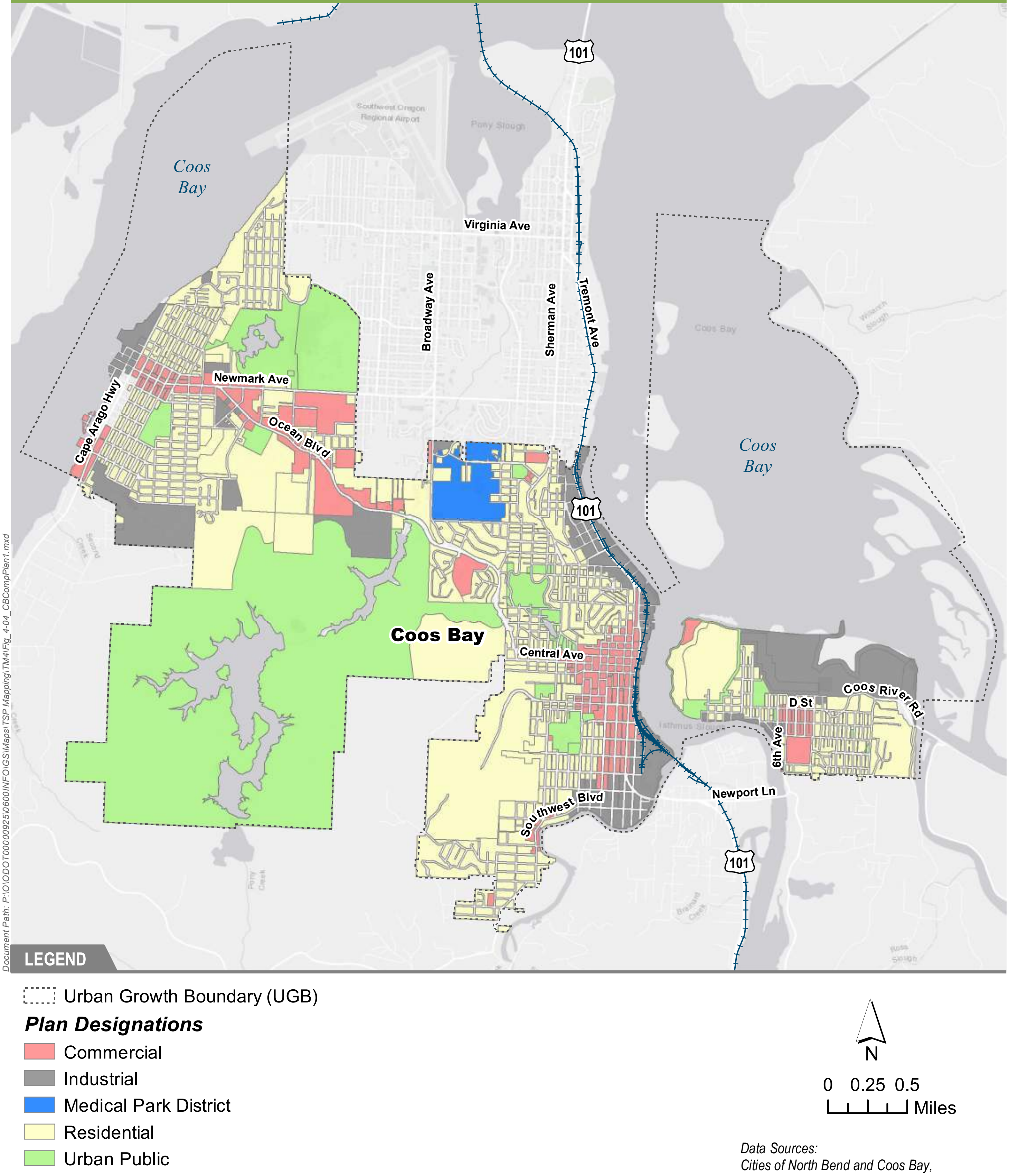
[3] One exception is a largely developed area south of Ocean Boulevard, between N 19th Street and W. Hills Boulevard, which includes Ocean Ridge Assisted Living. This facility and some limited commercial lots on Ocean Boulevard have a Comprehensive Plan designation of High-density Residential and are zoned Mixed-Use. Also, note that areas designated Commercial along Southwest Boulevard/W. Lockhart Avenue in the southeastern corner of the City are zoned Industrial-Commercial and Trust Land near the Pony Creek Reservoir is designated industrial on the Comprehensive Plan map.

Table 2. Land Use and Zoning Designations for City of Coos Bay

Zoning District	Zoning District Purpose
Commercial and Mixed-Use Districts (C and MX)	Allowed uses include residential uses above the ground floor, convenience food markets, beauty and barbershops, bakeries and service industries for Commercial and a mix of mutually supporting retail, service, office and medium or high-density residential uses. Higher intensity uses include theaters and recreational facilities (including zoos and amusement rides), vocational schools, educational institutions, public service buildings (city hall, police and fire stations), churches and business services, distribution facilities of less than 25,000 square feet gross floor area. Some retail and service uses are prohibited in the MX zone, including motor vehicle dealers, manufactured home sales, and vehicle towing and service.
Low Density Residential (LDR-6, LDR-8.5)	Intended for low-density residential areas and appropriate infill and redevelopment with higher densities close to employment centers and transit corridors. Average lot sizes 6,000 sf and 8,500 sf. Allowed non-residential uses include child care facilities (fewer than 13, permitted outright) and bed and breakfasts and art galleries (permitted conditionally).
Medium Density Residential (MDR-16)	Residential uses allowed with a minimum density of 8 units per net acre and a maximum density of 16 units per net acre. Conditional uses include religious assembly, educational service, and assembly buildings.
Industrial-Commercial (I-C)	Allowed uses include a variety of industrial uses including manufacturing, wholesale trade, and distribution activities. Commercial and institutional uses include residential living facilities, offices, restaurants (including drive-through), schools, recreation facilities, and public and semi-public buildings and uses.
Waterfront Heritage (WH)	The WH district is made up of three zoning sub districts: WH-1, Core Area (bounded by Alder Avenue to the south, US 101/North Bayshore to the west, Date Avenue to the north and the Coos Bay waterway to the east); WH-2, Transition Area (bounded by Commercial Avenue to the south, US 101/North Bayshore to the west, Fir Avenue to the north, and the Coos Bay waterway to the east); WH-3, Central Dock Area (bounded by Fir Avenue on the south, US 101 to the west, Ivy Avenue to the north and the Coos Bay waterway to the east.) For areas lying east of Front Street, including the WH-3 sub district, all commercial, industrial, and civic uses, which are water-dependent or water-related, are permitted as allowed by the Coos Bay Estuary Management Plan. Permitted conditional uses include bus shelters, equipment sales, waterfront inns (WH-2 and WH-3), manufacturing (WH-3), and horticulture.

Zoning District	Zoning District Purpose
Waterfront Industrial (W-I)	Coos Bay Estuary Management Plan controls the allowed uses; permitted uses depend on the mapped Management Unit (Natural, Conservation, and Development). Uses permitted include aquaculture, high-intensity water-dependent recreation, and mining and mineral extraction. There are no minimum lot size, lot coverage, or building height requirements.
Hollering Place (HP)	Enables a PUD based on guidelines from Hollering Place Master Plan. Development is divided into two (2) sub districts, HP-1 and HP-2. Both areas require development intended for the public. HP-1 (upper bluff area): Continuation from the existing Empire business district (dining, retail, offices, visitor information services). HP-2 (lower bench area): commercial, residential, educational and recreational development.
Medical Park District (MP)	All intended uses are related to medical uses, including hospitals, pharmacies, medical offices and group residential care facilities. Conditional uses that might be related to medical parks are allowed, like childcare facilities, florists, and bus shelters.
Urban Public (UP)	Permitted uses include parking service, parks, playgrounds, educational and government services, and recreational buildings. All of these follow the general dimensional and development standards of commercial zoning.
Watershed (W)	Very low development area. Permitted uses are related to operation and maintenance of the water system. Civic uses may also be allowed if authorized by the Coos Bay/North Bend water board.

Source: Coos Bay Municipal Code Chapter 17, revised August 2018.
Notes: Code amendments in process: "Accessory Dwelling Unit" may be a permitted use. Proposing to eliminate max lot size restrictions. In the process of amendments that will add all the uses from the Commercial zone and permitted uses in the I-C zone; uses were accidentally left off with the Development Code Rewrite of March 2016.



Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

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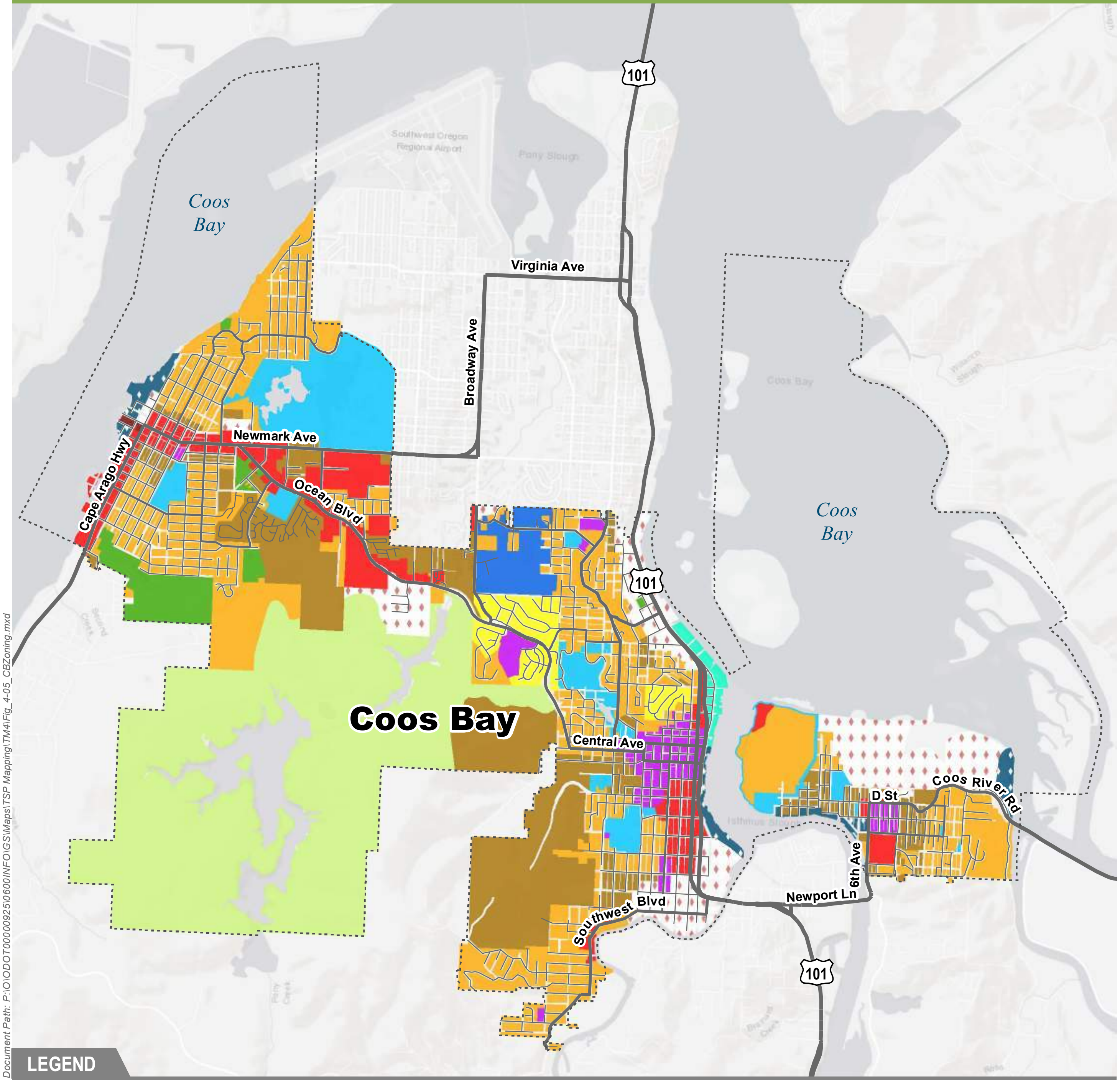
Figure 4. City of Coos Bay Comprehensive Plan



LEGEND

Urban Growth Boundary (UGB)

City of Coos Bay Zoning Designations

- Low Density Residential (LDR-8.5)
- Low Density Residential (LDR-6)
- Medium Density Residential (MDR-16)
- Medical Park (MP)
- Mixed Use (MX)
- Commercial (C)
- Industrial/Commercial (I-C)
- Hollering Place (HP)
- Waterfront Heritage (W-H)
- Waterfront Industrial (W-I)
- Urban Public (UP)
- Watershed (W)
- Trust Land (TL)

N

0 0.5 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

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Figure 5. Coos Bay Zoning Designations

Development Potential

As part of the TSP process, it is important to identify “buildable lands”, or areas for potential redevelopment. "Buildable lands" includes both vacant land and developed land likely to be redeveloped (ORS 197.295). A well-connected transportation network is integrated with surrounding land uses and provides safe, multimodal facilities between and within neighborhoods. Knowing where development is likely to occur can aide in planning a transportation network that adequately and efficiently serves the community. Figure 6 summarizes areas identified in both North Bend and Coos Bay.

North Bend

There are several parcels scattered throughout the City of North Bend that have potential for development. Most of the parcels are currently zoned as residential, but the largest area is in the North Point industrial zone.[4] As development occurs, new transportation infrastructure may be needed to connect to the existing system.

Coos Bay

Coos Bay has identified several parcels with potential for development with the zoning spanning nearly all of their designations. The locations with the most area are on the southwestern edge of the existing transportation system. These parcels are zoned residential (low and medium density) and would require new transportation infrastructure with development. There are also areas along the Coos Bay waterfront east of US 101 currently zoned as either waterfront heritage, industrial/commercial or low density residential that would need to be connected to the existing transportation system.

Population and Demographics

Demographic characteristics usually inform what modes and methods of transportation will most benefit a population. The approximate populations of North Bend and Coos Bay are 9,919 and 16,824, respectively, but like many cities, their populations are not homogenous. The transportation system also is expected to serve more than just its residents, with large numbers of people visiting the Oregon Coast every year.

Population Inventory

According to Portland State University (PSU) Population Research Center’s (PRC) population forecast for the area, North Bend’s UGB population is expected to total 10,152 in 2035 and 10,007 in 2065. This represents an average annual growth rate of 0.1% over the next 17 years, and an average annual growth rate of -0.1% over the following 35 years. Coos Bay’s Urban Growth Boundary (UGB) population is expected to grow to 18,117 by the year 2035, and to 19,214 by the year 2065. This represents an average annual growth rate 0.4% over the next 17 years and an average annual growth rate of 0.2% over the following 30 years. By comparison, the average annual growth rate for Coos County is expected to be 0.0% (17-year rate) and -0.2% (30-year rate).

---

[4] The City has developed a master plan for this area: *North Point Area Master Plan, May 2017.*

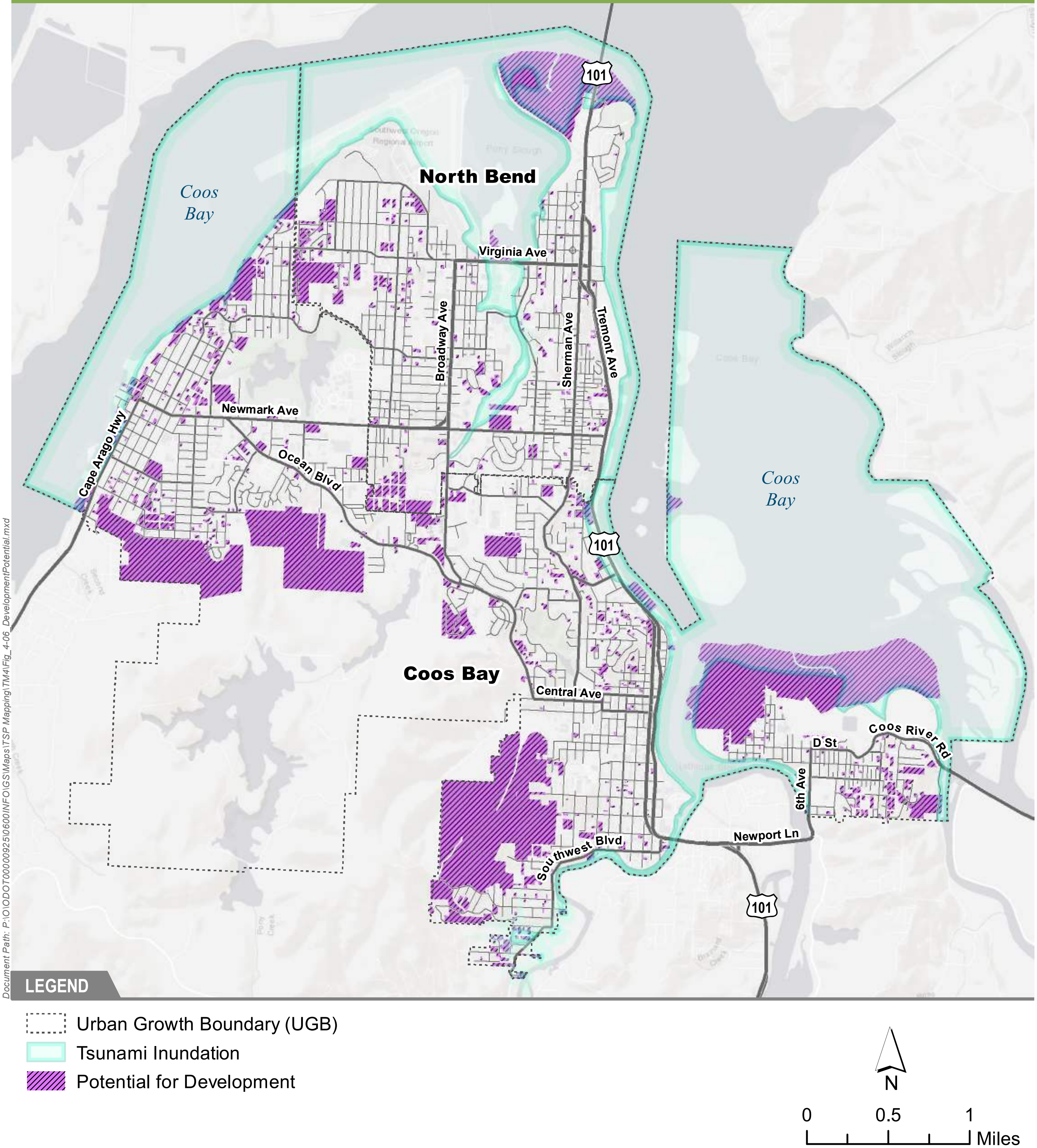
Table 3. Coos County Population Projections

Year	Coos County	North Bend	Coos Bay
2018	63,471	9,919	16,824
2020	63,795	9,979	17,057
2025	63,895	10,095	17,543
2030	63,855	10,148	17,874
2035	63,552	10,152	18,117
2040	63,066	10,126	18,301
2045	62,536	10,095	18,451
2050	62,011	10,079	18,676
2055	61,490	10,079	18,994
2060	60,974	10,050	19,145
2065	60,462	10,007	19,214

Notes:

1. 2018 population totals are based on PSU PRC estimates published June 2018
2. Population Projections for 2020-2040 are based on PSU PRC forecasts published June 2018

Coos Bay/North Bend TSP



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Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 6. Development Potential

Consistency with 2035/36 Coos Bay/North Bend Travel Demand Model

The Coos Bay/North Bend travel demand model will be used to develop future traffic volumes for the planning horizon. The model relies on socioeconomic data (e.g., households and employment) to determine the travel demand, and system attributes (e.g., roadway capacity, speeds, and distances) to represent the transportation supply. The long-range regional growth forecasts are consistent with current land use zoning.

The travel demand model was last updated in 2015 through a coordinated process with ODOT and staff from the Cities of North Bend and Coos Bay. The model relies on PSU population forecasts and input from the cities on future land use assumptions consistent with the Comprehensive Plans. No major network improvement projects were planned. Only typical improvements such as speed changes, capacity changes, and new signals were integrated into the future model.

Title VI/Environmental Justice Demographics Overview

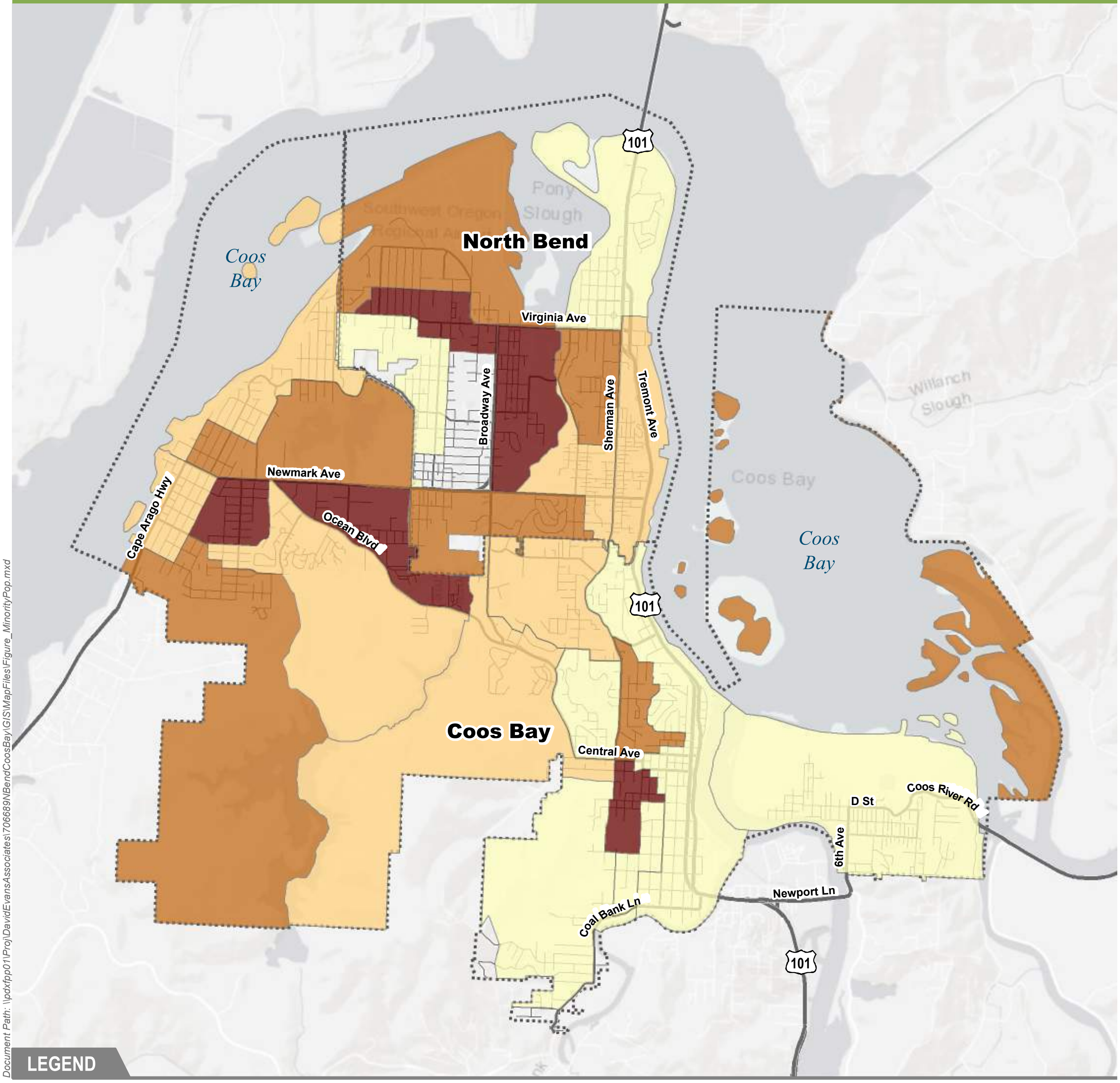
To ensure compliance with Oregon Department of Transportation Title VI (1964 Civil Rights Act) Plan guidance and the US Department of Transportation Executive Order 12898 on Environmental Justice, affected groups and protected classes have been inventoried and mapped as part of the Title VI, Environmental and Cultural inventory. A detailed outreach strategy was documented as part of this project in the *Title VI/Environmental Justice Outreach Memorandum* and includes further breakdown of the population demographics.

Figure 7 through Figure 11 map Title VI/Environmental Justice populations[5] for North Bend and Coos Bay:

- Minority Population
- Elderly
- Low Income
- Median Household Income
- Limited English Proficiency

[5]Information from the American Community Survey (2012-2016); mapped by census block group, which may include multiple neighborhoods.

Coos Bay/North Bend TSP



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LEGEND

Urban Growth Boundary (UGB)

Minority Population By Block Group

- < 8%
- 8 – 15%
- 15 – 22%
- > 22%

N

0 0.5 1 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
U.S. Census American Community Survey
ESRI ArcGIS Online

Figure 7. Minority Population

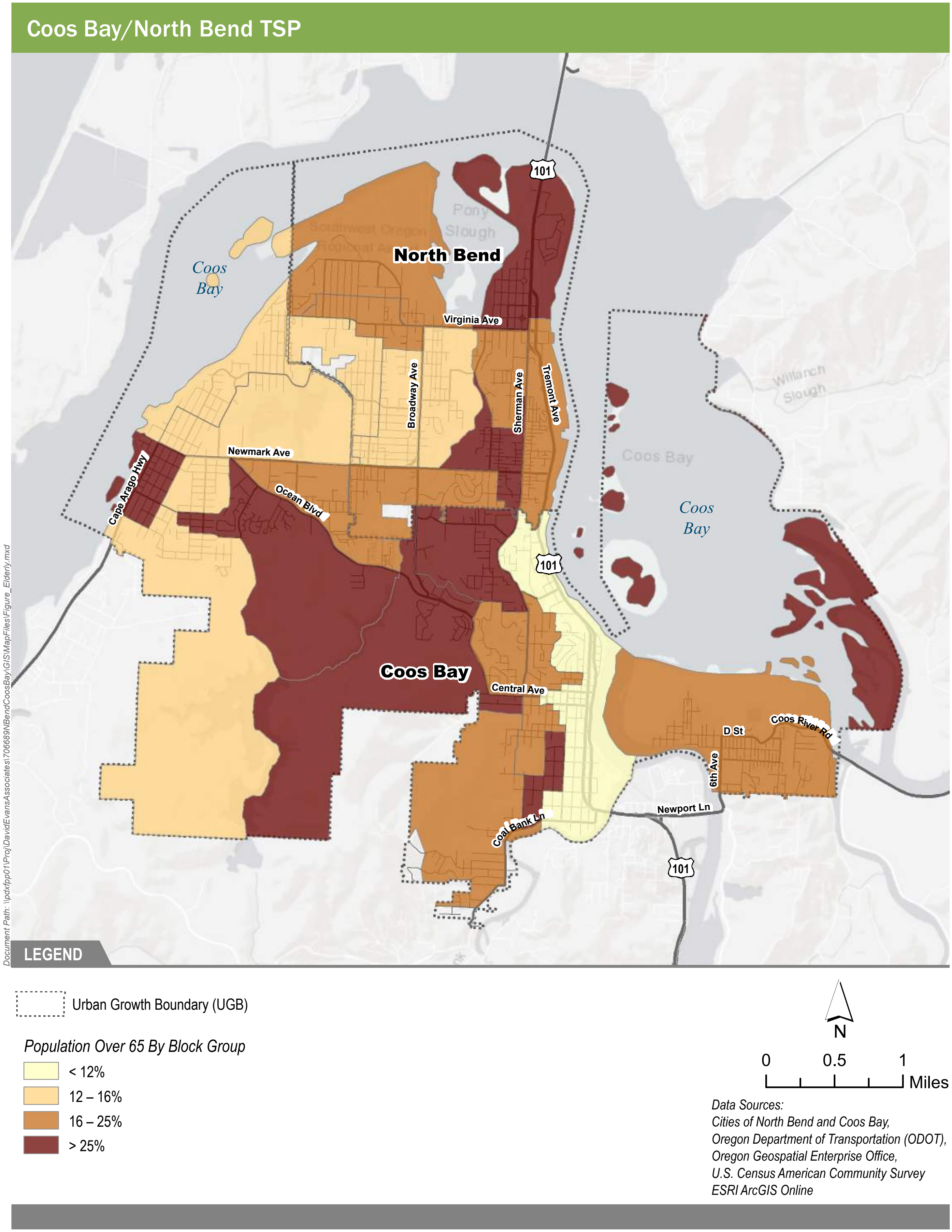
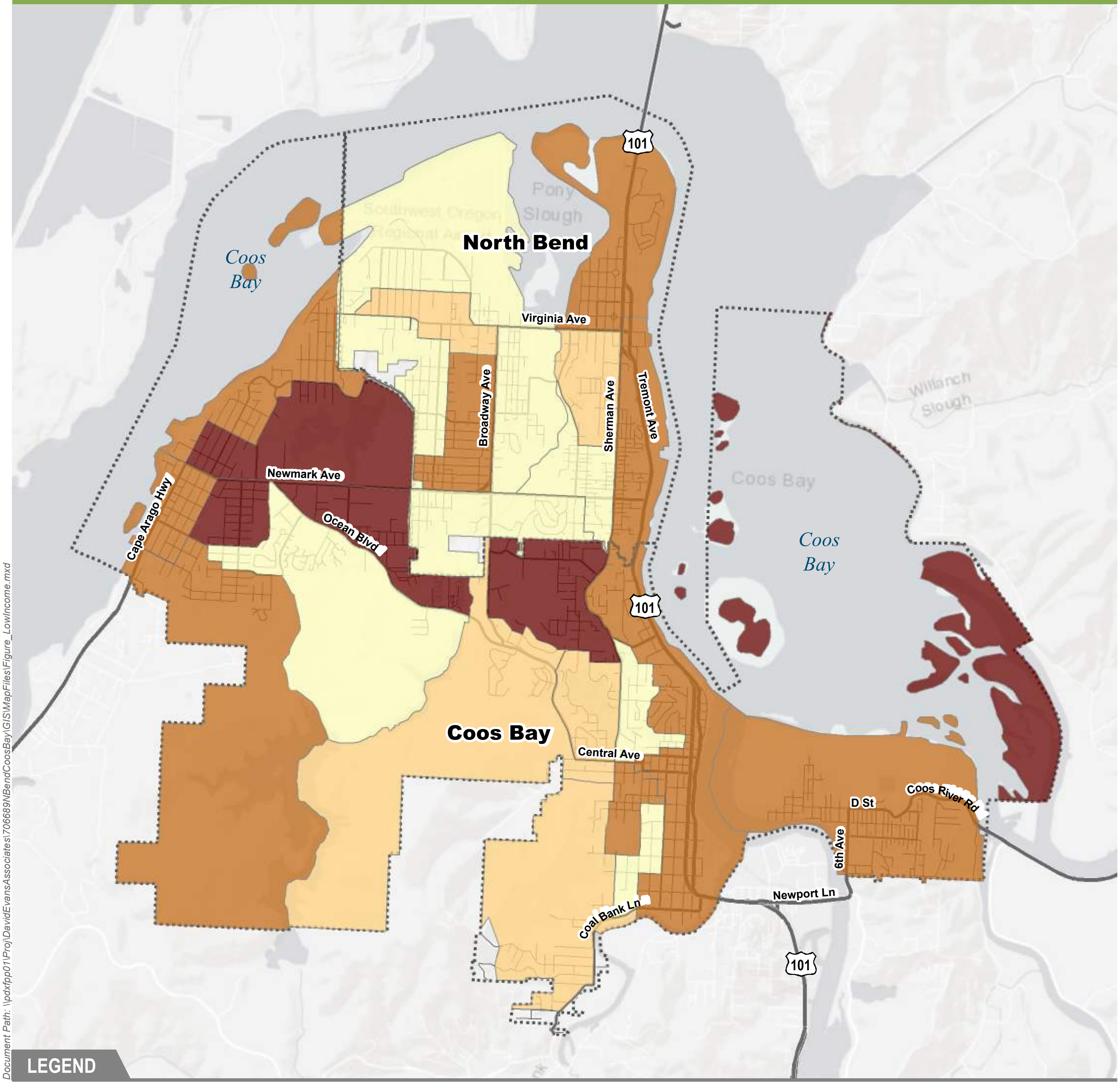


Figure 8. Population Over 65

Coos Bay/North Bend TSP



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Urban Growth Boundary (UGB)

Low Income Population By Block Group

- < 7%
- 7 – 16%
- 16 – 25%
- > 25%

N

0 0.5 1 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
U.S. Census American Community Survey
ESRI ArcGIS Online

Figure 9. Low Income Population

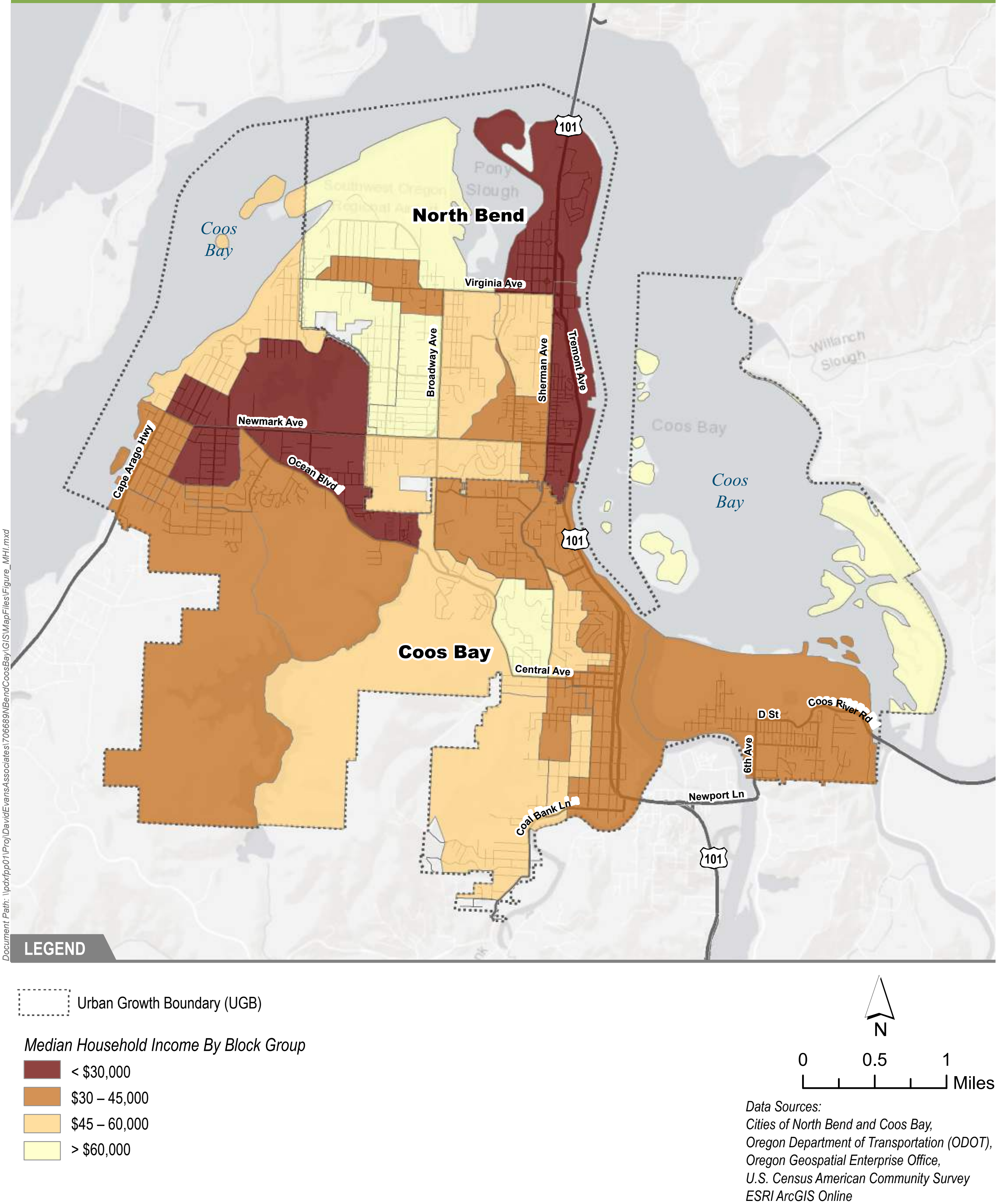
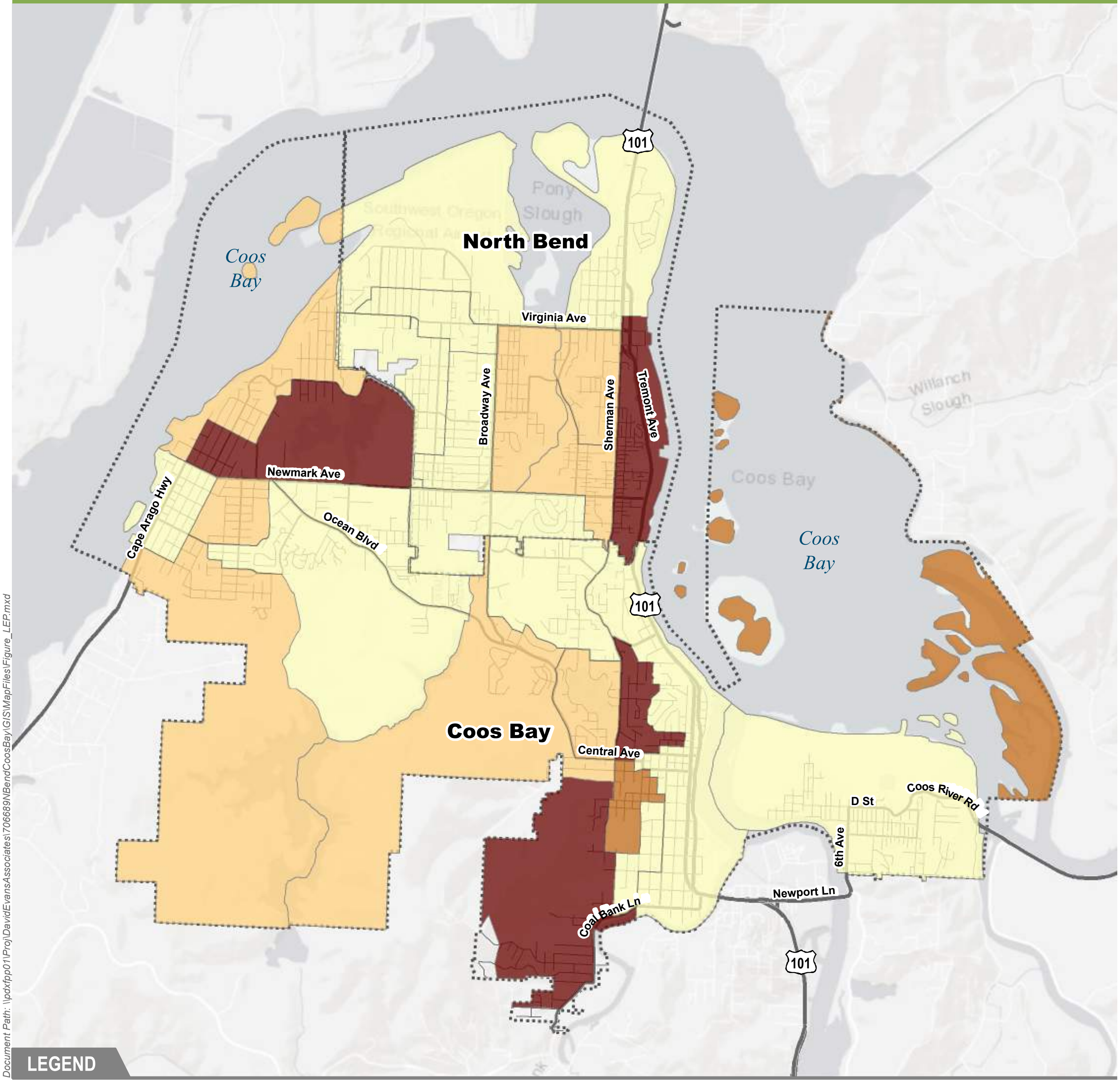


Figure 10. Median Household Income

Coos Bay/North Bend TSP



LEGEND

Urban Growth Boundary (UGB)

Limited English Proficiency By Block Group

- < 0.5%
- 0.5 – 2.5%
- 2.5 – 5%
- > 5%

N

0 0.5 1 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
U.S. Census American Community Survey
ESRI ArcGIS Online

Figure 11. Limited English Proficiency

Existing Transportation System Inventory

An inventory of the existing transportation system in Coos Bay and North Bend was conducted as part of the TSP process. This inventory includes the street, pedestrian, bikeway, public transportation, rail, air, water, and pipeline systems within the Urban Growth Boundary (UGB).

Street System

This section summarizes the existing street network and important characteristics of the study area roadways. Several jurisdictions, including the State (ODOT) and the Cities of Coos Bay and North Bend, maintain portions of the existing street system within the study area. A comprehensive inventory was conducted of all arterial and collector streets within the UGBs of both cities.

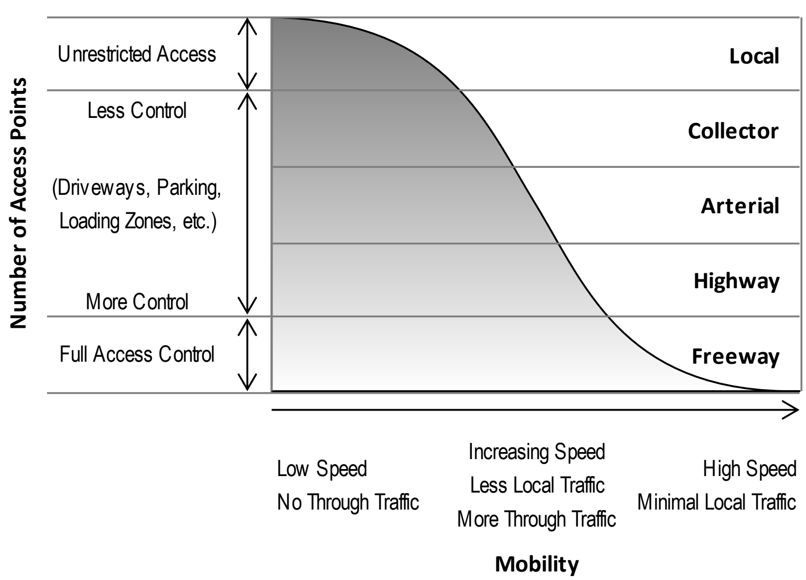
Jurisdiction

The street system within the Cities of Coos Bay and North Bend includes roadways under jurisdiction of the State and both Cities. There are also numerous private streets in the study area. Coos County maintains a single local road within the Coos Bay or North Bend UGBs. Coos County maintains a few roads outside of the UGB that connect to Coos Bay routes (Anderson Lane, Coal Bank Lane, Flanagan Road, Mullen Road and Olive Barber Rd).[6] Figure 12 shows the location of roads by jurisdictional responsibility within the UGBs.

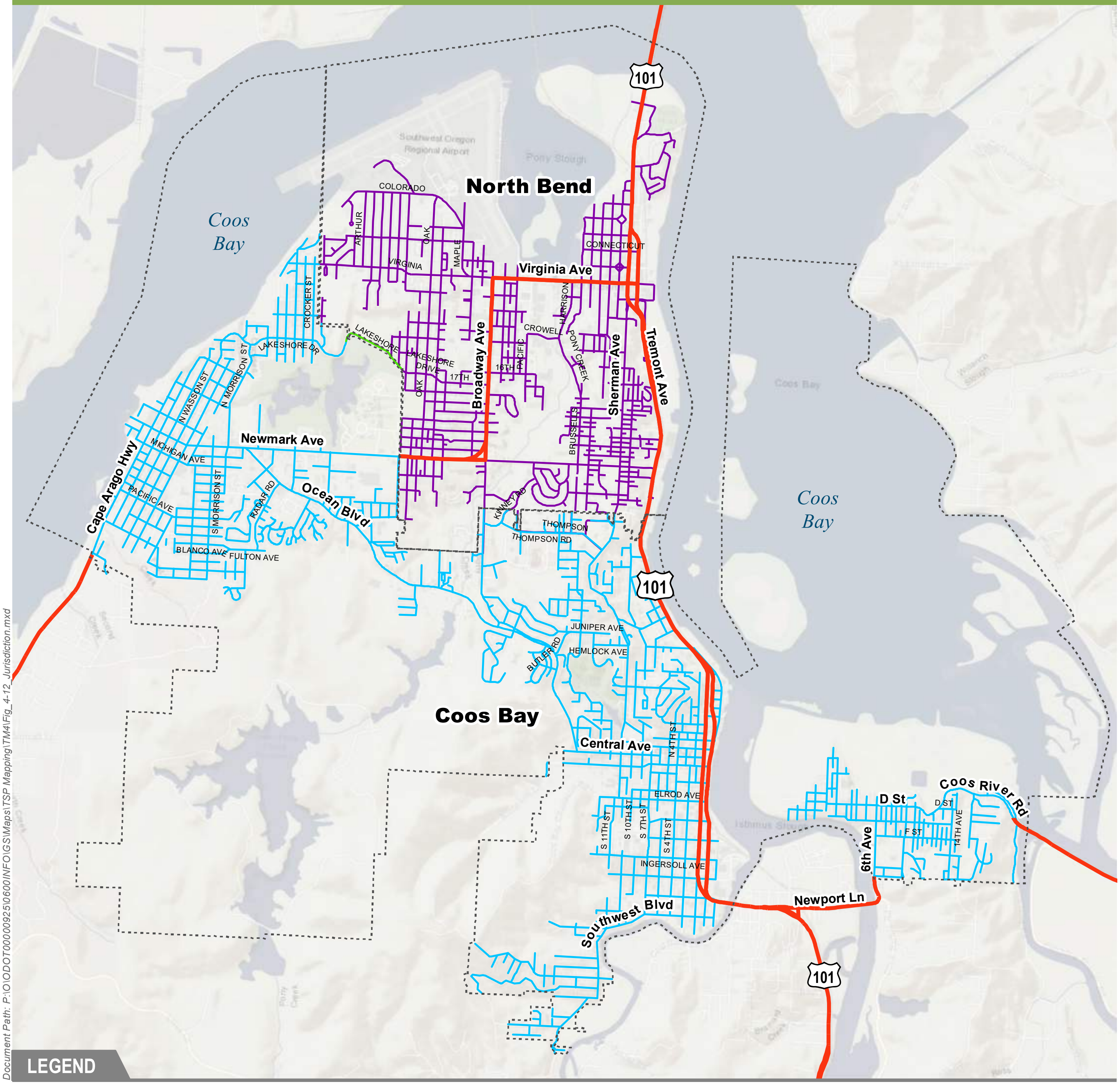
Functional Classification

Streets and highways are assigned a classification to indicate purpose, design and function. This functional classification ensures that streets are built and maintained with features that can support demand from both the surrounding land uses and traffic that may be traveling through parts of the city. It also describes how adjacent properties are accessed and how much mobility the street provides, as illustrated below.

Exhibit 1. Functional Classification



[6] http://www.co.coos.or.us/Departments/RoadDepartment.aspx



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LEGEND

Urban Growth Boundary (UGB)

Jurisdiction

- ODOT
- Coos Bay
- North Bend
- Coos County

N

0 0.5 1 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 12. Roadway Jurisdiction

There are five roadway classifications in Coos Bay/North Bend including principal arterial (highway), arterial, collector, neighborhood routes, and local roadways. The classification system facilitates the design and management of the roadway; it allows for safe and efficient travel based on the desired objectives, as described above. The current functional classifications were established in the 2004 TSP Updates and relied heavily on connectivity and adjacent land use. Some changes may be necessary to establish consistency with State and Federal classifications (specifically "Neighborhood Routes").

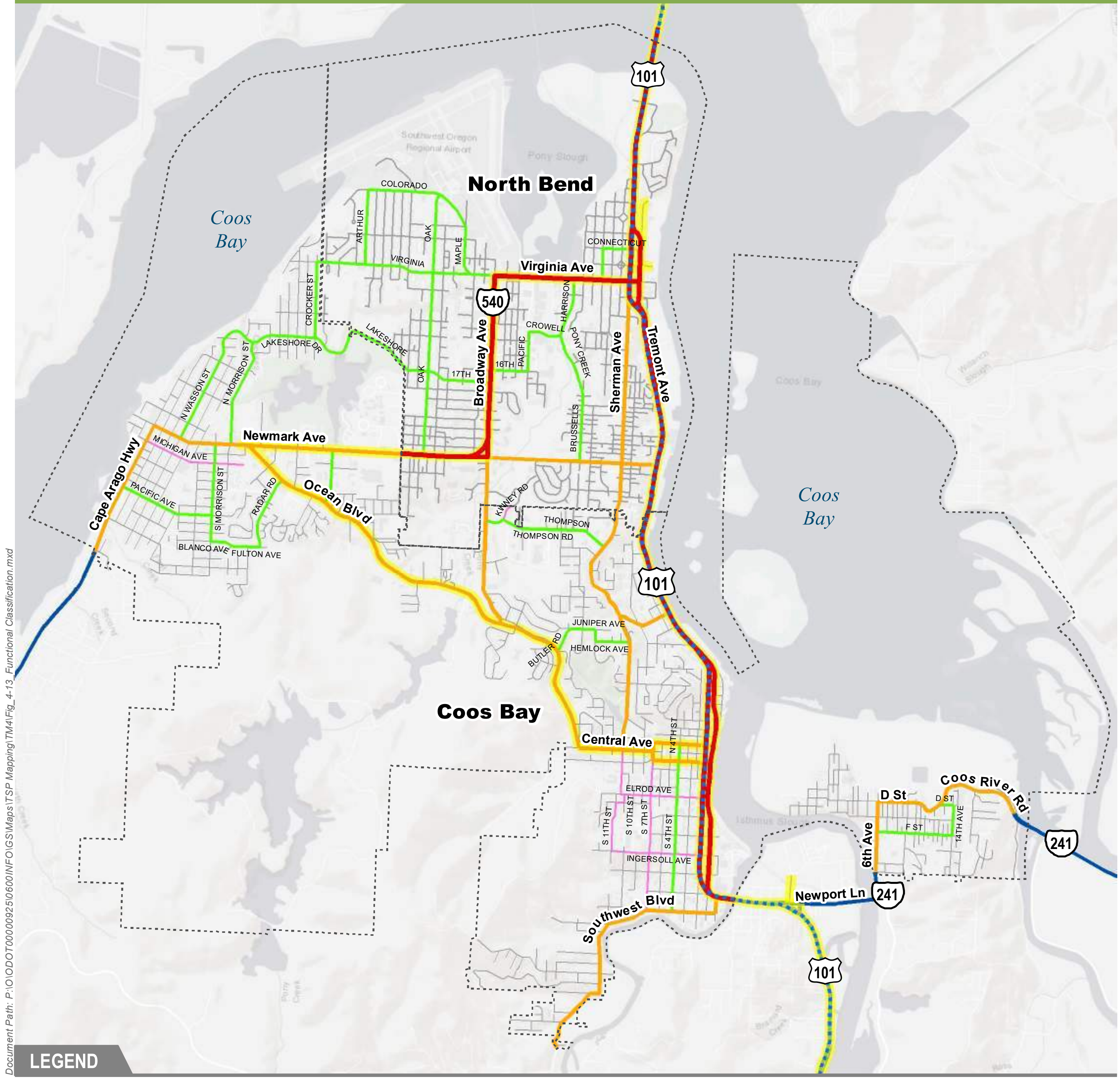
There is one state highway and two district highways that provide connections throughout the project area: US 101, OR 540 and OR 241, respectively. The district highway, arterials, and major collector routes provide access and circulation throughout the Bay Area and to US 101. Functional classification and other important identifying information is mapped in Figure 13.

General descriptions of the classifications include:

> **Principal Arterials** are typically freeways and state highways that provide the highest level of connectivity. These routes connect over the longest distance (sometimes miles long) and are less frequent than other arterials or collectors.
>
> **Arterial** streets serve to interconnect and support the principal arterial highway system. These streets link major commercial, residential, industrial and institutional areas. Arterial streets are typically spaced about one mile apart to assure accessibility and reduce the incidence of traffic using collectors or local streets in lieu of a well-placed arterial street.
>
> **Collector** streets provide both access and circulation within residential and commercial/industrial areas. Collectors differ from arterials in that they provide more of a citywide circulation function and do not require as extensive control of access and penetrate residential neighborhoods, distributing trips from the neighborhood and local street system.
>
> **Neighborhood Routes** are usually long relative to local streets and provide connectivity to collectors or arterials. Because neighborhood routes have greater connectivity, they generally have more traffic than local streets and are used by residents in the area to get into and out of the neighborhood, but do not serve citywide/large area circulation. They are typically about a quarter to a half-mile in total length. Traffic from cul-de-sacs and other local streets may drain onto neighborhood routes to gain access to collectors or arterials. Because traffic needs are greater than a local street, certain measures should be considered to retain the neighborhood character and livability of these routes.
>
> Neighborhood traffic management measures are often appropriate (including devices such as speed humps, traffic circles and other devices - refer to later section in this chapter). However, it should not be construed that neighborhood routes automatically get speed humps or any other measures. While these routes have special needs, neighborhood traffic management is only one means of retaining neighborhood character and vitality.
>
> **Local streets** have the sole function of providing access to immediate adjacent land. Service to "through traffic movement" on local streets is deliberately discouraged by design.

Roadway ownership and maintenance responsibilities of the various roadways in the study area are carried out by the respective local and county agencies while State routes are under ODOT jurisdiction.

Coos Bay/North Bend TSP



LEGEND

Urban Growth Boundary (UGB)
National Highway System Facilities
Oregon Scenic Byway

ODOT Functional Classification
- Principal Arterial
- Minor Arterial

City Functional Classification
- Arterial
- Collector
- Neighborhood
- Local

N

0 0.5 1 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 13. Functional Classification

Access

Access management can be an important tool for protecting the function of roadway. As part of a TSP, access management describes property access conditions that may influence travel along major local transportation corridors. The TSP must also be consistent with designated access management categories in the Oregon Highway Plan (OHP).

There is a common understanding for the need of property owners to maintain roadway access to their businesses and residences. However, a proliferation of driveways and minor street intersections multiplies the number of conflicts along a roadway segment, thus reducing the capacity of intersections, increasing the probability of crashes, and generally degrading service for all system users. Hence, access management must balance the competing needs of compatible land uses, private access, and the function of the transportation system.

ODOT and the Cities of Coos Bay and North Bend have access management standards that apply within their City limits. The access management standards applicable to this study area are summarized in **Error! Reference source not found.** and Table 5.

Table 4. Existing City Access Spacing Guidelines

Functional Classification	North Bend[1]	Coos Bay[2]
Arterial	500 feet	500 feet
Collector	300 feet	300 feet

Source: [1]Chapter 10.12.110 NBCC; [2]2004 Coos Bay Transportation System Plan

Table 5. Existing ODOT Access Spacing Standards

Functional Classification	Posted Speed	Urban Areas Access Spacing Standard
Statewide Highways (Applicable to US 101)	25 mph & lower	350 feet[1]
	30 mph & 35 mph	500 feet[1]
	40 mph & 45 mph	800 feet[1]
	50 mph	1,100 feet[1]
	55 mph or higher	1,320 feet[1]
District Highways (Applicable to OR 540 and OR 241)	25 mph & lower	250 feet[2]
	30 mph & 35 mph	350 feet[2]
	40 mph & 45 mph	500 feet[2]
	50 mph	550 feet[2]
	55 mph or higher	700 feet[2]

Notes:

1. **Table 14 in Appendix C of the OHP Including Amendments November 1999 through May 2015: Access Management Spacing Standards for Statewide Highways with Annual Average Daily Traffic (AADT) of More Than 5,000 Vehicles**
2. **Table 16 in Appendix C of the OHP Including Amendments November 1999 through May 2015: Access Management Spacing Standards for District Highways with Annual Average Daily Traffic (AADT) of More Than 5,000 Vehicles**

An access inventory for roadways within the Coos Bay and North Bend UGBs was not available for inclusion in the report. The 2004 TSPs identified specific segments that could benefit from specific access management plans. North Bend identified Newmark Avenue between Broadway and Fir Street, as well as Virginia Avenue between US 101 and Harrison. Coos Bay identified the Bayshore Drive/Front Street area.

Roadway Characteristics

State Facilities

The study area is served by three state highways (listed in Table 6 and summarized below). Although the Cities have no direct control over the majority of the state highways within its boundaries, the highways influence traffic patterns, tourism and development.

Table 6. State Highway Inventory within Study Area

No.	Name	State Classification	Other Designation(s)
US 101	Oregon Coast Highway	Statewide	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway
OR 540	Cape Arago Highway	District	STA; District Hwy; NHS
OR 241	Coos River Highway	District	None

US 101

The Coos Bay/North Bend area is bisected by US 101, which serves as the primary through north and south route for traffic traveling through the area. US 101 ranges from a two-lane to five-lane road with posted speed limits ranging from 20 to 45 miles per hour (mph) in the Coos Bay/North Bend area.

OR 540 (Cape Arago Highway)

Cape Arago Highway serves as a primary means of access to the Empire District of Coos Bay and the Coos County coastal communities of Barview and Charleston. Coos Bay maintains the portion of OR 540 in its City limits and the rest is maintained by ODOT. The ODOT-maintained portion of OR 540 in North Bend is a four-lane road with posted speed limits of 25 to 35 mph.

OR 241 (Coos River Highway)

Coos River Highway does not intersect any of the study are intersections; however it plays an important role for connectivity, linking the Eastside District of Coos Bay and Allegany. Coos Bay maintains most of the length of OR 241 falling within the UGB, but ODOT maintains short segments of the road within the City's UGB as well. The ODOT-maintained portions of the highway in +the UGBs are both two-lanes, with posted speed limits of 35 and 55 mph, respectively.

National Highway System Facilities

The National Highway System (NHS) is a network of nationally significant roads. There are a few NHS routes in the study area, as summarized below and noted on Figure 13 (page 25).

- US 101
- OR 540:
    - Virginia Ave (Broadway Ave to US 101 northbound)
    - Broadway Ave (Virginia Ave to Newmark St)
    - Newmark Ave (Broadway Ave to Fir St)
- Newmark Ave (Fir St to Ocean Blvd)
- Sheridan Avenue

- California Avenue (east of US 101 SB)
- Ocean Blvd
- Central Ave (Ocean Blvd to 7th St)
- Commercial Ave (7th to US 101 northbound)
- Anderson Ave (7th St to US 101 northbound

Truck Freight

Efficient truck movement plays a vital role in maintaining and developing North Bend and Coos Bay's economic base. Well-planned truck routes can provide for the economical movement of raw materials, finished products and services. Important truck freight information is summarized below and mapped in Figure 14.

Freight Routes

US 101 is designated as a Freight Route in the Oregon Highway Plan (OHP). Consistent with the State designation, North Bend and Coos Bay's TSPs classify US 101 as a primary truck route, along with other State and local roads within the UGB. The major freight routes proposed by North Bend and Coos Bay's 2004 TSPs include:

- Primary Truck Routes:
  - US 101 (North Bend and Coos Bay)
  - OR 540 – Cape Arago Hwy (North Bend)
  - Newmark Ave (Coos Bay)
  - Empire Blvd (Coos Bay)
  - Ocean Blvd (Coos Bay)
- Secondary Truck Routes
  - Libby Drive (Outside UGB)
  - Southwest Blvd (Coos Bay)
  - Lockhart Ave (Coos Bay)
  - Front St (Coos Bay)

Highway Over-dimension Load Pinch Points

According to the ODOT Freight Planning Unit, Transportation Development Division's Highway Over-dimension Load Pinch Point (HOLPP) study, pinch points include weight-restricted bridges, vertical clearance restrictions, and horizontal constraints, which limit vehicle widths and lengths. Two locations within the North Bend UGB are identified in the HOLPP report as pinch points:

- **US 101 MP 233.99, Coos Bay (McCullough) Bridge: Wide/Long Loads and Vertical Clearance pinch point, Low Priority –** The bridge has narrow shoulders and raised sidewalks with railings, as well as a vertical clearance of 16'-11" in both directions. It is a historic coast bridge, so no capacity improvements will be made as long as the bridge remains in good condition.
- **US 101 MP 236.28, Lewis Street signal head: Vertical Clearance pinch point, High Priority –** The signal currently is 4" below the minimum height requirement for both directions.

The HOLPP also identifies two locations within the Coos Bay UGB as pinch points:

- **US 101 MP 238.25, Downtown Coos Bay, Low Priority –** Route includes two narrow lanes of traffic in each direction, with on-street parking

- **US 101 MP 238.40, Curtis Avenue signal head: Vertical Clearance pinch point, High Priority –** The signal head clearance is currently 17'-0" in both directions.

Reduction Review Route

Within both cities, US 101 is also classified as a Reduction Review Route (RRR). An RRR is a facility that is required by ORS 366.215 to be reviewed during all planning, project development, development review, and maintenance projects for "hole in the air" capacity. No changes can be made to the US101 corridor that will permanently reduce capacity in any way unless it is required for safety reasons or an exception is made by the Oregon Transportation Commission.

Freight Highway Bottlenecks

The Oregon Freight Highway Bottlenecks Project (FHBP) report includes a list of critical delay areas along Oregon freight routes. The report does not highlight any segments within the Coos Bay or North Bend UGBs that cause significant delay or unreliability.

Intermodal Connectors (Truck and Rail Freight)

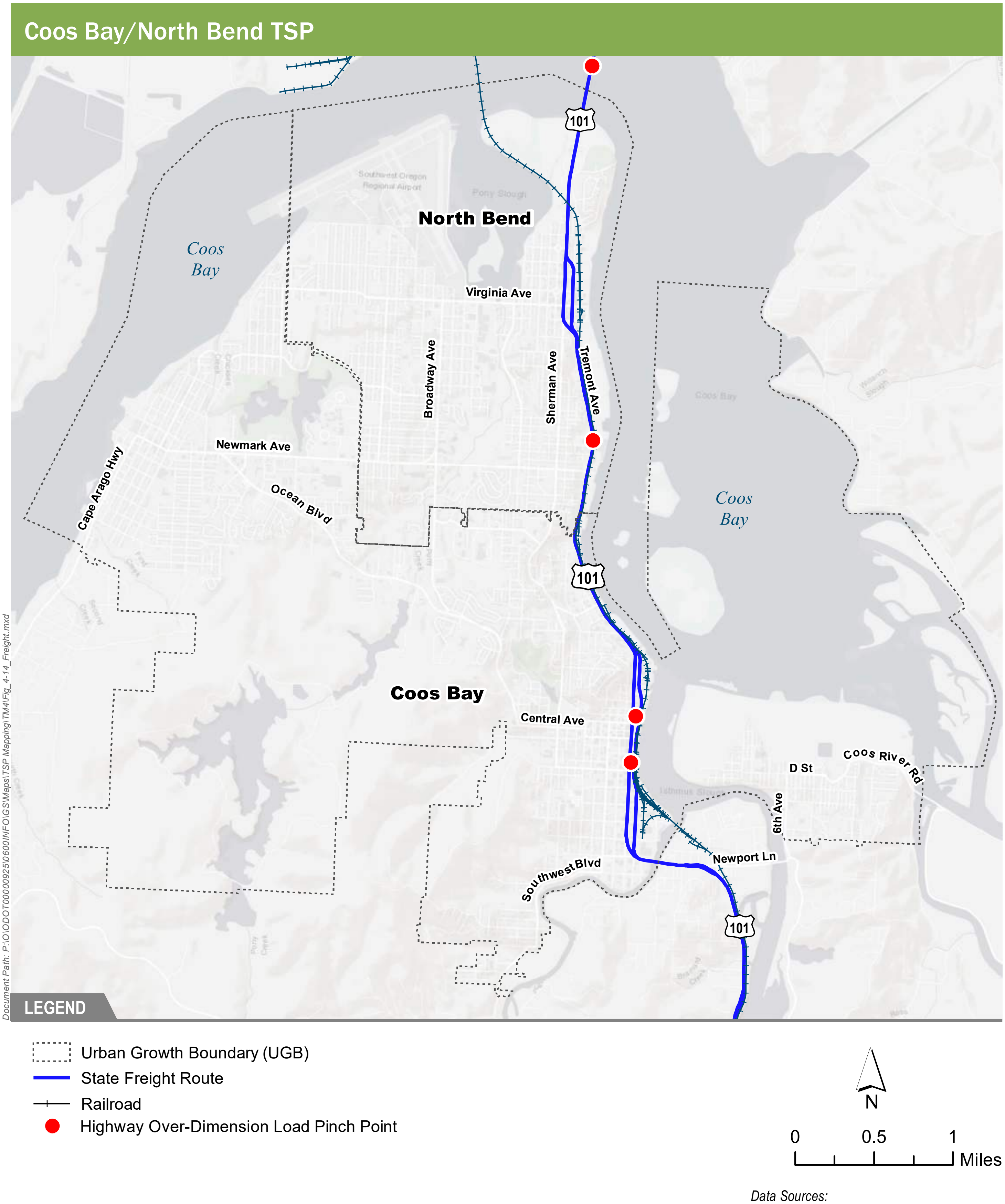
Another critical piece of the North Bend and Coos Bay area freight system is the intermodal connector system. The Oregon Freight Intermodal Connector System (OFICS) study defines freight intermodal connectors as "roads that provide the 'last-mile' connection between major rail, port, airport, and intermodal freight facilities" and the state's freight routes. Table 7 summarizes the freight intermodal connectors that are within the North Bend and Coos Bay UGBs.

Table 7. Study Area Intermodal Connectors

Intermodal Connector ID#	City	Location	Connecting Highway	Intermodal Terminal/Business
OR4P_1	North Bend	California Ave	US 101	Port of Coos Bay – Ocean Terminals
OR4P_2	North Bend	Sheridan Ave	US 101	Port of Coos Bay – Ocean Terminals
R3T2A03	North Bend	E Airport Way W Airport Way Maple Leaf St Maple St Virginia Ave	OR 540	SW Oregon Regional Airport
R3T2R36	Coos Bay	E Hall Ave	US 101	Coos Bay Rail Link Thomas & Sons Transportation Systems

Source: https://www.oregon.gov/ODOT/Planning/Documents/2017-OFICS-Inventory-Table.pdf

Coos Bay/North Bend TSP



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Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 14. Freight Routes

Design and Geometric Roadway Data

There are various inventories that describe the design and various features along the street systems of Coos Bay and North Bend. A description and accompanying table or figure are provided in this section.

Speed Limits – Appendix A provides a listing of speed limits for arterials and collectors within the North Bend and Coos Bay UGBs. Speeds on local roads are typically 25 mph or less. Collectors are typically 25 mph. City arterials can range from 25 mph to 35 mph in North Bend and 25 mph to 40 mph in Coos Bay. The principal arterial of US 101 ranges from 20 mph to 45 mph within the UGBs, as shown in Figure 15. *Map does not include Coos Bay speed limits because information is not readily available in GIS.*

Stop Control Devices – Stop control devices in North Bend and Coos Bay include signalized intersections and stop signs. Their use is intended to increase safety for all users by regulating the flow of traffic. There are numerous signalized and stop controlled intersections in the study area. Figure 15 summarizes the traffic control for only the study area intersections. Appendix B summarizes the stop controlled intersections in North Bend; Coos Bay does not summarize this data.

Structures – An important aspect of a community's transportation system is recognizing the critical role that transportation facilities, particularly bridges, play in emergency response and evacuation. These structures include 10 bridges and 11 cantilever sign structures that are on facilities either within or connecting the City UGBs. Table 8 summarizes the bridge information and Table 9 summarizes the cantilever sign structures (see Figure 15).

Table 8. Study Area Bridge Inventory

M.P.	Br. #	Name	Location	Sufficiency Rating	Notes
233.99	01823	Coos Bay, Hwy 9 (US 101) (McCullough)	North Bend	49.5	Functionally obsolete
234.76	01950	Hwy 9 over CBRL (North Bend)	North Bend	73.6	Functionally obsolete
N/A	006T1	Pony Slough, Broadway St	North Bend	73.5	
N/A	006T2	Pony Slough, Vermont Ave	North Bend	40	
0.42	03225A	Pony Creek, Hwy 240	North Bend	94.1	
239.20	02478C	Coalbank Slough, Hwy 9 (US 101)	Coos Bay	87	
1.56	03254A	Pony Creek, Ocean Blvd	Coos Bay	-	
2.19	02278E	Catching Slough, Hwy 241	Coos Bay/Coos County	74.6	Functionally obsolete
0.14	02390	Hwy 241 over CBRL	Coos County	65	Functionally obsolete
0.42	01132F	Isthmus Slough, Hwy 241 (Eastside)	Coos County	46.7	Structurally deficient

Sources: 2017 Bridge Condition Report; ODOT TransGIS

Table 9. Cantilever Sign Structure Inventory

M.P.	Br. #	Name	Location	Superstructure Rating	Substructure Rating
235.48	21670	Sign Cantilever Br, US 101 NB	North Bend	Very Good	Very Good
235.49	21671	1-35’6” Sign Cantilever Br, US 101 NB	North Bend	Very Good	Very Good
235.61	21672	1-36’2” Sign Cantilever Br, US 101 NB	North Bend	Very Good	Very Good
238.20	20686	1-21’ Sign Cantilever Br, US 101 NB	Coos Bay	Satisfactory	Satisfactory
238.25	20687	1-21’ Sign Cantilever Br, US 101 NB	Coos Bay	Fair	Satisfactory
238.32	20688	1-21’ Sign Cantilever Br, US 101 NB	Coos Bay	Satisfactory	Satisfactory
235.15	21667	1-35’ Sign Cantilever Br, US 101 SB	North Bend	Very Good	Very Good
235.38	21668	1-26’ Sign Cantilever Br, US 101 SB	North Bend	Very Good	Very Good
235.39	21669	1-30’6” Sign Cantilever Br, US 101 SB	North Bend	Very Good	Very Good
238.14	20684	1-21’ Sign Cantilever Br, US 101 SB	Coos Bay	Satisfactory	Satisfactory
238.23	20685	1-21’ Sign Cantilever Br, US 101 SB	Coos Bay	Satisfactory	Satisfactory

Source: ODOT TransGIS

Culverts – See Figure 15.

Railroad Crossings – The Coos Bay rail line runs parallel to US 101 through Coos Bay and North Bend. There are 15 at-grade crossings where rail line intersects a number of local roads (shown in Figure 15). The rail line also passes under an overpass carrying US 101 at US 101 MP 234.76.

Medians/Islands/Curb – On US 101, there is approximately 800 feet of raised median just south of the North Bend couplet.

Anecdotal information provided from both cities suggest that all roads built to standard have curb. Data is not available to indicate the presence of curbed medians or pedestrian islands in either city.

On Street Parking – On street parking is widely available in both cities on most roads. The most utilized on street parking is found in the downtown areas of both cities on US 101 and intersecting side streets.

Pavement Condition – Data provided by the City of North Bend suggests that North Bend’s road network pavement condition is generally ‘good’. The City of Coos Bay’s *2015 Pavement Condition Survey and Asset Management Plan* provides a detailed review of Pavement Condition Index (PCI) scores for City-maintained roadways. In 2015, the overall condition of Coos Bay’s road network was defined as ‘fair,’ with an average PCI of 64.3. See Appendix C for more details.

Coos Bay's *2015 Pavement Condition Survey and Asset Management Plan* established PCI levels for when a street's PCI becomes critical for repair. These thresholds are summarized in Table 10 below. Although similar guidance was not available for North Bend, it is reasonable to expect similar thresholds due to the proximity, comparable environment and shared use.

Table 10. Pavement Condition Critical Thresholds by Functional Classification

Functional Classification	Critical Condition (PCI)
Asphalt Concrete (AC) Streets	
Principal Arterial	55
Minor Arterial	55
Principal Arterial	55
Principal Arterial	55
Portland Cement Concrete (PCC) - All	10

Source: City of Coos Bay's *2015 Pavement Condition Survey and Asset Management Plan, pg. 8*

Coos Bay/North Bend TSP

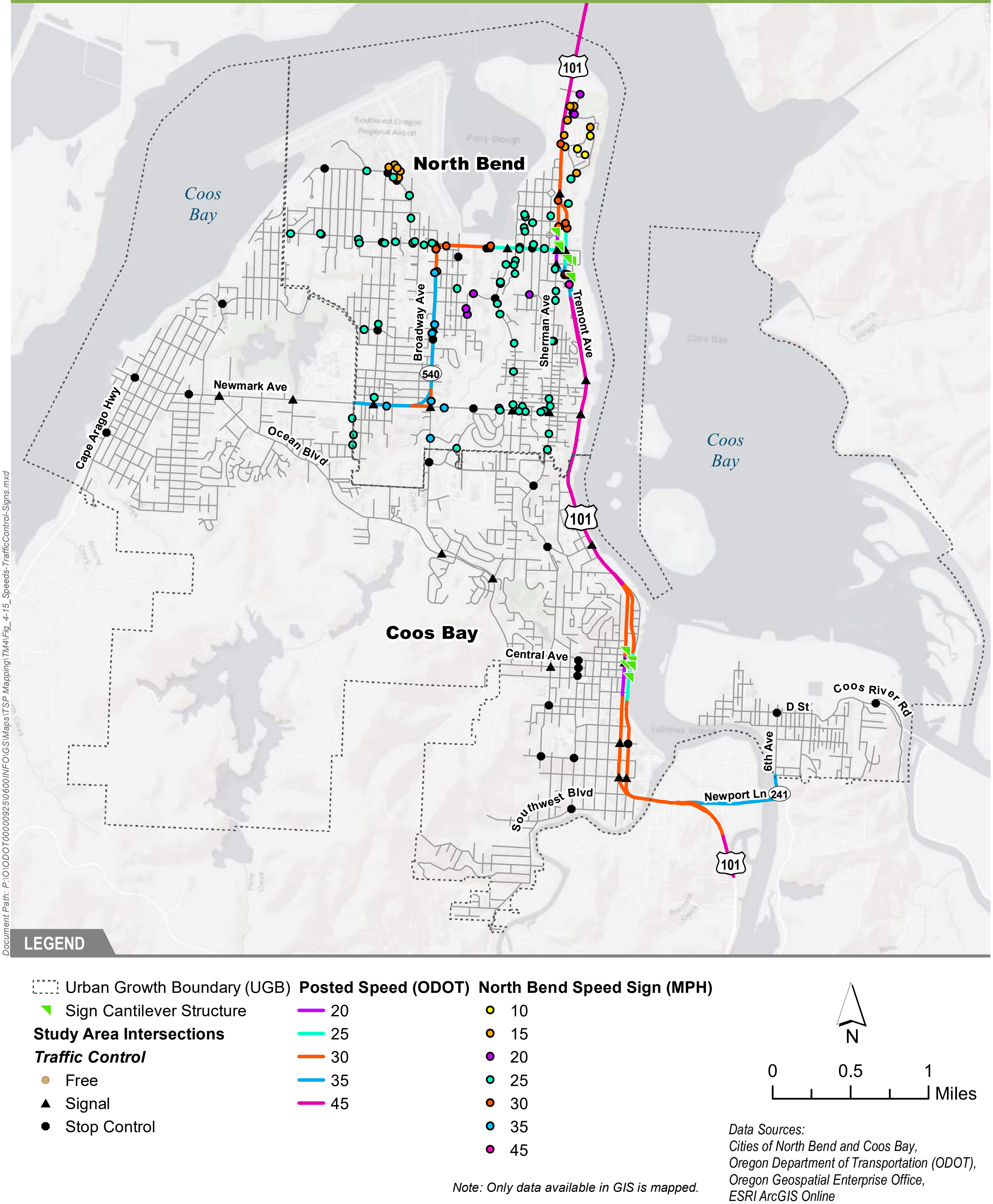
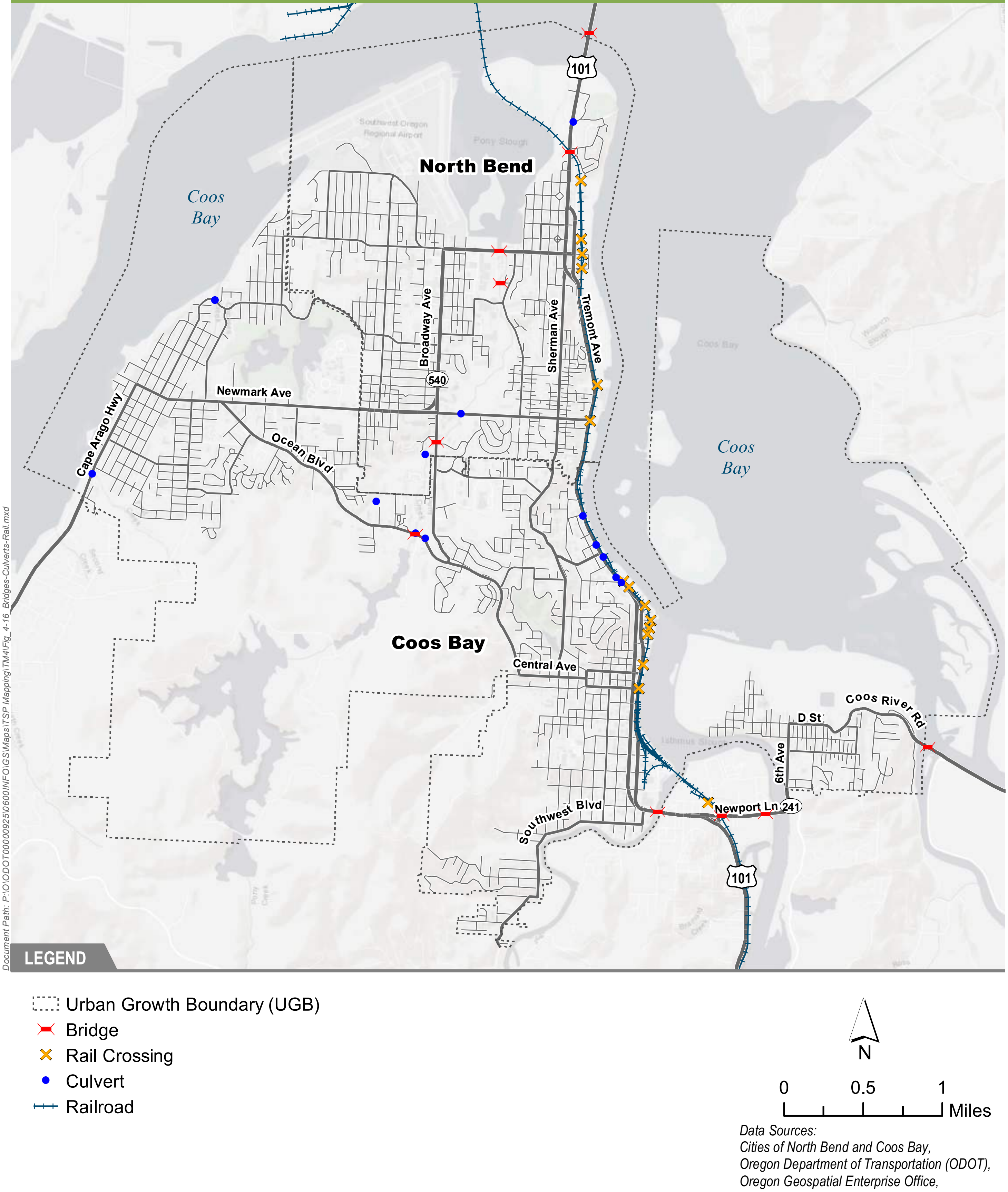


Figure 15. Traffic Control, Sign Structures, Posted Speeds

Coos Bay/North Bend TSP



Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online,
Oregon Fish Passage Barrier Standard (ODOT)

Figure 16. Bridges, Culverts and Rail

Existing Pedestrian and Bicycle Network

Provisions of a comprehensive pedestrian and bicycle facilities can enable people to walk and bike safely and efficiently between land uses. In addition, bicycling and walking are more environmentally friendly alternatives to driving. Improving the non-motorized elements of the transportation system can provide more choices for the traveling public and can have the added benefit of reducing vehicle congestion, carbon emissions and improving health through physical activity.

This section provides a basic inventory of the current pedestrian and bicycle network in the Cities of Coos Bay and North Bend.

Pedestrian Network

Walking is the most affordable and accessible of all transportation modes. It is also clean, low-impact on the City's infrastructure, healthy for the individual, and integral to community livability. A walkable environment integrated with other modes of transportation is essential to creating a multi-modal transportation system. It is also a key component to reducing reliance on automobiles. Whether an entire trip is on foot or with a mobility device, people must walk for at least part of every trip, even when the trip takes place on transit, in an automobile, or on a bicycle.

City of North Bend

The majority of North Bend's arterial and collector roads have sidewalks, as well as the street system in the downtown core. The City has identified a need for sidewalks on the following collector streets:

- 17th Street
- Arthur Street
- Colorado Ave
- Crowell Lane
- Lakeshore Drive
- Oak Street.

Table 11 summarizes the sidewalk facilities on North Bend's arterial and collector system. Figure 17 summarizes North Bend's sidewalk system and identified needs. There are currently no specific sidewalk projects planned for construction.

Table 11. Inventory of Sidewalks on Arterials and Collectors – North Bend

Roadway Name	Classification	Existing Sidewalks
US 101	Principal Arterial	Yes[1]
Virginia Ave	Minor Arterial/Urban Collector	Yes
Broadway Ave	Minor Arterial	Yes
Sherman Ave	Minor Arterial	Yes
Newmark St	Minor Arterial	Varies[1]
16th St	Urban Collector	Yes
17th St	Urban Collector	Varies[1]
Arthur St	Urban Collector	Varies[1]
Colorado Ave	Urban Collector	South Side[1]
Connecticut Ave	Urban Collector	Varies[1]
Crowell Lane	Urban Collector	Varies[1]
Harrison Ave	Urban Collector	Varies
Lakeshore Dr	Urban Collector	No
Maple Leaf St	Urban Collector	West Side
Maple St	Urban Collector	Yes
Oak St	Urban Collector	No[1,2]
Pacific St	Urban Collector	East Side[1]
Pony Creek St	Urban Collector	West Side[1]

[1] Identified need for pedestrian facilities in 2004 TSP or on ODOT TransGIS, [2] Only section of road bordering school has sidewalks.
Note: Information on marked pedestrian crossings and sidewalk pavement condition and was not available for inclusion in this inventory.

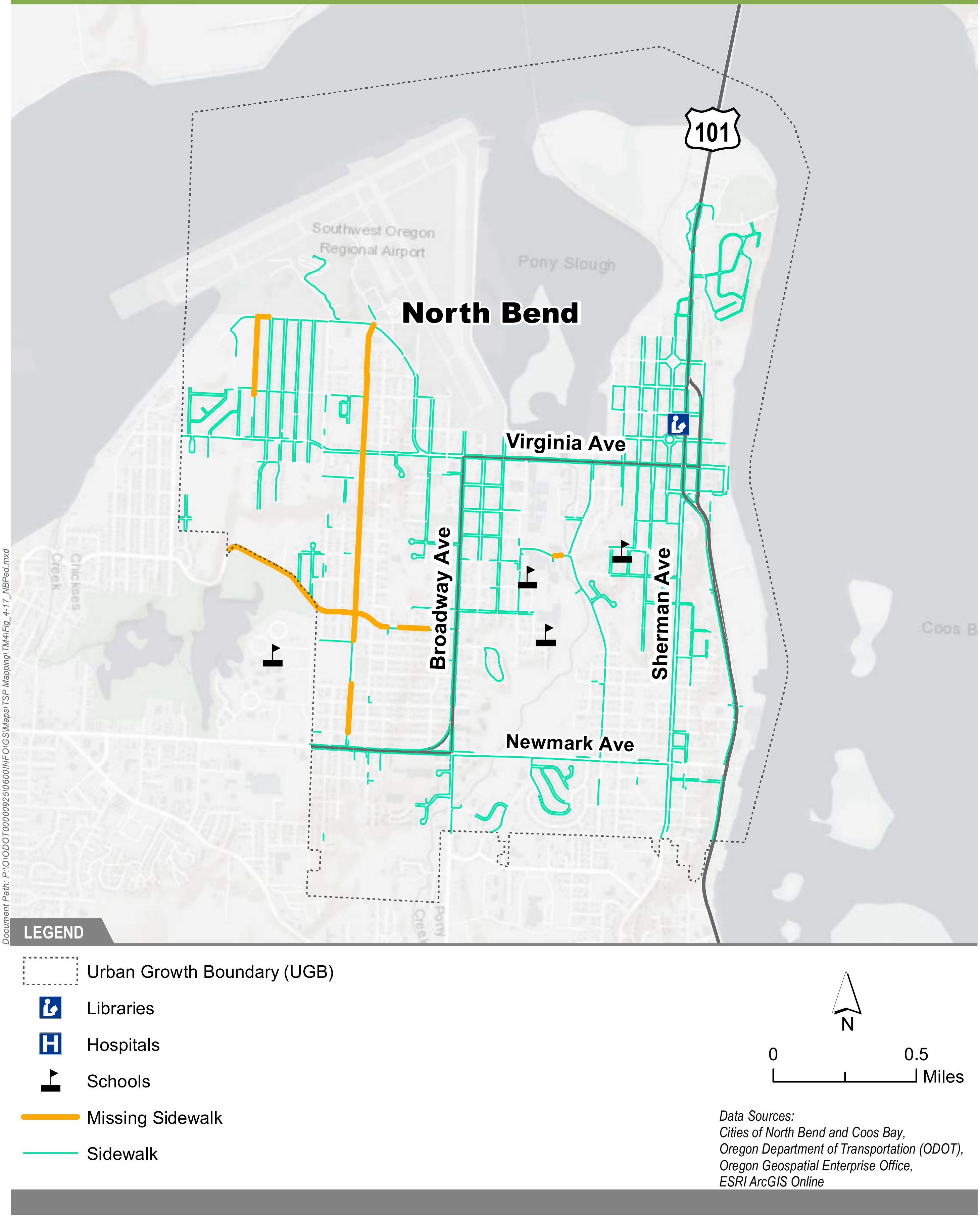


Figure 17. North Bend Sidewalk Inventory

City of Coos Bay

The City of Coos Bay's sidewalk inventory was collected for the arterial and collector network. Table 12 below catalogs the existing sidewalk inventory. The inventory of the Coos Bay sidewalks is limited to "visual windshield validation." Further resources may exist in the study area that are not yet documented or are not visually apparent. There are currently no specific sidewalk projects planned for construction, but notes are included where the 2004 TSP identified a neeed.

Table 12. Inventory of Sidewalks on Arterials and Collectors – Coos Bay

Roadway Name	Classification	Existing Sidewalks
US 101	Principal Arterial	Varies[1, 2]
S Front St	Principal Arterial	No[1]
S Empire Blvd	Arterial	Yes
Newmark Ave	Arterial	Yes
Ocean Blvd	Arterial	Yes
Woodland Dr	Arterial	No[1]
Coos River Hwy	Arterial	No[1]
6th Ave	Arterial	No
Southwest Blvd	Arterial	Yes[1]
Lockhart Ave	Arterial	No[1]
Koosbay Blvd	Arterial	Varies[1]
N 7th St	Arterial	Varies[1]
N 10th St	Arterial	Yes[1]
Newport Ln	Arterial	Varies[3]
Blanco Ave	Collector	Varies
Radar Rd	Collector	No
S Morrison St	Collector	No[1]
Pacific Ave	Collector	North Side[1]
Lakeshore Dr	Collector	No
N Morrison St	Collector	No[1]
N Schoneman St	Collector	No[1]
N Wasson St	Collector	Varies
Laclair St	Collector	Varies (North Side)
Thompson Rd	Collector	Yes
D St	Collector	No
F St	Collector	No
Butler Rd	Collector	Yes

Roadway Name	Classification	Existing Sidewalks
Hemlock Ave	Collector	Yes
N 13th St	Collector	Yes
S 4th St	Collector	Yes
N 4th St	Collector	Yes
14th Ave	Collector	No
Juniper Ave	Collector	Yes
Fulton Ave	Collector	Yes
Virginia St	Collector	No

Source: Bing Maps

[1] Identified need for pedestrian facilities in 2004 TSP or on ODOT TransGIS, [2] US 101 lacks sidewalks on east side (M.P. 236.8-237.88; NB M.P. 238.25-238.6), [3] Newport Lane has sidewalks on the structure over the railroad and on the Isthmus slough bridge

Note: Information on marked pedestrian crossings and sidewalk pavement condition and was not available for inclusion in this inventory.

Bicycle Network

City of North Bend

As of this writing, the City of North Bend has limited bicycle facilities, and minor improvements have been made since the adoption of the previous TSP in 2004. The existing bike network, as shown in Figure 18, overlaps with the Oregon Coast Bike Route, a 370-mile signed bike route that runs from Astoria to Brookings and beyond. Within North Bend, the OCBR shares the roadway with motor vehicles along US 101, Virginia Avenue, Broadway Avenue, and Newmark Street, with minimal marked and unmarked shoulders. As the entire bike network is on street, the condition and surface type of bike facilities is equivalent to pavement conditions for the streets on which they exist. Table 13 below catalogs both existing facilities and planned bike facilities from the current TSP on arterial and collector streets. Current standards for bicycle facilities on arterial and collector streets require a minimum 6-foot bike lane for new construction and 5 to 6-foot bike lane for reconstruction.

Table 13. Inventory of Bicycle Facilities on Arterials and Collectors

Roadway Name	Classification	Existing Bike Facility	Planned Bike Facility
US 101	Principal Arterial	Yes[1,2]	Yes
Virginia Ave	Minor Arterial/Urban Collector	Yes[1]	Yes
Broadway Ave	Minor Arterial	Yes[1]	Yes
Sherman Ave	Minor Arterial	No	Yes
Newmark St	Minor Arterial	Yes[1]	Yes
16th St	Urban Collector	No	Yes
17th St	Urban Collector	No	Yes
Arthur St	Urban Collector	No	Yes
Colorado Ave	Urban Collector	No	Yes

Roadway Name	Classification	Existing Bike Facility	Planned Bike Facility
Connecticut Ave	Urban Collector	No	Yes
Crowell Lane	Urban Collector	No	Yes
Harrison Ave	Urban Collector	No	No
Lakeshore Dr	Urban Collector	No	Yes
Maple Leaf St	Urban Collector	No	No
Maple St	Urban Collector	No	Yes
Oak St	Urban Collector	No	Yes
Pacific St	Urban Collector	No	Yes
Pony Creek St	Urban Collector	No	Yes
Thompson Ave	Urban Collector	No	Yes

[1] Oregon Coast Bike Route, [2] Bike lanes between MP 236.1 and 236.5
Note: Information on bicycle crossings and parking was not available for inclusion in this inventory.

City of Coos Bay

As of this writing, the City of Coos Bay has a limited bicycle network, and minor improvements have been made since the adoption of the previous TSP in 2004. The existing bike network, as shown in Figure 18, includes part of the Oregon Coast Bike Route (OCBR) and a few other facilities, principally in and near downtown Coos Bay and the Empire neighborhood. As the entire bike network is on street, the condition and surface type of bike facilities is equivalent to pavement conditions for the streets on which they exist. Table 14 below catalogs both existing facilities and planned bike facilities from the current TSP on arterial and collector streets. Current standards for bicycle facilities on arterial and collector streets require a minimum 6-foot bike lane for new construction and 5 to 6-foot bike lane for reconstruction.

For a portion of the Oregon Coast Bike Route (OCBR) in Coos Bay that runs along Newmark Avenue between Fir Street and Ackerman Avenue, the facility has approximately 5-foot wide bike lanes on either side of the roadway. The rest of the OCBR shares the roadway with vehicles on Newmark Avenue. On S Empire Boulevard, there are 6-foot bike lanes from Newmark Avenue to the southern city limits. Striped bike lanes approximately 5-feet wide also exist in downtown Coos Bay on US 101 southbound between Curtis Avenue and Johnson Avenue and northbound between Johnson Avenue and Central Avenue. In addition, Ocean Boulevard has 7- to 8-foot wide bike lanes between N 19th Street and Central Avenue, and 6-foot bike lanes from Newmark Avenue to Lindy Lane. All existing facilities meet current standards adopted in the 2004 TSP.

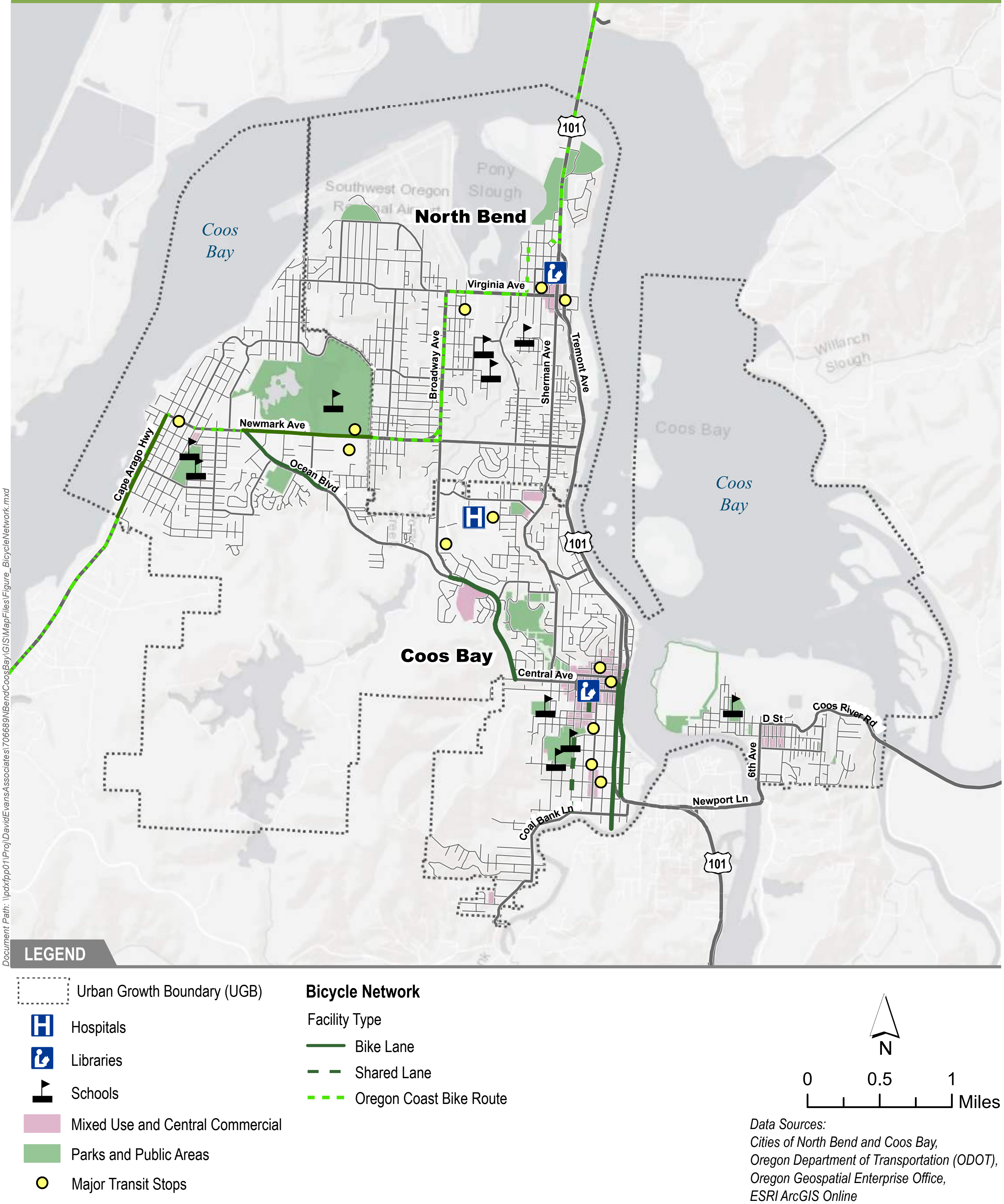
Table 14. Inventory of Bicycle Facilities on Arterials and Collectors

Roadway Name	Classification	Existing Bike Facility	Planned Bike Facility
US 101	Principal Arterial	Yes[1]	Yes
S Front St	Principal Arterial	No	No
Newport Ln	Minor Arterial	No	No

Roadway Name	Classification	Existing Bike Facility	Planned Bike Facility
S Empire Blvd	Arterial	Yes	Yes
Newmark Ave	Arterial	Yes	Yes
Ocean Blvd	Arterial	Yes	Yes
Woodland Dr	Arterial	No	Yes
Coos River Hwy	Arterial	No	Yes
6th Ave	Arterial	No	Yes
Southwest Blvd	Arterial	No	Yes
Lockhart Ave	Arterial	No	Yes
Koosbay Blvd	Arterial	No	Yes
N 7th St	Arterial	No	Yes
N 10th St	Arterial	No	Yes
Blanco Ave	Collector	No	No
Radar Rd	Collector	No	No
S Morrison St	Collector	No	Yes
Pacific Ave	Collector	No	Yes
Lakeshore Dr	Collector	No	Yes
N Morrison St	Collector	No	Yes
N Schoneman St	Collector	No	Yes
N Wasson St	Collector	No	No
Laclair St	Collector	No	No
Thompson Rd	Collector	No	Yes
D St	Collector	No	No
F St	Collector	No	No
Butler Rd	Collector	No	No
Hemlock Ave	Collector	No	Yes
N 13th St	Collector	No	No
S 4th St	Collector	No	Yes
N 4th St	Collector	No	Yes
14th Ave	Collector	No	No
Juniper Ave	Collector	No	Yes
Fulton Ave	Collector	No	No
Virginia St	Collector	No	Yes

[1] Bike lanes in downtown Coos Bay on Broadway and Bayside Dr

Note: Information on bicycle crossings and parking was not available for inclusion in this inventory.



Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 18. Bicycle Network

Existing Public Transit Services

Local Services

Coos County Area Transit (CCAT) provides local public transportation services to the City of Coos Bay and City of North Bend, including fixed-route bus, paratransit (dial-a-ride) services, and intercity service to connections north to Lakeside and Hauser and south to Coquille, Myrtle Point, and Powers. The route names and description are included in Table 15. Figure 19 shows the Bay Area Loop service, and Figure 20 shows intercity connections CCAT provides to Lakeside, Hauser, Coquille, Myrtle Point, and Powers.

The Bay Area East and West Loop route serves as North Bend and Coos Bay's local public transportation service. Transfer points between the East and West Loop are at Wal-Mart and Pony Village Mall.

The East Loop originates and ends at 9th and Anderson in downtown Coos Bay. There are 28 total stops along the route. Community destinations served by the East Loop route include the Coos Bay Post Office, Senior Center, Work Source, South Coast Business Employment Corporation, Bay Area Hospital, Wal-Mart, Coos County Annex, and Pony Village Mall.

The West Loop originates and ends at Davey Jones Locker in Charleston, which is located five miles south of Coos Bay. There are 27 total stops along the route. Community destinations served by the West Loop route include Star of Hope Community Center, Coos Health and Wellness, Wal-Mart, Newmark Center Southwestern Oregon Community College, DHS/North Bend Senior Center, and Pony Village Mall.

The CCAT Dial-A-Ride Program includes curb-to-curb service within the city limits of Coos Bay and North Bend, along with Bandon, Myrtle Point, and Coquille. Service in Coos Bay and North Bend is limited to ¾ mile of either side of an existing fixed route.

As of May 2018, CCAT also operates a free, ADA accessible shuttle service for all Veterans with a verified medical appointment at the Roseburg and Eugene VA Medical Centers. The shuttle operates Tuesday and Thursday to Roseburg and Wednesday to Eugene, departing from the North Bend VA Clinic at 7:00 am and returning by 4:00 pm.

Table 15. Coos County Area Transit Route Descriptions

Route Name	Service	Frequency
Bay Area Loop–East Loop	Local fixed-route	• Monday through Friday • 1.5-hour headways • First bus at 7:05 am; last bus at 4:05 pm
Bay Area Loop—West Loop	Local fixed-route	• Monday through Friday • 1.5-hour headways • First bus at 7:20 am; last bus at 4:20 pm
Lakeside/Hauser Connector	Intercity service	• Twice a day to Lakeside and Hauser, Friday service only • Morning: Bus at 7:00 am from VA Clinic • Afternoon: Bus at 2:30 pm from VA Clinic

Route Name	Service	Frequency
Myrtle Point/Coquille Connector	Intercity service	• Three times a day to Myrtle Point and Coquille, Monday through Friday • Morning: Bus at 6:55 am from W. Central and N. Laurel • Mid-Day: Bus at 11:00 am from W. Central and N. Laurel • Afternoon: Bus at 3:30 pm from W. Central and N. Laurel • Powers Stage runs to Myrtle Points, Coquille, North Bend, and Coos Bay every Thursday

Regional Connections

In addition to intercity service provided to CCAT, regional connections are available through the following public transportation providers:

Curry Public Transit – Coastal Express

Offers connecting service from North Bend and Coos Bay to the communities of Bandon, Port Orford, Gold Beach, Brookings, Harbor and Smith River. The Coastal Express operates Monday thru Friday and provides service three times daily in the morning, mid-day, and early afternoon. Figure 21 displays the Coastal Express route and the location of stops in North Bend and Coos Bay.

UTrans

Offers connecting service to the greater Roseburg area and commuter services to Winston, Sutherlin, Myrtle Creek, Riddle, and Canyonville.

Pacific Crest Bus Lines

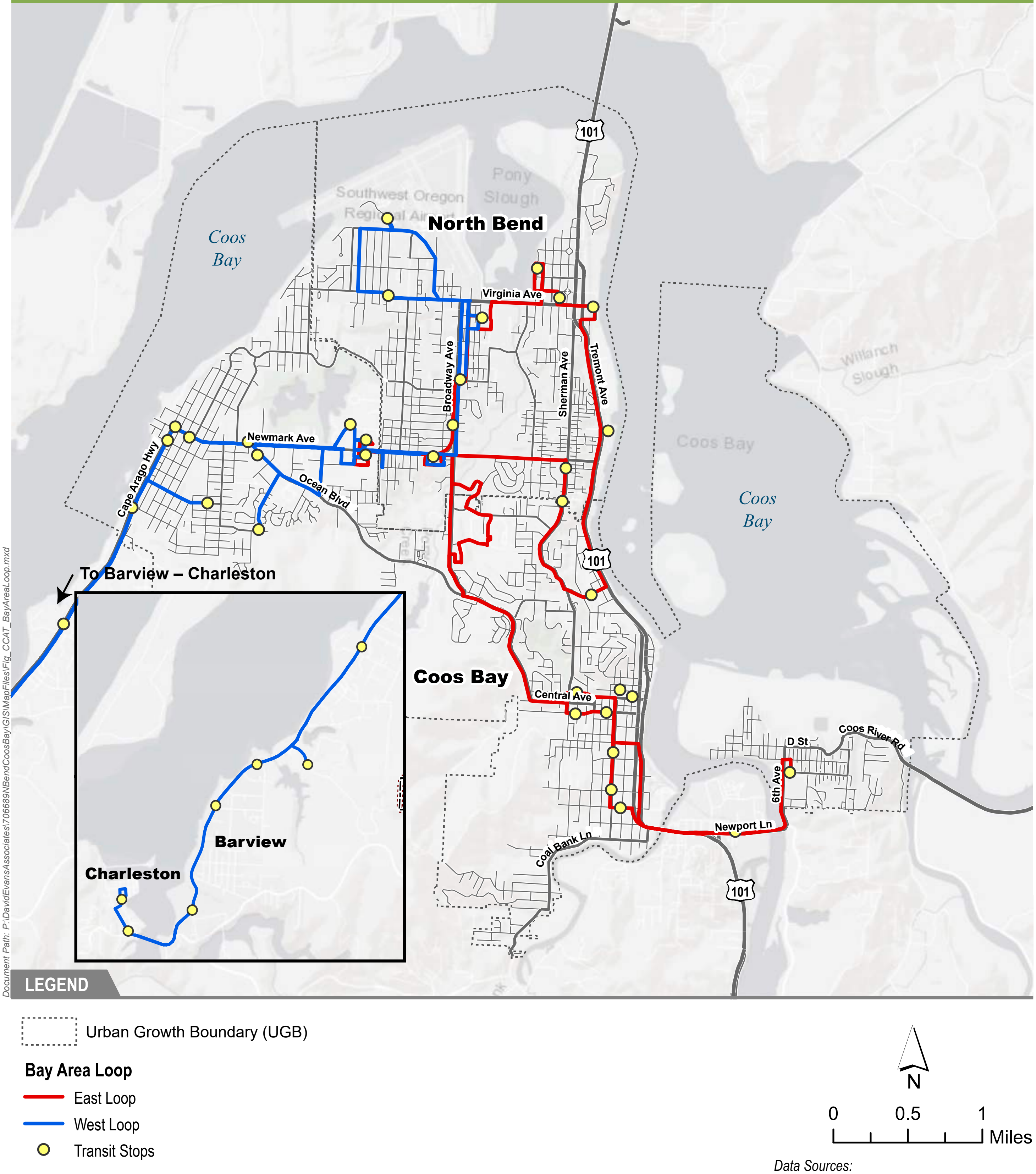
Offers service to Reedsport, Florence, and Eugene once daily, seven days a week.

Other Services

Currently, CCAT does not operate any park and ride facilities. In addition, there are no carpool and vanpool programs specific to North Bend and Coos Bay outside of ODOT's Drive Less Connect program, nor any formalized employed-based commute programs.[7]

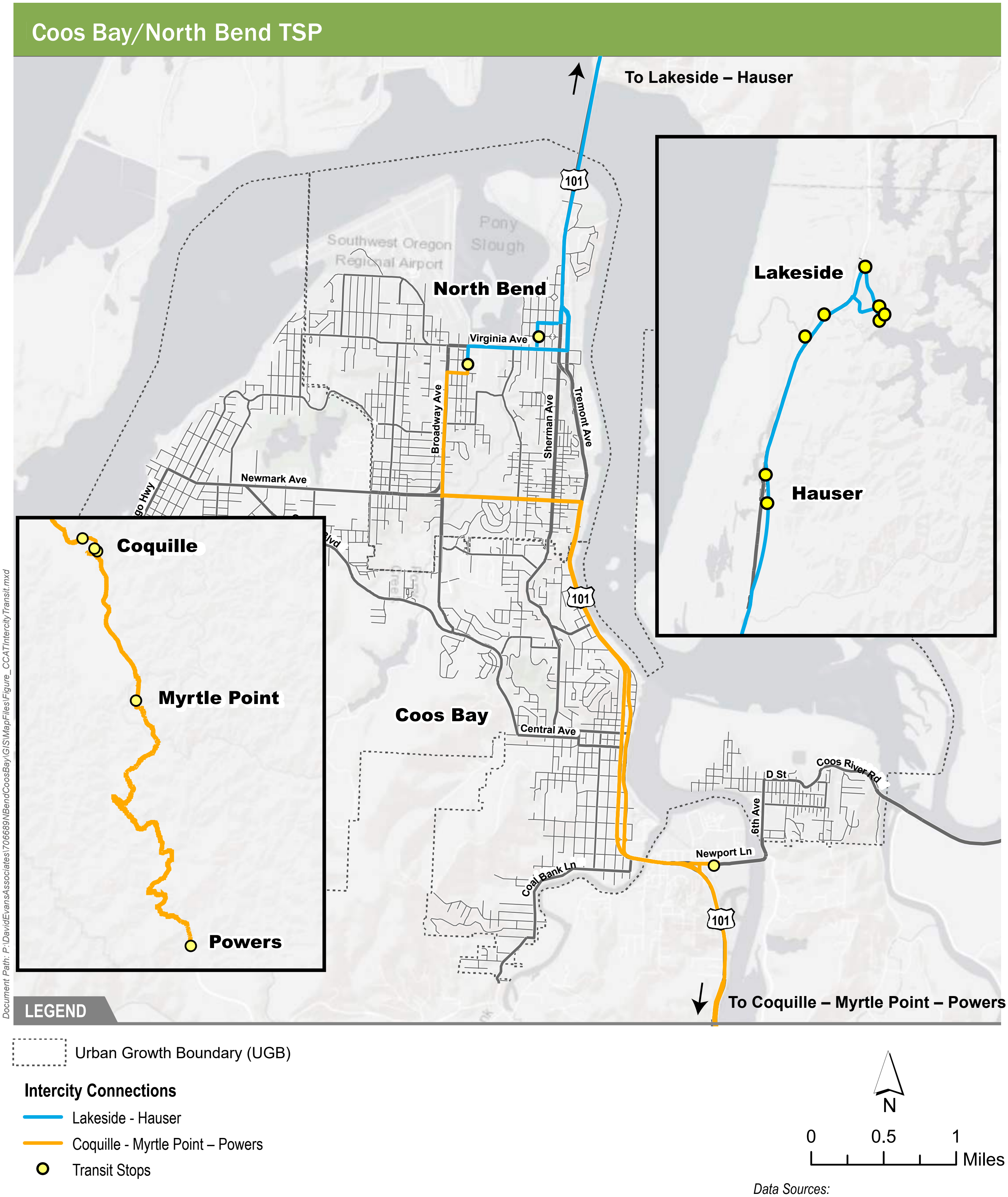
[7] These programs may not be applicable to North Bend or Coos Bay, but are noted here for informational purposes only.

Coos Bay/North Bend TSP



Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 19. Coos County Area Transit – Bay Area Loop



Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 20. Coos County Area Transit – Intercity Connections

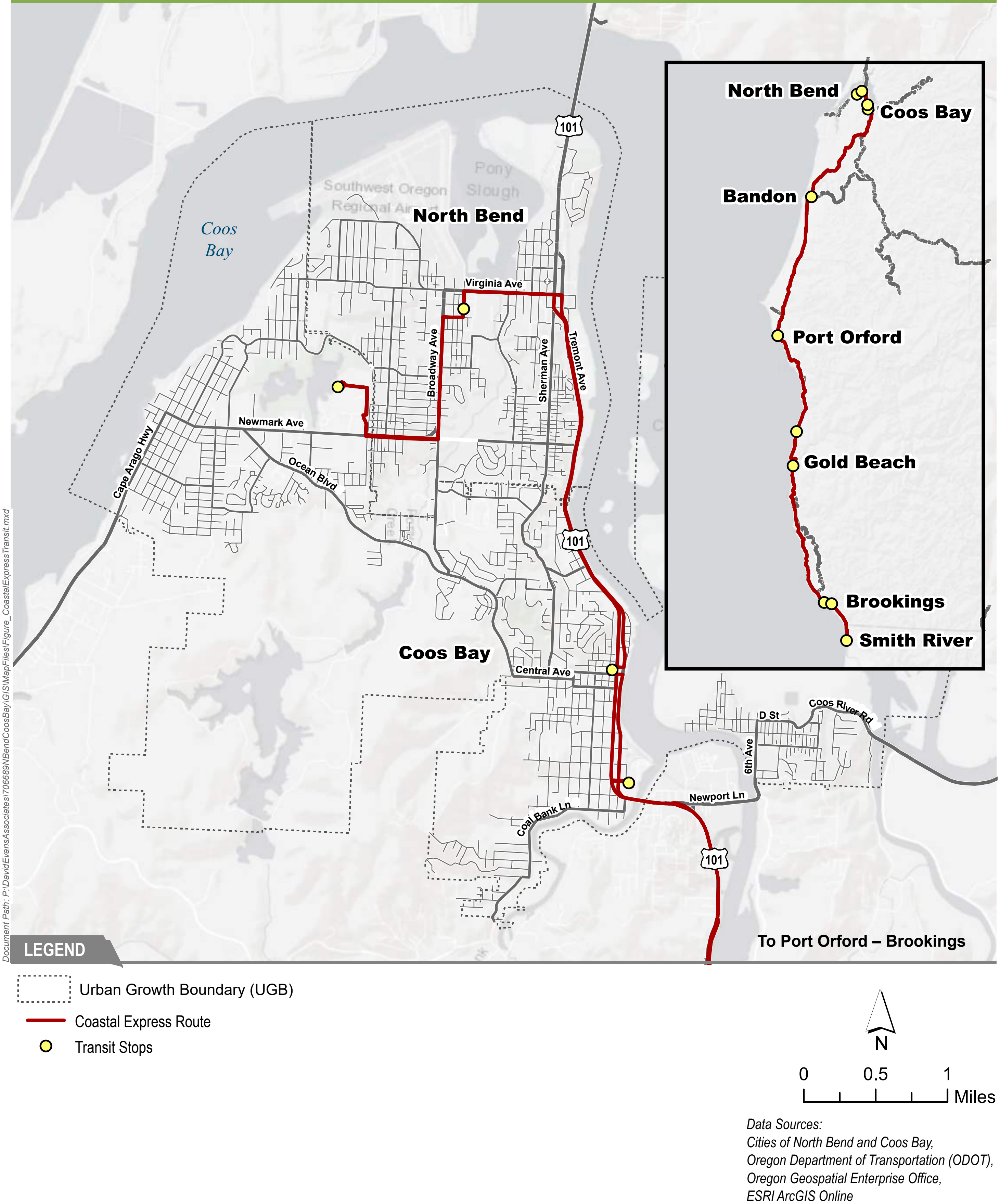


Figure 21. Curry Public Transit – Coastal Express

Existing Air, Water, Rail, and Pipeline Inventories

While the movement of goods and commodities into, out of, and through the Coos Bay/North Bend area is heavily dependent on the highway system (see the discussion of the Freight Routes in the Existing Street Network section above), freight movement also occurs via rail and pipeline modes. This section describes air, water, rail, and pipeline facilities in the study area.

Air Facilities

Southwest Oregon Regional Airport (OTH) is located on approximately 620 acres of land extending out into Coos Bay, in the northern sections of North Bend and Coos Bay.[8] Owned and operated by the Coos County Airport District (CCAD), OTH is the only commercial service airport on the Oregon Coast. From May 2017 to April 2018, OTH served approximately 25,000 revenue passengers and 1.5 Million pounds of freight and mail.[9] The airport's top passenger destinations are San Francisco, CA and Denver, CO. The airport also accommodates private aircraft arrivals and departures and serves as a base for US Coast Guard operations. Airport parking is free of charge.

Water Facilities

Coos Bay and North Bend are set on Coos Bay, a major inlet draining into the Pacific Ocean. The Bay's navigation channel is designed and maintained by the US Army Corps of Engineers and facilitates significant maritime trade activity at six marine terminals, seven deep-draft berths, and a number of barge facilities.[10] The Port of Coos Bay moves more than 1.5 million tons of cargo annually – more than any other seaport in Oregon.

Rail Facilities

One railroad line passes through North Bend and Coos Bay. Owned by the Port of Coos Bay, the Coos Bay Rail Line is operating as the Coos Bay Rail Link (CBR) and spans 134 miles from Coquille to Danebo Junction in Eugene.[11] In Coos Bay and North Bend, the Coos Bay rail line runs parallel to US 101. Currently, the railroad line is exclusively for freight, with about 99 percent of their product moved being related to the timber industry.[12]

CBR tracks are classified by the Association of American Railroads (AAR) as local. Once the current phase of rehabilitation is complete, the rail line will have been restored to a mix of Federal Railroad Administration (FRA) Class 2 (25 mph) and Class 3 (40 mph) conditions. Detailed information on frequency of service was not available. No passenger rail service is available in the study area; the closest available is AMTRAK located in Eugene, Oregon.

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[8] Coos County Airport District Master Plan

[9] Bureau of Transportation Statistics. North Bend/Coos Bay, OR: Southwest Oregon Regional (OTH). https://www.transtats.bts.gov/airports.asp?pn=1&Airport=OTH&Airport_Name=North%20Bend/Coos%20Bay,%20OR:%20Southwest%20Oregon%20Regional&carrier=FACTS

[10] Oregon International Port of Coos Bay. Maritime Commerce. https://www.portofcoosbay.com/maritime-commerce/

[11] Oregon International Port of Coos Bay. 2015 Strategic Business Plan. https://static1.squarespace.com/static/569e6f1176d99c4f392858c4/t/58b489d89f74562a52de8425/1488226796269/Strategic+Business+Plan+web.pdf

[12] https://www.portofcoosbay.com/about-the-railroad/

Pipeline Facilities

There is a Coos County natural gas pipeline operated by NW Natural Gas in the Coos Bay/North Bend area. This pipeline extends east, connecting with the Williams' Northwest Pipeline.[13, 14]

The Pacific Connector Gas Pipeline project proposes to add a second pipeline in the study area, connecting the Jordon Cove liquid natural gas terminal in the City of Coos Bay and Malin, OR with a pipeline 229 miles long, and 36 inches in diameter.

[13] 2011 Coos County Transportation System Plan
[14] https://www.nwnatural.com/Business/Safety/PipelineLocationInformation

Environmental and Cultural Inventories

The following summarizes the existing natural resources and environmental features found in Coos Bay and North Bend. The following sections illustrate and describe areas that may pose barriers to providing transportation access or improvements. The inventory is based on available Geographic Information System (GIS) maps, previous reports, and known resource sites. Further resources may exist in the study area that are not yet documented or are not visually apparent.

Coos Bay and North Bend's unique environment attract large number of visitors every year, and the planning process should take special care to identify and protect these resources. The following figures map environmental constraints for the transportation system in Coos Bay/North Bend, including environmental and cultural resources and hazards as listed below.

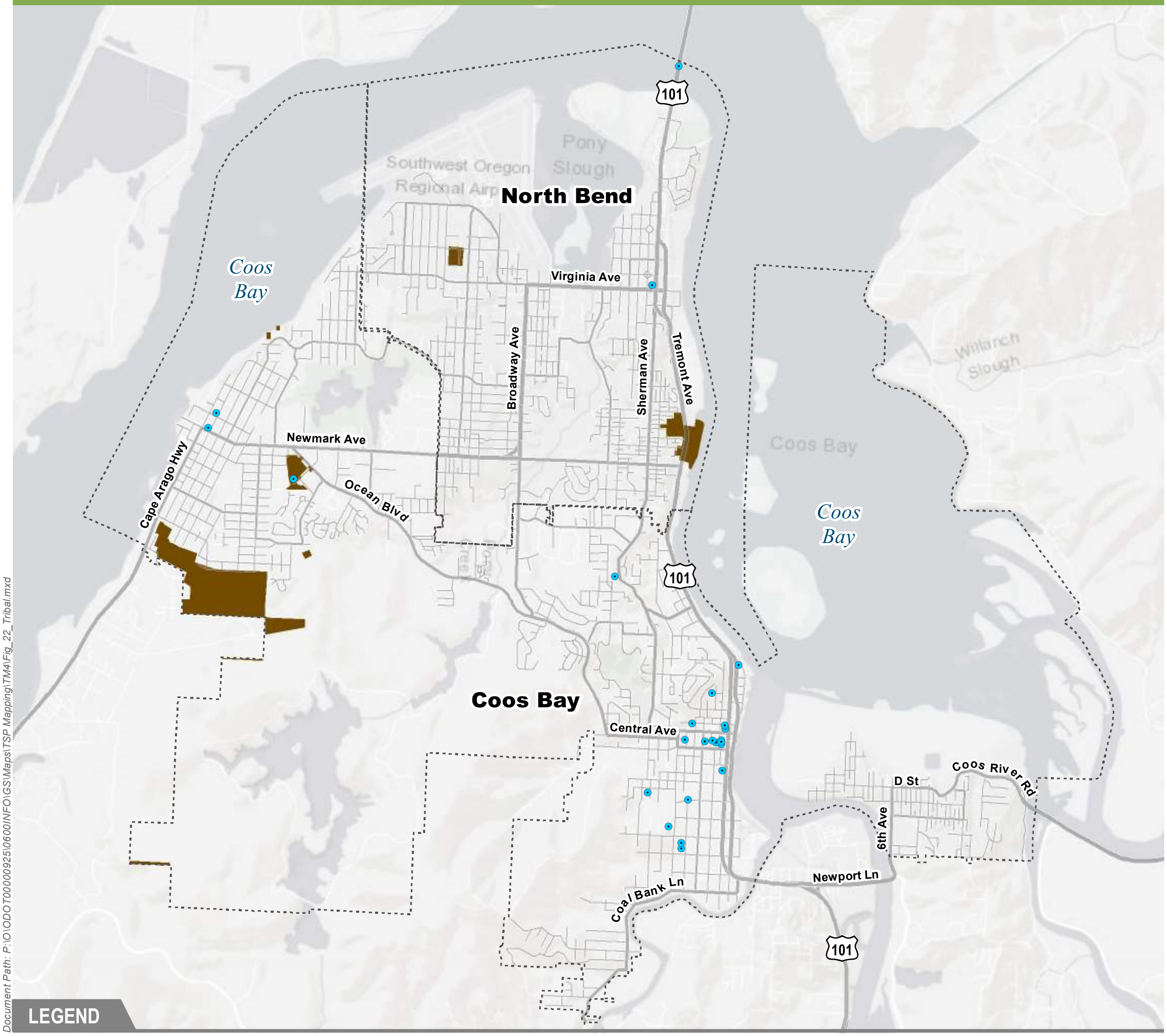
- **Goal 5:** Statewide Planning Goal 5 requires local jurisdictions to inventory natural resources such as riparian corridors, wetlands, and wildlife habitat.
- **Federal Emergency Management Agency (FEMA) Floodplains:** FEMA 100-year floodplain is shown on Figure 26. The impacted areas are focused near existing waterways.
- **National Wetland Inventory:** The wetland types are mapped in Figure 24.
- **Tsunami Inundation Zone:** Figure 26. See the Comprehensive Plan and Zoning Designations section starting on page 3 of this document for additional details.
- **Known Slide Areas:** Landslide deposits exist in areas of southern and southeastern Coos Bay. These areas are mapped in Figure 24.
- **Threatened and Endangered Species:** There are several threatened & endangered species within the study area. The majority of the species rely on the existing marine and wetland environments in and around the Coos Bay. These species are mapped in Figure 25.
- **Hazardous Materials Sites:** There are several hazardous material sites throughout the study area, mostly related to historic rail operations. In addition to those sites, there are leaking underground storage tanks scattered throughout North Bend and Coos Bay, mostly surrounding areas of commercial land use. See Figure 23.
- **Historic and Archaeological Resources:** North Bend has 4 properties designated by the City as historically significant and/or nationally registered, while Coos Bay has 22. Properties.[14] See Figure 22.
- **Tribal Lands:** There are two tribal lands areas in North Bend and three areas in Coos Bay. These areas are mapped in brown in Figure 22.
- **Section 4(f) and 6(f) Resources:** Not mapped. There are no 4(f) or 6(f) sites in the study area.[15,16]

[14] http://heritagedata.prd.state.or.us/historic/

[15] Section 4(f) specifies that FHWA cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless there are no existing feasible and prudent alternatives to the use of the land and the proposed action includes all possible planning to minimize harm to the property.

[16] Under Section 6(f), it is prohibited to convert property acquired or developed with Land and Water Conservation Fund Act (LWCF) grant money to non-recreational purposes without approval from the National Park Service (NPS).

North Bend/Coos Bay TSP



LEGEND

Urban Growth Boundary (UGB)

Tribal Land

Eligible/Listed Oregon Historic Site

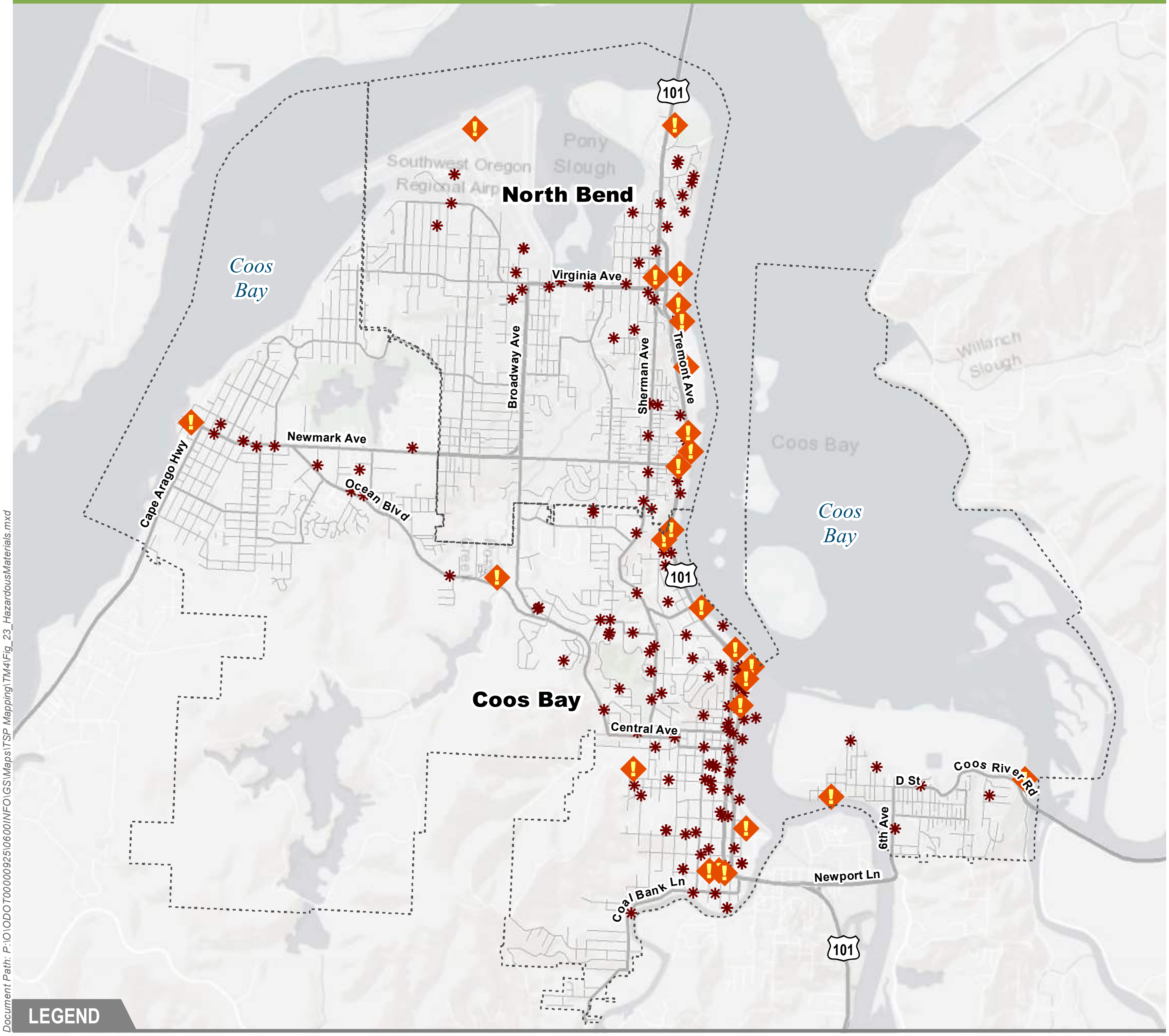
Data Sources:
Cities of North Bend and Coos Bay, Oregon Department of Transportation (ODOT), Oregon Historic Sites Database

N

0 0.5 1 Miles

Figure 22. Historic and Cultural (Tribal)

North Bend/Coos Bay TSP



Document Path: P:\O\ODOT00000925\0600INFO\GS\Maps\TSP Mapping\TM4\Fig_23_HazardousMaterials.mxd

LEGEND

Urban Growth Boundary (UGB)

Hazardous Material Site (ECSI Database)

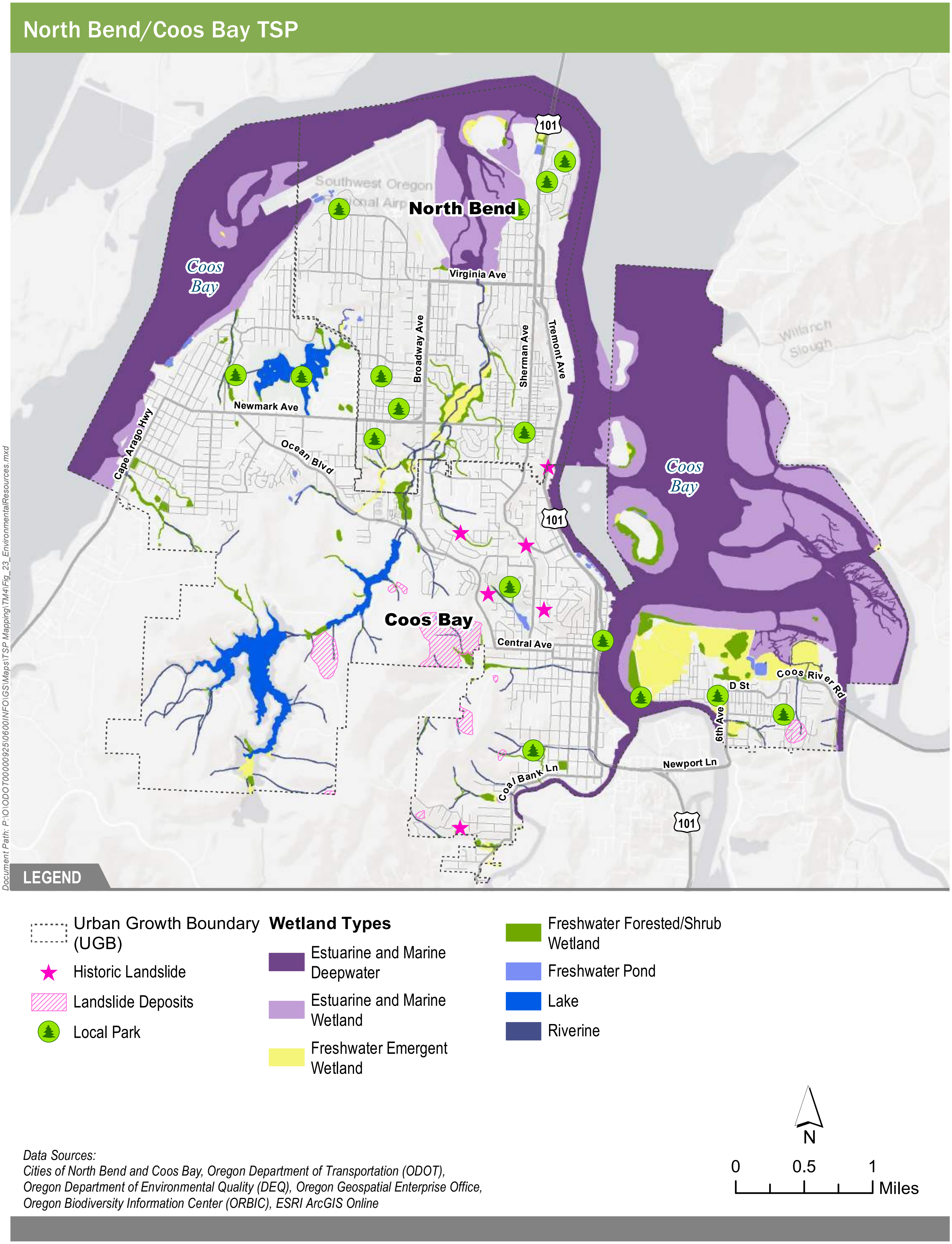
Leaking Underground Storage Tank (LUST Databse)

N

0 0.5 1 Miles

Data Sources:
Cities of North Bend and Coos Bay, Oregon Department of Transportation (ODOT), Oregon Department of Environmental Quality (DEQ), Oregon Geospatial Enterprise Office, Oregon Biodiversity Information Center (ORBIC), ESRI ArcGIS Online

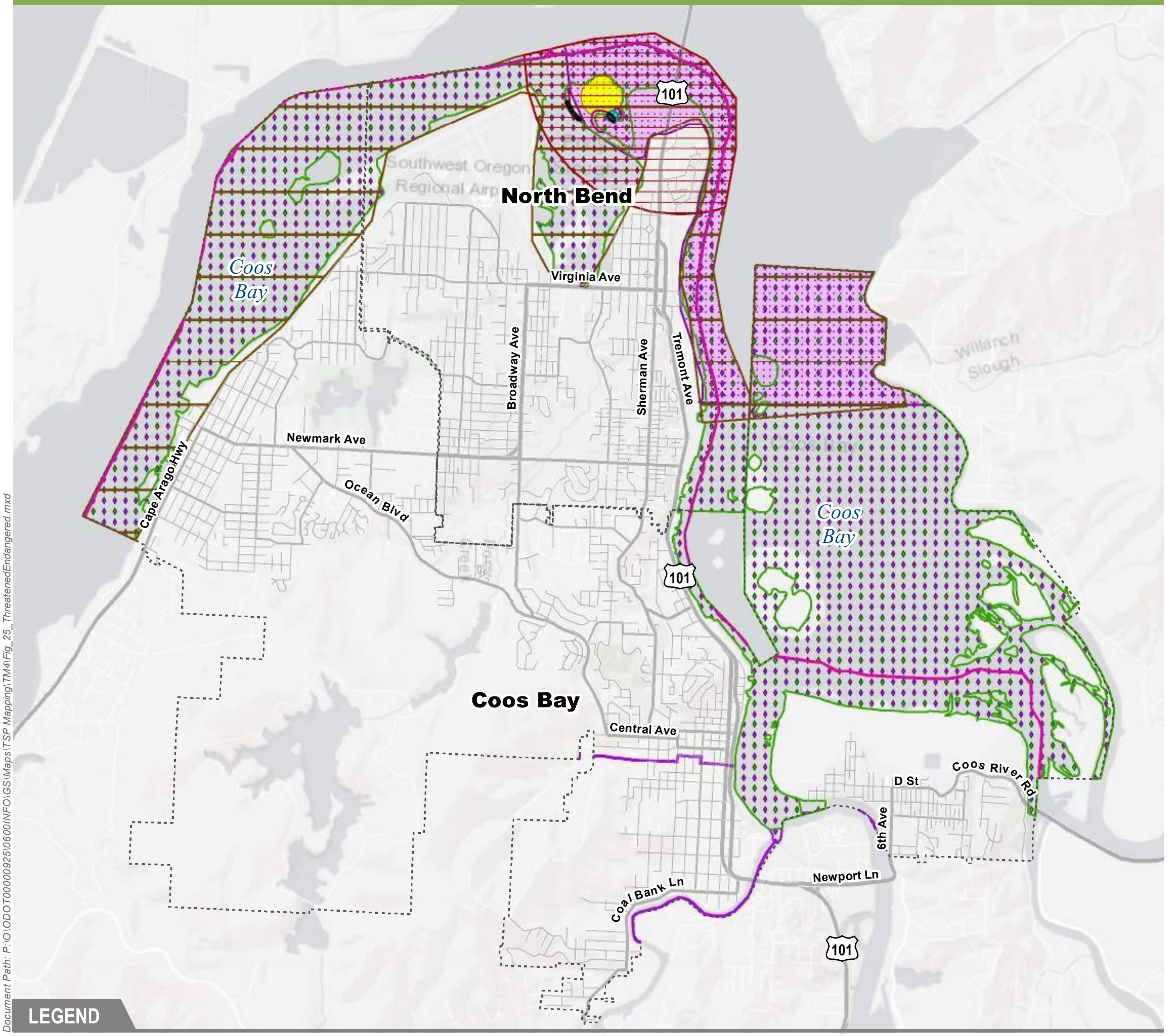
Figure 23. Hazardous Materials



Data Sources:
Cities of North Bend and Coos Bay, Oregon Department of Transportation (ODOT), Oregon Department of Environmental Quality (DEQ), Oregon Geospatial Enterprise Office, Oregon Biodiversity Information Center (ORBIC), ESRI ArcGIS Online

Figure 24. Environmental Resources

North Bend/Coos Bay TSP



Document Path: P:\O\ODOT00000925\0600INFO\GS\Maps\TSP Mapping\TM4\Fig_25_ThreatenedEndangered.mxd

LEGEND

Urban Growth Boundary (UGB)

Threatened & Endangered Species

- American peregrine falcon
- Black-grass rush
- California brown pelican
- Coho Salmon (Oregon Coast ESU)
- Green sturgeon and Steelhead (Oregon Coast ESU, winter run)
- Pacific lamprey
- Pt. Reyes bird's-beak
- Purple martin
- Western marsh-rosemary
- Western snowy plover

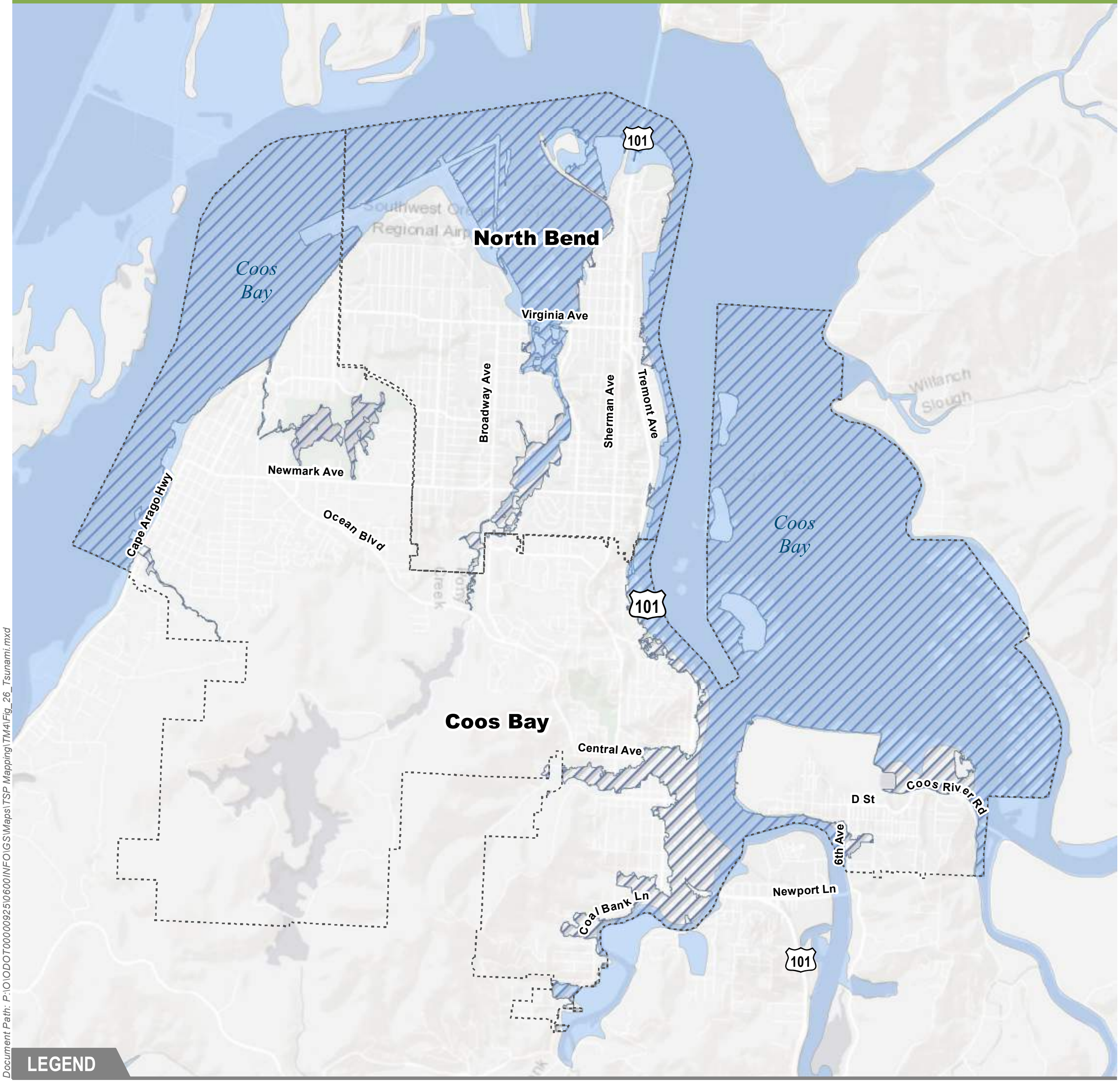
Data Sources:
Cities of North Bend and Coos Bay, Oregon Department of Transportation (ODOT), Oregon Department of Environmental Quality (DEQ), Oregon Geospatial Enterprise Office, Oregon Biodiversity Information Center (ORBIC), ESRI ArcGIS Online

N

0 0.5 1 Miles

Figure 25. Threatened and Endangered Species

North Bend/Coos Bay TSP



LEGEND

- Urban Growth Boundary (UGB)
- Tsunami Inundation Zone
- 100-Year Floodplain

N

0 0.5 1 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 26. Tsunami Inundation Zone

TECHN MEMORA #4
APPEN

Appendix A Road Inventory

Appendix B Miscellaneous Geometry: North Bend Stop Control and ODOT ADA Mapping

Appendix C Pavement Reports

Appendix D Historical Sites

Appen

Road Inventory

										Roadway					Sidewalks				Bike Lanes		
Street Name	From	To	Designation	Juris-diction	Federal Functional Class	City Functional Class	No. of Lanes	Posted Speed	On-Street Parking	Median	Pavement Width (ft)	Surface Type	Surface Condition	Shoulder Width	Location	Condition	Buffer	Width (ft.)	Location	Width (ft.)	City
State Highways																					
US 101	North City Limit	Ferry Rd	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	2	45	No	None	26	CU	Good	Curb	Both	Good	None	5	None	n/a	NB
US 101	Ferry Rd	Montana Ave	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	4	30	No	None	48	AU	Very good	Curb	Both	Good	Partial	5	None	n/a	NB
US 101 (SB)	Northern Couplet Begin (Montana Ave)	Connecticut Ave	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	3	30	East	None	52	AU	Very good	Curb	Both	Excellent	None	>10	None	n/a	NB
US 101 (SB)	Connecticut Ave	Southern Couplet End (Washington Ave)	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	3	20	Both	None	52	AU	Very good	Curb	Both	Excellent	None	>10	None	n/a	NB
US 101 (NB)	Northern Couplet Begin (Montana Ave)	Connecticut Ave	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	2-3	30	No	None	28-52	AU	Very good	Curb	Both	Good-Excellent	None	>10; 5	None	n/a	NB
US 101 (NB)	Connecticut Ave	Southern Couplet End (Washington Ave)	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	3	25	Both	None	52	AU	Very good	Curb	Both	Good-Excellent	None	>10; 5	None	n/a	NB
US 101 (SB)	Washington Ave	M.P. 235.73	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	2	35	No	Curbed	28	AU	Very good	Curb	West	Excellent	None	6	None	n/a	NB
US 101 (NB)	Washington Ave	M.P. 235.73	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	2	35	No	Curbed	28	AU	Very good	Curb	East	Good	None	5-6	None	n/a	NB
US 101	M.P. 235.73	M.P. 236.77 (South City Limit)	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	5	45	No	Painted	48-82	AU	Very good	Curb	West	Fair-Good	None	5	None	n/a	NB
US 101 (SB)	M.P. 236.77 (North City Limit)	Northern Couplet Begin	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	5	45	No	Painted	52-68	AU	Very good	Curb	West	Good-Excellent	None	5-8	West (Beg. Myrtle Ave)	<6	CB
US 101 (SB)	Northern Couplet Begin	Market Ave	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	2	30	Both	None	30-46	AU	Good	Curb	Both	Good	None	5-8	None	n/a	CB
US 101 (SB)	Market Ave	Curtis Ave	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	2	20	Both	None	46	AU	Good	Curb	Both	Good	None	5-8	None	n/a	CB
US 101 (SB)	Curtis Ave	Southern Couplet End (S 1st St)	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	2-3	30	Both	None	29-47	AU	Good	Curb	Both	Good	None	5-10	West	n/a	CB
US 101 (NB)	Northern Couplet Begin	Market Ave	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	2	30	Both	None	27-50	AU	Good	Curb	Both	Fair-Good	Varies	5-8	None	n/a	CB
US 101 (NB)	Market Ave	Curtis Ave	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	2	25	Both	None	36-60	AU	Good	Curb	Both	Good	None	5-8	None	n/a	CB

											Roadway				Sidewalks				Bike Lanes		
Street Name	From	To	Designation	Juris-diction	Federal Functional Class	City Functional Class	No. of Lanes	Posted Speed	On-Street Parking	Median	Pavement Width (ft)	Surface Type	Surface Condition	Shoulder Width	Location	Condition	Buffer	Width (ft.)	Location	Width (ft.)	City
US 101 (NB)	Curtis Ave	Southern Couplet End (S 1st St)	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	2	30	East (Varies)	None	54-72	AU	Good	Curb	Both	Good	None	5-8	East	<6	CB
US 101	Southern Couplet End (S 1st St)	Newport Lane	OHP Freight Rt.; Statewide Hwy; NHS; Oregon Scenic Byway	ODOT	Urban Other Principal Arterial	Principal Arterial	5	30	No	Painted	72	AU	Good	Curb	Both	Fair-Good	None	5-8	None	n/a	CB
Hwy 240 (Cape Arago)	US 101	Pony Creek Bridge	STA; District Hwy; NHS	ODOT	Urban Other Principal Arterial	Arterial	4	25	No	None	24-26	AU	Good	Curb	Both	Good	None	5-8	None	n/a	NB
Hwy 240 (Cape Arago)	Pony Creek Bridge	Broadway Ave	STA; District Hwy; NHS	ODOT	Urban Other Principal Arterial	Arterial	5	30	No	Painted	24	AU	Good	Curb	Both	Good	None	5-8	None	n/a	NB
Hwy 240 (Cape Arago)	Broadway Ave	12th St	STA; District Hwy; NHS	ODOT	Urban Other Principal Arterial	Arterial	4-5	30	No	Painted	24-26	AU	Poor	Curb	Both	Fair	None	5-8	None	n/a	NB
Hwy 240 (Cape Arago)	12th St	State St	STA; District Hwy; NHS	ODOT	Urban Other Principal Arterial	Arterial	5	35	No	Painted	26	AU	Poor	Curb	Both	Fair-Good	None	5	None	n/a	NB
Hwy 240 (Cape Arago)	State St	Newmark St	STA; District Hwy; NHS	ODOT	Urban Other Principal Arterial	Arterial	4	30	No	Painted	26	AU	Fair	Curb	Both	Fair-Good	None	5	None	n/a	NB
Hwy 240 (Cape Arago) - Channelized	State St	Newmark St	STA; District Hwy; NHS	ODOT	Urban Other Principal Arterial	Arterial	1	35	No	Painted	24	AU	Fair	Curb	North	Fair-Good	None	5	None	n/a	NB
Hwy 240 (Cape Arago)	Broadway Ave	Channelized Lane	STA; District Hwy; NHS	ODOT	Urban Other Principal Arterial	Arterial	5	30	No	Painted	26	AU	Fair	Curb	Both	Fair-Good	None	5	None	n/a	NB
Hwy 240 (Cape Arago)	Channelized Lane	Fir St	STA; District Hwy; NHS	ODOT	Urban Other Principal Arterial	Arterial	5	35	No	Painted	26	AU	Fair	Curb	Both	Fair-Good	None	5	None	n/a	NB
Hwy 241 (Coos River Highway)	US 101	Edward Rd	Statewide Hwy; NHS	ODOT	Urban Minor Arterial	Arterial	2	35	North (Varies)	Curbed	22-59	AU	Fair-Good	8	South	Fair	None	4	None	n/a	CB
Hwy 241 (Coos River Highway)	Edward Rd	I St	District Hwy	ODOT	Urban Minor Arterial	Arterial	2	35	No	None	26-46	AU	Fair-Good	1-6	Both	Fair-Good	None	3-4	None	n/a	CB
City Roadways																					
Broadway Avenue	Newmark St	South City Limit	--	City	Urban Minor Arterial	Minor Arterial	3	35	No	--	42	AC	--	--	Both	--	None	5	None	n/a	NB
Sherman Avenue	Southern Couplet End (Washington Ave)	South City Limit	--	City	Urban Minor Arterial	Minor Arterial	2	25	Yes	--	20-50	AC/PCC	--	--	Both	--	Landscape	5-6	None	n/a	NB
Newmark Street	Hwy 240 (Broadway Ave)	US 101	--	City	Urban Minor Arterial	Minor Arterial	2-4	25-35	No	--	33-53	AC	--	--	Varies	--	None	0-5	None	n/a	NB
Virginia Avenue	West City Limit	Broadway Ave	--	City	Urban Collector	Urban Collector	4-5	25	Varies	--	33-60	AC	--	--	Both	--	None	4-5	None	n/a	NB
16th Street	Hwy 240 (Cape Arago)	Pacific Ave	--	City	Urban Collector	Urban Collector	2	25	Yes	--	33	AC	--	--	Both	--	None	5	None	n/a	NB
17th Street	West City Limit	Hwy 240 (Cape Arago)	--	City	Urban Collector	Urban Collector	2	25	Yes	--	33	AC	--	--	None (Varies Myrtle to Broadway)	--	n/a	n/a	None	n/a	NB

											Roadway				Sidewalks				Bike Lanes		
Street Name	From	To	Designation	Juris-diction	Federal Functional Class	City Functional Class	No. of Lanes	Posted Speed	On-Street Parking	Median	Pavement Width (ft)	Surface Type	Surface Condition	Shoulder Width	Location	Condition	Buffer	Width (ft.)	Location	Width (ft.)	City
Arthur Street	Colorado Ave	Virginia Ave	--	City	Urban Collector	Urban Collector	2	25	Yes	--	36	AC	--	--	Varies	--	None	5	None	n/a	NB
Brussels Street	Pony Creek St	Newmark St	--	City	Urban Collector	Urban Collector	2	25	Yes	--	34	AC	--	--	Varies	--	None	5			NB
Colorado Avenue	Arthur St	Oak St	--	City	Urban Collector	Urban Collector	2	25	Varies	--	42	AC	--	--	South	--	Landscape	4	None	n/a	NB
Connecticut Avenue	Meade Ave	US 101	--	City	Urban Collector	Urban Collector	2	25	Yes	--	50	AC	--	--	Varies	--	None	6	None	n/a	NB
Crowell Lane	Pacific Street	Pony Creek St	--	City	Urban Collector	Urban Collector	2	20	No	--	30	AC	--	--	Varies	--	None	5	None	n/a	NB
Harrison Avenue	Hwy 240 (Cape Arago)	Pony Creek St	--	City	Urban Collector	Urban Collector	2	25	Yes	--	33	AC	--	--	Varies	--	Landscape	5	None	n/a	NB
Lakeshore Drive	City Limit	City Limit	--	County	Urban Collector	Urban Collector	2	25	No	--	28-36	AC	--	--	No	--	n/a	n/a	None	n/a	NB
Maple Leaf Street	Oak St	Maple St	--	City	Urban Collector	Urban Collector	2	25	No	--	42	AC	--	--	West	--	None	4	None	n/a	NB
Maple Street	Maple Leaf St	Virginia Ave	--	City	Urban Collector	Urban Collector	2	25	Yes	--	44	AC	--	--	Yes	--	None	5	None	n/a	NB
Meade Avenue	Hwy 240 (Cape Arago)	Connecticut Ave	--	City	Urban Collector	Urban Collector	2	25	Yes	--	50	AC	--	--	Yes	--	None	6	None	n/a	NB
Oak Street	Colorado Ave	Hwy 240 (Cape Arago)	--	City	Urban Collector	Urban Collector	2	25	Yes	--	33-36	AC	--	--	No	--	n/a	n/a	None	n/a	NB
Pacific Street	Crowell Ave	16th St	--	City	Urban Collector	Urban Collector	2	20-25	Yes	--	33	AC	--	--	East	--	None	5	None	n/a	NB
Pony Creek Street	Harrison Ave	Brussells St	--	City	Urban Collector	Urban Collector	2	25	Varies	--	30-32	AC	--	--	West	--	Landscape	5	None	n/a	NB
S Front Street	US 101	Lockhart Ave	--	City	Urban Minor Arterial	Arterial	2	25	No	--	36	Gravel	--	--	No	--	--	--	None	n/a	CB
S Empire Boulevard	Newmark Ave	City Limit	--	City	Urban Minor Arterial	Arterial	2	30	Yes	--	32	AC	--	--	Yes	--	--	--	Yes	--	CB
Newmark Avenue	Ocean Blvd	City Limit	NHS	City	Other Urban Principal Arterial	Arterial	2	30-35	Yes	--	66	AC	--	--	Yes	--	--	--	Yes	--	CB
Newmark Avenue	Empire Blvd	Ocean Blvd	NHS	City	Urban Minor Arterial	Arterial	2-5	30-35	Varies	--	46-81	AC	--	--	Yes	--	--	--	None	n/a	CB
Ocean Boulevard	Newmark Ave	Central Ave	NHS	City	Other Urban Principal Arterial	Arterial	3-4	30-40	Varies	--	56	AC	--	--	Yes	--	--	--	Yes	--	CB
Central Avenue	Ocean Blvd	N 7th St	NHS	City	Other Urban Principal Arterial	Arterial	3	30	Varies	--	44	AC	--	--	Yes	--	--	--	Yes	--	CB
Commercial Avenue	N 7th St	US 101	NHS	City	Other Urban Principal Arterial	Arterial	2	25	Varies	--	44	AC	--	--	Yes	--	--	--	None	n/a	CB
Anderson Avenue	N 7th St	US 101	NHS	City	Other Urban Principal Arterial	Arterial	2	25	Yes	--	44	AC	--	--	Yes	--	--	--	None	n/a	CB
Woodland Drive	North City Limit	Ocean Blvd	--	City	Urban Minor Arterial	Arterial	3	30	Yes	--	40	AC	--	--	No	--	--	--	None	n/a	CB
Coos River Highway	6th Ave	City Limit	--	City	Urban Minor Arterial	Arterial	2	35	No	--	32-40	AC/AC	--	--	No	--	--	--	None	n/a	CB
6th Avenue	I St	D St	--	City	Urban Minor Arterial	Arterial	2	35	No	--	--	--	--	--	No	--	--	--	None	n/a	CB
Southwest Boulevard	S 7th St	South City Limit	--	City	Urban Minor Arterial	Arterial	2	25	Yes	--	36-40	AC	--	--	Varies	--	--	--	None	n/a	CB
Lockhart Avenue	S 7th St	S Front St	--	City	Urban Minor Arterial	Arterial	2	25	No	--	40-44	AC	--	--	No	--	--	--	Yes	n/a	CB

Street Name	From	To	Designation	Juris-diction	Federal Functional Class	City Functional Class	No. of Lanes	Posted Speed	On-Street Parking	Median	Roadway: Pavement Width (ft)	Roadway: Surface Type	Roadway: Surface Condition	Roadway: Shoulder Width	Sidewalks: Location	Sidewalks: Condition	Sidewalks: Buffer	Sidewalks: Width (ft.)	Bike Lanes: Location	Bike Lanes: Width (ft.)	City
Koosbay Boulevard	North City Limit	N 10th St	--	City	Urban Minor Arterial	Arterial	2	25-30	No	--	36-40	AC/AC	--	--	Varies	--	--	--	None	n/a	CB
Koosbay Boulevard	N 10th St	US 101	--	City	Urban Collector	Arterial	2	30	Yes	--	36-40	AC	--	--		--	--	--			CB
N 7th Street	Commercial Ave	Anderson Ave	NHS	City	Other Urban Principal Arterial	Arterial	2	25	No	--	35-46	AC/PCC	--	--	Varies	--	--	--	None	n/a	CB
N 10th Street	Koosbay Blvd	Central Ave	--	City	Urban Minor Arterial	Arterial	2	30	Yes	--	28-36	AC/PCC	--	--	Varies	--	--	--	None	n/a	CB
Blanco Avenue	S Morrison St	Fulton Ave	--	City	Urban Collector	Collector/Local	2	25	Yes	--	--	--	--	--	Varies	--	--	--	None	n/a	CB
Radar Road	Ocean Blvd	Fulton Ave	--	City	Urban Collector	Collector	2	25	Yes	--	--	--	--	--	No	--	--	--	None	n/a	CB
S Morrison Street	Newmark Ave	Blanco Ave	--	City	Urban Collector	Collector	2	25	Yes	--	36	AC/AC	--	--	No	--	--	--	None	n/a	CB
Pacific Avenue	Empire Blvd	S Morrison St	--	City	Urban Collector	Collector	2	25	Yes	--	36	AC	--	--	North	--	--	--	None	n/a	CB
Crocker Street	Virginia St	Lakeshore Dr	--	City	Urban Collector	Collector	2	25	Yes	--	--	--	--	--	No	--	--	--	None	n/a	CB
Lakeshore Drive	City Limit	Taylor Ave	--	City	Urban Collector	Collector	2	25	Yes	--	18-36	AC/AC	--	--	No	--	--	--	None	n/a	CB
N Morrison Street	Lakeshore Dr	Harris Ave	--	City	Urban Collector	Collector	2	25	Yes	--	24-36	AC/AC	--	--	No	--	--	--	None	n/a	CB
N Schoneman Street	Harris Ave	Newmark Ave	--	City	Urban Collector	Collector	2	25	Yes	--	36	AC	--	--	No	--	--	--	None	n/a	CB
N Wasson Street	Taylor Ave	Newmark Ave	--	City	Urban Collector	Collector	2	25	Yes	--	36-56	AC	--	--	Varies	--	--	--	None	n/a	CB
Laclair Street	Newmark Ave	Ocean Blvd	--	City	Urban Collector	Collector	2	25	Yes	--	--	--	--	--	Varies (North)	--	--	--	None	n/a	CB
Thompson Road	Woodland Dr	Koosbay Blvd	--	City	Urban Collector	Collector	2	30	Yes	--	36	AC/AC	--	--	Yes	--	--	--	None	n/a	CB
D Street	Coos River Hwy	14th Ave	--	City	Urban Collector	Collector	2	25	No	--	24	AC	--	--	No	--	--	--	None	n/a	CB
F Street	6th Ave	14th Ave	--	City	Urban Collector	Collector	2	25	Yes	--	--	--	--	--	No	--	--	--	None	n/a	CB
Butler Road	Juniper Ave	Ocean Blvd	--	City	Urban Collector	Collector	2	25	Yes	--	--	--	--	--	Yes	--	--	--	None	n/a	CB
Hemlock Avenue	N 13th St	N 10th St	--	City	Urban Collector	Collector	2	25	Yes	--	--	--	--	--	Yes	--	--	--	None	n/a	CB
N 13th Street	Juniper Ave	Hemlock Ave	--	City	Urban Collector	Collector	2	25	Yes	--	--	--	--	--	Yes	--	--	--	None	n/a	CB
S 4th Street	Commercial Ave	Lockhart Ave	--	City	Urban Collector	Collector	2	25	Yes	--	44-60	A/C	--	--	Yes	--	--	--	None	n/a	CB
Juniper Avenue	Butler Rd	N 13th St	--	City	Urban Collector	Collector	2	25	Yes	--	--	--	--	--	Yes	--	--	--	None	n/a	CB
Fulton Avenue	Blanco Ave	Radar Rd	--	City	Urban Collector	Collector	2	25	Yes	--	--	--	--	--	Yes	--	--	--	None	n/a	CB
Virginia Street	City Limit	Crocker St	--	City	Urban Collector	Collector	2	25	Yes	--	--	--	--	--	No	--	--	--	None	n/a	CB

Notes

- ODOT Data from TransGIS
- North Bend Data from GIS shapefiles
- Coos Bay Data from Pavement Width Table and GIS files
- -- = Data not available
- n/a = Data not applicable

Appendix B

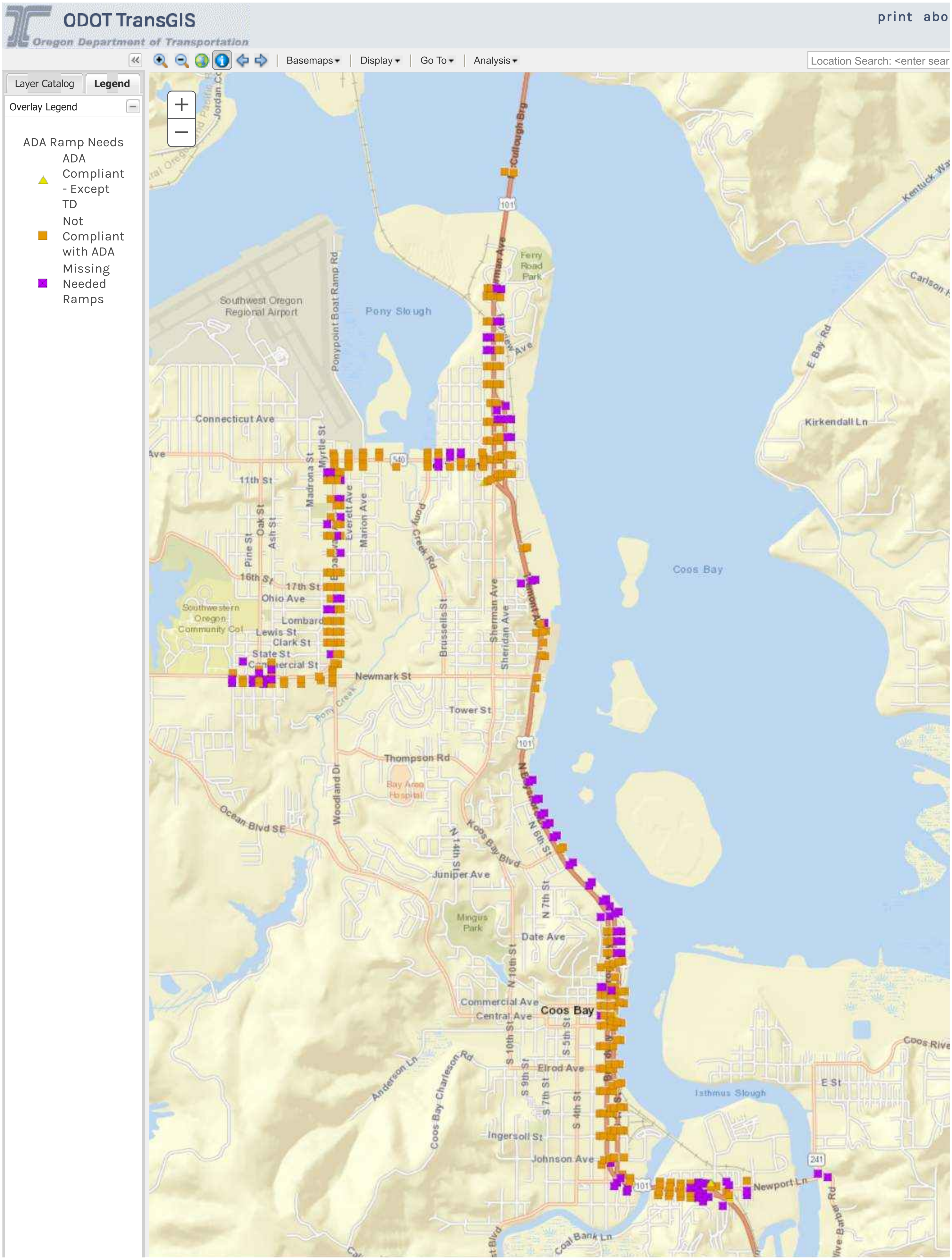
Miscellaneous Geometry: North Bend Stop Control and ODOT ADA Mapping

Document Path: P:\O\ODOT00000925\0600INFO\GIS\Maps\TSP Mapping\TM4\NB_StopSign.mxd

Note: Only data available in GIS is mapped.

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

North Bend Stop Sign Inventory


ODOT TransGIS
Oregon Department of Transportation
print abo
Basemaps
Display
Go To
Analysis
Location Search: <enter sear
Layer Catalog
Legend
Overlay Legend
ADA Ramp Needs
ADA Compliant - Except TD
Not Compliant with ADA
Missing Needed Ramps
Southwest Oregon Regional Airport
Pony Slough
Ferry Road Park
Connecticut Ave
11th St
16th St
17th St
Ohio Ave
Lombard
Lewis St
Clark St
State St
Commercial St
Newmark St
Tower St
Thompson Rd
Bay Area Hospital
Ocean Blvd SE
Koos Bay Blvd
Juniper Ave
Mingus Park
Date Ave
Commercial Ave
Central Ave
Coos Bay
Elrod Ave
Ingersoll St
Johnson Ave
Coal Bank Ln
Newport Ln
Isthmus Slough
E St
Coos River
Kirkendall Ln
Carlson
Kentuck Way
E Bay Rd
Southwestern Oregon Community Col
Ponypoint Boat Ramp Rd
Myrtle St
Madrona St
Oak St
Ash St
Pine St
Everett Ave
Marion Ave
Pony Creek Rd
Brussells St
Sherman Ave
Sheridan Ave
N 14th St
N 6th St
N 7th St
N 10th St
S 10th St
S 9th St
S 7th St
S 5th St
S 4th St
Anderson Ln
Coos Bay Charleston Rd
101
540
241

Appendix C
Pavement Reports

City of

Coos Bay

PUBLIC WORKS

FINAL REPORT JUNE 2015
PAVEMENT CONDITION SURVEY AND ASSET MANAGEMENT PLAN




Civil Engineering Design
Construction Management
Infrastructure Management
GIS Mapping & Data Systems
Inspection

OMNIS INCORPORATED
981 W. Arrow Highway #248
San Dimas, CA 91773
909-631-8335 Office
866-314-6017 Fax
www.omnis-inc.com

June 1, 2015

City of Coos Bay
Attn: Jim Hossley
Public Works Director
500 Central Avenue
Coos Bay, OR 97420

Subject: Final Report Submittal for City-wide Pavement Management Program

Mr. Hossley:

As part of the development of the Pavement Management System for the City of Coos Bay, OMNIS Inc. hereby submits this Final Report.

The information contained in this report presents the findings from the development of the system data associated with the pavement condition survey of the City's street network. The City is also provided with the information that was used to develop the recommended improvement program. The report covers the following categories:

- Introduction
- Methodologies
- Condition Distribution Report
- Pavement Condition Index (PCI)
- Projected Work

It has been a pleasure working with the City on developing the City's Pavement Management Program. Should you have any questions or comments, please contact us at (909)631-8335.

Sincerely,

Omnis Incorporated

John Gabor
Project Manager

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Pavement Management Program (PMP) for the City of Coos Bay provides a current inventory, with condition and preservation requirement, for the roadways, and a forecasting of the budget needs.

While the following recommendations have been generated by the Pavement Management Program, they are for planning purposes only and are not intended to replace sound engineering judgment. Final project recommendations should be weighed against the actual approach the City wishes to utilize in scheduling the workloads for contracting purposes. In addition, an engineering review of the pavement condition may indicate that a particular pavement section needs attention earlier than the other roads in its localized area.

- **Replacement value & quantity of pavement**
  The pavement network within the City of Coos Bay has 67.0 centerline miles of paved surfaces, comprised of 50.4 miles of local, 6.7 miles of collector streets, and 9.9 miles of arterial streets. There is a total of over 11,557,160 square feet of pavement. The estimated replacement value of this pavement is $46.9 million for local/collector streets and $17.1 million for arterial/secondary for a total of $64 million.

- **Condition of City's pavement**
  The overall condition of the City of Coos Bay's road network is Fair, with an average "Pavement Condition Index" of 64.3, with 100 being a brand new street and 0 being a badly deteriorated street with virtually no remaining life.

- **Recommended preservation program and costs.**
  A strategy was developed to reduce the backlog of street preservation work over the next 5 years and increase the overall condition of the road network. This strategy involves using both slurry seal and pavement resurfacing as preservation components.

  Preventative maintenance on streets with better than average PCI ratings must be considered in combination with the more extensive rehabilitation of failing streets to realize the maximum net benefit and reduce the long term costs. The strategies herein were developed to provide alternatives for halting the deterioration of the existing pavement, reducing the backlog of street maintenance work over the next 5 years and improving the overall condition of the roadway network. These strategies generally involve the utilization of crack sealing, patching, slurry sealing, and major work typically consisting of pavement overlays, overlays with fabric, and reconstruction. Future roadway maintenance plans for the City of Coos Bay should be based on the general maintenance strategies developed from this pavement system analysis in combination with the other major contributing factors as discussed previously in this executive summary.

SECTION I
INTRODUCTION

NEED FOR PAVEMENT MANAGEMENT SYSTEM

A Citywide Pavement Management Program will assist City personnel by providing current technical data to maintain a desirable level of pavement performance, while optimizing the expenditure of limited fiscal resources.

Specifically, the program provides administrators and maintenance personnel with:

- A current inventory of all public roadways
- The current pavement condition for all public roadways
- A project listing of all pavement needing maintenance, rehabilitation, or replacement
- A forecast of budget needs for maintenance, rehabilitation, or replacement of deficient sections of pavement for a 5 year Capital Improvement Program

THE PAVEMENT NETWORK

The entire pavement network within the City of Coos Bay is comprised of 67.0 centerline miles of paved surface. To assist in planning maintenance needs, the City's road system was broken into classifications based upon their importance in the road network, i.e. functional class such as arterial, collector, and local.

	Current	
CLASSIFICATION	Square feet	Cline miles
Local/Collector	9,379,790	57.1
Arterial	2,177,370	9.9
TOTALS	11,557,160	67.0

The entire pavement network represents a current replacement valuation of over $66 million broken down by classification as follows:

CLASSIFICATION	Square feet	Unit Cost for Replacement	Total Replacement Value	Percent of Replacement Value
Local/Collector	9,379,790	$5.00	$46,898,950	71%
Arterial	2,177,370	$8.86	$19,291,498	29%
TOTALS	11,557,160		$66,190,448	100%

CURRENT CONDITIONS

As part of the development of the Pavement Management System for the City of Coos Bay, a visual survey of the pavement network was conducted to assess the existing surface condition of each individual pavement segment. The federal guidelines specified by the Army Corps of Engineers in their *Pavement Distress Identification Guide for Asphalt-Surfaced Roads and Parking Lots*, dated June 1997, were used as the basis of the visual survey. Upon completion of this survey, a Pavement Condition Index (PCI) was calculated for each segment to reflect overall pavement condition. The PCI system is a rating mechanism used to describe the condition of the City's pavement and has been adopted as the nation's standard rating system by AASHTO and ASTM. Ranging between "0" and "100," a PCI of "0" would correspond to a badly deteriorated pavement with virtually no remaining life, while a PCI of "100" would correspond to a pavement with proper engineering design and construction at the beginning of its life cycle.

The table below relates PCI ranges to general pavement condition definitions.

PCI RANGE	CONDITION
86 –100	Good
71 - 85	Satisfactory
56 - 70	Fair
41 - 55	Poor
26 - 40	Very Poor
11 - 25	Serious
0 - 10	Failed

A. PCI Ranges*

* These are the ranges recommended by the U. S. Army Corps of Engineers.

The overall condition of the City of Coos Bay's road network based on current conditions is "Fair" with an average PCI of 64.3.

ANNUAL BUDGET PROJECTIONS

Based on the results of the condition survey and input from the City, pavement preservation/rehabilitation strategies were developed. A standard agreement at the outset was to identify the City's preservation and maintenance work program for the next 5 years, while reducing the preservation and maintenance backlog and increasing the overall condition of the network.

RECOMMENDATIONS

The actual workload requirements identified indicate that the street network is currently in good condition. To maintain this condition, it is critical that the preservation activities be funded at the levels identified in the recommended work program to maintain a high network PCI value.

In order to meet these requirements, certain projects have been recommended within the context of this program. The funding requirements just presented are generated in the form of individual projects, as outlined in the Projected Work Reports (Section V).

While the project listings outlined in Section V are the recommendations as generated by the PMS, they are for planning purposes only and are not intended to replace engineering judgment. Before construction has actually started on the pavement work, a field verification should be conducted to ascertain whether conditions still warrant the recommended treatment or whether they have worsened. Final project recommendations should be weighed against the actual approach the City wishes to utilize in scheduling the workloads for contracting purposes. Pavement condition may indicate that a particular pavement section needs attention earlier than the rest of the roads in its localized area.

Because pavement deterioration is a never-ending phenomenon, OMNIS Inc. recommends that all Arterial routes be re-inspected over the course of the next two years. In addition, OMNIS Inc. recommends that all Local roads be re-inspected over the course of the next three years (approximately 33% of the streets each year). This recommended inspection cycle will fulfill the requirements for GASB 34. The costs for the re-inspection should be included in the annual pavement management budget to assure that the PMS has updated, accurate information.

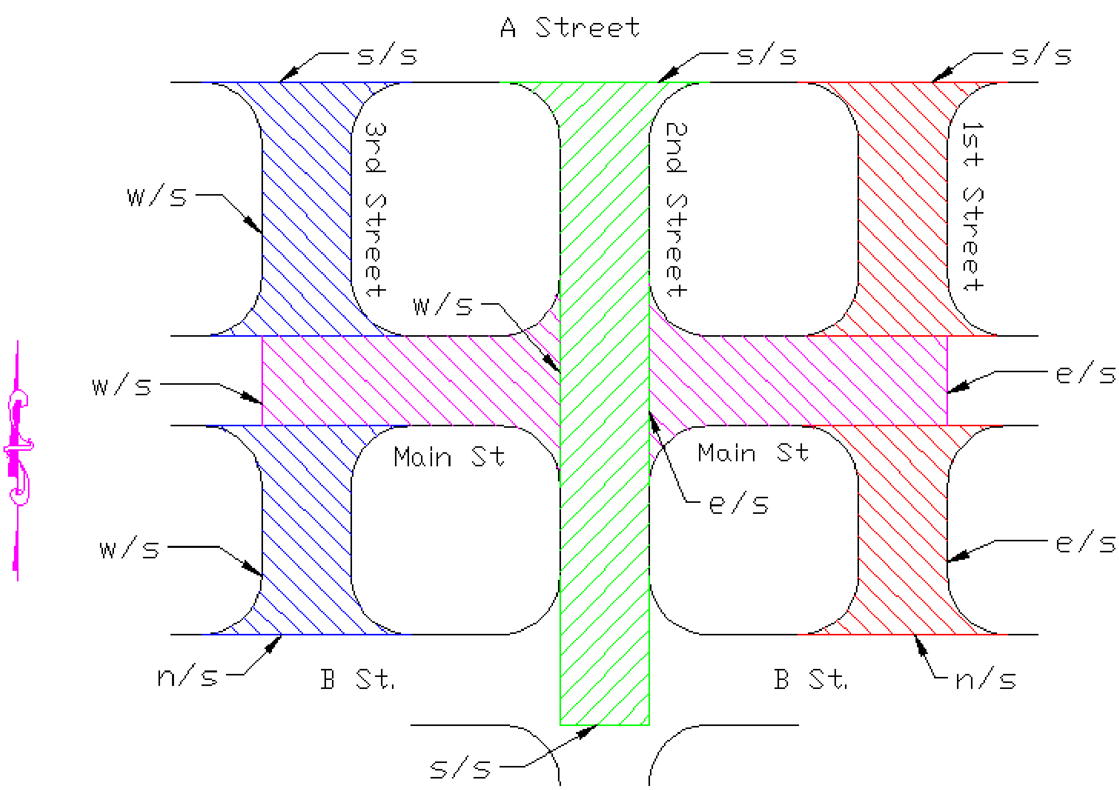
SECTION II
METHODOLOGY

The following section provides a description of the methodology and rationale utilized in determining the recommended actions identified in this report.

Field Survey

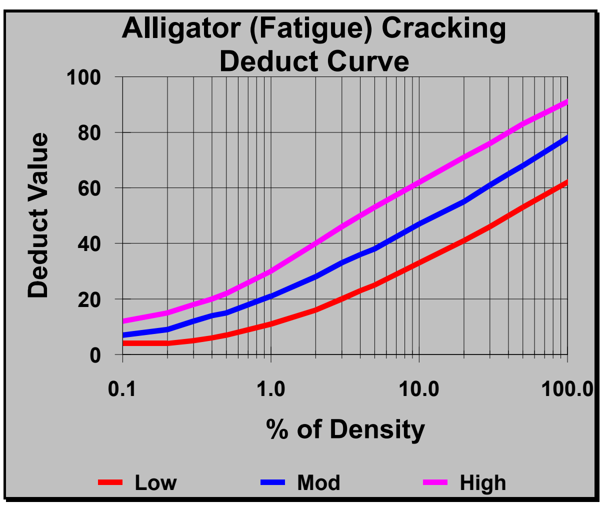
An inventory of street data for each public roadway within the City of Coos Bay was completed. Data, including distress types and quantities, segment length and width, etc. was collected on all public streets. Using a combination of City street maps and field survey forms to collect field information, a field crew visually surveyed each street. Data was categorized by street and "maintenance" segment. Maintenance segment limits were identified by determining the "logical" maintenance practices that would apply to each street and may vary from street to street, i.e. intersection to intersection, change in pavement type, change in overall pavement condition, change in pavement width, drainage conditions, crown of the roadway, sufficient pavement project areas or quantities, etc. It was determined that sufficient pavement project area and/or length should be at least one mile in length whenever possible. All data collected was entered into the APWA MicroPAVER version 6.5.7 pavement management software.

Segmentation limits are from the curb lip to curb lip. The following Exhibit demonstrates roadway segmentation:



The roadway Main Street is divided into two segments by 2nd Street. The first segment is from the w/s (west side) of 3rd Street to the w/s (west side) of 2nd Street. The area of the intersection of Main Street and 3rd Street is within this segment. Please note that segmentation begins at the lip of gutter of the crossing roadway. The second segment of Main Street would begin from the e/s (east side) of 2nd Street and end at the e/s (east side) of 1st Street. The area of the intersection of Main Street and 1st Street is within this segment. The area of the intersection of Main Street and 2nd Street would belong to a 2nd Street segment not to Main Street. The 2nd Street segment begins at the s/s (south side) of A Street and continues through the intersection of Main Street and 2nd Street and ends at the s/s of B Street. The area of the intersection of 2nd Street and B Street is within this segment. It is important to establish the start and stop of roadway segments and to establish intersection allocation to ensure the intersection areas are only quantified once.

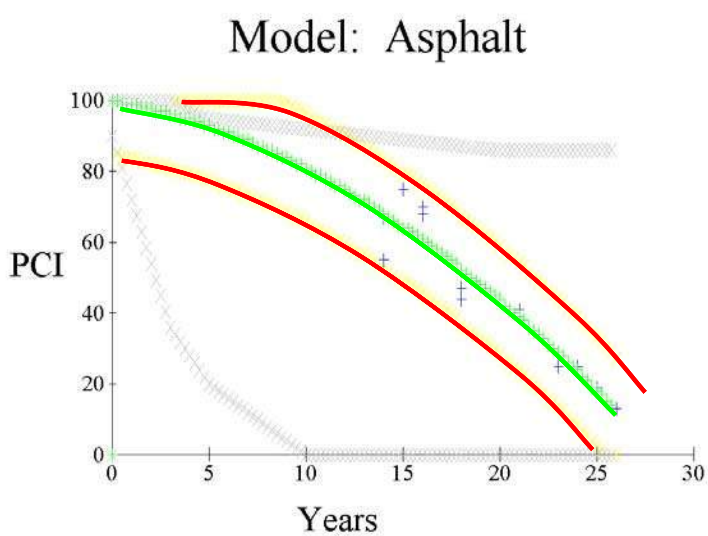
After the data entry procedures were completed, a resultant distress rating was calculated for each segment. The distress rating is calculated using an algorithm developed by the Army Corps of Engineers that is recommended by the American Public Works Association and incorporated within the MicroPAVER software. The algorithm begins by giving each pavement section a score of 100 then deducting point values based on the pavement distress found within the section weighted by the quantity of distress. The Army Corps has assigned deduct values based on severity (low, moderate, or high) and the density of each distress, as shown below in the case of alligator (fatigue) cracking. The following chart is an example of an algorithm for alligator cracking in asphalt pavement.



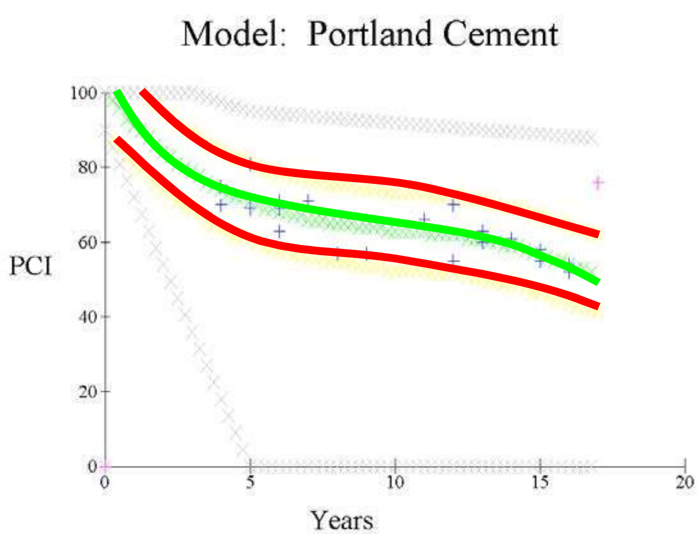
The algorithm weighs the total deducts within a section and calculates a total distress rating between 0 (failed) and 100 (excellent).

The summary of all road condition data and the representative PCI's are located in the Condition Data Report in Section IV.

Once the PCI has been established for a pavement section, the analysis and workload predictions can be commenced. Predictions on future pavement performance are based on a pavement deterioration curve researched and developed by the Army Corps of Engineers. The deterioration curves below shows the expected deterioration rate for typical asphalt (AC). The gray line represent the outer limits of data allowed to be included in creating the curve. Data beyond these limits will be considered anomalies. The yellow lines represent the upper and lower levels of data collected for an area. The green lines represent the deterioration curve for asphalt. Taking the averages of yellow line data creates the green line.



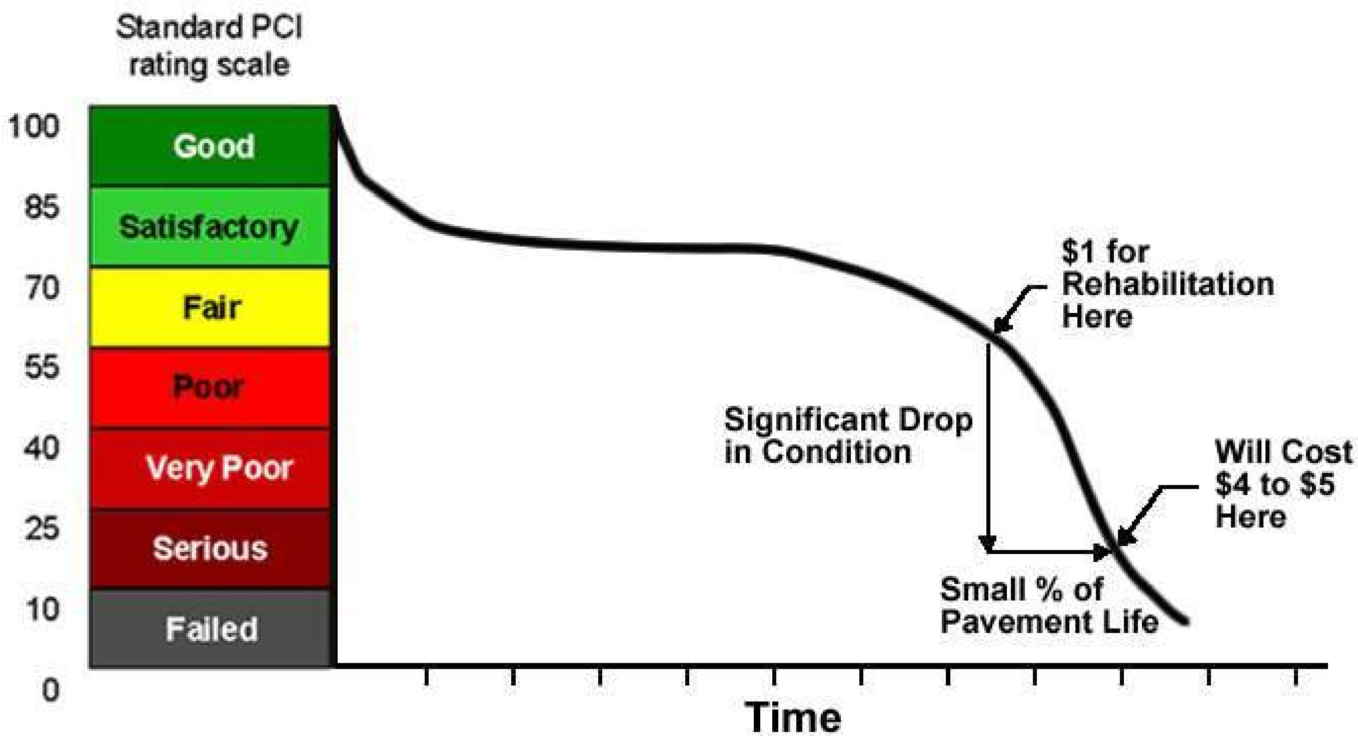
Standard Deterioration Curve for Asphalt Concrete (AC) Pavements



Standard Deterioration Curve for Portland Cement Concrete (PCC) Pavements

As a pavement ages, the system predicts the PCI of the pavement based on the deterioration curves.

The next step in the analysis is to determine at what point simple maintenance has become major rehabilitation. In the following chart it is suggested that after 75% of useful life renovation can take place for about $1.00 a square foot. If we wait 3 more years or 12% of life longer the cost is substantially higher at $4.00 a square foot.



As you can see by the above graphic, by doing preventative maintenance on a pavement earlier in the pavements life, a substantial amount of money can be saved.

For the City of Coos Bay, it was determined that this critical point of work was as follows:

AC Streets	**Critical Condition**
Principal Arterial	55
Minor Arterial	55
Collector	41
Residential	41

PCC Streets	10

MAINTENANCE STRATEGY ASSIGNMENTS

The PCI is used by the system to schedule each pavement segment for maintenance activities. The MicroPAVER program recommends a specific maintenance activity based on the PCI and budget constraints. The MicroPAVER system generates work based on categories of maintenance, such as localized, global and major maintenance. The engineering group has created the following unit costs that are to be reviewed and approved by the City of Coos Bay staff and used for budget scenarios.

Coos Bay - PMS Update Unit Costs

Estimated Construction Costs

Thin Overlay (2-inch ARHM)

* Assumed sample segment 1,000 feet long x 50 feet wide

Item	Unit	Quantity	Unit Cost	Extended	Assumptions
Cold Milling (grinding)	SY	1,435	$2	$2,869	6-foot wide edge grind both sides + 12-foot wide grind at
Repair Areas (Dig-outs)	SF	2,500	$4	$10,000	5 percent of pavement area
1/2-inch Leveling Course	TON	156	$140	$21,875	
1 1/2-inch ARHM Overlay	TON	469	$140	$65,625	
Utility Cover Adjustment	EACH	5	$500	$2,500	Average 1 utility cover per 200 lineal feet of roadway
Traffic Striping and Markings	LF	3,167	$1	$3,167	12-foot lane widths
Traffic Control	LS	1		$3,086	3 percent of construction cost
			Subtotal =	$109,122	
			Contingency (20%) =	$21,824	
			Total =	$130,946	
			$/SF =	**$2.62**	

Reconstruction (5-inch AC on 6-inch AB)

* Assumed sample segment 1,000 feet long x 50 feet wide

Item	Unit	Quantity	Unit Cost	Extended	Assumptions
Roadway Excavation	CY	1,704	$12	$20,444	11 inches deep
Class II AB	TON	1,625	$20	$32,500	6 inches thick
Asphalt Concrete Pavement	TON	1,575	$140	$220,500	5 inches thick
Utility Cover Adjustment	EACH	5	$500	$2,500	Average 1 utility cover per 200 lineal feet of roadway
Traffic Striping and Markings	LF	3,167	$1	$3,167	12-foot lane widths
Traffic Control	LS	1		$8,203	3 percent of construction cost
			Subtotal =	$287,314	
			Contingency (20%) =	$57,463	
			Total =	$344,777	
			$/SF =	**$6.90**	

Slurry Seal

* Assumed sample segment 1,000 feet long x 50 feet wide

Item	Unit	Quantity	Unit Cost	Extended	Assumptions
Repair Areas (Dig-outs)	SF	1,000	$4	$4,000	2 percent of pavement area
Slurry Seal	SY	5,556	$1.75	$9,722	
Traffic Striping and Markings	LF	3,167	$1	$3,167	12-foot lane widths
Traffic Control	LS	1		$412	3 percent of construction cost
			Subtotal =	$17,301	
			Contingency (20%) =	$3,460	
			Total =	$20,761	
			$/SF =	**$0.42**	

		Thin Overlay	**Reconst.**	**Slurry Seal**
Construction	$/SF	$2.62	$6.90	$0.42
Design	10.00%	$0.26	$0.69	$0.04
Inspection/Testing/Survey	10.00%	$0.26	$0.69	$0.04
Construction Management	3.50%	$0.09	$0.24	$0.01
City Administration	5.00%	$0.13	$0.34	$0.02
		$3.37	**$8.86**	**$0.53**

MAINTENANCE & REPAIR DECISIONS

Once the activities were chosen and unit costs were defined, budgets and work assignments were generated for each work program on an annual basis. Using the pavement deterioration curves for each type of pavement surface and class of road, both current year and future years work requirements for each pavement segment within the City were determined. The current PCI is reduced annually based on the deterioration curve, maintenance activities increase the PCI value as they are applied to the segment. The overall program is dynamic in that each strategy consists of a cyclic series of actions that simulates pavement's anticipated life cycle.

PROJECTED WORK PROGRAMS

In developing an annual expenditure level required to maintain the street network at its current average PCI level, three (3) budget scenarios were studied. The budget scenarios should be utilized in conjunction with each other by City staff to consider possible plans for the maintenance strategies within the City. The City of Coos Bay has a Fair PCI rating citywide of 64.3. The budget scenarios are as follows:

<u>UNLIMITED BUDGET</u> – Unlimited Budget scenario is the amount of money necessary to complete all of the maintenance required each year for the entire roadway network. The City of Coos Bay's backlog of maintenance is approximately $19.6 million.

<u>5 YEAR SLURRY SEAL BUDGET</u> – 5 YEAR SLURRY SEAL Budget scenario is the amount of money recommended for the Slurry Seal maintenance required each year for the entire roadway network. The recommended slurry seal budget for the City of Coos Bay is approximately $250,000.

<u>RECOMMENDED BUDGET</u> –Recommended Budget scenario is the city staff budget of $750K a year for five years for a total budget of $3.75 Million. Maintenances include thin overlay, overlay, reconstruction, and slurry seals.

Network PCI levels were determined on an annual basis for each of the budget scenarios outlined above with the results shown in Section V. **For a summary of the work program costs, see Section V.**

PAVEMENT MANAGEMENT SYSTEM REPORTS

In addition to the annual budgets, this report contains a comprehensive assemblage of pavement management reports ranging from summary reports to annual maintenance and rehabilitation schedules. Collectively, as well as individually, the reports represent reasonable projections of pavement maintenance needs and performance based on visual condition assessments, unit cost estimates, and pavement deterioration models.

It is important to note that pavement segment dimensions and surface area, along with the action and repair costs, as presented on the reports, are accurate within tolerable limits. This is noteworthy due to the "implied" accuracy of reporting length and width to the nearest foot, surface area to the nearest square foot, and action and repair unit costs and project estimates to the nearest penny and dollar, respectively.

SYSTEM MAINTENANCE

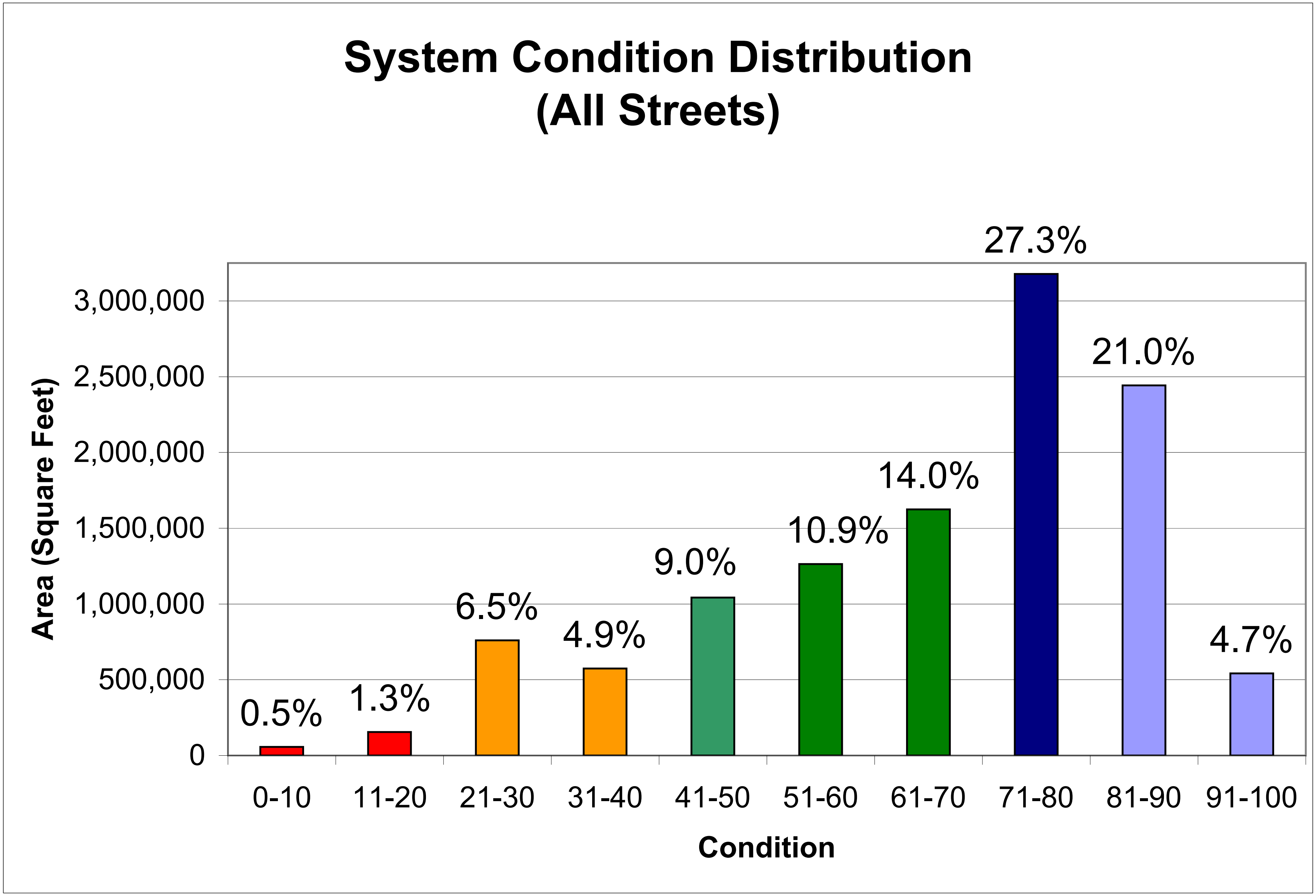
The City needs to maintain its commitment to the preventive maintenance system, while working toward reducing the City's present backlog of rehabilitation projects.

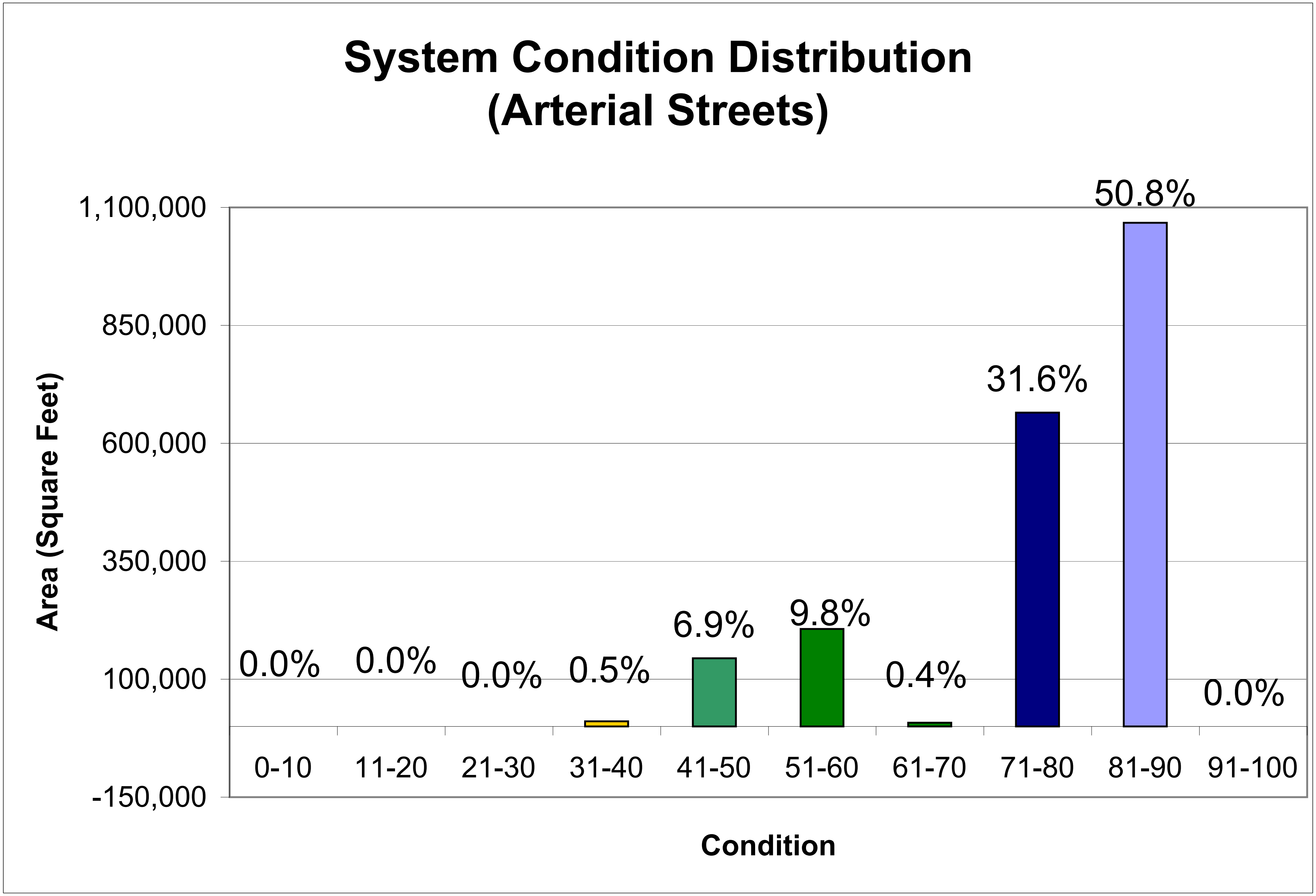
In order to ensure that report outputs are accurate and credible, it is essential that the integrity of all data files be maintained. This will require performing all necessary updates when changes are made to scheduling scenarios, unit cost information, historical data, etc. In addition, the entire pavement network will have to be re-inventoried at regular intervals. This will not only allow work to be scheduled based on the most current condition data available, but will provide City personnel with a means to monitor actual rates of pavement deterioration so appropriate modifications can be made to the system curves.

SECTION III
CONDITION DISTRIBUTION REPORT

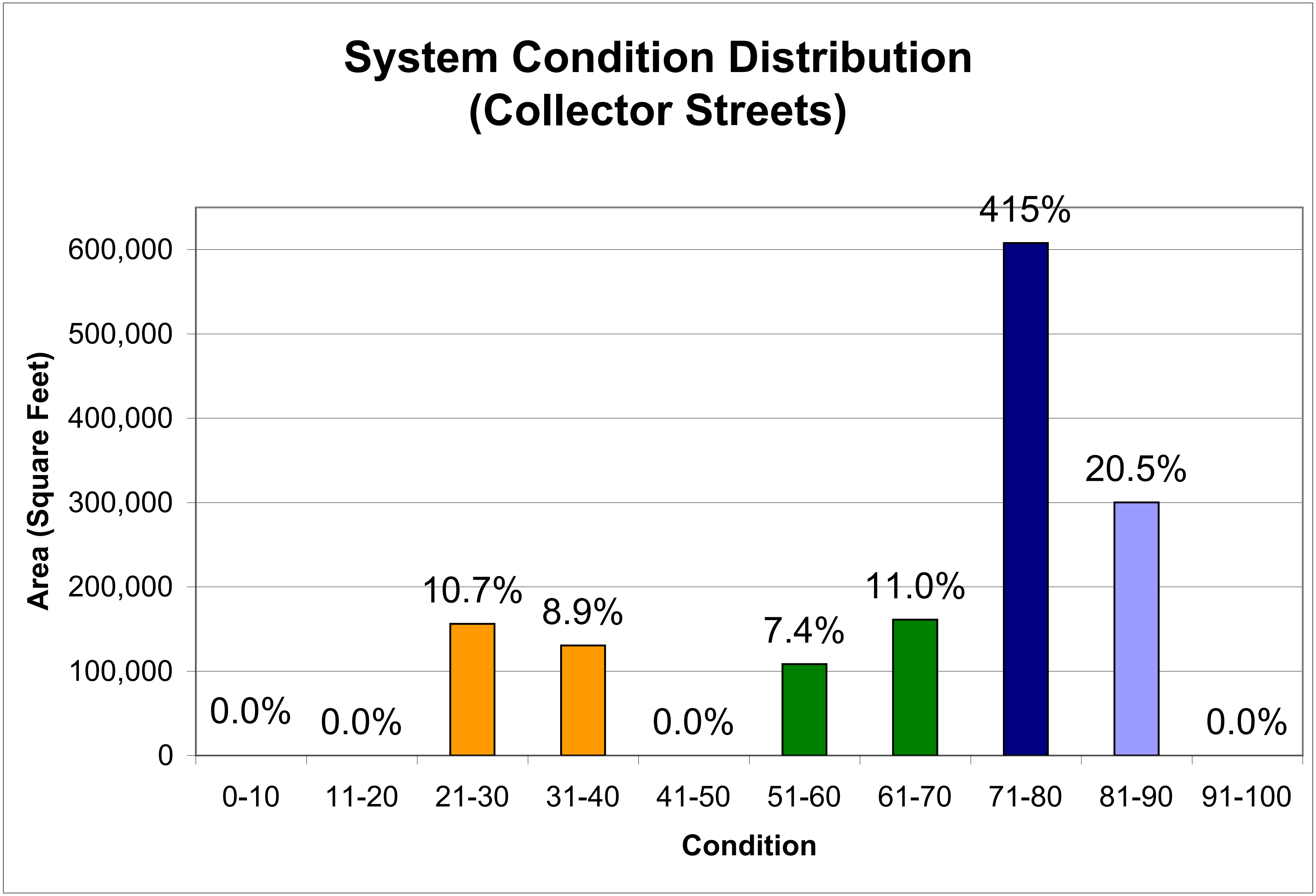
This report graphically depicts the distribution of the pavement condition throughout the street network by area. The condition ranges from "Failed" to "Excellent", with an "Excellent" condition corresponding to a pavement at the beginning of its life cycle, and a "Failed" condition representing a badly deteriorated pavement with virtually no remaining life. The City of Coos Bay has a "Good" overall pavement network condition rating with a network wide average PCI rating of 64.1. The tables on the following pages show the general description for each pavement condition:

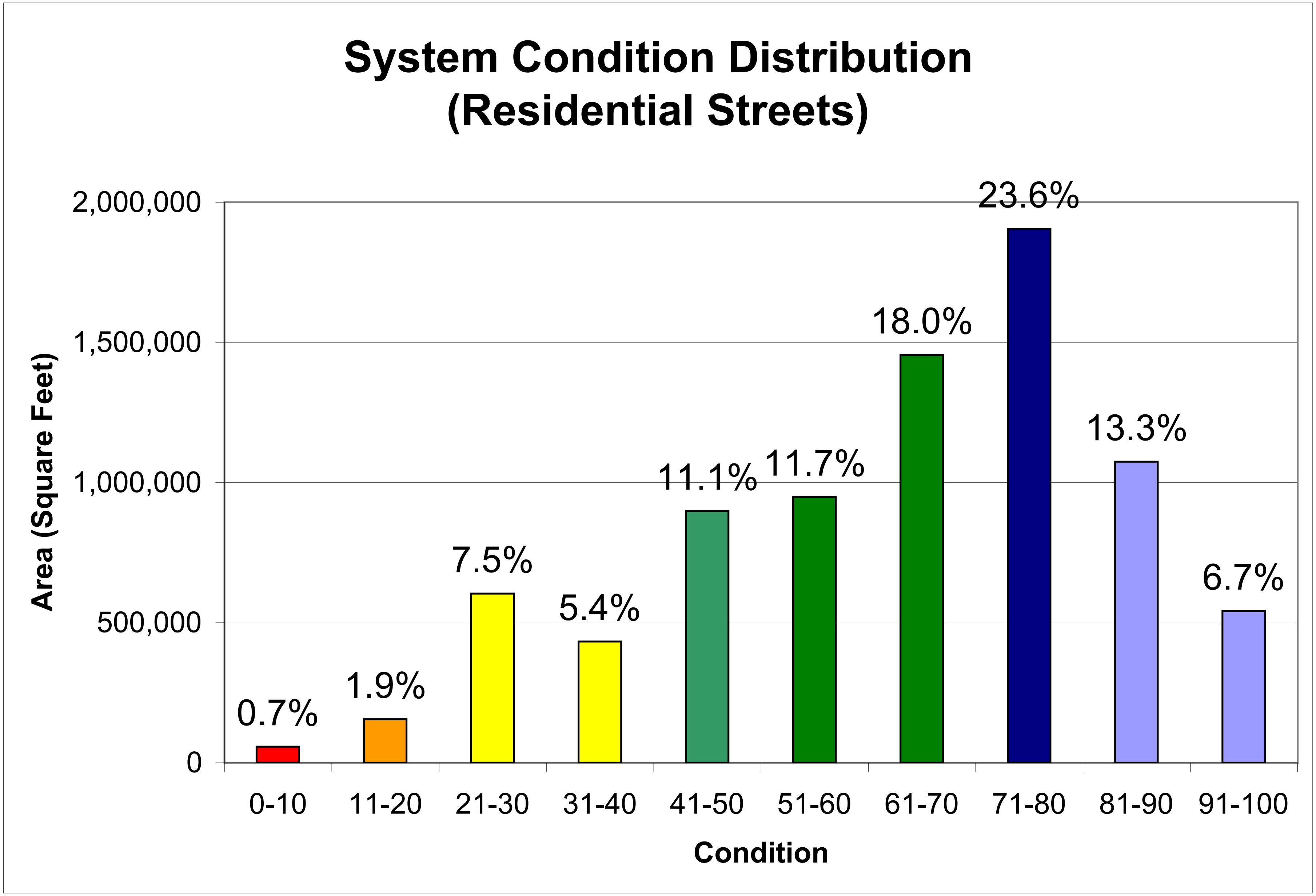
Condition	**PCI Range**	**Description**
Good	86 - 100	No significant distress.
Satisfactory	71 - 85	Little distress, with the exception of utility patches in good condition, or slight hairline cracks; may be slightly weathered.
Fair	56 - 70	Slight to moderately weathered, slight distress, possibly patching.
Poor	41 - 55	Severely weathered or slight to moderate levels of distress generally limited to patches and non-load-related cracking.
Very Poor	26 - 40	Moderate to severe distresses including load-related types, such as alligator cracking.
Serious	11 - 25	Severely distressed or large quantities of distortion or alligator cracking.
Failed	0 - 10	Failure of the pavement, distress has surpassed tolerable rehabilitation limits.


System Condition Distribution
(All Streets)
Area (Square Feet)
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
0.5%
1.3%
6.5%
4.9%
9.0%
10.9%
14.0%
27.3%
21.0%
4.7%
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
Condition



System Condition Distribution
(Arterial Streets)
1,100,000
850,000
600,000
350,000
100,000
-150,000
Area (Square Feet)
0.0%
0.0%
0.0%
0.5%
6.9%
9.8%
0.4%
31.6%
50.8%
0.0%
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
Condition


System Condition Distribution
(Collector Streets)
Area (Square Feet)
600,000
500,000
400,000
300,000
200,000
100,000
0
0.0%
0.0%
10.7%
8.9%
0.0%
7.4%
11.0%
415%
20.5%
0.0%
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
Condition



System Condition Distribution
(Residential Streets)
2,000,000
1,500,000
1,000,000
500,000
0
Area (Square Feet)
0.7%
1.9%
7.5%
5.4%
11.1%
11.7%
18.0%
23.6%
13.3%
6.7%
0-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
Condition

SECTION IV
PAVEMENT CONDITION INDEX (PCI) REPORT

OMNIS Inc submits two (2) PCI Reports alphabetically and by PCI rating. The alphabetically report is listed by street name, this report provides the City with a listing of pertinent inventory and pavement condition data for each pavement section within the City's pavement network. The Pavement Condition Index (PCI) Report notes the names, limits, classification, dimension, pavement class and PCI as of the last inspection for each pavement section. The PCI rating report is listed by condition rating descending and includes the same information that is within the alphabetical report.

Detailed descriptions of the information appearing on this report are presented below:

Branch Name - The name of each pavement section appears in this column. Generally, the pavement section name is taken directly from a street sign; however, where no street signs are posted, the name appearing on the network map is noted instead.

Section Number - The street segmentation is numbered in this column. The length limitations are approximately 1300 linear feet for residentials and 2600 linear feet for arterials.

From - A description of the beginning limit of each pavement section appears in this column. The limit will note the side of the boundary street from which the segment was taken (e.g., “N/S MAIN ST” refers to the north side of the intersection at Main St). If the beginning limit exists between intersections, then the beginning limit description may be an address, post mile marker, or a distance from a known point of reference (e.g., "500' N/O MAIN ST").

To - A description of the ending limit of each pavement section appears in this column. The description may consist of a street name, an address, or a distance from a known point of reference as described in the above section.

Surface - A code was assigned to each pavement section to describe surface type.

CODE	DESCRIPTION
AC	Asphalt Concrete
PCC	Portland Cement Concrete

Rank - The rank of each pavement section appears in this column. Typically, street segments are classified according to traffic volume or the agency’s circulation element.

CODE	DESCRIPTION
A	Primary Arterial
C	Collector
E	Local/Residential

Lanes – The number of lanes in the pavement section.

Length – The length of the pavement section.

Width – The width of the pavement section.

Shoulder - The shoulder of each pavement section appears in this column. The following codes were used in the database

CODE	DESCRIPTION
C&G	Curb & Gutter
CUR	Curb Only
NON	Edge of Pavement Only

Surface - The surface of each pavement section appears in this column. The following codes were used in the database

CODE	DESCRIPTION
AC	Asphalt Concrete
PCC	Portland Concrete Cement

PCI - Pavement Condition Indexes were calculated for pavement sections based on severity and extent of distress manifestations observed within the pavement section. Ranging between 0 and 100, a PCI of "100" corresponds to a pavement at the beginning of its life cycle, while a PCI of "0" corresponds to a badly deteriorated pavement which is at or near the end of its life cycle.

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
10TH AVENUE	1	D ST S/S	E ST N/S	2	435	23	10,005.00	E	NON	58
10TH AVENUE	2	E ST S/S	F ST N/S	2	435	26	11,310.00	E	NON	65
10TH AVENUE	3	F ST S/S	END	2	385	24	9,240.00	E	NON	93
10TH COURT	1	DATE AVE N/S	END	2	560	23	12,880.00	E	NON	42
10TH COURT	2	HEMLOCK AVE N/S	END	2	240	14	3,360.00	E	NON	76
10TH COURT	3	F ST S/S	END	2	125	12	1,500.00	E	NON	95
10TH STREET	1	ELROD AVE N/S	CENTRAL AVE S/S	2	1,285.00	35	44,975.00	C	CUR	73
10TH STREET	2	CENTRAL AVE N/S	180' N/O COMMERCIAL AVE	2	500	35	17,500.00	A	CUR	81
10TH STREET	3	180' N/O COMMERCIAL AVE	8TH TER S/S	2	435	28	12,180.00	A	CUR	83
10TH STREET	4	8TH TER S/S	DATE AVE N/S	2	1,085.00	29	31,465.00	A	C&G	81
10TH STREET	5	DATE AVE N/S	HEMLOCK AVE N/S	2	1,215.00	25	30,375.00	A	C&G	83
10TH STREET	6	HEMLOCK AVE N/S	KOOSBAY BL S/S	2	810	35	28,350.00	A	CUR	81
10TH STREET	7	JOHNSON AVE N/S	SOUTHWEST BL N/S	2	1,525.00	22	33,550.00	A	CUR	53
10TH STREET	8	ELROD AVE S/S	END	2	675	22	14,850.00	E	CUR	25
10TH STREET	9	INGERSOLL AVE S/S	JOHNSON AVE N/S	2	560	22	12,320.00	A	CUR	53
11TH AVENUE	1	F ST S/S	END	2	200	23	4,600.00	E	NON	95
11TH AVENUE	2	F ST N/S	E ST S/S	2	435	24	10,440.00	E	NON	50
11TH COURT	1	F ST S/S	END	2	135	17	2,295.00	E	NON	95
11TH STREET	1	INGERSOLL AVE N/S	FERGUSON AVE N/S	2	1,475.00	36	53,100.00	E	C&G	82
11TH STREET	2	FERGUSON AVE N/S	ELROD AVE S/S	2	230	35	8,050.00	E	CUR	40
11TH STREET	3	SPRUCE AVE N/S	END SOUTH	2	325	18	5,850.00	E	CUR	75
11TH STREET	4	INGERSOLL AVE S/S	END	2	350	16	5,600.00	E	NON	50
11TH STREET	5	CENTRAL AVE N/S	100' N/O CENTRAL	2	100	26	2,600.00	E	CUR	15
11TH STREET	6	100' N/O CENTRAL AVE	100' N/O COMMERCIAL AVE	2	350	25	8,750.00	E	C&G	100
11TH STREET	7	100' N/O COMMERCIAL AVE	PARK AVE N/S	2	515	24	12,360.00	E	CUR	45
12TH AVENUE	1	F ST S/S	END	2	205	23	4,715.00	E	NON	95
12TH AVENUE	2	F ST N/S	E ST S/S	2	435	24	10,440.00	E	NON	65
12TH COURT	1	FERGUSON AVE N/S	END	2	405	21	8,505.00	E	CUR	61
12TH COURT	2	F ST N/S	E ST S/S	2	425	16	6,800.00	E	NON	59
12TH STREET	1	INGERSOLL AVE N/S	END	2	210	30	6,300.00	E	NON	68
12TH STREET	2	ELROD ST S/S	END	2	525	18	9,450.00	E	CUR	36
12TH STREET	3	YEW AVE N/S	CITY LIMITS	2	200	30	6,000.00	E	NON	50
12TH STREET	4	PARK AVE N/S	BIRCH AVE N/S	2	555	24	13,320.00	E	CUR	43
12TH STREET	5	CENTRAL AVE N/S	COMMERCIAL AVE N/S	2	355	45	12,975.00	E	CUR	95
12TH STREET	6	COMMERCIAL AVE N/S	12TH TER N/S	2	325	45	12,125.00	E	CUR	43
13TH AVENUE	1	D ST S/S	END	2	300	23	6,900.00	E	NON	68

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13TH AVENUE	2	F ST S/S	END	2	245	22	5,390.00	E	C&G	95
13TH AVENUE	3	F ST N/S	END	2	325	28	9,100.00	E	NON	85
13TH COURT	1	F ST S/S	END	2	80	15	1,200.00	E	NON	95
13TH COURT	2	F ST N/S	END	2	305	18	5,490.00	E	NON	79
13TH STREET	1	JUNIPER AVE S/S	HEMLOCK AVE S/S	2	340	32	10,880.00	E	CUR	65
13TH STREET	2	BIRCH AVE S/S	ADLER AVE N/S	2	235	25	5,875.00	E	CUR	83
13TH STREET	3	HIGHLAND AVE S/S	COMMERCIAL AVE N/S	2	335	19	6,365.00	E	NON	75
14TH AVENUE	1	F ST N/S	D ST S/S	2	900	25	22,500.00	E	NON	93
14TH COURT	1	D ST N/S	END	2	200	13	2,600.00	E	NON	75
14TH STREET	1	JUNIPER AVE N/S	MYRTLE AVE S/S	2	925	30	27,750.00	E	CUR	74
14TH STREET	2	MYRTLE AVE S/S	NUTWOOD AVE S/S	2	375	36	13,500.00	E	CUR	35
14TH STREET	3	NUTWOOD AVE S/S	TEAKWOOD AVE S/S	2	1,155.00	36	41,580.00	E	CUR	59
14TH STREET	4	JUNIPER AVE S/S	PARK AVE N/S	2	675	30	20,250.00	E	CUR	20
14TH STREET	5	CEDAR AVE S/S	BIRCH AVE N/S	2	250	29	7,250.00	E	C&G	85
14TH STREET	6	F ST N/S	I ST S/S	2	1,220.00	23	28,060.00	E	NON	86
14TH STREET	7	COMMERCIAL AVE S/S	HIGHLAND AVE S/S	2	360	42	11,120.00	E	NON	95
15TH COURT	1	THOMPSON RD N/S	END	2	530	25	13,250.00	E	NON	61
15TH STREET	1	THOMPSON RD N/S	END	2	620	27	16,740.00	E	NON	78
15TH STREET	2	MYRTLE AVE N/S	END	2	320	31	9,920.00	E	CUR	68
15TH STREET	3	MYRTLE AVE S/S	END	2	425	32	13,600.00	E	NON	61
16TH AVENUE	1	EVERGREEN ST S/S	COOS RIVER HWY S/S	2	1,365.00	28	38,220.00	E	NON	93
16TH COURT	1	THOMPSON RD N/S	END	2	50	15	750	E	NON	74
16TH STREET	1	CALIFORNIA AVE N/S	END	2	350	27	9,450.00	E	C&G	84
16TH STREET	2	MYRTLE AVE S/S	KINGWOOD AVE N/S	2	445	34	15,130.00	E	CUR	81
17TH STREET	1	THOMPSON RD N/S	END	2	160	50	6,800.00	E	C&G	59
17TH STREET	2	MYRTLE AVE S/S	KINGWOOD AVE N/S	2	400	35	14,000.00	E	CUR	78
17TH STREET	3	I ST N/S	EVERGREEN ST N/S	2	1,275.00	22	28,050.00	E	NON	64
18TH AVENUE	1	FILBERT AVE S/S	END	2	250	23	5,750.00	E	NON	43
18TH AVENUE	2	FILBERT AVE N/S	CDS	2	595	25	15,875.00	E	NON	82
19TH STREET	1	CALIFORNIA AVE S/S	END	2	660	33	21,780.00	E	C&G	62
19TH STREET	2	OCEAN BL N/S	JUNIPER AVE S/S	2	465	28	13,020.00	E	CUR	56
19TH STREET	3	JUNIPER AVE S/S	COTTONWOOD AVE S/S	2	290	28	8,120.00	E	CUR	69
19TH STREET	4	THOMPSON RD S/S	END	2	650	33	21,450.00	E	C&G	73
19TH STREET	5	OCEAN BL S/S	TIMBERLINE DR S/S	2	205	35	7,175.00	E	C&G	83
1ST AVENUE	1	FINK ST N/S	D ST S/S	2	200	24	4,800.00	E	NON	81
1ST AVENUE	2	D ST N/S	A ST N/S	2	1,315.00	30	39,450.00	E	NON	57

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
1STCOURT	1	A ST S/S	END	2	135	13	1,755.00	E	NON	63
20TH STREET	1	CALIFORNIA AVE S/S	END	2	420	20	8,400.00	E	C&G	83
20TH STREET	2	WOODLAND DR N/S	JUNIPER AVE S/S	2	380	35	13,300.00	E	CUR	53
21ST STREET	1	CALIFORNIA AVE S/S	END	2	215	16	3,440.00	E	NON	83
22ND STREET	1	CALIFORNIA AVE S/S	END	2	360	21	7,560.00	E	C&G	95
28TH COURT	2	OCEAN BL S/S	TWIG TER S/S	2	900	26	23,400.00	E	CUR	82
2ND AVENUE	1	D ST S/S	E ST N/S	2	330	33	10,890.00	E	NON	37
2ND AVENUE	02A	D ST N/S	B ST S/S	2	890	25	22,250.00	E	CUR	28
2ND AVENUE	02B	D ST N/S	B ST S/S	2	890	25	22,250.00	E	NON	55
2ND AVENUE	03A	B ST S/S	A ST S/S	2	470	16	7,520.00	E	NON	25
2ND AVENUE	03B	B ST S/S	A ST S/S	2	470	16	7,520.00	E	NON	85
2ND COURT	1	2ND ST W/S	4TH ST W/S	2	475	25	11,875.00	E	CUR	37
2ND STREET	1	LOCKHART AVE N/S	KRUSE AVE S/S	2	535	36	19,260.00	E	C&G	43
2ND STREET	2	KRUSE AVE N/S	JOHNSON AVE S/S	2	535	39	20,865.00	E	CUR	52
2ND STREET	3	JOHNSON AVE N/S	HALL AVE S/S	2	1,110.00	38	42,180.00	E	CUR	50
2ND STREET	4	HALL AVE S/S	GOLDEN AVE S/S	2	525	54	28,350.00	E	CUR	44
2ND STREET	5	GOLDEN AVE N/S	ELROD AVE S/S	2	525	55	28,875.00	E	CUR	52
2ND STREET	6	ELROD AVE N/S	CURTIS AVE S/S	2	520	36	18,720.00	E	CUR	33
2ND STREET	7	CURTIS AVE N/S	ANDERSON AVE S/S	2	465	38	21,470.00	E	CUR	78
2ND STREET	8	PARK AVE N/S	ALDER AVE S/S	2	255	26	6,630.00	E	CUR	13
2ND STREET	9	ANDERSON AVE N/S	CENTRAL AVE S/S	2	220	30	6,600.00	E	C&G	84
2ND STREET	10	CENTRAL AVE N/S	COMMERCIAL AVE S/S	2	220	30	6,600.00	E	C&G	75
2ND STREET	11	COMMERCIAL AVE N/S	MARKET AVE S/S	2	215	41	8,815.00	E	C&G	75
2ND STREET	12	MARKET AVE N/S	PARK AVE S/S	2	435	36	15,660.00	E	C&G	56
32ND STREET	1	N/S WALNUT AVE	LINDBERG AVE S/S	2	380	33	12,540.00	E	C&G	83
33RD STREET	1	N/S WALNUT AVE	LINDBERG AVE S/S	2	400	33	13,200.00	E	C&G	86
34TH STREET	1	LINDBERG AVE S/S	OCEAN BL N/S	2	1,195.00	36	43,020.00	E	C&G	72
35TH STREET	1	VINE AVE N/S	LINDBERG AVE S/S	2	665	33	18,645.00	E	C&G	75
3RD AVENUE	1	D ST S/S	E ST N/S	2	355	24	8,520.00	E	NON	78
3RD COURT	1	DATE AVE N/S	END	2	415	15	6,225.00	E	NON	83
3RD STREET	1	BIRCH AVE N/S	PARK AVE N/S	2	510	17	8,670.00	E	CUR	25
3RD STREET	2	CENTRAL AVE S/S	ANDERSON AVE N/S	2	225	28	6,300.00	E	C&G	78
3RD STREET	3	COMMERCIAL AVE S/S	CENTRAL AVE N/S	2	220	29	6,380.00	E	C&G	82
4TH AVENUE	1	E ST N/S	D ST S/S	2	435	22	9,570.00	E	NON	71
4TH AVENUE	2	D ST N/S	END	2	495	25	12,375.00	E	NON	48
4TH COURT	1	HIGHLAND AVE N/S	PARK AVE S/S	2	235	18	4,230.00	E	CUR	51

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4TH COURT	2	PARK AVE N/S	205' N/O PARK AVE	2	205	18	3,690.00	E	CUR	66
4TH COURT	3	205' N/O PARK AVE	END	2	715	18	12,870.00	E	CUR	54
4TH STREET	1	LOCKHART AVE N/S	KRUSE AVE N/S	2	570	44	25,080.00	C	CUR	77
4TH STREET	2	KRUSE AVE N/S	JOHNSON AVE N/S	2	535	42	22,470.00	C	C&G	84
4TH STREET	3	JOHNSON AVE N/S	GOLDEN AVE S/S	2	1,685.00	42	70,770.00	C	CUR	84
4TH STREET	4	GOLDEN AVE S/S	CURTIS AVE S/S	2	1,140.00	54	62,560.00	C	CUR	74
4TH STREET	5	CURTIS AVE S/S	ANDERSON AVE S/S	2	495	63	31,185.00	C	CUR	85
4TH STREET	6	ANDERSON AVE N/S	COMMERCIAL AVE S/S	2	480	53	25,440.00	C	C&G	66
4TH STREET	7	COMMERCIAL AVE N/S	MARKET AVE S/S	3	215	52	11,180.00	C	C&G	69
4TH STREET	8	MARKET AVE N/S	HIGHLAND AVE S/S	2	180	26	4,680.00	E	CUR	33
4TH STREET	9	HIGHLAND AVE N/S	PARK AVE S/S	2	230	24	5,520.00	E	CUR	58
4TH STREET	10	2ND CT N/S	FIR AVE N/S	2	120	20	2,400.00	E	NON	83
5TH AVENUE	1	D ST N/S	END	2	220	25	5,500.00	E	NON	76
5TH AVENUE	2	D ST S/S	E ST N/S	2	435	23	10,005.00	E	NON	64
5TH STREET	1	HIGHLAND AVE N/S	MARKET AVE N/S	2	210	33	6,930.00	E	C&G	52
5TH STREET	2	MARKET AVE N/S	COMMERCIAL AVE N/S	2	255	34	8,670.00	E	C&G	95
5TH STREET	5	GOLDEN AVE S/S	HALL AVE N/S	2	540	26	14,040.00	E	CUR	13
5TH STREET	6	HALL AVE S/S	INGERSOLL AVE N/S	2	545	28	15,260.00	E	CUR	46
5TH STREET	7	INGERSOLL AVE N/S	JOHNSON AVE N/S	2	570	27	15,390.00	E	CUR	32
5TH STREET	8	JOHNSON AVE S/S	KRUSE AVE N/S	2	545	24	13,080.00	E	NON	20
5TH STREET	9	KRUSE AVE N/S	LOCKHART AVE N/S	2	565	38	21,470.00	E	CUR	57
5TH STREET	10	FIR AVE N/S	END	2	115	20	2,300.00	E	NON	17
5TH STREET	11	DONNELLY AVE N/S	BENNETT AVE S/S	2	510	31	15,810.00	E	CUR	59
5TH STREET	12	BENNETT AVE N/S	ANDERSON AVE S/S	2	220	36	7,920.00	E	CUR	70
5TH STREET	13	ANDERSON AVE N/S	COMMERCIAL AVE S/S	2	475	36	19,900.00	E	CUR	65
6TH STREET	1	COMMERCIAL AVE S/S	ANDERSON AVE N/S	2	480	38	18,240.00	E	C&G	45
6TH STREET	2	ANDERSON AVE S/S	BENNETT AVE N/S	2	225	28	6,300.00	E	CUR	66
6TH STREET	3	BENNETT AVE S/S	ELROD AVE N/S	2	770	24	18,480.00	E	CUR	70
6TH STREET	4	ELROD AVE S/S	CDS	2	305	24	7,920.00	E	CUR	77
6TH STREET	5	IVY AVE N/S	KOOSBAY BL S/S	2	430	41	17,630.00	E	C&G	55
6TH STREET	6	KOOSBAY BL N/S	KINGWOOD AVE S/S	2	320	41	13,120.00	E	CUR	65
6TH STREET	7	KINGWOOD AVE N/S	MYRTLE AVE S/S	2	325	41	13,325.00	E	C&G	66
6TH STREET	8	MYRTLE AVE S/S	PINE AVE S/S	2	745	41	30,545.00	E	C&G	85
7TH AVENUE	1	F ST N/S	E ST S/S	2	415	22	9,130.00	E	NON	46
7TH AVENUE	2	E ST N/S	D ST S/S	2	435	30	13,050.00	E	NON	74
7TH AVENUE	3	D ST N/S	END	2	240	22	5,280.00	E	NON	75

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7TH AVENUE	4	I ST N/S	H ST N/S	2	260	14	3,640.00	E	NON	77
7TH COURT	1	FIR AVE N/S	END	2	215	20	4,300.00	E	NON	57
7TH ROAD	1	FIR AVE S/S	3RD CT N/S	2	185	35	6,475.00	E	C&G	76
7TH ROAD	2	3RD CT N/S	DATE AVE N/S	2	485	33	16,005.00	E	C&G	67
7TH STREET	1	KOOSBAY BL N/S	KINGWOOD AVE N/S	2	325	38	12,350.00	E	C&G	15
7TH STREET	2	ANDERSON AVE S/S	DONNELLY AVE N/S	2	765	34	26,010.00	E	CUR	60
7TH STREET	3	DONNELLY AVE N/S	ELROD AVE N/S	2	255	36	9,180.00	E	CUR	77
7TH STREET	4	ELROD AVE N/S	FERGUSON AVE S/S	2	290	36	10,440.00	E	CUR	66
7TH STREET	5	FERGUSON AVE S/S	HALL ST N/S	2	865	39	33,735.00	E	CUR	74
7TH STREET	6	HALL ST N/S	INGERSOLL AVE S/S	2	630	39	24,570.00	E	CUR	83
7TH STREET	7	INGERSOLL AVE S/S	JOHNSON AVE S/S	2	570	33	18,810.00	E	C&G	54
7TH STREET	8	JOHNSON AVE S/S	KRUSE AVE N/S	2	545	33	17,985.00	E	C&G	61
7TH STREET	9	KRUSE AVE N/S	LOCKHART AVE N/S	2	565	33	18,645.00	A	C&G	52
7TH STREET	10	HEMLOCK AVE S/S	END	2	675	32	21,600.00	E	C&G	76
7TH STREET	11	HEMLOCK AVE N/S	IVY AVE N/S	2	250	37	9,250.00	E	C&G	84
7TH STREET	12	PINE AVE S/S	END	2	460	37	17,020.00	E	CUR	47
7TH STREET	13	HEMLOCK AVE S/S	END	2	315	33	10,395.00	E	C&G	75
7TH TERRACE	1	8TH ST E/S	END	2	120	15	1,800.00	E	C&G	0
8TH AVENUE	1	D ST N/S	END	2	175	20	3,500.00	E	NON	56
8TH AVENUE	2	D ST S/S	E ST N/S	2	435	22	9,570.00	E	NON	75
8TH AVENUE	3	E ST S/S	F ST N/S	2	420	25	10,500.00	E	NON	51
8TH LOOP	1	BIRCH AVE N/S	8TH ST W/S	2	330	22	7,260.00	E	CUR	78
8TH STREET	1	FIR AVE N/S	HEMLOCK AVE S/S	2	695	33	22,935.00	E	CUR	58
8TH STREET	2	HEMLOCK AVE S/S	KOOSBAY BL S/S	2	590	25	14,750.00	E	CUR	24
8TH STREET	3	KOOSBAY BL N/S	END	2	680	33	22,440.00	E	CUR	49
8TH STREET	5	PINE AVE S/S	REDWOOD AVE N/S	2	355	32	11,360.00	E	CUR	52
8TH STREET	6	TEAKWOOD AVE N/S	END	2	380	13	4,940.00	E	NON	60
8TH STREET	7	FERGUSON AVE N/S	ELROD AVE S/S	2	230	26	5,980.00	E	CUR	25
8TH STREET	8	ELROD AVE N/S	DONNELLY AVE S/S	2	225	26	5,850.00	E	CUR	25
8TH STREET	9	JOHNSON AVE S/S	END	2	525	29	15,225.00	E	CUR	71
8TH STREET	10	JOHNSON AVE N/S	INGERSOLL AVE S/S	2	525	29	15,225.00	E	CUR	25
8TH STREET	11	COMMERCIAL AVE N/S	8TH TERR N/S	2	270	32	8,640.00	E	CUR	73
8TH STREET	12	8TH TERR N/S	7TH TERR S/S	2	250	26	6,500.00	E	CUR	49
8TH STREET	13	DATE AVE S/S	BIRCH AVE S/S	2	660	26	17,160.00	E	CUR	76
8TH STREET	14	ANDERSON AVE S/S	END	2	550	36	19,800.00	E	CUR	95
8TH STREET	15	ANDERSON AVE N/S	CENTRAL AVE S/S	2	320	25	8,000.00	E	CUR	19

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8TH STREET	16	CENTRAL AVE N/S	COMMERCIAL AVE S/S	2	320	26	8,320.00	E	CUR	51
8TH TERRACE	1	8TH ST W/S	10TH ST E/S	2	640	25	16,000.00	E	CUR	76
9TH AVENUE	1	E ST N/S	D ST S/S	2	435	36	15,660.00	E	NON	65
9TH AVENUE	2	F ST S/S	H ST N/S	2	915	23	21,045.00	E	NON	79
9TH AVENUE	3	H ST N/S	I ST S/S	2	250	24	6,000.00	E	NON	79
9TH STREET	1	FIR AVE N/S	DATE AVE N/S	2	500	26	13,000.00	E	CUR	45
9TH STREET	2	COMMERCIAL AVE S/S	CENTRAL AVE N/S	2	320	23	7,360.00	E	CUR	73
9TH STREET	3	CENTRAL AVE S/S	ANDERSON AVE N/S	2	325	35	11,375.00	E	CUR	6
9TH STREET	4	ANDERSON AVE S/S	END	2	330	35	11,550.00	E	CUR	95
9TH STREET	5	DONNELLY AVE S/S	ELROD AVE N/S	2	230	18	4,140.00	E	CUR	25
9TH STREET	6	ELROD AVE S/S	END	2	615	25	15,375.00	E	CUR	25
9TH STREET	7	DATE AVE S/S	END	2	875	27	23,625.00	E	CUR	63
9TH STREET	04E	ANDERSON AVE S/S	END	2	330	35	11,550.00	E	CUR	42
A STREET	1	1ST AVE E/S	2ND AVE E/S	2	275	22	6,050.00	E	CUR	25
ACKERMAN STREET	1	NEWMARK AVE N/S	END	2	1,265.00	33	41,745.00	E	C&G	75
ADLER AVENUE	1	12TH ST W/S	13TH ST W/S	2	320	25	8,000.00	E	CUR	53
ADLER AVENUE	2	13TH ST W/S	END	2	200	12	2,400.00	E	NON	94
ALDERWOOD STREET	1	LINDBERG AVE N/S	WAITE ST N/S	2	410	37	15,170.00	E	C&G	85
ANDERSON AVENUE	1	10TH ST W/S	11TH ST W/S	2	310	33	10,230.00	E	C&G	60
ANDERSON AVENUE	2	11T ST W/S	END	2	1,550.00	23	35,650.00	E	NON	47
ANDERSON AVENUE	3	7TH ST W/S	10TH ST E/S	2	895	35	31,325.00	E	CUR	78
APPLEWOOD DRIVE	1	16TH AVE E/S	END	2	870	16	13,920.00	E	NON	82
ARAGO AVENUE	1	MORRISON ST E/S	END	2	400	33	13,200.00	E	C&G	56
ARAGO AVENUE	2	MORRISON ST W/S	MADISON ST E/S	2	465	33	15,345.00	E	C&G	71
ARAGO AVENUE	3	MADISON ST W/S	FILLMORE ST E/S	2	465	33	15,345.00	E	CUR	75
AUGUSTINE AVENUE	1	END NORTH	LAKESHORE DR N/S	2	1,600.00	34	54,400.00	E	C&G	69
AUGUSTINE AVENUE	2	LAKESHORE DR S/S	END SOUTH	2	665	33	21,945.00	E	C&G	73
B STREET	1	2ND AVE E/S	4TH AVE E/S	2	325	32	10,400.00	E	NON	94
BARHAM TERRACE	1	PARK RD W/S	CDS	2	210	26	6,460.00	E	NON	66
BAYVIEW DRIVE	1	16TH AVE E/S	END	2	725	20	14,500.00	E	NON	57
BENNETT AVENUE	1	4TH ST W/S	6TH ST W/S	2	510	35	17,850.00	E	CUR	68
BENNETT AVENUE	2	6TH ST W/S	7TH ST E/S	2	230	25	5,750.00	E	CUR	56
BESSIE STREET	1	FINK ST N/S	END	2	245	27	6,615.00	E	NON	81
BIRCH AVENUE	1	14TH ST W/S	END	2	110	25	2,750.00	E	C&G	95
BIRCH AVENUE	2	8TH ST W/S	END	2	160	22	3,520.00	E	CUR	78
BIRCH AVENUE	3	12TH ST W/S	13TH ST E/S	2	220	25	5,500.00	E	CUR	59

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BLANCO AVENUE	1	MORRISON ST E/S	FULTON AVE N/S	2	640	33	21,120.00	E	C&G	33
BLANCO AVENUE	2	MORRISON ST W/S	MADISON ST E/S	2	465	33	15,345.00	E	C&G	75
BLANCO AVENUE	3	MADISON ST W/S	FILLMORE ST E/S	2	465	33	15,345.00	E	C&G	82
BROOKLYN DRIVE	1	END	END	2	260	28	7,280.00	E	C&G	95
BROOKLYN LANE	1	WOODLAND DR W/S	BROOKLYN DR E/S	2	265	24	6,360.00	E	C&G	100
BRULE STREET	1	OCEAN BL N/S	LINDBERG ST S/S	2	415	33	13,695.00	E	C&G	44
BUTLER ROAD	1	OCEAN BL N/S	JUNIPER AVE S/S	2	710	35	24,850.00	E	CUR	34
CALIFORNIA AVENUE	1	SOUTHWEST BL W/S	16TH ST W/S	2	1,615.00	20	32,300.00	E	NON	83
CALIFORNIA AVENUE	2	16TH ST W/S	19TH ST E/S	2	860	22	18,920.00	E	NON	78
CALIFORNIA AVENUE	3	19TH ST E/S	22ND ST W/S	2	320	21	6,720.00	E	C&G	93
CAMMANN STREET	1	DIVISION AVE S/S	TAYLOR AVE N/S	2	290	33	9,570.00	E	C&G	88
CAMMANN STREET	2	TAYLOR AVE N/S	GRANT AVE S/S	2	545	36	19,620.00	E	CUR	25
CAMMANN STREET	3	GRANT AVE S/S	HARRIS AVE N/S	2	495	34	16,830.00	E	CUR	24
CAMMANN STREET	4	HARRIS AVE N/S	JACKSON AVE N/S	2	525	34	17,850.00	E	CUR	24
CAMMANN STREET	5	JACKSON AVE N/S	SHETTER AVE N/S	2	515	34	17,510.00	E	CUR	22
CAMMANN STREET	6	SHETTER AVE N/S	NEWMARK AVE N/S	2	495	53	26,235.00	E	C&G	49
CAMMANN STREET	7	NEWMARK AVE S/S	MICHIGAN AVE N/S	2	475	54	25,650.00	E	C&G	85
CAMMANN STREET	8	MICHIGAN AVE N/S	MONTGOMERY AVE N/S	2	1,050.00	34	35,700.00	E	C&G	81
CAMMANN STREET	9	MONTGOMERY AVE N/S	PACIFIC AVE N/S	2	515	33	16,995.00	E	C&G	47
CAMMANN STREET	10	PACIFIC AVE S/S	END	2	1,500.00	33	49,500.00	E	C&G	63
CANYON DRIVE	1	9TH AVE E/S	SHONSTA WY N/S	2	370	21	7,770.00	E	CUR	41
CANYON DRIVE	2	SHONSTA WY N/S	CANYON TERR S/S	2	540	20	10,800.00	E	CUR	62
CANYON TERRACE	1	CANYON DR W/S	END	2	315	20	6,300.00	E	CUR	84
CEDAR AVENUE	1	10TH ST W/S	END	2	335	23	7,705.00	E	NON	52
CEDAR AVENUE	2	PARK AVE S/S	BIRCH AVE N/S	2	590	18	10,620.00	E	NON	34
CEDAR AVENUE	3	16TH AVE W/S	END	2	705	21	14,805.00	E	NON	70
CENTRAL AVENUE	1	OCEAN BL E/S	12TH ST E/S	2	690	30	20,700.00	A	CUR	76
CENTRAL AVENUE	2	12TH ST E/S	10TH ST W/S	3	595	41	24,395.00	A	CUR	44
CENTRAL AVENUE	3	10TH ST W/S	8TH ST W/S	3	645	41	26,445.00	A	CUR	84
CENTRAL AVENUE	4	8TH ST W/S	7TH ST W/S	4	270	55	14,850.00	A	CUR	90
CENTRAL AVENUE	5	E/S 7TH ST	6TH ST W/S	2	220	36	7,920.00	E	CUR	95
CENTRAL AVENUE	6	BROADWAY ST W/S	4TH ST E/S	1	725	34	24,650.00	E	CUR	100
CHICKSES DRIVE	1	END NORTH	LAKESHORE DR N/S	2	585	33	19,305.00	E	C&G	79
COMMERCIAL AVENUE	1	1ST ST W/S	BROADWAY ST E/S	2	185	42	7,770.00	A	CUR	68
COMMERCIAL AVENUE	2	BROADWAY ST W/S	7TH ST W/S	2	1,565.00	42	65,730.00	A	CUR	77
COMMERCIAL AVENUE	3	7TH ST W/S	8TH ST W/S	2	300	33	9,900.00	A	CUR	70

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COMMERCIAL AVENUE	4	8TH ST W/S	10TH ST E/S	2	605	35	21,175.00	A	CUR	78
COMMERCIAL AVENUE	5	10TH ST W/S	11TH ST E/S	2	290	29	8,410.00	A	CUR	78
COMMERCIAL AVENUE	6	11TH ST W/S	12TH ST E/S	2	280	25	7,000.00	A	CUR	83
COMMERCIAL AVENUE	7	12TH ST W/S	14TH ST E/S	2	660	16	10,560.00	A	CUR	32
COMPASS CIRCLE	1	RADAR RD E/S	CDS	2	190	33	7,370.00	E	C&G	72
COTTONWOOD AVENUE	1	JUNIPER AVE N/S	END	2	1,720.00	29	49,880.00	E	CUR	74
CROCKER AVENUE	1	ST JOHN N/S	HOWARD ST N/S	2	470	35	16,450.00	E	C&G	74
CROCKER AVENUE	2	HOWARD ST N/S	LAKESHORE DR N/S	2	1,200.00	35	42,000.00	E	C&G	62
CROCKER AVENUE	3	LAKESHORE DR S/S	END	2	690	35	24,150.00	E	C&G	63
CROCKER AVENUE	4	ST JOHN N/S	END	2	800	35	28,000.00	E	C&G	75
CURTIS AVENUE	1	1ST ST W/S	BROADWAY ST E/S	1	115	33	3,795.00	E	CUR	56
CURTIS AVENUE	2	BROADWAY ST W/S	4TH ST E/S	2	705	32	22,560.00	E	C&G	47
CYPRESS POINT	1	A ST N/S	END	2	295	19	5,605.00	E	NON	67
D STREET	1	HARBORVIEW DR W/S	COOS RIVER HWY E/S	2	495	21	10,395.00	C	NON	63
D STREET	2	6TH AVE W/S	5TH AVE W/S	2	275	39	10,725.00	C	NON	61
D STREET	3	5TH AVE W/S	2ND AVE W/S	2	910	41	37,310.00	C	NON	34
D STREET	4	2ND AVE W/S	1ST AVE E/S	2	275	30	8,250.00	C	NON	81
D STREET	5	1ST AVE E/S	WHITTY ST W/S	2	645	33	21,285.00	C	C&G	76
DAKOTA AVENUE	1	SOUTHWEST BL	END	2	205	27	5,535.00	E	C&G	21
DATE AVENUE	1	10TH ST E/S	8TH ST E/S	2	535	25	13,375.00	E	CUR	83
DATE AVENUE	2	8TH ST E/S	TELEGRAPH DR E/S	2	1,205.00	34	40,970.00	E	CUR	79
DATE AVENUE	3	TELEGRAPH DR E/S	3RD CT E/S	2	135	34	4,590.00	E	CUR	34
DATE AVENUE	4	10TH ST W/S	10TH CT W/S	2	250	18	4,500.00	E	NON	76
DENISE PLACE	1	KENTUCKY AVE N/S	CDS	2	410	34	14,840.00	E	C&G	72
DONNELLY AVENUE	1	4TH ST W/S	6TH ST E/S	2	500	24	12,000.00	E	C&G	84
DONNELLY AVENUE	2	6TH ST W/S	7TH ST E/S	2	230	26	5,980.00	E	CUR	14
DONNELLY AVENUE	3	7TH ST W/S	9TH ST W/S	2	510	25	12,750.00	E	CUR	14
DUNN STREET	1	OCEAN BL N/S	LINDBERG ST S/S	2	590	34	20,060.00	E	C&G	62
E STREET	1	2ND AV W/S	6TH ST W/S	2	1,230.00	23	28,290.00	E	NON	30
E STREET	2	6TH AVE E/S	9TH ST W/S	2	875	21	18,375.00	E	NON	44
E STREET	3	9TH ST W/S	11TH ST E/S	2	565	23	12,995.00	E	NON	24
E STREET	4	11TH ST E/S	14TH AVE W/S	2	810	18	14,580.00	E	NON	26
EDWARDS STREET	1	LAKESHORE DR E/S	END	2	340	26	8,840.00	E	C&G	95
ELM AVENUE	1	10TH CT E/S	END	2	250	18	4,500.00	E	NON	80
ELM STREET	1	7TH RD E/S	END	2	195	18	3,510.00	E	NON	68
ELROD AVENUE	1	1ST ST W/S	BROADWAY ST E/S	2	90	38	3,420.00	E	C&G	68

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ELROD AVENUE	2	BROADWAY ST W/S	4TH ST E/S	2	700	54	37,800.00	C	CUR	85
ELROD AVENUE	3	4TH ST W/S	7TH ST E/S	2	750	35	26,250.00	C	CUR	61
ELROD AVENUE	4	7TH ST W/S	10TH ST W/S	2	900	35	31,500.00	C	CUR	58
ELROD AVENUE	5	10TH ST W/S	12TH ST W/S	2	575	25	14,375.00	E	CUR	64
EMPIRE BOULEVARD	1	SCHETTER AVE N/S	NEWMARK AVE N/S	2	525	24	12,600.00	A	NON	77
EMPIRE BOULEVARD	2	NEWMARK AVE N/S	CITY LIMITS	2	4,445.00	32	142,240.00	A	NON	54
EVERGREEN DRIVE	1	TIMBERLINE DR E/S	TIMBERLINE DR S/S	2	655	34	22,270.00	E	C&G	63
EVERGREEN DRIVE	2	17TH AVE W/S	16TH AVE E/S	2	200	24	4,800.00	E	NON	54
F STREET	1	6TH ST E/S	9TH AVE W/S	2	870	29	25,230.00	E	C&G	79
F STREET	2	9TH AVE W/S	10TH AVE W/S	2	250	26	6,500.00	E	C&G	53
F STREET	3	10TH AVE W/S	12TH AVE E/S	2	560	23	12,880.00	E	C&G	79
F STREET	4	12TH AVE E/S	12TH CT W/S	2	125	25	3,125.00	E	C&G	36
F STREET	5	12TH CT W/S	14TH AVE W/S	2	415	25	10,375.00	E	C&G	85
FENWICK AVENUE	1	MAXWELL RD S/S	ST JOHN ST S/S	2	1,045.00	33	34,485.00	E	C&G	81
FENWICK AVENUE	2	ST JOHN ST S/S	LAKESHORE DR N/S	2	1,625.00	35	56,875.00	E	C&G	61
FENWICK AVENUE	3	LAKESHORE DR S/S	END	2	665	34	22,610.00	E	C&G	83
FERGUSON AVENUE	1	7TH ST W/S	9TH ST E/S	2	490	25	12,250.00	E	CUR	25
FERGUSON AVENUE	2	9TH ST W/S	10TH ST E/S	2	235	25	5,875.00	E	CUR	14
FERGUSON AVENUE	3	10TH ST W/S	11TH ST E/S	2	230	26	5,980.00	E	CUR	23
FERGUSON AVENUE	4	11TH ST W/S	12TH CT E/S	2	225	25	5,625.00	E	CUR	37
FERN COURT	1	EVERGREEN DR W/S	CDS	2	240	34	9,160.00	E	C&G	79
FILBERT AVENUE	1	17TH AVE E/S	18TH AVE E/S	2	115	32	3,680.00	E	NON	85
FILBERT AVENUE	2	18TH AVE E/S	END	2	895	23	20,585.00	E	NON	74
FILLMORE STREET	1	MARSHALL AVE N/S	KENTUCKY AVE S/S	2	230	32	7,360.00	E	C&G	94
FILLMORE STREET	2	FULTON AVE S/S	END	2	430	32	13,760.00	E	C&G	82
FINK STREET	1	WHITTY ST W/S	BESSIE ST E/S	2	500	24	12,000.00	E	NON	63
FINK STREET	2	WHITTY ST E/S	1ST AVE W/S	2	560	22	12,320.00	E	NON	55
FIR AVENUE	1	9TH ST E/S	8TH ST W/S	2	245	23	5,635.00	E	CUR	36
FIR AVENUE	2	7TH CT W/S	4TH ST W/S	2	640	21	13,440.00	E	C&G	65
FIR STREET	1	NEWMARK AVE S/S	WALNUT AVE S/S	2	1,815.00	35	63,525.00	E	C&G	72
FLANAGAN AVENUE	1	MADISON ST E/S	MORRISON ST W/S	2	465	34	15,810.00	E	C&G	50
FLANAGAN AVENUE	2	MORRISON ST E/S	END	2	460	34	15,640.00	E	C&G	44
FOREST HILLS DRIVE	1	TIMBERLINE DR W/S	END	2	1,830.00	25	45,750.00	E	CUR	95
FRONT STREET	1	JOHNSON AVE N/S	INGERSOLL AVE N/S	2	565	22	12,430.00	E	C&G	79
FULTON AVENUE	1	EMPIRE BL E/S	WASSON ST W/S	2	810	32	25,920.00	E	C&G	60
FULTON AVENUE	3	CAMMANN ST W/S	END	2	325	17	5,525.00	E	C&G	79

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FULTON AVENUE	4	MADISON ST W/S	MORRISON ST W/S	2	495	32	15,840.00	E	C&G	80
FULTON AVENUE	5	MORRISON ST E/S	390' E/O MORRISON ST	2	390	32	12,480.00	E	C&G	81
FULTON AVENUE	6	390' E/O MORRISON ST	PREFONTAINE DR W/S	2	755	33	24,915.00	E	C&G	27
FULTON AVENUE	7	PREFONTAINE DR W/S	RADAR RD E/S	2	395	33	13,035.00	E	C&G	23
FULTON AVENUE	8	RADAR RD E/S	END	2	225	34	7,650.00	E	C&G	81
FULTON AVENUE	9	FILLMORE ST E/S	END	2	135	32	4,320.00	E	C&G	82
GARFIELD AVENUE	1	MORRISON ST E/S	END	2	365	33	12,045.00	E	C&G	76
GARFIELD AVENUE	2	MORRISON ST W/S	MADISON ST E/S	2	465	33	15,345.00	E	C&G	71
GARFIELD AVENUE	3	MADISON ST E/S	END	2	490	34	16,660.00	E	CUR	60
GOLDEN AVENUE	1	7TH ST E/S	5TH ST E/S	2	400	36	14,400.00	E	CUR	63
GOLDEN AVENUE	2	5TH ST E/S	4TH ST W/S	2	350	42	14,700.00	E	CUR	56
GOLDEN AVENUE	3	4TH ST E/S	BROADWAY ST W/S	2	700	50	35,000.00	E	C&G	63
GOLDEN AVENUE	4	BROADWAY ST E/S	FIRST ST W/S	2	325	58	18,850.00	E	C&G	77
H STREET	1	6TH AVE E/S	9TH AVE W/S	2	810	26	21,060.00	E	NON	46
HALL AVENUE	1	7TH ST E/S	4TH ST W/S	2	715	29	20,735.00	E	CUR	44
HALL AVENUE	2	4TH ST E/S	2ND ST W/S	2	325	31	10,075.00	E	CUR	46
HALL AVENUE	3	2ND ST E/S	ALLEY E/S	2	165	35	5,775.00	E	CUR	60
HALL AVENUE	4	ALLEY E/S	BROADWAY ST W/S	2	160	30	4,800.00	E	CUR	77
HALL AVENUE	5	BROADWAY ST E/S	1ST ST W/S	2	230	33	7,590.00	E	C&G	85
HARBORVIEW COURT	1	HARBORVIEW DR W/S	END	2	180	16	2,880.00	E	NON	54
HARBORVIEW DRIVE	1	D ST S/S	END	2	475	16	7,600.00	E	NON	42
HEMLOCK AVENUE	1	BAYSHORE DR W/S	8TH ST E/S	2	1,285.00	24	30,840.00	E	CUR	57
HEMLOCK AVENUE	2	10TH ST W/S	13TH ST E/S	2	1,015.00	29	29,435.00	E	CUR	75
HIGHLAND AVENUE	1	BROADWAY ST W/S	2ND ST E/S	2	205	24	4,920.00	E	CUR	80
HIGHLAND AVENUE	2	2ND ST W/S	5TH ST E/S	2	755	25	18,875.00	E	CUR	79
HIGHLAND AVENUE	3	OCEAN BL E/S	13TH ST E/S	2	535	17	9,095.00	E	NON	73
HOLLAND AVENUE	1	MILL ST W/S	END	2	450	56	25,200.00	E	NON	81
HOSPITAL WAY	1	WOODLAND AVE E/S	END	2	865	35	30,275.00	E	NON	86
HULL STREET	1	NEWMARK AVE N/S	CITY LIMITS	2	75	34	2,550.00	E	C&G	81
I STREET	1	14TH AVE E/S	17TH AVE E/S	2	720	22	15,840.00	E	NON	35
I STREET	2	H ST N/S	I ST S/S	2	525	20	10,500.00	E	NON	71
IDAHO AVENUE	1	SOUTHWEST BL W/S	END	2	1,130.00	25	28,250.00	E	C&G	50
INGERSOLL AVENUE	1	1ST ST W/S	BROADWAY ST E/S	2	230	38	8,740.00	E	C&G	70
INGERSOLL AVENUE	2	BROADWAY AVE W/S	2ND ST E/S	2	325	38	12,350.00	E	AB	29
INGERSOLL AVENUE	3	2ND ST W/S	4TH ST E/S	2	335	38	12,730.00	E	CUR	36
INGERSOLL AVENUE	4	4TH ST W/S	5TH ST E/S	2	345	28	9,660.00	E	CUR	28

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INGERSOLL AVENUE	5	5TH ST W/S	7TH ST E/S	2	345	31	10,695.00	E	CUR	21
INGERSOLL AVENUE	6	7TH ST W/S	10TH ST E/S	2	725	25	18,125.00	E	C&G	57
INGERSOLL AVENUE	7	10TH ST E/S	11TH ST W/S	2	405	35	14,175.00	E	CUR	74
INGERSOLL AVENUE	8	11TH ST W/S	END	2	365	18	6,570.00	E	NON	57
INGERSOLL AVENUE	9	FRON ST W/S	1ST ST E/S	2	220	33	7,260.00	E	C&G	82
INLET LOOP	1	NAUTICAL LN S/S (W)	NAUTICAL LN S/S (E)	2	815	25	20,375.00	E	C&G	95
IVY AVENUE	1	BAYSHORE DR W/S	7TH ST E/S	2	585	37	21,645.00	E	C&G	63
JACKSON STREET	1	1ST AVE W/S	MERCHANT ST W/S	2	345	26	8,970.00	E	NON	35
JACKSON STREET	2	MERCHANT ST W/S	END	2	220	26	5,720.00	E	CUR	95
JEFFERSON STREET	1	MARSHALL AVE N/S	KENTUCKY AVE N/S	2	285	33	9,405.00	E	C&G	91
JOHN AVENUE	1	END WEST	LAKESHORE DR W/S	2	275	15	4,125.00	E	NON	69
JOHN AVENUE	2	LAKESHORE DR E/S	END EAST	2	350	26	9,100.00	E	C&G	81
JOHNSON AVENUE	1	BROADWAY ST W/S	4TH ST E/S	2	720	39	28,080.00	C	CUR	36
JOHNSON AVENUE	2	4TH ST W/S	5TH ST E/S	2	345	39	13,455.00	E	CUR	73
JOHNSON AVENUE	3	5TH ST W/S	7TH ST W/S	2	385	39	15,015.00	E	CUR	67
JOHNSON AVENUE	4	7TH ST W/S	10TH ST E/S	2	725	25	18,125.00	E	CUR	81
JOHNSON AVENUE	5	BROADWAY ST E/S	1ST ST W/S	3	205	56	11,480.00	C	CUR	80
JOHNSON AVENUE	6	1ST ST E/S	FRONT ST W/S	5	220	55	12,100.00	C	CUR	78
JUNIPER AVENUE	1	20TH ST E/S	19TH ST W/S	2	330	34	11,220.00	E	CUR	53
JUNIPER AVENUE	2	19TH ST E/S	COTTONWOOD AVE E/S	2	1,605.00	29	46,545.00	E	CUR	59
JUNIPER AVENUE	3	COTTONWODD AVE E/S	BUTLER RD W/S	2	235	30	7,050.00	E	CUR	73
JUNIPER AVENUE	4	BUTLER RD W/S	14TH ST W/S	2	435	33	14,355.00	E	CUR	37
JUNIPER AVENUE	5	14TH ST W/S	13TH ST E/S	2	430	29	12,470.00	E	CUR	74
JUNIPER AVENUE	6	13TH ST E/S	END	2	440	29	12,760.00	E	CUR	42
JUNIPER AVENUE	7	MYRTLE AVE S/S	20TH ST E/S	2	505	33	16,665.00	E	C&G	73
KENTUCKY AVENUE	1	JEFFERSON ST W/S	END	2	245	33	8,085.00	E	C&G	94
KENTUCKY AVENUE	2	JEFFERSON ST E/S	MORRISON ST W/S	2	1,460.00	24	35,040.00	E	C&G	80
KENTUCKY AVENUE	3	MORRISON ST E/S	125' W/O TRICIA PL	2	395	24	9,480.00	E	C&G	74
KENTUCKY AVENUE	4	125' W/O TRICIA PL	PREFONTAINE DR W/S	2	705	33	23,265.00	E	C&G	37
KINGWOOD AVENUE	1	7TH ST E/S	BAYSHORE DR W/S	2	455	38	17,290.00	E	CUR	46
KINGWOOD AVENUE	2	END	END	2	1,070.00	23	24,610.00	E	CUR	84
KINNEY ROAD	1	THOMPSON RD N/S	CITY LIMITS	2	235	28	6,580.00	E	NON	30
KNOT TERRACE	1	28TH CT W/S	END	2	535	23	12,305.00	E	NON	64
KOOSBAY BOULEVARD	1	BAYSHORE DR W/S	10TH ST E/S	2	1,615.00	36	58,140.00	C	C&G	71
KOOSBAY BOULEVARD	2	10TH ST E/S	TEAKWOOD AVE S/S	2	2,170.00	30	65,100.00	A	CUR	70
KOOSBAY BOULEVARD	3	TEAKWOOD AVE S/S	CITY LIMITS	2	1,565.00	40	62,600.00	A	C&G	45

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KRUSE AVENUE	1	BROADWAY ST W/S	4TH ST E/S	2	1,040.00	40	41,600.00	E	CUR	67
KRUSE AVENUE	2	5TH ST W/S	7TH ST E/S	2	345	37	12,765.00	E	C&G	16
LA CLAIR STREET	1	OCEAN BL N/S	NEWMARK AVE S/S	2	1,555.00	34	55,270.00	E	C&G	26
LAKE COURT	1	TIDEVIEW TERRACE S/S	CDS	2	190	26	7,940.00	E	C&G	85
LAKESHORE DRIVE	1	TAYLOR AVE N/S	CHICKSES DR W/S	2	1,440.00	28	40,320.00	C	NON	78
LAKESHORE DRIVE	2	CHICKSES DR W/S	SEABREEZE TER E/S	2	920	34	31,280.00	C	C&G	79
LAKESHORE DRIVE	3	SEABREEZE TER E/S	CROCKER AVE E/S	2	1,355.00	34	46,070.00	C	C&G	67
LAKESHORE DRIVE	4	CROCKER AVE E/S	CITY LIMITS EAST	2	1,600.00	25	40,000.00	C	C&G	80
LAUREL AVENUE	1	14TH ST W/S	END	2	245	26	6,370.00	E	C&G	76
LEAF TERRACE	1	28TH CT W/S	END	2	495	23	11,885.00	E	NON	69
LIMNELL STREET	1	FINK ST S/S	END	2	180	26	4,680.00	E	NON	72
LINCOLN BOULEVARD	1	WEST HILLS BL S/S	OAKWAY DR E/S	2	635	35	22,225.00	E	C&G	37
LINCOLN BOULEVARD	2	OAKWAY DR E/S	OCEAN BL W/S	2	275	35	9,625.00	E	CUR	83
LINDBERG AVENUE	1	FIR AVE W/S	END	2	1,245.00	33	41,085.00	E	C&G	84
LINDBERG AVENUE	2	BRULE ST W/S	END	2	525	35	18,375.00	E	C&G	62
LINDY LANE	1	OCEAN BL S/S	END	2	75	26	1,950.00	E	NON	74
LISA PLACE	1	KENTUCKY AVE S/S	CDS	2	235	33	8,655.00	E	C&G	76
LOCKHART AVENUE	1	7TH ST E/S	BROADWAY AVE E/S	2	1,520.00	44	66,880.00	C	CUR	82
MADISON STREET	1	MARSHALL AVE N/S	KENTUCKY AVE S/S	2	235	30	7,050.00	E	C&G	78
MADISON STREET	2	PLYMOUTH AVE S/S	FULTON AVE S/S	2	275	29	7,975.00	E	C&G	95
MADISON STREET	3	FULTON AVE N/S	PACIFIC AVE S/S	2	1,005.00	35	35,175.00	E	C&G	79
MADISON STREET	4	PACIFIC AVE N/S	GARFIELD AVE S/S	2	225	35	7,875.00	E	CUR	80
MADISON STREET	5	GARFIELD AVE N/S	MICHIGAN AVE S/S	2	1,265.00	35	44,275.00	E	CUR	76
MAIN STREET	1	SCHETTER AVE N/S	NEWMARK AVE N/S	2	325	55	17,875.00	E	C&G	66
MARKET AVENUE	1	1ST ST W/S	BROADWAY E/S	2	205	39	7,995.00	E	C&G	74
MARKET AVENUE	2	BROADWAY W/S	4TH ST W/S	2	785	39	30,615.00	E	C&G	49
MARKET AVENUE	3	4TH ST W/S	5TH ST E/S	2	220	33	7,260.00	E	C&G	61
MARKET AVENUE	4	5TH ST W/S	END	2	180	25	4,500.00	E	CUR	25
MARPLE STREET	1	FULTON ST N/S	PACIFIC AVE S/S	2	1,005.00	33	33,165.00	E	C&G	61
MARPLE STREET	2	PACIFIC AVE N/S	MICHIGAN AVE S/S	2	1,515.00	33	49,995.00	E	C&G	61
MARPLE STREET	3	MICHIGAN AVE N/S	NEWMARK AVE S/S	2	465	54	25,110.00	E	C&G	62
MARPLE STREET	4	NEWMARK AVE N/S	SCHETTER AVE N/S	2	515	52	26,780.00	E	C&G	73
MARPLE STREET	5	SCHETTER AVE N/S	JACKSON AVE N/S	2	515	35	18,025.00	E	CUR	60
MARPLE STREET	6	JACKSON AVE N/S	HARRIS AVE S/S	2	495	32	15,840.00	E	CUR	58
MARPLE STREET	7	HARRIS AVE S/S	GRANT AVE N/S	2	560	32	17,920.00	E	CUR	62
MARPLE STREET	8	GRANT AVE N/S	TAYLOR AVE N/S	2	475	22	10,450.00	E	CUR	55

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MARSHALL AVENUE	1	MORRISON ST W/S	MADISON ST W/S	2	500	20	10,000.00	E	C&G	85
MARSHALL AVENUE	2	MADISON W/S	END	2	1,270.00	32	40,640.00	E	C&G	91
MARYLAND AVENUE	1	MADISON ST E/S	MORRISON ST W/S	2	465	34	15,810.00	E	C&G	71
MARYLAND AVENUE	2	MORRISON ST E/S	SCHONEMAN ST W/S	2	375	34	12,750.00	E	CUR	59
MASSEY LANE	1	HOSPITAL WY S/S	END	2	395	40	15,800.00	E	NON	82
MERCHANT STREET	1	1ST AVE W/S	END	2	475	26	12,350.00	E	CUR	95
MERCHANT STREET	2	JACKSON ST S/S	D ST N/S	2	230	22	5,060.00	E	NON	54
MERCHANT STREET	3	D ST S/S	FINK ST N/S	2	235	23	5,405.00	E	NON	57
MERRILL STREET	1	OCEAN BL N/S	LINDBERG ST S/S	2	685	33	22,605.00	E	C&G	71
MICHIGAN AVENUE	1	MILL ST E/S	EMPIRE BL W/S	2	235	16	3,760.00	E	NON	39
MICHIGAN AVENUE	2	EMPIRE BL E/S	MARPLE ST E/S	2	290	53	15,370.00	E	C&G	25
MICHIGAN AVENUE	3	MARPLE ST E/S	CAMMANN ST W/S	2	835	53	44,255.00	E	C&G	48
MICHIGAN AVENUE	4	CAMMANN ST E/S	MADISON ST E/S	2	525	44	23,100.00	E	C&G	64
MICHIGAN AVENUE	5	MADISON ST E/S	MORRISON ST W/S	2	460	37	17,020.00	E	CUR	24
MICHIGAN AVENUE	6	MORRISON ST E/S	SCHONEMAN ST E/S	2	405	35	14,175.00	E	CUR	77
MICHIGAN AVENUE	7	SCHONEMAN ST E/S	END	2	450	35	15,750.00	E	CUR	73
MILL STREET	1	NEWMARK AVE S/S	MICHIGAN AVE N/S	2	515	28	14,420.00	E	NON	79
MILLIGAN AVENUE	1	LA CLAIR ST W/S	END	2	475	23	10,925.00	E	C&G	85
MINNESOTA AVENUE	1	SOUTHWEST BL N/S	14TH ST W/S	2	915	34	31,110.00	E	C&G	31
MINNESOTA AVENUE	2	14TH ST W/S	END	2	785	19	14,915.00	E	C&G	81
MONTGOMERY AVENUE	1	MARPLE ST W/S	CDS	2	200	30	6,500.00	E	C&G	75
MONTGOMERY AVENUE	2	MARPLE ST E/S	WALL ST W/S	2	260	33	8,580.00	E	C&G	72
MONTGOMERY AVENUE	3	WALL ST E/S	WASSON ST W/S	2	265	33	8,745.00	E	C&G	77
MONTGOMERY AVENUE	4	WASSON ST E/S	CAMMANN ST W/S	2	265	33	8,745.00	E	C&G	57
MONTGOMERY AVENUE	5	MORRISON ST W/S	END	2	235	32	7,520.00	E	C&G	63
MONTGOMERY AVENUE	6	MORRISON ST E/S	END	2	370	32	11,840.00	E	C&G	7
MORRISON STREET	1	LAKESHORE DR S/S	PIRATES CT S/S	2	885	34	30,090.00	C	C&G	57
MORRISON STREET	2	PIRATES CT S/S	HARRIS AVE N/S	2	1,190.00	26	30,940.00	C	NON	70
MORRISON STREET	3	NEWMARK AVE N/S	END	2	255	24	6,120.00	E	C&G	84
MORRISON STREET	4	NEWMARK AVE S/S	SALMON AVE N/S	2	250	38	9,500.00	C	C&G	40
MORRISON STREET	5	SALMON AVE N/S	MICHIGAN AVE N/S	2	295	37	10,915.00	C	CUR	53
MORRISON STREET	6	MICHIGAN AVE N/S	MONTGOMERY AVE S/S	2	1,085.00	34	36,890.00	C	C&G	77
MORRISON STREET	7	MONTGOMERY AVE S/S	PACIFIC AVE N/S	2	485	33	16,005.00	C	C&G	30
MORRISON STREET	8	PACIFIC AVE N/S	WEBSTER AVE S/S	2	555	33	18,315.00	E	C&G	30
MORRISON STREET	9	WEBSTER AVE S/S	BLANCO AVE S/S	2	260	33	8,580.00	E	C&G	54
MORRISON STREET	10	BLANCO AVE S/S	MARSHALL AVE S/S	2	1,035.00	33	34,155.00	E	C&G	75

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MYRTLE AVENUE	1	BAYSHORE DR W/S	6TH ST E/S	2	185	36	6,660.00	E	C&G	80
MYRTLE AVENUE	2	17TH ST W/S	14TH ST W/S	2	975	35	34,125.00	E	CUR	76
MYRTLE AVENUE	3	14TH ST E/S	END	2	415	22	9,130.00	E	NON	65
MYRTLE AVENUE	4	JUNIPER AVE E/S	WOODLAND AVE E/S	2	490	32	15,680.00	E	C&G	66
NAUTICAL COURT	1	NAUTICAL LN N/S	CDS	2	230	33	8,090.00	E	C&G	95
NAUTICAL LANE	1	PREFONTAINE DR W/S	END	2	695	33	22,935.00	E	C&G	95
NEWMARK AVENUE	1	LA CLAIR ST E/S	WALLACE ST W/S	3	1,765.00	48	92,720.00	A	C&G	81
NEWMARK AVENUE	2	WALLACE ST W/S	CAMMANN ST W/S	5	2,610.00	64	167,040.00	A	CUR	83
NEWMARK AVENUE	3	CAMMANN ST W/S	EMPIRE BL W/S	3	1,160.00	55	63,800.00	A	CUR	82
NEWMARK AVENUE	4	EMPIRE BL W/S	MILL ST W/S	2	270	21	5,670.00	E	NON	49
NEWMARK AVENUE	5	MILL ST W/S	END	2	425	23	9,775.00	E	NON	71
NICHOLLS AVENUE	1	EMPIRE BL E/S	MARPLE ST W/S	2	245	24	5,880.00	E	C&G	84
NOBLE AVENUE	1	CAMMANN ST W/S	WASSON ST E/S	2	260	33	8,580.00	E	C&G	71
NOBLE AVENUE	2	WASSON ST W/S	WALL ST E/S	2	265	33	8,745.00	E	C&G	77
NOBLE AVENUE	3	WALL ST W/S	MARPLE ST E/S	2	260	33	8,580.00	E	C&G	75
NOBLE AVENUE	4	MARPLE ST W/S	EMPIRE BL E/S	2	250	33	8,250.00	E	C&G	77
NOBLE AVENUE	5	MADISON ST E/S	MORRISON ST W/S	2	465	34	15,810.00	E	C&G	76
NOBLE AVENUE	6	MORRISON ST E/S	SCHONEMAN ST W/S	2	375	34	12,750.00	E	C&G	69
NORMAN AVENUE	1	NEWMARK AVE N/S	END	2	270	33	8,910.00	E	C&G	83
NORMAN AVENUE	2	NEWMARK AVE S/S	OCEAN BL N/S	2	1,165.00	33	38,445.00	E	C&G	51
NUTWOOD AVENUE	1	14TH ST W/S	15TH ST E/S	2	220	20	4,400.00	E	NON	39
OAKWAY COURT	1	OAKWAY DR W/S	END	2	85	33	2,805.00	E	C&G	73
OAKWAY DRIVE	1	WEST HILLS BL S/S	LINCOLN RD N/S	2	460	34	15,640.00	E	C&G	73
OAKWAY DRIVE	2	LINCOLN RD S/S (E)	LINCOLN RD N/S (W)	2	1,305.00	34	44,370.00	E	CUR	61
OCEAN BOULEVARD	1	CENTRAL AVE N/S	LINCOLN RD N/S	3	2,660.00	57	151,620.00	A	CUR	77
OCEAN BOULEVARD	2	LINCOLN RD N/S	WOODLAND RD W/S	3	2,435.00	67	163,145.00	A	CUR	79
OCEAN BOULEVARD	3	WOODLAND RD W/S	28TH CT W/S	5	3,410.00	41	139,810.00	A	CUR	82
OCEAN BOULEVARD	4	28TH ST W/S	VINE AVE N/S	4	2,625.00	51	133,875.00	A	CUR	84
OCEAN BOULEVARD	5	VINE AVE N/S	NORMAN AVE W/S	4	2,260.00	51	115,260.00	A	CUR	84
OCEAN BOULEVARD	6	NORMAN AVE W/S	NEWMARK AVE S/S	4	1,825.00	51	93,075.00	A	CUR	80
OCEAN TERRACE	1	LINCOLN RD N/S	WEST HILLS BL E/S	2	570	16	9,120.00	E	CUR	76
OREGON AVENUE	1	SOUTHWEST BL W/S	END	2	1,315.00	26	34,190.00	E	C&G	61
PACIFIC AVENUE	1	EMPIRE BL E/S	FILLMORE ST W/S	2	1,845.00	34	62,730.00	C	C&G	82
PACIFIC AVENUE	2	FILLMORE AVE W/S	MORRISON ST W/S	2	995	34	33,830.00	C	CUR	73
PACIFIC AVENUE	3	MORRISON ST E/S	END	2	1,510.00	33	49,830.00	E	CUR	35
PARK AVENUE	1	TELEGRAPH DR S/S	4TH CT W/S	2	485	35	16,975.00	E	CUR	20

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PARK AVENUE	2	4TH CT W/S	4TH ST W/S	2	230	25	5,750.00	E	CUR	69
PARK AVENUE	3	4TH ST W/S	BROADWAY ST W/S	2	675	34	22,950.00	E	CUR	72
PARK AVENUE	4	14TH ST E/S	CEDAR AVE S/S	2	1,555.00	20	31,100.00	E	NON	48
PARK AVENUE	5	11TH ST W/S	END	2	550	23	12,650.00	E	CUR	27
PENNSYLVANIA AVENUE	1	SOUTHWEST BL W/S	17TH ST W/S	2	900	36	32,400.00	E	C&G	10
PENNSYLVANIA AVENUE	2	17TH ST W/S	19TH ST W/S	2	640	26	16,640.00	E	NON	53
PENNSYLVANIA COURT	1	PENNSYLVANIA PL W/S	END	2	185	33	6,105.00	E	C&G	95
PENNSYLVANIA PLACE	1	PENNSYLVANIA AVE N/S	END	2	550	33	18,150.00	E	C&G	95
PINE AVENUE	1	BAYSHORE DR W/S	8TH ST E/S	2	515	36	18,540.00	E	CUR	70
PLYMOUTH AVENUE	1	MADISON ST E/S	MORRISON ST W/S	2	465	32	14,880.00	E	C&G	86
PLYMOUTH AVENUE	2	MORRISON ST E/S	END	2	360	24	8,640.00	E	C&G	82
PREFONTAINE DRIVE	1	NAUTICAL LN N/S	FULTON AVE S/S	2	1,115.00	33	36,795.00	E	C&G	25
RADAR ROAD	1	FULTON AVE N/S	OCEAN BL S/S	2	2,195.00	35	76,825.00	E	C&G	24
REDWOOD AVENUE	1	8TH ST W/S	11TH ST E/S	2	520	22	11,440.00	E	CUR	48
SALMON AVENUE	1	MORRISON ST E/S	SCHONEMAN ST W/S	2	365	34	12,410.00	E	C&G	73
SALMON AVENUE	2	SCHONEMAN ST E/S	END	2	460	32	14,720.00	E	C&G	77
SANFORD AVENUE	1	END NORTH	VIRGINIA AVE N/S	2	185	35	6,475.00	E	C&G	80
SANFORD AVENUE	2	VIRGINIA AVE S/S	LAKESHORE DR N/S	2	2,240.00	34	76,160.00	E	C&G	65
SANFORD AVENUE	3	LAKESHORE DR S/S	CDS	2	540	30	19,700.00	E	ROL	84
SCHETTER AVENUE	1	MARPLE ST E/S	WALL ST W/S	2	265	50	13,250.00	E	C&G	80
SCHETTER AVENUE	2	WALL ST E/S	WASSON ST W/S	2	260	54	14,040.00	E	C&G	77
SCHONEMAN STREET	1	HARRIS AVE S/S	NEWMARK AVE N/S	2	1,135.00	35	39,725.00	C	C&G	33
SCHONEMAN STREET	2	NEWMARK AVE S/S	MICHIGAN AVE N/S	2	550	33	18,150.00	E	C&G	66
SCHONEMAN STREET	3	MICHIGAN AVE S/S	FLANAGAN AVE N/S	2	755	33	24,915.00	E	C&G	59
SEABREEZE TERRACE	1	TIDEVIEW TERRACE S/S	LAKESHORE DR N/S	2	305	26	7,930.00	E	C&G	48
SEABREEZE TERRACE	2	LAKESHORE DR S/S	LAKEWOOD LN N/S	2	490	26	12,740.00	E	C&G	67
SEAGATE STREET	1	END NORTH	LAKESHORE DR N/S	2	1,195.00	36	43,020.00	E	C&G	85
SEAGATE STREET	3	LAKESHORE DR S/S	END SOUTH	2	715	33	23,595.00	E	C&G	66
SHON-STA WAY	1	CANYON DR E/S	END	2	245	25	6,125.00	E	NON	65
SIGNAL WAY	1	DATE AVE S/S	TELEGRAPH DR E/S	2	720	35	25,200.00	E	CUR	51
SOUTHWEST BOULEVARD	1	CITY LIMITS SOUTH	PENNSYLVANIA AVE S/S	2	1,540.00	33	50,820.00	A	C&G	86
SOUTHWEST BOULEVARD	2	PENNSYLVANIA AVE S/S	MONTANA AVE S/S	2	1,270.00	36	45,720.00	A	C&G	77
SOUTHWEST BOULEVARD	3	MONTANA AVE S/S	WASHINGTON AVE S/S	2	1,435.00	40	57,400.00	A	C&G	47
SOUTHWEST BOULEVARD	4	WASHINGTON AVE S/S	7TH ST E/S	2	2,245.00	37	83,065.00	A	CUR	74
SPRUCE AVENUE	1	11TH ST W/S	END	2	140	20	2,800.00	E	CUR	75
SPRUCE AVENUE	2	14TH ST W/S	16TH ST E/S	2	570	18	10,260.00	E	NON	78

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
STILLWATER DRIVE	1	LAKESHORE DR N/S	CITY LIMITS NORTH	2	790	30	23,700.00	E	ROL	85
TAYLOR AVENUE	1	MARPLE ST W/S	WALL ST W/S	2	220	34	7,480.00	E	CUR	73
TAYLOR AVENUE	2	WALL ST W/S	WASSON ST W/S	2	300	32	9,600.00	E	CUR	79
TAYLOR AVENUE	3	WASSON ST E/S	CAMMANN ST W/S	2	260	33	8,580.00	E	CUR	73
TEAKWOOD AVENUE	1	200' W/O 14TH ST	14TH ST E/S	2	230	32	7,360.00	E	CUR	84
TEAKWOOD AVENUE	2	14TH ST E/S	KOOSBAY BL W/S	2	520	30	15,600.00	E	CUR	82
TELEGRAPH DRIVE	1	DATE AVE (E) S/S	PARK AVE E/S	2	1,080.00	35	37,800.00	E	CUR	38
TELEGRAPH DRIVE	2	PARK AVE E/S	DATE AVE (W) S/S	2	1,025.00	35	35,875.00	E	CUR	45
THOMAS STREET	1	LA CLAIR ST E/S	END	2	605	35	21,175.00	E	C&G	69
THOMPSON ROAD	1	KOOSBAY BL W/S	15TH CT W/S	2	1,340.00	35	46,900.00	C	C&G	80
THOMPSON ROAD	2	15TH CT W/S	KINNEY RD E/S	2	1,895.00	37	70,115.00	C	C&G	76
THOMPSON ROAD	3	KINNEY RD E/S	WOODLAND DR E/S	2	575	36	20,700.00	C	C&G	78
TIDEVIEW TERRACE	1	CHICKSES DR E/S	SEABREEZE TERRACE E/S	2	625	25	15,625.00	E	C&G	81
TIMBERLINE DRIVE	1	19TH ST W/S	235' S/O EVERGREEN DR	2	1,805.00	34	61,370.00	E	C&G	95
TIMBERLINE DRIVE	2	235' S/O EVERGREEN DR	FOREST HILLS DR N/S	2	705	28	19,740.00	E	CUR	95
TRICIA PLACE	1	KENTUCKY AVE N/S	CDS	2	235	33	8,655.00	E	C&G	52
TWIG TERRACE	1	28TH CT W/S	CDS	2	475	23	11,425.00	E	NON	66
UNDERWOOD AVENUE	1	8TH ST W/S	END	2	405	13	5,265.00	E	NON	55
VINE AVENUE	1	34TH ST W/S	OCEAN BL E/S	2	425	33	14,025.00	E	C&G	80
VIRGINIA AVENUE	1	FENWICK AVE E/S	CROCKER AVE W/S	2	505	34	17,170.00	E	C&G	79
VIRGINIA AVENUE	2	CROCKER AVE E/S	CITY LIMITS EAST	2	110	32	3,520.00	E	C&G	83
WAITE STREET	1	ALDERWOOD ST E/S	END	2	160	37	5,920.00	E	C&G	86
WALL STREET	1	TAYLOR AVE S/S	HARRIS AVE S/S	2	1,025.00	36	36,900.00	E	CUR	74
WALL STREET	2	HARRIS AVE S/S	SCHETTER AVE N/S	2	1,010.00	34	34,340.00	E	CUR	59
WALL STREET	3	SCHETTER AVE N/S	NEWMARK AVE N/S	2	520	53	27,560.00	E	C&G	84
WALL STREET	4	NEWMARK AVE S/S	MICHIGAN AVE N/S	2	465	53	24,645.00	E	C&G	58
WALL STREET	5	MICHIGAN AVE S/S	PACIFIC AVE N/S	2	1,515.00	33	49,995.00	E	C&G	68
WALL STREET	6	PACIFIC AVE S/S	FULTON AVE N/S	2	1,005.00	33	33,165.00	E	C&G	74
WALLACE STREET	1	NEWMARK AVE S/S	OCEAN BL N/S	2	615	37	22,755.00	E	C&G	62
WALLACE STREET	2	OCEAN BL S/S	END	2	485	33	16,005.00	E	C&G	45
WALNUT AVENUE	1	FIR ST W/S	34TH ST E/S	2	745	33	24,585.00	E	C&G	83
WASHINGTON AVENUE	1	SOUTHWEST BL W/S	END	2	1,220.00	25	30,500.00	E	C&G	46
WASSON STREET	1	HARRIS AVE S/S	TAYLOR AVE N/S	2	1,060.00	34	36,040.00	C	C&G	54
WASSON STREET	2	HARRIS AVE N/S	SCHETTER AVE S/S	2	1,060.00	34	36,040.00	C	C&G	71
WASSON STREET	3	SCHETTER AVE S/S	NEWMARK AVE N/S	2	475	34	16,150.00	C	C&G	72
WASSON STREET	4	NEWMARK AVE S/S	MICHIGAN AVE N/S	2	465	52	24,180.00	E	C&G	32

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
WASSON STREET	5	MICHIGAN AVE S/S	NOBLE AVE N/S	2	475	34	16,150.00	E	C&G	33
WASSON STREET	6	NOBLE AVE N/S	PACIFIC AVE N/S	2	1,040.00	34	35,360.00	E	C&G	45
WASSON STREET	7	PACIFIC AVE S/S	END	2	1,500.00	33	49,500.00	E	C&G	45
WEBSTER AVENUE	1	MADISON ST W/S	END	2	445	33	14,685.00	E	C&G	76
WEBSTER AVENUE	2	MADISON ST E/S	MORRISON ST W/S	2	465	33	15,345.00	E	C&G	72
WEBSTER AVENUE	3	MORRISON ST E/S	END	2	380	33	12,540.00	E	C&G	72
WEST HILLS BOULEVARD	1	OCEAN BL S/S	LINCOLN BL W/S	2	485	33	16,005.00	E	C&G	50
WHITTY STREET	1	D ST S/S	END	2	475	31	14,725.00	E	CUR	17
WISCONSIN AVENUE	1	EMPIRE BL E/S	END	2	375	33	12,375.00	E	C&G	75
WOODLAND DRIVE	1	CITY LIMITS	MYRTLE AVE S/S	3	2,700.00	37	99,900.00	A	C&G	84
WOODLAND DRIVE	2	MYRTLE AVE S/S	OCEAN BL N/S	2	980	37	36,260.00	A	CUR	82
YEW AVENUE	1	KOOSBAY BL E/S	END	2	210	32	6,720.00	E	NON	15
YEW AVENUE	2	KOOSBAY BL E/S	END	2	690	25	17,250.00	E	NON	23
YEW AVENUE	3	15TH ST E/S	END	2	150	20	3,000.00	E	NON	85
YEW STREET	1	35TH ST W/S	END	2	240	33	7,920.00	E	C&G	73
ZANNA PLACE	1	KENTUCKY AVE S/S	CDS	2	235	33	8,655.00	E	C&G	67
					353,940 67.0		11,557,160			64.3

Total Length	**353,940**	**LF**
Total Area	**11,557,150**	**SF**
Total Centerline Miles	**67.0**	**Miles**
Average PCI	**64.3**	**PCI**

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
11TH STREET	6	100' N/O CENTRAL AVE	100' N/O COMMERCIAL AVE	2	350	25	8,750.00	E	C&G	100
BROOKLYN LANE	1	WOODLAND DR W/S	BROOKLYN DR E/S	2	265	24	6,360.00	E	C&G	100
CENTRAL AVENUE	6	BROADWAY ST W/S	4TH ST E/S	1	725	34	24,650.00	E	CUR	100
10TH COURT	3	F ST S/S	END	2	125	12	1,500.00	E	NON	95
11TH AVENUE	1	F ST S/S	END	2	200	23	4,600.00	E	NON	95
11TH COURT	1	F ST S/S	END	2	135	17	2,295.00	E	NON	95
12TH AVENUE	1	F ST S/S	END	2	205	23	4,715.00	E	NON	95
12TH STREET	5	CENTRAL AVE N/S	COMMERCIAL AVE N/S	2	355	45	12,975.00	E	CUR	95
13TH AVENUE	2	F ST S/S	END	2	245	22	5,390.00	E	C&G	95
13TH COURT	1	F ST S/S	END	2	80	15	1,200.00	E	NON	95
14TH STREET	7	COMMERCIAL AVE S/S	HIGHLAND AVE S/S	2	360	42	11,120.00	E	NON	95
22ND STREET	1	CALIFORNIA AVE S/S	END	2	360	21	7,560.00	E	C&G	95
5TH STREET	2	MARKET AVE N/S	COMMERCIAL AVE N/S	2	255	34	8,670.00	E	C&G	95
8TH STREET	14	ANDERSON AVE S/S	END	2	550	36	19,800.00	E	CUR	95
9TH STREET	4	ANDERSON AVE S/S	END	2	330	35	11,550.00	E	CUR	95
BIRCH AVENUE	1	14TH ST W/S	END	2	110	25	2,750.00	E	C&G	95
BROOKLYN DRIVE	1	END	END	2	260	28	7,280.00	E	C&G	95
CENTRAL AVENUE	5	E/S 7TH ST	6TH ST W/S	2	220	36	7,920.00	E	CUR	95
EDWARDS STREET	1	LAKESHORE DR E/S	END	2	340	26	8,840.00	E	C&G	95
FOREST HILLS DRIVE	1	TIMBERLINE DR W/S	END	2	1,830.00	25	45,750.00	E	CUR	95
INLET LOOP	1	NAUTICAL LN S/S (W)	NAUTICAL LN S/S (E)	2	815	25	20,375.00	E	C&G	95
JACKSON STREET	2	MERCHANT ST W/S	END	2	220	26	5,720.00	E	CUR	95
MADISON STREET	2	PLYMOUTH AVE S/S	FULTON AVE S/S	2	275	29	7,975.00	E	C&G	95
MERCHANT STREET	1	1ST AVE W/S	END	2	475	26	12,350.00	E	CUR	95
NAUTICAL COURT	1	NAUTICAL LN N/S	CDS	2	230	33	8,090.00	E	C&G	95
NAUTICAL LANE	1	PREFONTAINE DR W/S	END	2	695	33	22,935.00	E	C&G	95
PENNSYLVANIA COURT	1	PENNSYLVANIA PL W/S	END	2	185	33	6,105.00	E	C&G	95
PENNSYLVANIA PLACE	1	PENNSYLVANIA AVE N/S	END	2	550	33	18,150.00	E	C&G	95
TIMBERLINE DRIVE	1	19TH ST W/S	235' S/O EVERGREEN DR	2	1,805.00	34	61,370.00	E	C&G	95
TIMBERLINE DRIVE	2	235' S/O EVERGREEN DR	FOREST HILLS DR N/S	2	705	28	19,740.00	E	CUR	95
ADLER AVENUE	2	13TH ST W/S	END	2	200	12	2,400.00	E	NON	94
B STREET	1	2ND AVE E/S	4TH AVE E/S	2	325	32	10,400.00	E	NON	94
FILLMORE STREET	1	MARSHALL AVE N/S	KENTUCKY AVE S/S	2	230	32	7,360.00	E	C&G	94
KENTUCKY AVENUE	1	JEFFERSON ST W/S	END	2	245	33	8,085.00	E	C&G	94
10TH AVENUE	3	F ST S/S	END	2	385	24	9,240.00	E	NON	93
14TH AVENUE	1	F ST N/S	D ST S/S	2	900	25	22,500.00	E	NON	93

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
16TH AVENUE	1	EVERGREEN ST S/S	COOS RIVER HWY S/S	2	1,365.00	28	38,220.00	E	NON	93
CALIFORNIA AVENUE	3	19TH ST E/S	22ND ST W/S	2	320	21	6,720.00	E	C&G	93
JEFFERSON STREET	1	MARSHALL AVE N/S	KENTUCKY AVE N/S	2	285	33	9,405.00	E	C&G	91
MARSHALL AVENUE	2	MADISON W/S	END	2	1,270.00	32	40,640.00	E	C&G	91
CENTRAL AVENUE	4	8TH ST W/S	7TH ST W/S	4	270	55	14,850.00	A	CUR	90
CAMMANN STREET	1	DIVISION AVE S/S	TAYLOR AVE N/S	2	290	33	9,570.00	E	C&G	88
14TH STREET	6	F ST N/S	I ST S/S	2	1,220.00	23	28,060.00	E	NON	86
33RD STREET	1	N/S WALNUT AVE	LINDBERG AVE S/S	2	400	33	13,200.00	E	C&G	86
HOSPITAL WAY	1	WOODLAND AVE E/S	END	2	865	35	30,275.00	E	NON	86
PLYMOUTH AVENUE	1	MADISON ST E/S	MORRISON ST W/S	2	465	32	14,880.00	E	C&G	86
SOUTHWEST BOULEVARD	1	CITY LIMITS SOUTH	PENNSYLVANIA AVE S/S	2	1,540.00	33	50,820.00	A	C&G	86
WAITE STREET	1	ALDERWOOD ST E/S	END	2	160	37	5,920.00	E	C&G	86
13TH AVENUE	3	F ST N/S	END	2	325	28	9,100.00	E	NON	85
14TH STREET	5	CEDAR AVE S/S	BIRCH AVE N/S	2	250	29	7,250.00	E	C&G	85
2ND AVENUE	03B	B ST S/S	A ST S/S	2	470	16	7,520.00	E	NON	85
4TH STREET	5	CURTIS AVE S/S	ANDERSON AVE S/S	2	495	63	31,185.00	C	CUR	85
6TH STREET	8	MYRTLE AVE S/S	PINE AVE S/S	2	745	41	30,545.00	E	C&G	85
ALDERWOOD STREET	1	LINDBERG AVE N/S	WAITE ST N/S	2	410	37	15,170.00	E	C&G	85
CAMMANN STREET	7	NEWMARK AVE S/S	MICHIGAN AVE N/S	2	475	54	25,650.00	E	C&G	85
ELROD AVENUE	2	BROADWAY ST W/S	4TH ST E/S	2	700	54	37,800.00	C	CUR	85
F STREET	5	12TH CT W/S	14TH AVE W/S	2	415	25	10,375.00	E	C&G	85
FILBERT AVENUE	1	17TH AVE E/S	18TH AVE E/S	2	115	32	3,680.00	E	NON	85
HALL AVENUE	5	BROADWAY ST E/S	1ST ST W/S	2	230	33	7,590.00	E	C&G	85
LAKE COURT	1	TIDEVIEW TERRACE S/S	CDS	2	190	26	7,940.00	E	C&G	85
MARSHALL AVENUE	1	MORRISON ST W/S	MADISON ST W/S	2	500	20	10,000.00	E	C&G	85
MILLIGAN AVENUE	1	LA CLAIR ST W/S	END	2	475	23	10,925.00	E	C&G	85
SEAGATE STREET	1	END NORTH	LAKESHORE DR N/S	2	1,195.00	36	43,020.00	E	C&G	85
STILLWATER DRIVE	1	LAKESHORE DR N/S	CITY LIMITS NORTH	2	790	30	23,700.00	E	ROL	85
YEW AVENUE	3	15TH ST E/S	END	2	150	20	3,000.00	E	NON	85
16TH STREET	1	CALIFORNIA AVE N/S	END	2	350	27	9,450.00	E	C&G	84
2ND STREET	9	ANDERSON AVE N/S	CENTRAL AVE S/S	2	220	30	6,600.00	E	C&G	84
4TH STREET	2	KRUSE AVE N/S	JOHNSON AVE N/S	2	535	42	22,470.00	C	C&G	84
4TH STREET	3	JOHNSON AVE N/S	GOLDEN AVE S/S	2	1,685.00	42	70,770.00	C	CUR	84
7TH STREET	11	HEMLOCK AVE N/S	IVY AVE N/S	2	250	37	9,250.00	E	C&G	84
CANYON TERRACE	1	CANYON DR W/S	END	2	315	20	6,300.00	E	CUR	84
CENTRAL AVENUE	3	10TH ST W/S	8TH ST W/S	3	645	41	26,445.00	A	CUR	84

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
DONNELLY AVENUE	1	4TH ST W/S	6TH ST E/S	2	500	24	12,000.00	E	C&G	84
KINGWOOD AVENUE	2	END	END	2	1,070.00	23	24,610.00	E	CUR	84
LINDBERG AVENUE	1	FIR AVE W/S	END	2	1,245.00	33	41,085.00	E	C&G	84
MORRISON STREET	3	NEWMARK AVE N/S	END	2	255	24	6,120.00	E	C&G	84
NICHOLLS AVENUE	1	EMPIRE BL E/S	MARPLE ST W/S	2	245	24	5,880.00	E	C&G	84
OCEAN BOULEVARD	4	28TH ST W/S	VINE AVE N/S	4	2,625.00	51	133,875.00	A	CUR	84
OCEAN BOULEVARD	5	VINE AVE N/S	NORMAN AVE W/S	4	2,260.00	51	115,260.00	A	CUR	84
SANFORD AVENUE	3	LAKESHORE DR S/S	CDS	2	540	30	19,700.00	E	ROL	84
TEAKWOOD AVENUE	1	200' W/O 14TH ST	14TH ST E/S	2	230	32	7,360.00	E	CUR	84
WALL STREET	3	SCHETTER AVE N/S	NEWMARK AVE N/S	2	520	53	27,560.00	E	C&G	84
WOODLAND DRIVE	1	CITY LIMITS	MYRTLE AVE S/S	3	2,700.00	37	99,900.00	A	C&G	84
10TH STREET	3	180' N/O COMMERCIAL AVE	8TH TER S/S	2	435	28	12,180.00	A	CUR	83
10TH STREET	5	DATE AVE N/S	HEMLOCK AVE N/S	2	1,215.00	25	30,375.00	A	C&G	83
13TH STREET	2	BIRCH AVE S/S	ADLER AVE N/S	2	235	25	5,875.00	E	CUR	83
19TH STREET	5	OCEAN BL S/S	TIMBERLINE DR S/S	2	205	35	7,175.00	E	C&G	83
20TH STREET	1	CALIFORNIA AVE S/S	END	2	420	20	8,400.00	E	C&G	83
21ST STREET	1	CALIFORNIA AVE S/S	END	2	215	16	3,440.00	E	NON	83
32ND STREET	1	N/S WALNUT AVE	LINDBERG AVE S/S	2	380	33	12,540.00	E	C&G	83
3RD COURT	1	DATE AVE N/S	END	2	415	15	6,225.00	E	NON	83
4TH STREET	10	2ND CT N/S	FIR AVE N/S	2	120	20	2,400.00	E	NON	83
7TH STREET	6	HALL ST N/S	INGERSOLL AVE S/S	2	630	39	24,570.00	E	CUR	83
CALIFORNIA AVENUE	1	SOUTHWEST BL W/S	16TH ST W/S	2	1,615.00	20	32,300.00	E	NON	83
COMMERCIAL AVENUE	6	11TH ST W/S	12TH ST E/S	2	280	25	7,000.00	A	CUR	83
DATE AVENUE	1	10TH ST E/S	8TH ST E/S	2	535	25	13,375.00	E	CUR	83
FENWICK AVENUE	3	LAKESHORE DR S/S	END	2	665	34	22,610.00	E	C&G	83
LINCOLN BOULEVARD	2	OAKWAY DR E/S	OCEAN BL W/S	2	275	35	9,625.00	E	CUR	83
NEWMARK AVENUE	2	WALLACE ST W/S	CAMMANN ST W/S	5	2,610.00	64	167,040.00	A	CUR	83
NORMAN AVENUE	1	NEWMARK AVE N/S	END	2	270	33	8,910.00	E	C&G	83
VIRGINIA AVENUE	2	CROCKER AVE E/S	CITY LIMITS EAST	2	110	32	3,520.00	E	C&G	83
WALNUT AVENUE	1	FIR ST W/S	34TH ST E/S	2	745	33	24,585.00	E	C&G	83
11TH STREET	1	INGERSOLL AVE N/S	FERGUSON AVE N/S	2	1,475.00	36	53,100.00	E	C&G	82
18TH AVENUE	2	FILBERT AVE N/S	CDS	2	595	25	15,875.00	E	NON	82
28TH COURT	2	OCEAN BL S/S	TWIG TER S/S	2	900	26	23,400.00	E	CUR	82
3RD STREET	3	COMMERCIAL AVE S/S	CENTRAL AVE N/S	2	220	29	6,380.00	E	C&G	82
APPLEWOOD DRIVE	1	16TH AVE E/S	END	2	870	16	13,920.00	E	NON	82
BLANCO AVENUE	3	MADISON ST W/S	FILLMORE ST E/S	2	465	33	15,345.00	E	C&G	82

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
FILLMORE STREET	2	FULTON AVE S/S	END	2	430	32	13,760.00	E	C&G	82
FULTON AVENUE	9	FILLMORE ST E/S	END	2	135	32	4,320.00	E	C&G	82
INGERSOLL AVENUE	9	FRON ST W/S	1ST ST E/S	2	220	33	7,260.00	E	C&G	82
LOCKHART AVENUE	1	7TH ST E/S	BROADWAY AVE E/S	2	1,520.00	44	66,880.00	C	CUR	82
MASSEY LANE	1	HOSPITAL WY S/S	END	2	395	40	15,800.00	E	NON	82
NEWMARK AVENUE	3	CAMMANN ST W/S	EMPIRE BL W/S	3	1,160.00	55	63,800.00	A	CUR	82
OCEAN BOULEVARD	3	WOODLAND RD W/S	28TH CT W/S	5	3,410.00	41	139,810.00	A	CUR	82
PACIFIC AVENUE	1	EMPIRE BL E/S	FILLMORE ST W/S	2	1,845.00	34	62,730.00	C	C&G	82
PLYMOUTH AVENUE	2	MORRISON ST E/S	END	2	360	24	8,640.00	E	C&G	82
TEAKWOOD AVENUE	2	14TH ST E/S	KOOSBAY BL W/S	2	520	30	15,600.00	E	CUR	82
WOODLAND DRIVE	2	MYRTLE AVE S/S	OCEAN BL N/S	2	980	37	36,260.00	A	CUR	82
10TH STREET	2	CENTRAL AVE N/S	180' N/O COMMERCIAL AVE	2	500	35	17,500.00	A	CUR	81
10TH STREET	4	8TH TER S/S	DATE AVE N/S	2	1,085.00	29	31,465.00	A	C&G	81
10TH STREET	6	HEMLOCK AVE N/S	KOOSBAY BL S/S	2	810	35	28,350.00	A	CUR	81
16TH STREET	2	MYRTLE AVE S/S	KINGWOOD AVE N/S	2	445	34	15,130.00	E	CUR	81
1ST AVENUE	1	FINK ST N/S	D ST S/S	2	200	24	4,800.00	E	NON	81
BESSIE STREET	1	FINK ST N/S	END	2	245	27	6,615.00	E	NON	81
CAMMANN STREET	8	MICHIGAN AVE N/S	MONTGOMERY AVE N/S	2	1,050.00	34	35,700.00	E	C&G	81
D STREET	4	2ND AVE W/S	1ST AVE E/S	2	275	30	8,250.00	C	NON	81
FENWICK AVENUE	1	MAXWELL RD S/S	ST JOHN ST S/S	2	1,045.00	33	34,485.00	E	C&G	81
FULTON AVENUE	5	MORRISON ST E/S	390' E/O MORRISON ST	2	390	32	12,480.00	E	C&G	81
FULTON AVENUE	8	RADAR RD E/S	END	2	225	34	7,650.00	E	C&G	81
HOLLAND AVENUE	1	MILL ST W/S	END	2	450	56	25,200.00	E	NON	81
HULL STREET	1	NEWMARK AVE N/S	CITY LIMITS	2	75	34	2,550.00	E	C&G	81
JOHN AVENUE	2	LAKESHORE DR E/S	END EAST	2	350	26	9,100.00	E	C&G	81
JOHNSON AVENUE	4	7TH ST W/S	10TH ST E/S	2	725	25	18,125.00	E	CUR	81
MINNESOTA AVENUE	2	14TH ST W/S	END	2	785	19	14,915.00	E	C&G	81
NEWMARK AVENUE	1	LA CLAIR ST E/S	WALLACE ST W/S	3	1,765.00	48	92,720.00	A	C&G	81
TIDEVIEW TERRACE	1	CHICKSES DR E/S	SEABREEZE TERRACE E/S	2	625	25	15,625.00	E	C&G	81
ELM AVENUE	1	10TH CT E/S	END	2	250	18	4,500.00	E	NON	80
FULTON AVENUE	4	MADISON ST W/S	MORRISON ST W/S	2	495	32	15,840.00	E	C&G	80
HIGHLAND AVENUE	1	BROADWAY ST W/S	2ND ST E/S	2	205	24	4,920.00	E	CUR	80
JOHNSON AVENUE	5	BROADWAY ST E/S	1ST ST W/S	3	205	56	11,480.00	C	CUR	80
KENTUCKY AVENUE	2	JEFFERSON ST E/S	MORRISON ST W/S	2	1,460.00	24	35,040.00	E	C&G	80
LAKESHORE DRIVE	4	CROCKER AVE E/S	CITY LIMITS EAST	2	1,600.00	25	40,000.00	C	C&G	80
MADISON STREET	4	PACIFIC AVE N/S	GARFIELD AVE S/S	2	225	35	7,875.00	E	CUR	80

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
MYRTLE AVENUE	1	BAYSHORE DR W/S	6TH ST E/S	2	185	36	6,660.00	E	C&G	80
OCEAN BOULEVARD	6	NORMAN AVE W/S	NEWMARK AVE S/S	4	1,825.00	51	93,075.00	A	CUR	80
SANFORD AVENUE	1	END NORTH	VIRGINIA AVE N/S	2	185	35	6,475.00	E	C&G	80
SCHETTER AVENUE	1	MARPLE ST E/S	WALL ST W/S	2	265	50	13,250.00	E	C&G	80
THOMPSON ROAD	1	KOOSBAY BL W/S	15TH CT W/S	2	1,340.00	35	46,900.00	C	C&G	80
VINE AVENUE	1	34TH ST W/S	OCEAN BL E/S	2	425	33	14,025.00	E	C&G	80
13TH COURT	2	F ST N/S	END	2	305	18	5,490.00	E	NON	79
9TH AVENUE	2	F ST S/S	H ST N/S	2	915	23	21,045.00	E	NON	79
9TH AVENUE	3	H ST N/S	I ST S/S	2	250	24	6,000.00	E	NON	79
CHICKSES DRIVE	1	END NORTH	LAKESHORE DR N/S	2	585	33	19,305.00	E	C&G	79
DATE AVENUE	2	8TH ST E/S	TELEGRAPH DR E/S	2	1,205.00	34	40,970.00	E	CUR	79
F STREET	1	6TH ST E/S	9TH AVE W/S	2	870	29	25,230.00	E	C&G	79
F STREET	3	10TH AVE W/S	12TH AVE E/S	2	560	23	12,880.00	E	C&G	79
FERN COURT	1	EVERGREEN DR W/S	CDS	2	240	34	9,160.00	E	C&G	79
FRONT STREET	1	JOHNSON AVE N/S	INGERSOLL AVE N/S	2	565	22	12,430.00	E	C&G	79
FULTON AVENUE	3	CAMMANN ST W/S	END	2	325	17	5,525.00	E	C&G	79
HIGHLAND AVENUE	2	2ND ST W/S	5TH ST E/S	2	755	25	18,875.00	E	CUR	79
LAKESHORE DRIVE	2	CHICKSES DR W/S	SEABREEZE TER E/S	2	920	34	31,280.00	C	C&G	79
MADISON STREET	3	FULTON AVE N/S	PACIFIC AVE S/S	2	1,005.00	35	35,175.00	E	C&G	79
MILL STREET	1	NEWMARK AVE S/S	MICHIGAN AVE N/S	2	515	28	14,420.00	E	NON	79
OCEAN BOULEVARD	2	LINCOLN RD N/S	WOODLAND RD W/S	3	2,435.00	67	163,145.00	A	CUR	79
TAYLOR AVENUE	2	WALL ST W/S	WASSON ST W/S	2	300	32	9,600.00	E	CUR	79
VIRGINIA AVENUE	1	FENWICK AVE E/S	CROCKER AVE W/S	2	505	34	17,170.00	E	C&G	79
15TH STREET	1	THOMPSON RD N/S	END	2	620	27	16,740.00	E	NON	78
17TH STREET	2	MYRTLE AVE S/S	KINGWOOD AVE N/S	2	400	35	14,000.00	E	CUR	78
2ND STREET	7	CURTIS AVE N/S	ANDERSON AVE S/S	2	465	38	21,470.00	E	CUR	78
3RD AVENUE	1	D ST S/S	E ST N/S	2	355	24	8,520.00	E	NON	78
3RD STREET	2	CENTRAL AVE S/S	ANDERSON AVE N/S	2	225	28	6,300.00	E	C&G	78
8TH LOOP	1	BIRCH AVE N/S	8TH ST W/S	2	330	22	7,260.00	E	CUR	78
ANDERSON AVENUE	3	7TH ST W/S	10TH ST E/S	2	895	35	31,325.00	E	CUR	78
BIRCH AVENUE	2	8TH ST W/S	END	2	160	22	3,520.00	E	CUR	78
CALIFORNIA AVENUE	2	16TH ST W/S	19TH ST E/S	2	860	22	18,920.00	E	NON	78
COMMERCIAL AVENUE	4	8TH ST W/S	10TH ST E/S	2	605	35	21,175.00	A	CUR	78
COMMERCIAL AVENUE	5	10TH ST W/S	11TH ST E/S	2	290	29	8,410.00	A	CUR	78
JOHNSON AVENUE	6	1ST ST E/S	FRONT ST W/S	5	220	55	12,100.00	C	CUR	78
LAKESHORE DRIVE	1	TAYLOR AVE N/S	CHICKSES DR W/S	2	1,440.00	28	40,320.00	C	NON	78

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
MADISON STREET	1	MARSHALL AVE N/S	KENTUCKY AVE S/S	2	235	30	7,050.00	E	C&G	78
SPRUCE AVENUE	2	14TH ST W/S	16TH ST E/S	2	570	18	10,260.00	E	NON	78
THOMPSON ROAD	3	KINNEY RD E/S	WOODLAND DR E/S	2	575	36	20,700.00	C	C&G	78
4TH STREET	1	LOCKHART AVE N/S	KRUSE AVE N/S	2	570	44	25,080.00	C	CUR	77
6TH STREET	4	ELROD AVE S/S	CDS	2	305	24	7,920.00	E	CUR	77
7TH AVENUE	4	I ST N/S	H ST N/S	2	260	14	3,640.00	E	NON	77
7TH STREET	3	DONNELLY AVE N/S	ELROD AVE N/S	2	255	36	9,180.00	E	CUR	77
COMMERCIAL AVENUE	2	BROADWAY ST W/S	7TH ST W/S	2	1,565.00	42	65,730.00	A	CUR	77
EMPIRE BOULEVARD	1	SCHETTER AVE N/S	NEWMARK AVE N/S	2	525	24	12,600.00	A	NON	77
GOLDEN AVENUE	4	BROADWAY ST E/S	FIRST ST W/S	2	325	58	18,850.00	E	C&G	77
HALL AVENUE	4	ALLEY E/S	BROADWAY ST W/S	2	160	30	4,800.00	E	CUR	77
MICHIGAN AVENUE	6	MORRISON ST E/S	SCHONEMAN ST E/S	2	405	35	14,175.00	E	CUR	77
MONTGOMERY AVENUE	3	WALL ST E/S	WASSON ST W/S	2	265	33	8,745.00	E	C&G	77
MORRISON STREET	6	MICHIGAN AVE N/S	MONTGOMERY AVE S/S	2	1,085.00	34	36,890.00	C	C&G	77
NOBLE AVENUE	2	WASSON ST W/S	WALL ST E/S	2	265	33	8,745.00	E	C&G	77
NOBLE AVENUE	4	MARPLE ST W/S	EMPIRE BL E/S	2	250	33	8,250.00	E	C&G	77
OCEAN BOULEVARD	1	CENTRAL AVE N/S	LINCOLN RD N/S	3	2,660.00	57	151,620.00	A	CUR	77
SALMON AVENUE	2	SCHONEMAN ST E/S	END	2	460	32	14,720.00	E	C&G	77
SCHETTER AVENUE	2	WALL ST E/S	WASSON ST W/S	2	260	54	14,040.00	E	C&G	77
SOUTHWEST BOULEVARD	2	PENNSYLVANIA AVE S/S	MONTANA AVE S/S	2	1,270.00	36	45,720.00	A	C&G	77
10TH COURT	2	HEMLOCK AVE N/S	END	2	240	14	3,360.00	E	NON	76
5TH AVENUE	1	D ST N/S	END	2	220	25	5,500.00	E	NON	76
7TH ROAD	1	FIR AVE S/S	3RD CT N/S	2	185	35	6,475.00	E	C&G	76
7TH STREET	10	HEMLOCK AVE S/S	END	2	675	32	21,600.00	E	C&G	76
8TH STREET	13	DATE AVE S/S	BIRCH AVE S/S	2	660	26	17,160.00	E	CUR	76
8TH TERRACE	1	8TH ST W/S	10TH ST E/S	2	640	25	16,000.00	E	CUR	76
CENTRAL AVENUE	1	OCEAN BL E/S	12TH ST E/S	2	690	30	20,700.00	A	CUR	76
D STREET	5	1ST AVE E/S	WHITTY ST W/S	2	645	33	21,285.00	C	C&G	76
DATE AVENUE	4	10TH ST W/S	10TH CT W/S	2	250	18	4,500.00	E	NON	76
GARFIELD AVENUE	1	MORRISON ST E/S	END	2	365	33	12,045.00	E	C&G	76
LAUREL AVENUE	1	14TH ST W/S	END	2	245	26	6,370.00	E	C&G	76
LISA PLACE	1	KENTUCKY AVE S/S	CDS	2	235	33	8,655.00	E	C&G	76
MADISON STREET	5	GARFIELD AVE N/S	MICHIGAN AVE S/S	2	1,265.00	35	44,275.00	E	CUR	76
MYRTLE AVENUE	2	17TH ST W/S	14TH ST W/S	2	975	35	34,125.00	E	CUR	76
NOBLE AVENUE	5	MADISON ST E/S	MORRISON ST W/S	2	465	34	15,810.00	E	C&G	76
OCEAN TERRACE	1	LINCOLN RD N/S	WEST HILLS BL E/S	2	570	16	9,120.00	E	CUR	76

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
THOMPSON ROAD	2	15TH CT W/S	KINNEY RD E/S	2	1,895.00	37	70,115.00	C	C&G	76
WEBSTER AVENUE	1	MADISON ST W/S	END	2	445	33	14,685.00	E	C&G	76
11TH STREET	3	SPRUCE AVE N/S	END SOUTH	2	325	18	5,850.00	E	CUR	75
13TH STREET	3	HIGHLAND AVE S/S	COMMERCIAL AVE N/S	2	335	19	6,365.00	E	NON	75
14TH COURT	1	D ST N/S	END	2	200	13	2,600.00	E	NON	75
2ND STREET	10	CENTRAL AVE N/S	COMMERCIAL AVE S/S	2	220	30	6,600.00	E	C&G	75
2ND STREET	11	COMMERCIAL AVE N/S	MARKET AVE S/S	2	215	41	8,815.00	E	C&G	75
35TH STREET	1	VINE AVE N/S	LINDBERG AVE S/S	2	665	33	18,645.00	E	C&G	75
7TH AVENUE	3	D ST N/S	END	2	240	22	5,280.00	E	NON	75
7TH STREET	13	HEMLOCK AVE S/S	END	2	315	33	10,395.00	E	C&G	75
8TH AVENUE	2	D ST S/S	E ST N/S	2	435	22	9,570.00	E	NON	75
ACKERMAN STREET	1	NEWMARK AVE N/S	END	2	1,265.00	33	41,745.00	E	C&G	75
ARAGO AVENUE	3	MADISON ST W/S	FILLMORE ST E/S	2	465	33	15,345.00	E	CUR	75
BLANCO AVENUE	2	MORRISON ST W/S	MADISON ST E/S	2	465	33	15,345.00	E	C&G	75
CROCKER AVENUE	4	ST JOHN N/S	END	2	800	35	28,000.00	E	C&G	75
HEMLOCK AVENUE	2	10TH ST W/S	13TH ST E/S	2	1,015.00	29	29,435.00	E	CUR	75
MONTGOMERY AVENUE	1	MARPLE ST W/S	CDS	2	200	30	6,500.00	E	C&G	75
MORRISON STREET	10	BLANCO AVE S/S	MARSHALL AVE S/S	2	1,035.00	33	34,155.00	E	C&G	75
NOBLE AVENUE	3	WALL ST W/S	MARPLE ST E/S	2	260	33	8,580.00	E	C&G	75
SPRUCE AVENUE	1	11TH ST W/S	END	2	140	20	2,800.00	E	CUR	75
WISCONSIN AVENUE	1	EMPIRE BL E/S	END	2	375	33	12,375.00	E	C&G	75
14TH STREET	1	JUNIPER AVE N/S	MYRTLE AVE S/S	2	925	30	27,750.00	E	CUR	74
16TH COURT	1	THOMPSON RD N/S	END	2	50	15	750	E	NON	74
4TH STREET	4	GOLDEN AVE S/S	CURTIS AVE S/S	2	1,140.00	54	62,560.00	C	CUR	74
7TH AVENUE	2	E ST N/S	D ST S/S	2	435	30	13,050.00	E	NON	74
7TH STREET	5	FERGUSON AVE S/S	HALL ST N/S	2	865	39	33,735.00	E	CUR	74
COTTONWOOD AVENUE	1	JUNIPER AVE N/S	END	2	1,720.00	29	49,880.00	E	CUR	74
CROCKER AVENUE	1	ST JOHN N/S	HOWARD ST N/S	2	470	35	16,450.00	E	C&G	74
FILBERT AVENUE	2	18TH AVE E/S	END	2	895	23	20,585.00	E	NON	74
INGERSOLL AVENUE	7	10TH ST E/S	11TH ST W/S	2	405	35	14,175.00	E	CUR	74
JUNIPER AVENUE	5	14TH ST W/S	13TH ST E/S	2	430	29	12,470.00	E	CUR	74
KENTUCKY AVENUE	3	MORRISON ST E/S	125' W/O TRICIA PL	2	395	24	9,480.00	E	C&G	74
LINDY LANE	1	OCEAN BL S/S	END	2	75	26	1,950.00	E	NON	74
MARKET AVENUE	1	1ST ST W/S	BROADWAY E/S	2	205	39	7,995.00	E	C&G	74
SOUTHWEST BOULEVARD	4	WASHINGTON AVE S/S	7TH ST E/S	2	2,245.00	37	83,065.00	A	CUR	74
WALL STREET	1	TAYLOR AVE S/S	HARRIS AVE S/S	2	1,025.00	36	36,900.00	E	CUR	74

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
WALL STREET	6	PACIFIC AVE S/S	FULTON AVE N/S	2	1,005.00	33	33,165.00	E	C&G	74
10TH STREET	1	ELROD AVE N/S	CENTRAL AVE S/S	2	1,285.00	35	44,975.00	C	CUR	73
19TH STREET	4	THOMPSON RD S/S	END	2	650	33	21,450.00	E	C&G	73
8TH STREET	11	COMMERCIAL AVE N/S	8TH TERR N/S	2	270	32	8,640.00	E	CUR	73
9TH STREET	2	COMMERCIAL AVE S/S	CENTRAL AVE N/S	2	320	23	7,360.00	E	CUR	73
AUGUSTINE AVENUE	2	LAKESHORE DR S/S	END SOUTH	2	665	33	21,945.00	E	C&G	73
HIGHLAND AVENUE	3	OCEAN BL E/S	13TH ST E/S	2	535	17	9,095.00	E	NON	73
JOHNSON AVENUE	2	4TH ST W/S	5TH ST E/S	2	345	39	13,455.00	E	CUR	73
JUNIPER AVENUE	3	COTTONWODD AVE E/S	BUTLER RD W/S	2	235	30	7,050.00	E	CUR	73
JUNIPER AVENUE	7	MYRTLE AVE S/S	20TH ST E/S	2	505	33	16,665.00	E	C&G	73
MARPLE STREET	4	NEWMARK AVE N/S	SCHETTER AVE N/S	2	515	52	26,780.00	E	C&G	73
MICHIGAN AVENUE	7	SCHONEMAN ST E/S	END	2	450	35	15,750.00	E	CUR	73
OAKWAY COURT	1	OAKWAY DR W/S	END	2	85	33	2,805.00	E	C&G	73
OAKWAY DRIVE	1	WEST HILLS BL S/S	LINCOLN RD N/S	2	460	34	15,640.00	E	C&G	73
PACIFIC AVENUE	2	FILLMORE AVE W/S	MORRISON ST W/S	2	995	34	33,830.00	C	CUR	73
SALMON AVENUE	1	MORRISON ST E/S	SCHONEMAN ST W/S	2	365	34	12,410.00	E	C&G	73
TAYLOR AVENUE	1	MARPLE ST W/S	WALL ST W/S	2	220	34	7,480.00	E	CUR	73
TAYLOR AVENUE	3	WASSON ST E/S	CAMMANN ST W/S	2	260	33	8,580.00	E	CUR	73
YEW STREET	1	35TH ST W/S	END	2	240	33	7,920.00	E	C&G	73
34TH STREET	1	LINDBERG AVE S/S	OCEAN BL N/S	2	1,195.00	36	43,020.00	E	C&G	72
COMPASS CIRCLE	1	RADAR RD E/S	CDS	2	190	33	7,370.00	E	C&G	72
DENISE PLACE	1	KENTUCKY AVE N/S	CDS	2	410	34	14,840.00	E	C&G	72
FIR STREET	1	NEWMARK AVE S/S	WALNUT AVE S/S	2	1,815.00	35	63,525.00	E	C&G	72
LIMNELL STREET	1	FINK ST S/S	END	2	180	26	4,680.00	E	NON	72
MONTGOMERY AVENUE	2	MARPLE ST E/S	WALL ST W/S	2	260	33	8,580.00	E	C&G	72
PARK AVENUE	3	4TH ST W/S	BROADWAY ST W/S	2	675	34	22,950.00	E	CUR	72
WASSON STREET	3	SCHETTER AVE S/S	NEWMARK AVE N/S	2	475	34	16,150.00	C	C&G	72
WEBSTER AVENUE	2	MADISON ST E/S	MORRISON ST W/S	2	465	33	15,345.00	E	C&G	72
WEBSTER AVENUE	3	MORRISON ST E/S	END	2	380	33	12,540.00	E	C&G	72
4TH AVENUE	1	E ST N/S	D ST S/S	2	435	22	9,570.00	E	NON	71
8TH STREET	9	JOHNSON AVE S/S	END	2	525	29	15,225.00	E	CUR	71
ARAGO AVENUE	2	MORRISON ST W/S	MADISON ST E/S	2	465	33	15,345.00	E	C&G	71
GARFIELD AVENUE	2	MORRISON ST W/S	MADISON ST E/S	2	465	33	15,345.00	E	C&G	71
I STREET	2	H ST N/S	I ST S/S	2	525	20	10,500.00	E	NON	71
KOOSBAY BOULEVARD	1	BAYSHORE DR W/S	10TH ST E/S	2	1,615.00	36	58,140.00	C	C&G	71
MARYLAND AVENUE	1	MADISON ST E/S	MORRISON ST W/S	2	465	34	15,810.00	E	C&G	71

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
MERRILL STREET	1	OCEAN BL N/S	LINDBERG ST S/S	2	685	33	22,605.00	E	C&G	71
NEWMARK AVENUE	5	MILL ST W/S	END	2	425	23	9,775.00	E	NON	71
NOBLE AVENUE	1	CAMMANN ST W/S	WASSON ST E/S	2	260	33	8,580.00	E	C&G	71
WASSON STREET	2	HARRIS AVE N/S	SCHETTER AVE S/S	2	1,060.00	34	36,040.00	C	C&G	71
5TH STREET	12	BENNETT AVE N/S	ANDERSON AVE S/S	2	220	36	7,920.00	E	CUR	70
6TH STREET	3	BENNETT AVE S/S	ELROD AVE N/S	2	770	24	18,480.00	E	CUR	70
CEDAR AVENUE	3	16TH AVE W/S	END	2	705	21	14,805.00	E	NON	70
COMMERCIAL AVENUE	3	7TH ST W/S	8TH ST W/S	2	300	33	9,900.00	A	CUR	70
INGERSOLL AVENUE	1	1ST ST W/S	BROADWAY ST E/S	2	230	38	8,740.00	E	C&G	70
KOOSBAY BOULEVARD	2	10TH ST E/S	TEAKWOOD AVE S/S	2	2,170.00	30	65,100.00	A	CUR	70
MORRISON STREET	2	PIRATES CT S/S	HARRIS AVE N/S	2	1,190.00	26	30,940.00	C	NON	70
PINE AVENUE	1	BAYSHORE DR W/S	8TH ST E/S	2	515	36	18,540.00	E	CUR	70
19TH STREET	3	JUNIPER AVE S/S	COTTONWOOD AVE S/S	2	290	28	8,120.00	E	CUR	69
4TH STREET	7	COMMERCIAL AVE N/S	MARKET AVE S/S	3	215	52	11,180.00	C	C&G	69
AUGUSTINE AVENUE	1	END NORTH	LAKESHORE DR N/S	2	1,600.00	34	54,400.00	E	C&G	69
JOHN AVENUE	1	END WEST	LAKESHORE DR W/S	2	275	15	4,125.00	E	NON	69
LEAF TERRACE	1	28TH CT W/S	END	2	495	23	11,885.00	E	NON	69
NOBLE AVENUE	6	MORRISON ST E/S	SCHONEMAN ST W/S	2	375	34	12,750.00	E	C&G	69
PARK AVENUE	2	4TH CT W/S	4TH ST W/S	2	230	25	5,750.00	E	CUR	69
THOMAS STREET	1	LA CLAIR ST E/S	END	2	605	35	21,175.00	E	C&G	69
12TH STREET	1	INGERSOLL AVE N/S	END	2	210	30	6,300.00	E	NON	68
13TH AVENUE	1	D ST S/S	END	2	300	23	6,900.00	E	NON	68
15TH STREET	2	MYRTLE AVE N/S	END	2	320	31	9,920.00	E	CUR	68
BENNETT AVENUE	1	4TH ST W/S	6TH ST W/S	2	510	35	17,850.00	E	CUR	68
COMMERCIAL AVENUE	1	1ST ST W/S	BROADWAY ST E/S	2	185	42	7,770.00	A	CUR	68
ELM STREET	1	7TH RD E/S	END	2	195	18	3,510.00	E	NON	68
ELROD AVENUE	1	1ST ST W/S	BROADWAY ST E/S	2	90	38	3,420.00	E	C&G	68
WALL STREET	5	MICHIGAN AVE S/S	PACIFIC AVE N/S	2	1,515.00	33	49,995.00	E	C&G	68
7TH ROAD	2	3RD CT N/S	DATE AVE N/S	2	485	33	16,005.00	E	C&G	67
CYPRESS POINT	1	A ST N/S	END	2	295	19	5,605.00	E	NON	67
JOHNSON AVENUE	3	5TH ST W/S	7TH ST W/S	2	385	39	15,015.00	E	CUR	67
KRUSE AVENUE	1	BROADWAY ST W/S	4TH ST E/S	2	1,040.00	40	41,600.00	E	CUR	67
LAKESHORE DRIVE	3	SEABREEZE TER E/S	CROCKER AVE E/S	2	1,355.00	34	46,070.00	C	C&G	67
SEABREEZE TERRACE	2	LAKESHORE DR S/S	LAKEWOOD LN N/S	2	490	26	12,740.00	E	C&G	67
ZANNA PLACE	1	KENTUCKY AVE S/S	CDS	2	235	33	8,655.00	E	C&G	67
4TH COURT	2	PARK AVE N/S	205' N/O PARK AVE	2	205	18	3,690.00	E	CUR	66

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
4TH STREET	6	ANDERSON AVE N/S	COMMERCIAL AVE S/S	2	480	53	25,440.00	C	C&G	66
6TH STREET	2	ANDERSON AVE S/S	BENNETT AVE N/S	2	225	28	6,300.00	E	CUR	66
6TH STREET	7	KINGWOOD AVE N/S	MYRTLE AVE S/S	2	325	41	13,325.00	E	C&G	66
7TH STREET	4	ELROD AVE N/S	FERGUSON AVE S/S	2	290	36	10,440.00	E	CUR	66
BARHAM TERRACE	1	PARK RD W/S	CDS	2	210	26	6,460.00	E	NON	66
MAIN STREET	1	SCHETTER AVE N/S	NEWMARK AVE N/S	2	325	55	17,875.00	E	C&G	66
MYRTLE AVENUE	4	JUNIPER AVE E/S	WOODLAND AVE E/S	2	490	32	15,680.00	E	C&G	66
SCHONEMAN STREET	2	NEWMARK AVE S/S	MICHIGAN AVE N/S	2	550	33	18,150.00	E	C&G	66
SEAGATE STREET	3	LAKESHORE DR S/S	END SOUTH	2	715	33	23,595.00	E	C&G	66
TWIG TERRACE	1	28TH CT W/S	CDS	2	475	23	11,425.00	E	NON	66
10TH AVENUE	2	E ST S/S	F ST N/S	2	435	26	11,310.00	E	NON	65
12TH AVENUE	2	F ST N/S	E ST S/S	2	435	24	10,440.00	E	NON	65
13TH STREET	1	JUNIPER AVE S/S	HEMLOCK AVE S/S	2	340	32	10,880.00	E	CUR	65
5TH STREET	13	ANDERSON AVE N/S	COMMERCIAL AVE S/S	2	475	36	19,900.00	E	CUR	65
6TH STREET	6	KOOSBAY BL N/S	KINGWOOD AVE S/S	2	320	41	13,120.00	E	CUR	65
9TH AVENUE	1	E ST N/S	D ST S/S	2	435	36	15,660.00	E	NON	65
FIR AVENUE	2	7TH CT W/S	4TH ST W/S	2	640	21	13,440.00	E	C&G	65
MYRTLE AVENUE	3	14TH ST E/S	END	2	415	22	9,130.00	E	NON	65
SANFORD AVENUE	2	VIRGINIA AVE S/S	LAKESHORE DR N/S	2	2,240.00	34	76,160.00	E	C&G	65
SHON-STA WAY	1	CANYON DR E/S	END	2	245	25	6,125.00	E	NON	65
17TH STREET	3	I ST N/S	EVERGREEN ST N/S	2	1,275.00	22	28,050.00	E	NON	64
5TH AVENUE	2	D ST S/S	E ST N/S	2	435	23	10,005.00	E	NON	64
ELROD AVENUE	5	10TH ST W/S	12TH ST W/S	2	575	25	14,375.00	E	CUR	64
KNOT TERRACE	1	28TH CT W/S	END	2	535	23	12,305.00	E	NON	64
MICHIGAN AVENUE	4	CAMMANN ST E/S	MADISON ST E/S	2	525	44	23,100.00	E	C&G	64
1STCOURT	1	A ST S/S	END	2	135	13	1,755.00	E	NON	63
9TH STREET	7	DATE AVE S/S	END	2	875	27	23,625.00	E	CUR	63
CAMMANN STREET	10	PACIFIC AVE S/S	END	2	1,500.00	33	49,500.00	E	C&G	63
CROCKER AVENUE	3	LAKESHORE DR S/S	END	2	690	35	24,150.00	E	C&G	63
D STREET	1	HARBORVIEW DR W/S	COOS RIVER HWY E/S	2	495	21	10,395.00	C	NON	63
EVERGREEN DRIVE	1	TIMBERLINE DR E/S	TIMBERLINE DR S/S	2	655	34	22,270.00	E	C&G	63
FINK STREET	1	WHITTY ST W/S	BESSIE ST E/S	2	500	24	12,000.00	E	NON	63
GOLDEN AVENUE	1	7TH ST E/S	5TH ST E/S	2	400	36	14,400.00	E	CUR	63
GOLDEN AVENUE	3	4TH ST E/S	BROADWAY ST W/S	2	700	50	35,000.00	E	C&G	63
IVY AVENUE	1	BAYSHORE DR W/S	7TH ST E/S	2	585	37	21,645.00	E	C&G	63
MONTGOMERY AVENUE	5	MORRISON ST W/S	END	2	235	32	7,520.00	E	C&G	63

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
19TH STREET	1	CALIFORNIA AVE S/S	END	2	660	33	21,780.00	E	C&G	62
CANYON DRIVE	2	SHONSTA WY N/S	CANYON TERR S/S	2	540	20	10,800.00	E	CUR	62
CROCKER AVENUE	2	HOWARD ST N/S	LAKESHORE DR N/S	2	1,200.00	35	42,000.00	E	C&G	62
DUNN STREET	1	OCEAN BL N/S	LINDBERG ST S/S	2	590	34	20,060.00	E	C&G	62
LINDBERG AVENUE	2	BRULE ST W/S	END	2	525	35	18,375.00	E	C&G	62
MARPLE STREET	3	MICHIGAN AVE N/S	NEWMARK AVE S/S	2	465	54	25,110.00	E	C&G	62
MARPLE STREET	7	HARRIS AVE S/S	GRANT AVE N/S	2	560	32	17,920.00	E	CUR	62
WALLACE STREET	1	NEWMARK AVE S/S	OCEAN BL N/S	2	615	37	22,755.00	E	C&G	62
12TH COURT	1	FERGUSON AVE N/S	END	2	405	21	8,505.00	E	CUR	61
15TH COURT	1	THOMPSON RD N/S	END	2	530	25	13,250.00	E	NON	61
15TH STREET	3	MYRTLE AVE S/S	END	2	425	32	13,600.00	E	NON	61
7TH STREET	8	JOHNSON AVE S/S	KRUSE AVE N/S	2	545	33	17,985.00	E	C&G	61
D STREET	2	6TH AVE W/S	5TH AVE W/S	2	275	39	10,725.00	C	NON	61
ELROD AVENUE	3	4TH ST W/S	7TH ST E/S	2	750	35	26,250.00	C	CUR	61
FENWICK AVENUE	2	ST JOHN ST S/S	LAKESHORE DR N/S	2	1,625.00	35	56,875.00	E	C&G	61
MARKET AVENUE	3	4TH ST W/S	5TH ST E/S	2	220	33	7,260.00	E	C&G	61
MARPLE STREET	1	FULTON ST N/S	PACIFIC AVE S/S	2	1,005.00	33	33,165.00	E	C&G	61
MARPLE STREET	2	PACIFIC AVE N/S	MICHIGAN AVE S/S	2	1,515.00	33	49,995.00	E	C&G	61
OAKWAY DRIVE	2	LINCOLN RD S/S (E)	LINCOLN RD N/S (W)	2	1,305.00	34	44,370.00	E	CUR	61
OREGON AVENUE	1	SOUTHWEST BL W/S	END	2	1,315.00	26	34,190.00	E	C&G	61
7TH STREET	2	ANDERSON AVE S/S	DONNELLY AVE N/S	2	765	34	26,010.00	E	CUR	60
8TH STREET	6	TEAKWOOD AVE N/S	END	2	380	13	4,940.00	E	NON	60
ANDERSON AVENUE	1	10TH ST W/S	11TH ST W/S	2	310	33	10,230.00	E	C&G	60
FULTON AVENUE	1	EMPIRE BL E/S	WASSON ST W/S	2	810	32	25,920.00	E	C&G	60
GARFIELD AVENUE	3	MADISON ST E/S	END	2	490	34	16,660.00	E	CUR	60
HALL AVENUE	3	2ND ST E/S	ALLEY E/S	2	165	35	5,775.00	E	CUR	60
MARPLE STREET	5	SCHETTER AVE N/S	JACKSON AVE N/S	2	515	35	18,025.00	E	CUR	60
12TH COURT	2	F ST N/S	E ST S/S	2	425	16	6,800.00	E	NON	59
14TH STREET	3	NUTWOOD AVE S/S	TEAKWOOD AVE S/S	2	1,155.00	36	41,580.00	E	CUR	59
17TH STREET	1	THOMPSON RD N/S	END	2	160	50	6,800.00	E	C&G	59
5TH STREET	11	DONNELLY AVE N/S	BENNETT AVE S/S	2	510	31	15,810.00	E	CUR	59
BIRCH AVENUE	3	12TH ST W/S	13TH ST E/S	2	220	25	5,500.00	E	CUR	59
JUNIPER AVENUE	2	19TH ST E/S	COTTONWOOD AVE E/S	2	1,605.00	29	46,545.00	E	CUR	59
MARYLAND AVENUE	2	MORRISON ST E/S	SCHONEMAN ST W/S	2	375	34	12,750.00	E	CUR	59
SCHONEMAN STREET	3	MICHIGAN AVE S/S	FLANAGAN AVE N/S	2	755	33	24,915.00	E	C&G	59
WALL STREET	2	HARRIS AVE S/S	SCHETTER AVE N/S	2	1,010.00	34	34,340.00	E	CUR	59

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
10TH AVENUE	1	D ST S/S	E ST N/S	2	435	23	10,005.00	E	NON	58
4TH STREET	9	HIGHLAND AVE N/S	PARK AVE S/S	2	230	24	5,520.00	E	CUR	58
8TH STREET	1	FIR AVE N/S	HEMLOCK AVE S/S	2	695	33	22,935.00	E	CUR	58
ELROD AVENUE	4	7TH ST W/S	10TH ST W/S	2	900	35	31,500.00	C	CUR	58
MARPLE STREET	6	JACKSON AVE N/S	HARRIS AVE S/S	2	495	32	15,840.00	E	CUR	58
WALL STREET	4	NEWMARK AVE S/S	MICHIGAN AVE N/S	2	465	53	24,645.00	E	C&G	58
1ST AVENUE	2	D ST N/S	A ST N/S	2	1,315.00	30	39,450.00	E	NON	57
5TH STREET	9	KRUSE AVE N/S	LOCKHART AVE N/S	2	565	38	21,470.00	E	CUR	57
7TH COURT	1	FIR AVE N/S	END	2	215	20	4,300.00	E	NON	57
BAYVIEW DRIVE	1	16TH AVE E/S	END	2	725	20	14,500.00	E	NON	57
HEMLOCK AVENUE	1	BAYSHORE DR W/S	8TH ST E/S	2	1,285.00	24	30,840.00	E	CUR	57
INGERSOLL AVENUE	6	7TH ST W/S	10TH ST E/S	2	725	25	18,125.00	E	C&G	57
INGERSOLL AVENUE	8	11TH ST W/S	END	2	365	18	6,570.00	E	NON	57
MERCHANT STREET	3	D ST S/S	FINK ST N/S	2	235	23	5,405.00	E	NON	57
MONTGOMERY AVENUE	4	WASSON ST E/S	CAMMANN ST W/S	2	265	33	8,745.00	E	C&G	57
MORRISON STREET	1	LAKESHORE DR S/S	PIRATES CT S/S	2	885	34	30,090.00	C	C&G	57
19TH STREET	2	OCEAN BL N/S	JUNIPER AVE S/S	2	465	28	13,020.00	E	CUR	56
2ND STREET	12	MARKET AVE N/S	PARK AVE S/S	2	435	36	15,660.00	E	C&G	56
8TH AVENUE	1	D ST N/S	END	2	175	20	3,500.00	E	NON	56
ARAGO AVENUE	1	MORRISON ST E/S	END	2	400	33	13,200.00	E	C&G	56
BENNETT AVENUE	2	6TH ST W/S	7TH ST E/S	2	230	25	5,750.00	E	CUR	56
CURTIS AVENUE	1	1ST ST W/S	BROADWAY ST E/S	1	115	33	3,795.00	E	CUR	56
GOLDEN AVENUE	2	5TH ST E/S	4TH ST W/S	2	350	42	14,700.00	E	CUR	56
2ND AVENUE	02B	D ST N/S	B ST S/S	2	890	25	22,250.00	E	NON	55
6TH STREET	5	IVY AVE N/S	KOOSBAY BL S/S	2	430	41	17,630.00	E	C&G	55
FINK STREET	2	WHITTY ST E/S	1ST AVE W/S	2	560	22	12,320.00	E	NON	55
MARPLE STREET	8	GRANT AVE N/S	TAYLOR AVE N/S	2	475	22	10,450.00	E	CUR	55
UNDERWOOD AVENUE	1	8TH ST W/S	END	2	405	13	5,265.00	E	NON	55
4TH COURT	3	205' N/O PARK AVE	END	2	715	18	12,870.00	E	CUR	54
7TH STREET	7	INGERSOLL AVE S/S	JOHNSON AVE S/S	2	570	33	18,810.00	E	C&G	54
EMPIRE BOULEVARD	2	NEWMARK AVE N/S	CITY LIMITS	2	4,445.00	32	142,240.00	A	NON	54
EVERGREEN DRIVE	2	17TH AVE W/S	16TH AVE E/S	2	200	24	4,800.00	E	NON	54
HARBORVIEW COURT	1	HARBORVIEW DR W/S	END	2	180	16	2,880.00	E	NON	54
MERCHANT STREET	2	JACKSON ST S/S	D ST N/S	2	230	22	5,060.00	E	NON	54
MORRISON STREET	9	WEBSTER AVE S/S	BLANCO AVE S/S	2	260	33	8,580.00	E	C&G	54
WASSON STREET	1	HARRIS AVE S/S	TAYLOR AVE N/S	2	1,060.00	34	36,040.00	C	C&G	54

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Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
10TH STREET	7	JOHNSON AVE N/S	SOUTHWEST BL N/S	2	1,525.00	22	33,550.00	A	CUR	53
10TH STREET	9	INGERSOLL AVE S/S	JOHNSON AVE N/S	2	560	22	12,320.00	A	CUR	53
20TH STREET	2	WOODLAND DR N/S	JUNIPER AVE S/S	2	380	35	13,300.00	E	CUR	53
ADLER AVENUE	1	12TH ST W/S	13TH ST W/S	2	320	25	8,000.00	E	CUR	53
F STREET	2	9TH AVE W/S	10TH AVE W/S	2	250	26	6,500.00	E	C&G	53
JUNIPER AVENUE	1	20TH ST E/S	19TH ST W/S	2	330	34	11,220.00	E	CUR	53
MORRISON STREET	5	SALMON AVE N/S	MICHIGAN AVE N/S	2	295	37	10,915.00	C	CUR	53
PENNSYLVANIA AVENUE	2	17TH ST W/S	19TH ST W/S	2	640	26	16,640.00	E	NON	53
2ND STREET	2	KRUSE AVE N/S	JOHNSON AVE S/S	2	535	39	20,865.00	E	CUR	52
2ND STREET	5	GOLDEN AVE N/S	ELROD AVE S/S	2	525	55	28,875.00	E	CUR	52
5TH STREET	1	HIGHLAND AVE N/S	MARKET AVE N/S	2	210	33	6,930.00	E	C&G	52
7TH STREET	9	KRUSE AVE N/S	LOCKHART AVE N/S	2	565	33	18,645.00	A	C&G	52
8TH STREET	5	PINE AVE S/S	REDWOOD AVE N/S	2	355	32	11,360.00	E	CUR	52
CEDAR AVENUE	1	10TH ST W/S	END	2	335	23	7,705.00	E	NON	52
TRICIA PLACE	1	KENTUCKY AVE N/S	CDS	2	235	33	8,655.00	E	C&G	52
4TH COURT	1	HIGHLAND AVE N/S	PARK AVE S/S	2	235	18	4,230.00	E	CUR	51
8TH AVENUE	3	E ST S/S	F ST N/S	2	420	25	10,500.00	E	NON	51
8TH STREET	16	CENTRAL AVE N/S	COMMERCIAL AVE S/S	2	320	26	8,320.00	E	CUR	51
NORMAN AVENUE	2	NEWMARK AVE S/S	OCEAN BL N/S	2	1,165.00	33	38,445.00	E	C&G	51
SIGNAL WAY	1	DATE AVE S/S	TELEGRAPH DR E/S	2	720	35	25,200.00	E	CUR	51
11TH AVENUE	2	F ST N/S	E ST S/S	2	435	24	10,440.00	E	NON	50
11TH STREET	4	INGERSOLL AVE S/S	END	2	350	16	5,600.00	E	NON	50
12TH STREET	3	YEW AVE N/S	CITY LIMITS	2	200	30	6,000.00	E	NON	50
2ND STREET	3	JOHNSON AVE N/S	HALL AVE S/S	2	1,110.00	38	42,180.00	E	CUR	50
FLANAGAN AVENUE	1	MADISON ST E/S	MORRISON ST W/S	2	465	34	15,810.00	E	C&G	50
IDAHO AVENUE	1	SOUTHWEST BL W/S	END	2	1,130.00	25	28,250.00	E	C&G	50
WEST HILLS BOULEVARD	1	OCEAN BL S/S	LINCOLN BL W/S	2	485	33	16,005.00	E	C&G	50
8TH STREET	3	KOOSBAY BL N/S	END	2	680	33	22,440.00	E	CUR	49
8TH STREET	12	8TH TERR N/S	7TH TERR S/S	2	250	26	6,500.00	E	CUR	49
CAMMANN STREET	6	SHETTER AVE N/S	NEWMARK AVE N/S	2	495	53	26,235.00	E	C&G	49
MARKET AVENUE	2	BROADWAY W/S	4TH ST W/S	2	785	39	30,615.00	E	C&G	49
NEWMARK AVENUE	4	EMPIRE BL W/S	MILL ST W/S	2	270	21	5,670.00	E	NON	49
4TH AVENUE	2	D ST N/S	END	2	495	25	12,375.00	E	NON	48
MICHIGAN AVENUE	3	MARPLE ST E/S	CAMMANN ST W/S	2	835	53	44,255.00	E	C&G	48
PARK AVENUE	4	14TH ST E/S	CEDAR AVE S/S	2	1,555.00	20	31,100.00	E	NON	48
REDWOOD AVENUE	1	8TH ST W/S	11TH ST E/S	2	520	22	11,440.00	E	CUR	48

City of Coos Bay
PCI Report 2015
Descending PCI Rating

Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
SEABREEZE TERRACE	1	TIDEVIEW TERRACE S/S	LAKESHORE DR N/S	2	305	26	7,930.00	E	C&G	48
7TH STREET	12	PINE AVE S/S	END	2	460	37	17,020.00	E	CUR	47
ANDERSON AVENUE	2	11T ST W/S	END	2	1,550.00	23	35,650.00	E	NON	47
CAMMANN STREET	9	MONTGOMERY AVE N/S	PACIFIC AVE N/S	2	515	33	16,995.00	E	C&G	47
CURTIS AVENUE	2	BROADWAY ST W/S	4TH ST E/S	2	705	32	22,560.00	E	C&G	47
SOUTHWEST BOULEVARD	3	MONTANA AVE S/S	WASHINGTON AVE S/S	2	1,435.00	40	57,400.00	A	C&G	47
5TH STREET	6	HALL AVE S/S	INGERSOLL AVE N/S	2	545	28	15,260.00	E	CUR	46
7TH AVENUE	1	F ST N/S	E ST S/S	2	415	22	9,130.00	E	NON	46
H STREET	1	6TH AVE E/S	9TH AVE W/S	2	810	26	21,060.00	E	NON	46
HALL AVENUE	2	4TH ST E/S	2ND ST W/S	2	325	31	10,075.00	E	CUR	46
KINGWOOD AVENUE	1	7TH ST E/S	BAYSHORE DR W/S	2	455	38	17,290.00	E	CUR	46
WASHINGTON AVENUE	1	SOUTHWEST BL W/S	END	2	1,220.00	25	30,500.00	E	C&G	46
11TH STREET	7	100' N/O COMMERCIAL AVE	PARK AVE N/S	2	515	24	12,360.00	E	CUR	45
6TH STREET	1	COMMERCIAL AVE S/S	ANDERSON AVE N/S	2	480	38	18,240.00	E	C&G	45
9TH STREET	1	FIR AVE N/S	DATE AVE N/S	2	500	26	13,000.00	E	CUR	45
KOOSBAY BOULEVARD	3	TEAKWOOD AVE S/S	CITY LIMITS	2	1,565.00	40	62,600.00	A	C&G	45
TELEGRAPH DRIVE	2	PARK AVE E/S	DATE AVE (W) S/S	2	1,025.00	35	35,875.00	E	CUR	45
WALLACE STREET	2	OCEAN BL S/S	END	2	485	33	16,005.00	E	C&G	45
WASSON STREET	6	NOBLE AVE N/S	PACIFIC AVE N/S	2	1,040.00	34	35,360.00	E	C&G	45
WASSON STREET	7	PACIFIC AVE S/S	END	2	1,500.00	33	49,500.00	E	C&G	45
2ND STREET	4	HALL AVE S/S	GOLDEN AVE S/S	2	525	54	28,350.00	E	CUR	44
BRULE STREET	1	OCEAN BL N/S	LINDBERG ST S/S	2	415	33	13,695.00	E	C&G	44
CENTRAL AVENUE	2	12TH ST E/S	10TH ST W/S	3	595	41	24,395.00	A	CUR	44
E STREET	2	6TH AVE E/S	9TH ST W/S	2	875	21	18,375.00	E	NON	44
FLANAGAN AVENUE	2	MORRISON ST E/S	END	2	460	34	15,640.00	E	C&G	44
HALL AVENUE	1	7TH ST E/S	4TH ST W/S	2	715	29	20,735.00	E	CUR	44
12TH STREET	4	PARK AVE N/S	BIRCH AVE N/S	2	555	24	13,320.00	E	CUR	43
12TH STREET	6	COMMERCIAL AVE N/S	12TH TER N/S	2	325	45	12,125.00	E	CUR	43
18TH AVENUE	1	FILBERT AVE S/S	END	2	250	23	5,750.00	E	NON	43
2ND STREET	1	LOCKHART AVE N/S	KRUSE AVE S/S	2	535	36	19,260.00	E	C&G	43
10TH COURT	1	DATE AVE N/S	END	2	560	23	12,880.00	E	NON	42
9TH STREET	04E	ANDERSON AVE S/S	END	2	330	35	11,550.00	E	CUR	42
HARBORVIEW DRIVE	1	D ST S/S	END	2	475	16	7,600.00	E	NON	42
JUNIPER AVENUE	6	13TH ST E/S	END	2	440	29	12,760.00	E	CUR	42
CANYON DRIVE	1	9TH AVE E/S	SHONSTA WY N/S	2	370	21	7,770.00	E	CUR	41
11TH STREET	2	FERGUSON AVE N/S	ELROD AVE S/S	2	230	35	8,050.00	E	CUR	40

City of Coos Bay
PCI Report 2015
Descending PCI Rating

Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
MORRISON STREET	4	NEWMARK AVE S/S	SALMON AVE N/S	2	250	38	9,500.00	C	C&G	40
MICHIGAN AVENUE	1	MILL ST E/S	EMPIRE BL W/S	2	235	16	3,760.00	E	NON	39
NUTWOOD AVENUE	1	14TH ST W/S	15TH ST E/S	2	220	20	4,400.00	E	NON	39
TELEGRAPH DRIVE	1	DATE AVE (E) S/S	PARK AVE E/S	2	1,080.00	35	37,800.00	E	CUR	38
2ND AVENUE	1	D ST S/S	E ST N/S	2	330	33	10,890.00	E	NON	37
2ND COURT	1	2ND ST W/S	4TH ST W/S	2	475	25	11,875.00	E	CUR	37
FERGUSON AVENUE	4	11TH ST W/S	12TH CT E/S	2	225	25	5,625.00	E	CUR	37
JUNIPER AVENUE	4	BUTLER RD W/S	14TH ST W/S	2	435	33	14,355.00	E	CUR	37
KENTUCKY AVENUE	4	125' W/O TRICIA PL	PREFONTAINE DR W/S	2	705	33	23,265.00	E	C&G	37
LINCOLN BOULEVARD	1	WEST HILLS BL S/S	OAKWAY DR E/S	2	635	35	22,225.00	E	C&G	37
12TH STREET	2	ELROD ST S/S	END	2	525	18	9,450.00	E	CUR	36
F STREET	4	12TH AVE E/S	12TH CT W/S	2	125	25	3,125.00	E	C&G	36
FIR AVENUE	1	9TH ST E/S	8TH ST W/S	2	245	23	5,635.00	E	CUR	36
INGERSOLL AVENUE	3	2ND ST W/S	4TH ST E/S	2	335	38	12,730.00	E	CUR	36
JOHNSON AVENUE	1	BROADWAY ST W/S	4TH ST E/S	2	720	39	28,080.00	C	CUR	36
14TH STREET	2	MYRTLE AVE S/S	NUTWOOD AVE S/S	2	375	36	13,500.00	E	CUR	35
I STREET	1	14TH AVE E/S	17TH AVE E/S	2	720	22	15,840.00	E	NON	35
JACKSON STREET	1	1ST AVE W/S	MERCHANT ST W/S	2	345	26	8,970.00	E	NON	35
PACIFIC AVENUE	3	MORRISON ST E/S	END	2	1,510.00	33	49,830.00	E	CUR	35
BUTLER ROAD	1	OCEAN BL N/S	JUNIPER AVE S/S	2	710	35	24,850.00	E	CUR	34
CEDAR AVENUE	2	PARK AVE S/S	BIRCH AVE N/S	2	590	18	10,620.00	E	NON	34
D STREET	3	5TH AVE W/S	2ND AVE W/S	2	910	41	37,310.00	C	NON	34
DATE AVENUE	3	TELEGRAPH DR E/S	3RD CT E/S	2	135	34	4,590.00	E	CUR	34
2ND STREET	6	ELROD AVE N/S	CURTIS AVE S/S	2	520	36	18,720.00	E	CUR	33
4TH STREET	8	MARKET AVE N/S	HIGHLAND AVE S/S	2	180	26	4,680.00	E	CUR	33
BLANCO AVENUE	1	MORRISON ST E/S	FULTON AVE N/S	2	640	33	21,120.00	E	C&G	33
SCHONEMAN STREET	1	HARRIS AVE S/S	NEWMARK AVE N/S	2	1,135.00	35	39,725.00	C	C&G	33
WASSON STREET	5	MICHIGAN AVE S/S	NOBLE AVE N/S	2	475	34	16,150.00	E	C&G	33
5TH STREET	7	INGERSOLL AVE N/S	JOHNSON AVE N/S	2	570	27	15,390.00	E	CUR	32
COMMERCIAL AVENUE	7	12TH ST W/S	14TH ST E/S	2	660	16	10,560.00	A	CUR	32
WASSON STREET	4	NEWMARK AVE S/S	MICHIGAN AVE N/S	2	465	52	24,180.00	E	C&G	32
MINNESOTA AVENUE	1	SOUTHWEST BL N/S	14TH ST W/S	2	915	34	31,110.00	E	C&G	31
E STREET	1	2ND AV W/S	6TH ST W/S	2	1,230.00	23	28,290.00	E	NON	30
KINNEY ROAD	1	THOMPSON RD N/S	CITY LIMITS	2	235	28	6,580.00	E	NON	30
MORRISON STREET	7	MONTGOMERY AVE S/S	PACIFIC AVE N/S	2	485	33	16,005.00	C	C&G	30
MORRISON STREET	8	PACIFIC AVE N/S	WEBSTER AVE S/S	2	555	33	18,315.00	E	C&G	30

City of Coos Bay
PCI Report 2015
Descending PCI Rating

Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
INGERSOLL AVENUE	2	BROADWAY AVE W/S	2ND ST E/S	2	325	38	12,350.00	E	AB	29
2ND AVENUE	02A	D ST N/S	B ST S/S	2	890	25	22,250.00	E	CUR	28
INGERSOLL AVENUE	4	4TH ST W/S	5TH ST E/S	2	345	28	9,660.00	E	CUR	28
FULTON AVENUE	6	390' E/O MORRISON ST	PREFONTAINE DR W/S	2	755	33	24,915.00	E	C&G	27
PARK AVENUE	5	11TH ST W/S	END	2	550	23	12,650.00	E	CUR	27
E STREET	4	11TH ST E/S	14TH AVE W/S	2	810	18	14,580.00	E	NON	26
LA CLAIR STREET	1	OCEAN BL N/S	NEWMARK AVE S/S	2	1,555.00	34	55,270.00	E	C&G	26
10TH STREET	8	ELROD AVE S/S	END	2	675	22	14,850.00	E	CUR	25
2ND AVENUE	03A	B ST S/S	A ST S/S	2	470	16	7,520.00	E	NON	25
3RD STREET	1	BIRCH AVE N/S	PARK AVE N/S	2	510	17	8,670.00	E	CUR	25
8TH STREET	7	FERGUSON AVE N/S	ELROD AVE S/S	2	230	26	5,980.00	E	CUR	25
8TH STREET	8	ELROD AVE N/S	DONNELLY AVE S/S	2	225	26	5,850.00	E	CUR	25
8TH STREET	10	JOHNSON AVE N/S	INGERSOLL AVE S/S	2	525	29	15,225.00	E	CUR	25
9TH STREET	5	DONNELLY AVE S/S	ELROD AVE N/S	2	230	18	4,140.00	E	CUR	25
9TH STREET	6	ELROD AVE S/S	END	2	615	25	15,375.00	E	CUR	25
A STREET	1	1ST AVE E/S	2ND AVE E/S	2	275	22	6,050.00	E	CUR	25
CAMMANN STREET	2	TAYLOR AVE N/S	GRANT AVE S/S	2	545	36	19,620.00	E	CUR	25
FERGUSON AVENUE	1	7TH ST W/S	9TH ST E/S	2	490	25	12,250.00	E	CUR	25
MARKET AVENUE	4	5TH ST W/S	END	2	180	25	4,500.00	E	CUR	25
MICHIGAN AVENUE	2	EMPIRE BL E/S	MARPLE ST E/S	2	290	53	15,370.00	E	C&G	25
PREFONTAINE DRIVE	1	NAUTICAL LN N/S	FULTON AVE S/S	2	1,115.00	33	36,795.00	E	C&G	25
8TH STREET	2	HEMLOCK AVE S/S	KOOSBAY BL S/S	2	590	25	14,750.00	E	CUR	24
CAMMANN STREET	3	GRANT AVE S/S	HARRIS AVE N/S	2	495	34	16,830.00	E	CUR	24
CAMMANN STREET	4	HARRIS AVE N/S	JACKSON AVE N/S	2	525	34	17,850.00	E	CUR	24
E STREET	3	9TH ST W/S	11TH ST E/S	2	565	23	12,995.00	E	NON	24
MICHIGAN AVENUE	5	MADISON ST E/S	MORRISON ST W/S	2	460	37	17,020.00	E	CUR	24
RADAR ROAD	1	FULTON AVE N/S	OCEAN BL S/S	2	2,195.00	35	76,825.00	E	C&G	24
FERGUSON AVENUE	3	10TH ST W/S	11TH ST E/S	2	230	26	5,980.00	E	CUR	23
FULTON AVENUE	7	PREFONTAINE DR W/S	RADAR RD E/S	2	395	33	13,035.00	E	C&G	23
YEW AVENUE	2	KOOSBAY BL E/S	END	2	690	25	17,250.00	E	NON	23
CAMMANN STREET	5	JACKSON AVE N/S	SHETTER AVE N/S	2	515	34	17,510.00	E	CUR	22
DAKOTA AVENUE	1	SOUTHWEST BL	END	2	205	27	5,535.00	E	C&G	21
INGERSOLL AVENUE	5	5TH ST W/S	7TH ST E/S	2	345	31	10,695.00	E	CUR	21
14TH STREET	4	JUNIPER AVE S/S	PARK AVE N/S	2	675	30	20,250.00	E	CUR	20
5TH STREET	8	JOHNSON AVE S/S	KRUSE AVE N/S	2	545	24	13,080.00	E	NON	20
PARK AVENUE	1	TELEGRAPH DR S/S	4TH CT W/S	2	485	35	16,975.00	E	CUR	20

City of Coos Bay
PCI Report 2015
Descending PCI Rating

Name	Section ID	From	To	Lanes	Length	Width	True Area	Rank	Shoulder	PCI
8TH STREET	15	ANDERSON AVE N/S	CENTRAL AVE S/S	2	320	25	8,000.00	E	CUR	19
5TH STREET	10	FIR AVE N/S	END	2	115	20	2,300.00	E	NON	17
WHITTY STREET	1	D ST S/S	END	2	475	31	14,725.00	E	CUR	17
KRUSE AVENUE	2	5TH ST W/S	7TH ST E/S	2	345	37	12,765.00	E	C&G	16
11TH STREET	5	CENTRAL AVE N/S	100' N/O CENTRAL	2	100	26	2,600.00	E	CUR	15
7TH STREET	1	KOOSBAY BL N/S	KINGWOOD AVE N/S	2	325	38	12,350.00	E	C&G	15
YEW AVENUE	1	KOOSBAY BL E/S	END	2	210	32	6,720.00	E	NON	15
DONNELLY AVENUE	2	6TH ST W/S	7TH ST E/S	2	230	26	5,980.00	E	CUR	14
DONNELLY AVENUE	3	7TH ST W/S	9TH ST W/S	2	510	25	12,750.00	E	CUR	14
FERGUSON AVENUE	2	9TH ST W/S	10TH ST E/S	2	235	25	5,875.00	E	CUR	14
2ND STREET	8	PARK AVE N/S	ALDER AVE S/S	2	255	26	6,630.00	E	CUR	13
5TH STREET	5	GOLDEN AVE S/S	HALL AVE N/S	2	540	26	14,040.00	E	CUR	13
PENNSYLVANIA AVENUE	1	SOUTHWEST BL W/S	17TH ST W/S	2	900	36	32,400.00	E	C&G	10
MONTGOMERY AVENUE	6	MORRISON ST E/S	END	2	370	32	11,840.00	E	C&G	7
9TH STREET	3	CENTRAL AVE S/S	ANDERSON AVE N/S	2	325	35	11,375.00	E	CUR	6
7TH TERRACE	1	8TH ST E/S	END	2	120	15	1,800.00	E	C&G	0
					353,940		11,557,160			64.3
					67.0					

Total Length	**353,940**	**LF**
Total Area	**11,557,150**	**SF**
Total Centerline Miles	**67.0**	**Miles**
Average PCI	**64.3**	**PCI**

SECTION V
PROJECTED WORK PROGRAMS

PROJECTED WORK PROGRAMS

In developing an annual expenditure level required to maintain the street network at its current average PCI level, three (3) budget scenarios were studied. The budget scenarios should be utilized in conjunction with each other by City staff to consider possible plans for the maintenance strategies within the City. The City of Coos Bay has a Fair PCI rating citywide of 64.3. The budget scenarios are as follows:

UNLIMITED BUDGET – Unlimited Budget scenario is the amount of money necessary to complete all of the maintenance required each year for the entire roadway network. The City of Coos Bay's backlog of maintenance is approximately $19.6 million.

5 YEAR SLURRY SEAL BUDGET – 5 YEAR SLURRY SEAL Budget scenario is the amount of money recommended for the Slurry Seal maintenance required each year for the entire roadway network. The recommended slurry seal budget for the City of Coos Bay is approximately $250,000.

RECOMMENDED BUDGET –Recommended Budget scenario is the city staff budget of $750K a year for five years for a total budget of $3.75 Million. Maintenances include thin overlay, overlay, reconstruction, and slurry seals.

City of Coos Bay
Unlimited Budget

2015

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
10TH AVENUE	1	D ST S/S	E ST N/S	$23,518.92	57.44	100	Major Below Critical	2015
10TH AVENUE	2	E ST S/S	F ST N/S	$5,994.33	64.54	73.73	Global MR	2015
10TH COURT	1	DATE AVE N/S	END	$43,405.62	41.2	100	Major Below Critical	2015
10TH COURT	2	HEMLOCK AVE N/S	END	$1,780.81	75.67	83.55	Global MR	2015
10TH STREET	1	ELROD AVE N/S	CENTRAL AVE S/S	$23,836.87	72.56	80.8	Global MR	2015
10TH STREET	7	JOHNSON AVE N/S	SOUTHWEST BL N/S	$102,767.83	52.24	100	Major Below Critical	2015
10TH STREET	8	ELROD AVE S/S	END	$120,044.99	23.96	100	Major Below Critical	2015
10TH STREET	9	INGERSOLL AVE S/S	JOHNSON AVE N/S	$37,552.05	52.35	100	Major Below Critical	2015
11TH AVENUE	2	F ST N/S	E ST S/S	$35,182.82	49.34	100	Major Below Critical	2015
11TH STREET	2	FERGUSON AVE N/S	ELROD AVE S/S	$29,884.94	39.03	100	Major Below Critical	2015
11TH STREET	3	SPRUCE AVE N/S	END SOUTH	$3,100.51	74.6	82.6	Global MR	2015
11TH STREET	4	INGERSOLL AVE S/S	END	$18,872.01	49.3	100	Major Below Critical	2015
11TH STREET	5	CENTRAL AVE N/S	100' N/O CENTRAL	$23,035.99	13.89	100	Major Below Critical	2015
11TH STREET	7	100' N/O COMMERCIAL AVE	PARK AVE N/S	$41,653.22	44.28	100	Major Below Critical	2015
12TH AVENUE	2	F ST N/S	E ST S/S	$11,400.49	64.54	100	Major Above Critical	2015
12TH COURT	1	FERGUSON AVE N/S	END	$4,507.67	60.46	70.13	Global MR	2015
12TH COURT	2	F ST N/S	E ST S/S	$15,034.67	58.46	100	Major Below Critical	2015
12TH STREET	1	INGERSOLL AVE N/S	END	$3,175.19	67.48	100	Major Above Critical	2015
12TH STREET	2	ELROD ST S/S	END	$48,158.79	35.11	100	Major Below Critical	2015
12TH STREET	3	YEW AVE N/S	CITY LIMITS	$20,220.01	49.31	100	Major Below Critical	2015
12TH STREET	4	PARK AVE N/S	BIRCH AVE N/S	$44,888.43	42.26	100	Major Below Critical	2015
12TH STREET	6	COMMERCIAL AVE N/S	12TH TER N/S	$40,861.27	42.26	100	Major Below Critical	2015
13TH AVENUE	1	D ST S/S	END	$3,657.02	67.57	76.41	Global MR	2015
13TH COURT	2	F ST N/S	END	$2,909.71	78.72	86.24	Global MR	2015

City of Coos Bay
Unlimited Budget

2015

13TH STREET	1	JUNIPER AVE S/S	HEMLOCK AVE S/S	$12,098.59	64.44	100	Major Above Critical	2015
13TH STREET	3	HIGHLAND AVE S/S	COMMERCIAL AVE N/S	$3,373.47	74.67	82.67	Global MR	2015
14TH COURT	1	D ST N/S	END	$1,378.01	74.67	82.66	Global MR	2015
14TH STREET	1	JUNIPER AVE N/S	MYRTLE AVE S/S	$14,707.57	73.64	81.76	Global MR	2015
14TH STREET	2	MYRTLE AVE S/S	NUTWOOD AVE S/S	$73,611.48	34.1	100	Major Below Critical	2015
14TH STREET	3	NUTWOOD AVE S/S	TEAKWOOD AVE S/S	$92,103.33	58.43	100	Major Below Critical	2015
14TH STREET	4	JUNIPER AVE S/S	PARK AVE N/S	$179,414.92	18.93	100	Major Below Critical	2015
15TH COURT	1	THOMPSON RD N/S	END	$25,280.95	60.46	100	Major Above Critical	2015
15TH STREET	1	THOMPSON RD N/S	END	$8,872.24	77.7	85.33	Global MR	2015
15TH STREET	2	MYRTLE AVE N/S	END	$5,257.63	67.56	76.4	Global MR	2015
15TH STREET	3	MYRTLE AVE S/S	END	$7,208.03	60.46	70.14	Global MR	2015
16TH COURT	1	THOMPSON RD N/S	END	$397.50	73.64	81.76	Global MR	2015
17TH STREET	1	THOMPSON RD N/S	END	$15,062.59	58.43	100	Major Below Critical	2015
17TH STREET	2	MYRTLE AVE S/S	KINGWOOD AVE N/S	$7,420.04	77.7	85.33	Global MR	2015
17TH STREET	3	I ST N/S	EVERGREEN ST N/S	$36,352.73	63.52	100	Major Above Critical	2015
18TH AVENUE	1	FILBERT AVE S/S	END	$19,377.51	42.24	100	Major Below Critical	2015
19TH STREET	1	CALIFORNIA AVE S/S	END	$11,543.46	61.38	70.94	Global MR	2015
19TH STREET	2	OCEAN BL N/S	JUNIPER AVE S/S	$34,423.57	55.3	100	Major Below Critical	2015
19TH STREET	3	JUNIPER AVE S/S	COTTONWOOD AVE S/S	$4,303.62	68.5	77.22	Global MR	2015
19TH STREET	4	THOMPSON RD S/S	END	$11,368.55	72.63	80.87	Global MR	2015
1ST AVENUE	2	D ST N/S	A ST N/S	$98,140.57	56.44	100	Major Below Critical	2015
1STCOURT	1	A ST S/S	END	$930.15	62.52	71.95	Global MR	2015
20TH STREET	2	WOODLAND DR N/S	JUNIPER AVE S/S	$40,539.14	52.35	100	Major Below Critical	2015
2ND AVENUE	1	D ST S/S	E ST N/S	$51,384.05	36.18	100	Major Below Critical	2015
2ND AVENUE	02A	D ST N/S	B ST S/S	$166,346.39	27.06	100	Major Below Critical	2015
2ND AVENUE	02B	D ST N/S	B ST S/S	$61,539.83	54.41	100	Major Below Critical	2015
2ND AVENUE	03A	B ST S/S	A ST S/S	$60,702.01	24.02	100	Major Below Critical	2015
2ND COURT	1	2ND ST W/S	4TH ST W/S	$56,828.15	35.99	100	Major Below Critical	2015
2ND STREET	1	LOCKHART AVE N/S	KRUSE AVE S/S	$64,906.24	42.08	100	Major Below Critical	2015

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2ND STREET	2	KRUSE AVE N/S	JOHNSON AVE S/S	$66,798.99	51.23	100	Major Below Critical	2015
2ND STREET	3	JOHNSON AVE N/S	HALL AVE S/S	$142,146.68	49.2	100	Major Below Critical	2015
2ND STREET	4	HALL AVE S/S	GOLDEN AVE S/S	$95,539.55	43.1	100	Major Below Critical	2015
2ND STREET	5	GOLDEN AVE N/S	ELROD AVE S/S	$92,442.88	51.23	100	Major Below Critical	2015
2ND STREET	6	ELROD AVE N/S	CURTIS AVE S/S	$116,480.45	31.92	100	Major Below Critical	2015
2ND STREET	7	CURTIS AVE N/S	ANDERSON AVE S/S	$11,379.16	77.65	85.28	Global MR	2015
2ND STREET	8	PARK AVE N/S	ALDER AVE S/S	$58,741.77	11.61	100	Major Below Critical	2015
2ND STREET	10	CENTRAL AVE N/S	COMMERCIAL AVE S/S	$3,498.02	74.67	82.67	Global MR	2015
2ND STREET	11	COMMERCIAL AVE N/S	MARKET AVE S/S	$4,671.97	74.67	82.67	Global MR	2015
2ND STREET	12	MARKET AVE N/S	PARK AVE S/S	$41,124.57	55.43	100	Major Below Critical	2015
34TH STREET	1	LINDBERG AVE S/S	OCEAN BL N/S	$22,800.71	71.56	79.91	Global MR	2015
35TH STREET	1	VINE AVE N/S	LINDBERG AVE S/S	$9,881.90	74.6	82.6	Global MR	2015
3RD AVENUE	1	D ST S/S	E ST N/S	$4,515.62	77.71	85.35	Global MR	2015
3RD STREET	1	BIRCH AVE N/S	PARK AVE N/S	$70,358.71	23.8	100	Major Below Critical	2015
3RD STREET	2	CENTRAL AVE S/S	ANDERSON AVE N/S	$3,339.02	77.71	85.35	Global MR	2015
4TH AVENUE	1	E ST N/S	D ST S/S	$5,072.12	70.62	79.1	Global MR	2015
4TH AVENUE	2	D ST N/S	END	$41,703.77	47.32	100	Major Below Critical	2015
4TH COURT	1	HIGHLAND AVE N/S	PARK AVE S/S	$14,133.40	50.21	100	Major Below Critical	2015
4TH COURT	2	PARK AVE N/S	205' N/O PARK AVE	$3,357.88	65.45	100	Major Above Critical	2015
4TH COURT	3	205' N/O PARK AVE	END	$37,623.90	53.26	100	Major Below Critical	2015
4TH STREET	1	LOCKHART AVE N/S	KRUSE AVE N/S	$13,292.46	76.63	84.39	Global MR	2015
4TH STREET	6	ANDERSON AVE N/S	COMMERCIAL AVE S/S	$13,483.26	65.45	74.53	Global MR	2015
4TH STREET	7	COMMERCIAL AVE N/S	MARKET AVE S/S	$5,925.43	68.5	77.22	Global MR	2015
4TH STREET	8	MARKET AVE N/S	HIGHLAND AVE S/S	$29,120.11	31.92	100	Major Below Critical	2015
4TH STREET	9	HIGHLAND AVE N/S	PARK AVE S/S	$13,059.13	57.33	100	Major Below Critical	2015
5TH AVENUE	1	D ST N/S	END	$2,915.01	75.69	83.57	Global MR	2015
5TH AVENUE	2	D ST S/S	E ST N/S	$5,302.68	63.53	72.85	Global MR	2015
5TH STREET	1	HIGHLAND AVE N/S	MARKET AVE N/S	$22,186.29	51.23	100	Major Below Critical	2015
5TH STREET	5	GOLDEN AVE S/S	HALL AVE N/S	$124,394.34	11.6	100	Major Below Critical	2015

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5TH STREET	6	HALL AVE S/S	INGERSOLL AVE N/S	$51,426.23	45.13	100	Major Below Critical	2015
5TH STREET	7	INGERSOLL AVE N/S	JOHNSON AVE N/S	$101,247.28	30.91	100	Major Below Critical	2015
5TH STREET	8	JOHNSON AVE S/S	KRUSE AVE N/S	$115,888.75	18.71	100	Major Below Critical	2015
5TH STREET	9	KRUSE AVE N/S	LOCKHART AVE N/S	$53,793.73	56.31	100	Major Below Critical	2015
5TH STREET	10	FIR AVE N/S	END	$20,377.99	15.67	100	Major Below Critical	2015
5TH STREET	11	DONNELLY AVE N/S	BENNETT AVE S/S	$35,020.53	58.43	100	Major Below Critical	2015
5TH STREET	12	BENNETT AVE N/S	ANDERSON AVE S/S	$4,197.62	69.58	78.18	Global MR	2015
5TH STREET	13	ANDERSON AVE N/S	COMMERCIAL AVE S/S	$10,547.05	64.51	73.71	Global MR	2015
6TH STREET	1	COMMERCIAL AVE S/S	ANDERSON AVE N/S	$61,468.84	44.11	100	Major Below Critical	2015
6TH STREET	2	ANDERSON AVE S/S	BENNETT AVE N/S	$3,339.02	65.45	74.53	Global MR	2015
6TH STREET	3	BENNETT AVE S/S	ELROD AVE N/S	$9,794.45	69.52	78.11	Global MR	2015
6TH STREET	4	ELROD AVE S/S	CDS	$4,197.62	76.63	84.39	Global MR	2015
6TH STREET	5	IVY AVE N/S	KOOSBAY BL S/S	$49,075.65	54.28	100	Major Below Critical	2015
6TH STREET	6	KOOSBAY BL N/S	KINGWOOD AVE S/S	$14,589.48	64.44	100	Major Above Critical	2015
6TH STREET	7	KINGWOOD AVE N/S	MYRTLE AVE S/S	$12,099.06	65.46	100	Major Above Critical	2015
7TH AVENUE	1	F ST N/S	E ST S/S	$30,768.12	45.28	100	Major Below Critical	2015
7TH AVENUE	2	E ST N/S	D ST S/S	$6,916.53	73.66	81.77	Global MR	2015
7TH AVENUE	3	D ST N/S	END	$2,798.41	74.67	82.67	Global MR	2015
7TH AVENUE	4	I ST N/S	H ST N/S	$1,929.21	76.7	84.46	Global MR	2015
7TH COURT	1	FIR AVE N/S	END	$10,773.78	56.31	100	Major Below Critical	2015
7TH ROAD	1	FIR AVE S/S	3RD CT N/S	$3,431.77	75.62	83.49	Global MR	2015
7TH ROAD	2	3RD CT N/S	DATE AVE N/S	$8,482.69	66.47	75.43	Global MR	2015
7TH STREET	1	KOOSBAY BL N/S	KINGWOOD AVE N/S	$109,420.95	13.62	100	Major Below Critical	2015
7TH STREET	2	ANDERSON AVE S/S	DONNELLY AVE N/S	$54,300.55	59.36	100	Major Below Critical	2015
7TH STREET	3	DONNELLY AVE N/S	ELROD AVE N/S	$4,865.42	76.63	84.39	Global MR	2015
7TH STREET	4	ELROD AVE N/S	FERGUSON AVE S/S	$5,533.23	65.46	74.53	Global MR	2015
7TH STREET	5	FERGUSON AVE S/S	HALL ST N/S	$17,879.64	73.58	81.7	Global MR	2015
7TH STREET	7	INGERSOLL AVE S/S	JOHNSON AVE S/S	$54,988.78	53.26	100	Major Below Critical	2015
7TH STREET	8	JOHNSON AVE S/S	KRUSE AVE N/S	$34,603.03	60.38	100	Major Above Critical	2015

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7TH STREET	9	KRUSE AVE N/S	LOCKHART AVE N/S	$59,691.69	51.23	100	Major Below Critical	2015
7TH STREET	10	HEMLOCK AVE S/S	END	$11,448.05	75.62	83.49	Global MR	2015
7TH STREET	12	PINE AVE S/S	END	$57,357.43	46.15	100	Major Below Critical	2015
7TH STREET	13	HEMLOCK AVE S/S	END	$5,509.38	74.67	82.67	Global MR	2015
7TH TERRACE	1	8TH ST E/S	END	$15,947.99	0	100	Major Below Critical	2015
8TH AVENUE	1	D ST N/S	END	$9,196.10	55.42	100	Major Below Critical	2015
8TH AVENUE	2	D ST S/S	E ST N/S	$5,072.12	74.67	82.67	Global MR	2015
8TH AVENUE	3	E ST S/S	F ST N/S	$34,881.58	50.35	100	Major Below Critical	2015
8TH LOOP	1	BIRCH AVE N/S	8TH ST W/S	$3,847.82	77.71	85.35	Global MR	2015
8TH STREET	1	FIR AVE N/S	HEMLOCK AVE S/S	$54,259.28	57.33	100	Major Below Critical	2015
8TH STREET	2	HEMLOCK AVE S/S	KOOSBAY BL S/S	$122,676.92	22.77	100	Major Below Critical	2015
8TH STREET	3	KOOSBAY BL N/S	END	$75,622.84	48.17	100	Major Below Critical	2015
8TH STREET	5	PINE AVE S/S	REDWOOD AVE N/S	$36,368.87	51.23	100	Major Below Critical	2015
8TH STREET	6	TEAKWOOD AVE N/S	END	$10,313.14	59.36	100	Major Below Critical	2015
8TH STREET	7	FERGUSON AVE N/S	ELROD AVE S/S	$48,341.35	23.96	100	Major Below Critical	2015
8TH STREET	8	ELROD AVE N/S	DONNELLY AVE S/S	$47,290.45	23.96	100	Major Below Critical	2015
8TH STREET	10	JOHNSON AVE N/S	INGERSOLL AVE S/S	$123,076.43	23.96	100	Major Below Critical	2015
8TH STREET	11	COMMERCIAL AVE N/S	8TH TERR N/S	$4,579.22	72.62	80.86	Global MR	2015
8TH STREET	12	8TH TERR N/S	7TH TERR S/S	$21,905.01	48.29	100	Major Below Critical	2015
8TH STREET	13	DATE AVE S/S	BIRCH AVE S/S	$9,094.84	75.69	83.57	Global MR	2015
8TH STREET	15	ANDERSON AVE N/S	CENTRAL AVE S/S	$70,879.97	17.94	100	Major Below Critical	2015
8TH STREET	16	CENTRAL AVE N/S	COMMERCIAL AVE S/S	$27,628.06	50.36	100	Major Below Critical	2015
8TH TERRACE	1	8TH ST W/S	10TH ST E/S	$8,480.04	75.67	83.55	Global MR	2015
9TH AVENUE	1	E ST N/S	D ST S/S	$17,100.73	64.54	100	Major Above Critical	2015
9TH AVENUE	2	F ST S/S	H ST N/S	$11,153.90	78.73	86.24	Global MR	2015
9TH AVENUE	3	H ST N/S	I ST S/S	$3,180.02	78.73	86.24	Global MR	2015
9TH STREET	1	FIR AVE N/S	DATE AVE N/S	$43,810.03	44.12	100	Major Below Critical	2015
9TH STREET	2	COMMERCIAL AVE S/S	CENTRAL AVE N/S	$3,900.82	72.62	80.86	Global MR	2015
9TH STREET	3	CENTRAL AVE S/S	ANDERSON AVE N/S	$100,782.45	4.69	100	Major Below Critical	2015

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9TH STREET	04E	ANDERSON AVE S/S	END	$38,923.52	41.19	100	Major Below Critical	2015
9TH STREET	5	DONNELLY AVE S/S	ELROD AVE N/S	$33,467.09	23.96	100	Major Below Critical	2015
9TH STREET	6	ELROD AVE S/S	END	$124,289.00	23.96	100	Major Below Critical	2015
9TH STREET	7	DATE AVE S/S	END	$12,521.31	62.52	71.95	Global MR	2015
ACKERMAN STREET	1	NEWMARK AVE N/S	END	$22,124.96	74.6	82.6	Global MR	2015
ADLER AVENUE	1	12TH ST W/S	13TH ST W/S	$24,340.60	52.39	100	Major Below Critical	2015
ANDERSON AVENUE	1	10TH ST W/S	11TH ST W/S	$21,188.75	59.48	100	Major Below Critical	2015
ANDERSON AVENUE	2	11T ST W/S	END	$120,140.57	46.31	100	Major Below Critical	2015
ANDERSON AVENUE	3	7TH ST W/S	10TH ST E/S	$16,602.33	77.71	85.35	Global MR	2015
ARAGO AVENUE	1	MORRISON ST E/S	END	$34,736.74	55.39	100	Major Below Critical	2015
ARAGO AVENUE	2	MORRISON ST W/S	MADISON ST E/S	$8,132.89	70.6	79.07	Global MR	2015
ARAGO AVENUE	3	MADISON ST W/S	FILLMORE ST E/S	$8,132.89	74.65	82.65	Global MR	2015
A STREET	1	1ST AVE E/S	2ND AVE E/S	$48,836.06	24.02	100	Major Below Critical	2015
AUGUSTINE AVENUE	1	END NORTH	LAKESHORE DR N/S	$28,832.14	68.48	77.35	Global MR	2015
AUGUSTINE AVENUE	2	LAKESHORE DR S/S	END SOUTH	$11,630.91	72.55	80.92	Global MR	2015
BARHAM TERRACE	1	PARK RD W/S	CDS	$3,423.82	65.55	74.62	Global MR	2015
BAYVIEW DRIVE	1	16TH AVE E/S	END	$36,091.75	56.43	100	Major Below Critical	2015
BENNETT AVENUE	1	4TH ST W/S	6TH ST W/S	$9,460.55	67.55	76.39	Global MR	2015
BENNETT AVENUE	2	6TH ST W/S	7TH ST E/S	$15,407.23	55.04	100	Major Below Critical	2015
BIRCH AVENUE	2	8TH ST W/S	END	$1,865.61	77.71	85.35	Global MR	2015
BIRCH AVENUE	3	12TH ST W/S	13TH ST E/S	$12,152.83	58.47	100	Major Below Critical	2015
BLANCO AVENUE	1	MORRISON ST E/S	FULTON AVE N/S	$130,295.44	32.07	100	Major Below Critical	2015
BLANCO AVENUE	2	MORRISON ST W/S	MADISON ST E/S	$8,132.89	74.65	82.65	Global MR	2015
BROOKLYN LANE	1	WOODLAND DR W/S	BROOKLYN DR E/S	$51,400.74	23.97	100	Major Below Critical	2015
BRULE STREET	1	OCEAN BL N/S	LINDBERG ST S/S	$46,152.18	43.11	100	Major Below Critical	2015
BUTLER ROAD	1	OCEAN BL N/S	JUNIPER AVE S/S	$144,096.34	33.12	100	Major Below Critical	2015
CALIFORNIA AVENUE	2	16TH ST W/S	19TH ST E/S	$10,027.65	77.64	85.28	Global MR	2015
CAMMANN STREET	2	TAYLOR AVE N/S	GRANT AVE S/S	$159,412.37	23.75	100	Major Below Critical	2015
CAMMANN STREET	3	GRANT AVE S/S	HARRIS AVE N/S	$140,075.42	22.74	100	Major Below Critical	2015

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CAMMANN STREET	4	HARRIS AVE N/S	JACKSON AVE N/S	$148,424.88	22.78	100	Major Below Critical	2015
CAMMANN STREET	5	JACKSON AVE N/S	SHETTER AVE N/S	$152,564.54	20.75	100	Major Below Critical	2015
CAMMANN STREET	6	SHETTER AVE N/S	NEWMARK AVE N/S	$88,412.00	48.18	100	Major Below Critical	2015
CAMMANN STREET	9	MONTGOMERY AVE N/S	PACIFIC AVE N/S	$57,273.18	46.16	100	Major Below Critical	2015
CAMMANN STREET	10	PACIFIC AVE S/S	END	$26,235.13	62.41	71.85	Global MR	2015
CANYON DRIVE	1	9TH AVE E/S	SHONSTA WY N/S	$26,184.91	40.23	100	Major Below Critical	2015
CANYON DRIVE	2	SHONSTA WY N/S	CANYON TERR S/S	$18,359.95	61.5	100	Major Above Critical	2015
CEDAR AVENUE	1	10TH ST W/S	END	$24,551.34	51.34	100	Major Below Critical	2015
CEDAR AVENUE	2	PARK AVE S/S	BIRCH AVE N/S	$61,581.61	33.12	100	Major Below Critical	2015
CEDAR AVENUE	3	16TH AVE W/S	END	$7,846.69	69.6	78.2	Global MR	2015
CENTRAL AVENUE	1	OCEAN BL E/S	12TH ST E/S	$10,971.05	75.62	83.49	Global MR	2015
CENTRAL AVENUE	2	12TH ST E/S	10TH ST W/S	$82,211.20	43.1	100	Major Below Critical	2015
CHICKSES DRIVE	1	END NORTH	LAKESHORE DR N/S	$10,231.70	78.65	86.27	Global MR	2015
COMMERCIAL AVENUE	1	1ST ST W/S	BROADWAY ST E/S	$4,118.12	67.49	76.33	Global MR	2015
COMMERCIAL AVENUE	2	BROADWAY ST W/S	7TH ST W/S	$34,837.07	76.63	84.39	Global MR	2015
COMMERCIAL AVENUE	3	7TH ST W/S	8TH ST W/S	$950.46	69.52	100	Major Above Critical	2015
COMMERCIAL AVENUE	5	10TH ST W/S	11TH ST E/S	$4,457.32	77.65	85.29	Global MR	2015
COMMERCIAL AVENUE	7	12TH ST W/S	14TH ST E/S	$68,726.22	31.11	100	Major Below Critical	2015
COMPASS CIRCLE	1	RADAR RD E/S	CDS	$3,906.12	71.61	79.97	Global MR	2015
COTTONWOOD AVENUE	1	JUNIPER AVE N/S	END	$26,436.53	73.58	81.7	Global MR	2015
CROCKER AVENUE	1	ST JOHN N/S	HOWARD ST N/S	$8,718.54	73.57	81.81	Global MR	2015
CROCKER AVENUE	2	HOWARD ST N/S	LAKESHORE DR N/S	$22,260.11	61.37	71.11	Global MR	2015
CROCKER AVENUE	3	LAKESHORE DR S/S	END	$12,799.56	62.38	72	Global MR	2015
CROCKER AVENUE	4	ST JOHN N/S	END	$14,840.07	74.6	82.6	Global MR	2015
CURTIS AVENUE	1	1ST ST W/S	BROADWAY ST E/S	$9,986.81	55.39	100	Major Below Critical	2015
CURTIS AVENUE	2	BROADWAY ST W/S	4TH ST E/S	$76,027.24	46.26	100	Major Below Critical	2015
CYPRESS POINT	1	A ST N/S	END	$3,845.01	66.57	100	Major Above Critical	2015
DAKOTA AVENUE	1	SOUTHWEST BL	END	$49,040.08	19.72	100	Major Below Critical	2015
DATE AVENUE	2	8TH ST E/S	TELEGRAPH DR E/S	$21,714.21	78.66	86.18	Global MR	2015

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DATE AVENUE	3	TELEGRAPH DR E/S	3RD CT E/S	$26,923.62	32.93	100	Major Below Critical	2015
DATE AVENUE	4	10TH ST W/S	10TH CT W/S	$2,385.01	75.67	83.55	Global MR	2015
DENISE PLACE	1	KENTUCKY AVE N/S	CDS	$7,865.24	71.56	79.91	Global MR	2015
DONNELLY AVENUE	2	6TH ST W/S	7TH ST E/S	$52,982.78	12.8	100	Major Below Critical	2015
DONNELLY AVENUE	3	7TH ST W/S	9TH ST W/S	$112,964.95	12.8	100	Major Below Critical	2015
D STREET	1	HARBORVIEW DR W/S	COOS RIVER HWY E/S	$15,571.67	62.51	100	Major Above Critical	2015
D STREET	2	6TH AVE W/S	5TH AVE W/S	$20,420.41	60.48	100	Major Above Critical	2015
D STREET	3	5TH AVE W/S	2ND AVE W/S	$216,215.39	33.13	100	Major Below Critical	2015
D STREET	5	1ST AVE E/S	WHITTY ST W/S	$11,281.10	75.68	83.56	Global MR	2015
DUNN STREET	1	OCEAN BL N/S	LINDBERG ST S/S	$10,631.85	61.4	70.95	Global MR	2015
ELM AVENUE	1	10TH CT E/S	END	$2,385.01	79.72	87.12	Global MR	2015
ELM STREET	1	7TH RD E/S	END	$1,860.31	67.49	76.33	Global MR	2015
ELROD AVENUE	1	1ST ST W/S	BROADWAY ST E/S	$1,812.61	67.55	76.39	Global MR	2015
ELROD AVENUE	3	4TH ST W/S	7TH ST E/S	$13,912.57	60.46	70.13	Global MR	2015
ELROD AVENUE	4	7TH ST W/S	10TH ST W/S	$74,133.89	57.42	100	Major Below Critical	2015
ELROD AVENUE	5	10TH ST W/S	12TH ST W/S	$7,618.79	63.5	72.82	Global MR	2015
EMPIRE BOULEVARD	1	SCHETTER AVE N/S	NEWMARK AVE N/S	$6,678.03	76.62	84.49	Global MR	2015
EMPIRE BOULEVARD	2	NEWMARK AVE N/S	CITY LIMITS	$401,401.86	54	100	Major Below Critical	2015
E STREET	1	2ND AV W/S	6TH ST W/S	$200,246.73	29.09	100	Major Below Critical	2015
E STREET	2	6TH AVE E/S	9TH ST W/S	$61,923.79	43.27	100	Major Below Critical	2015
E STREET	3	9TH ST W/S	11TH ST E/S	$107,469.08	23.01	100	Major Below Critical	2015
E STREET	4	11TH ST E/S	14TH AVE W/S	$114,776.06	25.04	100	Major Below Critical	2015
EVERGREEN DRIVE	1	TIMBERLINE DR E/S	TIMBERLINE DR S/S	$33,449.55	62.49	100	Major Above Critical	2015
EVERGREEN DRIVE	2	17TH AVE W/S	16TH AVE E/S	$13,946.74	53.39	100	Major Below Critical	2015
FENWICK AVENUE	2	ST JOHN ST S/S	LAKESHORE DR N/S	$109,427.16	60.38	100	Major Above Critical	2015
FERGUSON AVENUE	1	7TH ST W/S	9TH ST E/S	$99,027.01	23.96	100	Major Below Critical	2015
FERGUSON AVENUE	2	9TH ST W/S	10TH ST E/S	$52,052.48	12.8	100	Major Below Critical	2015
FERGUSON AVENUE	3	10TH ST W/S	11TH ST E/S	$50,720.70	21.93	100	Major Below Critical	2015
FERGUSON AVENUE	4	11TH ST W/S	12TH CT E/S	$26,660.50	36.12	100	Major Below Critical	2015

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FERN COURT	1	EVERGREEN DR W/S	CDS	$4,854.82	78.72	86.24	Global MR	2015
FILBERT AVENUE	2	18TH AVE E/S	END	$10,910.10	73.65	81.77	Global MR	2015
FINK STREET	1	WHITTY ST W/S	BESSIE ST E/S	$17,975.96	62.51	100	Major Above Critical	2015
FINK STREET	2	WHITTY ST E/S	1ST AVE W/S	$34,075.09	54.41	100	Major Below Critical	2015
FIR AVENUE	1	9TH ST E/S	8TH ST W/S	$28,975.52	34.98	100	Major Below Critical	2015
FIR AVENUE	2	7TH CT W/S	4TH ST W/S	$14,945.32	64.44	100	Major Above Critical	2015
FIR STREET	1	NEWMARK AVE S/S	WALNUT AVE S/S	$33,668.41	71.56	79.91	Global MR	2015
FLANAGAN AVENUE	1	MADISON ST E/S	MORRISON ST W/S	$53,279.73	49.21	100	Major Below Critical	2015
FLANAGAN AVENUE	2	MORRISON ST E/S	END	$52,706.83	43.11	100	Major Below Critical	2015
FRONT STREET	1	JOHNSON AVE N/S	INGERSOLL AVE N/S	$6,587.93	78.66	86.18	Global MR	2015
F STREET	1	6TH ST E/S	9TH AVE W/S	$13,371.96	78.72	86.24	Global MR	2015
F STREET	2	9TH AVE W/S	10TH AVE W/S	$19,794.55	52.37	100	Major Below Critical	2015
F STREET	3	10TH AVE W/S	12TH AVE E/S	$6,826.43	78.72	86.24	Global MR	2015
F STREET	4	12TH AVE E/S	12TH CT W/S	$15,892.43	35.14	100	Major Below Critical	2015
FULTON AVENUE	1	EMPIRE BL E/S	WASSON ST W/S	$54,112.66	59.36	100	Major Below Critical	2015
FULTON AVENUE	3	CAMMANN ST W/S	END	$2,928.26	78.67	86.18	Global MR	2015
FULTON AVENUE	4	MADISON ST W/S	MORRISON ST W/S	$8,395.24	79.68	87.08	Global MR	2015
FULTON AVENUE	6	390' E/O MORRISON ST	PREFONTAINE DR W/S	$192,228.33	25.84	100	Major Below Critical	2015
FULTON AVENUE	7	PREFONTAINE DR W/S	RADAR RD E/S	$110,942.41	21.78	100	Major Below Critical	2015
GARFIELD AVENUE	1	MORRISON ST E/S	END	$6,383.88	75.62	83.5	Global MR	2015
GARFIELD AVENUE	2	MORRISON ST W/S	MADISON ST E/S	$8,132.89	70.54	79.02	Global MR	2015
GARFIELD AVENUE	3	MADISON ST E/S	END	$34,780.75	59.36	100	Major Below Critical	2015
GOLDEN AVENUE	1	7TH ST E/S	5TH ST E/S	$7,632.04	62.4	71.84	Global MR	2015
GOLDEN AVENUE	2	5TH ST E/S	4TH ST W/S	$38,885.40	55.29	100	Major Below Critical	2015
GOLDEN AVENUE	3	4TH ST E/S	BROADWAY ST W/S	$53,199.86	62.4	100	Major Above Critical	2015
HALL AVENUE	1	7TH ST E/S	4TH ST W/S	$69,876.99	43.1	100	Major Below Critical	2015
HALL AVENUE	2	4TH ST E/S	2ND ST W/S	$33,952.77	45.13	100	Major Below Critical	2015
HALL AVENUE	3	2ND ST E/S	ALLEY E/S	$12,056.35	59.36	100	Major Below Critical	2015
HALL AVENUE	4	ALLEY E/S	BROADWAY ST W/S	$2,544.01	76.63	84.39	Global MR	2015

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HARBORVIEW COURT	1	HARBORVIEW DR W/S	END	$8,368.04	53.39	100	Major Below Critical	2015
HARBORVIEW DRIVE	1	D ST S/S	END	$25,612.01	41.23	100	Major Below Critical	2015
HEMLOCK AVENUE	1	BAYSHORE DR W/S	8TH ST E/S	$77,312.66	56.3	100	Major Below Critical	2015
HEMLOCK AVENUE	2	10TH ST W/S	13TH ST E/S	$15,600.63	74.6	82.6	Global MR	2015
HIGHLAND AVENUE	1	BROADWAY ST W/S	2ND ST E/S	$2,607.61	79.68	87.08	Global MR	2015
HIGHLAND AVENUE	2	2ND ST W/S	5TH ST E/S	$10,003.80	78.66	86.18	Global MR	2015
HIGHLAND AVENUE	3	OCEAN BL E/S	13TH ST E/S	$4,820.37	72.65	80.89	Global MR	2015
H STREET	1	6TH AVE E/S	9TH AVE W/S	$70,972.24	45.3	100	Major Below Critical	2015
IDAHO AVENUE	1	SOUTHWEST BL W/S	END	$95,202.55	49.19	100	Major Below Critical	2015
INGERSOLL AVENUE	1	1ST ST W/S	BROADWAY ST E/S	$4,632.22	69.52	78.11	Global MR	2015
INGERSOLL AVENUE	2	BROADWAY AVE W/S	2ND ST E/S	$90,419.30	27.85	100	Major Below Critical	2015
INGERSOLL AVENUE	3	2ND ST W/S	4TH ST E/S	$65,548.34	34.96	100	Major Below Critical	2015
INGERSOLL AVENUE	4	4TH ST W/S	5TH ST E/S	$72,655.94	26.83	100	Major Below Critical	2015
INGERSOLL AVENUE	5	5TH ST W/S	7TH ST E/S	$94,757.66	19.72	100	Major Below Critical	2015
INGERSOLL AVENUE	6	7TH ST W/S	10TH ST E/S	$45,437.48	56.3	100	Major Below Critical	2015
INGERSOLL AVENUE	7	10TH ST E/S	11TH ST W/S	$7,512.79	73.58	81.7	Global MR	2015
INGERSOLL AVENUE	8	11TH ST W/S	END	$16,470.30	56.3	100	Major Below Critical	2015
I STREET	1	14TH AVE E/S	17TH AVE E/S	$86,203.04	34.13	100	Major Below Critical	2015
IVY AVENUE	1	BAYSHORE DR W/S	7TH ST E/S	$11,471.91	62.41	71.85	Global MR	2015
JACKSON STREET	1	1ST AVE W/S	MERCHANT ST W/S	$48,752.41	34.15	100	Major Below Critical	2015
JOHN AVENUE	1	END WEST	LAKESHORE DR W/S	$1,245.75	68.49	100	Major Above Critical	2015
JOHNSON AVENUE	1	BROADWAY ST W/S	4TH ST E/S	$144,587.38	34.96	100	Major Below Critical	2015
JOHNSON AVENUE	2	4TH ST W/S	5TH ST E/S	$7,131.18	72.56	80.8	Global MR	2015
JOHNSON AVENUE	3	5TH ST W/S	7TH ST W/S	$7,957.99	66.47	75.42	Global MR	2015
JOHNSON AVENUE	5	BROADWAY ST E/S	1ST ST W/S	$6,084.43	79.68	87.08	Global MR	2015
JOHNSON AVENUE	6	1ST ST E/S	FRONT ST W/S	$6,413.03	77.65	85.28	Global MR	2015
JUNIPER AVENUE	1	20TH ST E/S	19TH ST W/S	$34,199.18	52.35	100	Major Below Critical	2015
JUNIPER AVENUE	2	19TH ST E/S	COTTONWOOD AVE E/S	$103,101.23	58.43	100	Major Below Critical	2015
JUNIPER AVENUE	4	BUTLER RD W/S	14TH ST W/S	$68,696.26	35.99	100	Major Below Critical	2015

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JUNIPER AVENUE	5	14TH ST W/S	13TH ST E/S	$6,609.13	73.58	81.7	Global MR	2015
JUNIPER AVENUE	6	13TH ST E/S	END	$43,001.22	41.07	100	Major Below Critical	2015
JUNIPER AVENUE	7	MYRTLE AVE S/S	20TH ST E/S	$8,832.49	72.63	80.87	Global MR	2015
KENTUCKY AVENUE	2	JEFFERSON ST E/S	MORRISON ST W/S	$18,571.29	79.68	87.08	Global MR	2015
KENTUCKY AVENUE	3	MORRISON ST E/S	125' W/O TRICIA PL	$5,024.42	73.59	81.71	Global MR	2015
KENTUCKY AVENUE	4	125' W/O TRICIA PL	PREFONTAINE DR W/S	$111,253.19	36	100	Major Below Critical	2015
KINGWOOD AVENUE	1	7TH ST E/S	BAYSHORE DR W/S	$58,267.33	45.12	100	Major Below Critical	2015
KINNEY ROAD	1	THOMPSON RD N/S	CITY LIMITS	$46,652.98	29.03	100	Major Below Critical	2015
KNOT TERRACE	1	28TH CT W/S	END	$6,521.68	63.11	75.82	Global MR	2015
KOOSBAY BOULEVARD	2	10TH ST E/S	TEAKWOOD AVE S/S	$5,338.56	69.59	100	Major Above Critical	2015
KOOSBAY BOULEVARD	3	TEAKWOOD AVE S/S	CITY LIMITS	$210,962.12	44.24	100	Major Below Critical	2015
KRUSE AVENUE	1	BROADWAY ST W/S	4TH ST E/S	$29,369.52	66.47	100	Major Above Critical	2015
KRUSE AVENUE	2	5TH ST W/S	7TH ST E/S	$113,097.85	14.65	100	Major Below Critical	2015
LA CLAIR STREET	1	OCEAN BL N/S	NEWMARK AVE S/S	$437,477.21	24.82	100	Major Below Critical	2015
LAKESHORE DRIVE	1	TAYLOR AVE N/S	CHICKSES DR W/S	$21,369.70	77.63	85.38	Global MR	2015
LAKESHORE DRIVE	2	CHICKSES DR W/S	SEABREEZE TER E/S	$16,578.48	78.65	86.27	Global MR	2015
LAKESHORE DRIVE	3	SEABREEZE TER E/S	CROCKER AVE E/S	$24,417.22	66.45	75.57	Global MR	2015
LAKESHORE DRIVE	4	CROCKER AVE E/S	CITY LIMITS EAST	$21,200.10	79.67	87.16	Global MR	2015
LAUREL AVENUE	1	14TH ST W/S	END	$3,376.12	75.67	83.55	Global MR	2015
LEAF TERRACE	1	28TH CT W/S	END	$6,299.08	68.23	79.87	Global MR	2015
LIMNELL STREET	1	FINK ST S/S	END	$2,480.41	71.64	79.99	Global MR	2015
LINCOLN BOULEVARD	1	WEST HILLS BL S/S	OAKWAY DR E/S	$105,024.74	36.16	100	Major Below Critical	2015
LINDBERG AVENUE	2	BRULE ST W/S	END	$9,738.80	61.4	70.95	Global MR	2015
LINDY LANE	1	OCEAN BL S/S	END	$1,033.51	73.59	81.71	Global MR	2015
LISA PLACE	1	KENTUCKY AVE S/S	CDS	$4,587.17	75.62	83.5	Global MR	2015
MADISON STREET	1	MARSHALL AVE N/S	KENTUCKY AVE S/S	$3,736.52	77.65	85.29	Global MR	2015
MADISON STREET	3	FULTON AVE N/S	PACIFIC AVE S/S	$18,642.84	78.67	86.18	Global MR	2015
MADISON STREET	4	PACIFIC AVE N/S	GARFIELD AVE S/S	$4,173.77	79.68	87.08	Global MR	2015
MADISON STREET	5	GARFIELD AVE N/S	MICHIGAN AVE S/S	$23,465.86	75.62	83.5	Global MR	2015

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MAIN STREET	1	SCHETTER AVE N/S	NEWMARK AVE N/S	$16,230.45	65.46	100	Major Above Critical	2015
MARKET AVENUE	1	1ST ST W/S	BROADWAY E/S	$4,237.37	73.35	83.92	Global MR	2015
MARKET AVENUE	2	BROADWAY W/S	4TH ST W/S	$103,172.61	48.29	100	Major Below Critical	2015
MARKET AVENUE	3	4TH ST W/S	5TH ST E/S	$3,847.82	60.46	70.13	Global MR	2015
MARKET AVENUE	4	5TH ST W/S	END	$36,377.27	23.96	100	Major Below Critical	2015
MARPLE STREET	1	FULTON ST N/S	PACIFIC AVE S/S	$63,809.26	60.38	100	Major Above Critical	2015
MARPLE STREET	2	PACIFIC AVE N/S	MICHIGAN AVE S/S	$26,497.48	60.38	70.06	Global MR	2015
MARPLE STREET	3	MICHIGAN AVE N/S	NEWMARK AVE S/S	$13,308.36	61.4	70.95	Global MR	2015
MARPLE STREET	4	NEWMARK AVE N/S	SCHETTER AVE N/S	$14,193.47	72.57	80.81	Global MR	2015
MARPLE STREET	5	SCHETTER AVE N/S	JACKSON AVE N/S	$37,630.43	59.36	100	Major Below Critical	2015
MARPLE STREET	6	JACKSON AVE N/S	HARRIS AVE S/S	$37,474.04	57.33	100	Major Below Critical	2015
MARPLE STREET	7	HARRIS AVE S/S	GRANT AVE N/S	$9,497.65	61.4	70.95	Global MR	2015
MARPLE STREET	8	GRANT AVE N/S	TAYLOR AVE N/S	$29,074.72	54.29	100	Major Below Critical	2015
MARYLAND AVENUE	1	MADISON ST E/S	MORRISON ST W/S	$8,379.34	70.54	79.02	Global MR	2015
MARYLAND AVENUE	2	MORRISON ST E/S	SCHONEMAN ST W/S	$28,382.13	58.35	100	Major Below Critical	2015
MERCHANT STREET	2	JACKSON ST S/S	D ST N/S	$14,695.28	53.4	100	Major Below Critical	2015
MERCHANT STREET	3	D ST S/S	FINK ST N/S	$13,446.13	56.44	100	Major Below Critical	2015
MERRILL STREET	1	OCEAN BL N/S	LINDBERG ST S/S	$11,980.71	70.54	79.02	Global MR	2015
MICHIGAN AVENUE	1	MILL ST E/S	EMPIRE BL W/S	$15,285.94	38.03	100	Major Below Critical	2015
MICHIGAN AVENUE	2	EMPIRE BL E/S	MARPLE ST E/S	$124,700.37	23.81	100	Major Below Critical	2015
MICHIGAN AVENUE	3	MARPLE ST E/S	CAMMANN ST W/S	$149,139.44	47.17	100	Major Below Critical	2015
MICHIGAN AVENUE	4	CAMMANN ST E/S	MADISON ST E/S	$30,353.45	63.43	100	Major Above Critical	2015
MICHIGAN AVENUE	5	MADISON ST E/S	MORRISON ST W/S	$141,489.97	22.79	100	Major Below Critical	2015
MICHIGAN AVENUE	6	MORRISON ST E/S	SCHONEMAN ST E/S	$7,512.79	76.63	84.39	Global MR	2015
MICHIGAN AVENUE	7	SCHONEMAN ST E/S	END	$8,347.54	72.57	80.81	Global MR	2015
MILL STREET	1	NEWMARK AVE S/S	MICHIGAN AVE N/S	$7,642.64	78.67	86.18	Global MR	2015
MINNESOTA AVENUE	1	SOUTHWEST BL N/S	14TH ST W/S	$215,390.86	29.88	100	Major Below Critical	2015
MONTGOMERY AVENUE	1	MARPLE ST W/S	CDS	$3,445.02	74.6	82.6	Global MR	2015
MONTGOMERY AVENUE	2	MARPLE ST E/S	WALL ST W/S	$4,547.42	71.56	79.91	Global MR	2015

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MONTGOMERY AVENUE	3	WALL ST E/S	WASSON ST W/S	$4,634.87	76.63	84.39	Global MR	2015
MONTGOMERY AVENUE	4	WASSON ST E/S	CAMMANN ST W/S	$21,898.84	56.32	100	Major Below Critical	2015
MONTGOMERY AVENUE	5	MORRISON ST W/S	END	$3,985.62	62.41	71.85	Global MR	2015
MONTGOMERY AVENUE	6	MORRISON ST E/S	END	$104,902.35	5.52	100	Major Below Critical	2015
MORRISON STREET	1	LAKESHORE DR S/S	PIRATES CT S/S	$75,473.86	56.29	100	Major Below Critical	2015
MORRISON STREET	2	PIRATES CT S/S	HARRIS AVE N/S	$16,398.28	69.5	78.25	Global MR	2015
MORRISON STREET	4	NEWMARK AVE S/S	SALMON AVE N/S	$35,200.87	39.05	100	Major Below Critical	2015
MORRISON STREET	5	SALMON AVE N/S	MICHIGAN AVE N/S	$33,419.00	52.25	100	Major Below Critical	2015
MORRISON STREET	6	MICHIGAN AVE N/S	MONTGOMERY AVE S/S	$19,551.79	76.63	84.39	Global MR	2015
MORRISON STREET	7	MONTGOMERY AVE S/S	PACIFIC AVE N/S	$113,916.58	28.89	100	Major Below Critical	2015
MORRISON STREET	8	PACIFIC AVE N/S	WEBSTER AVE S/S	$130,358.15	28.89	100	Major Below Critical	2015
MORRISON STREET	9	WEBSTER AVE S/S	BLANCO AVE S/S	$25,106.11	53.24	100	Major Below Critical	2015
MORRISON STREET	10	WEBSTER AVE S/S	BLANCO AVE S/S	$18,102.24	74.6	82.6	Global MR	2015
MYRTLE AVENUE	1	BAYSHORE DR W/S	6TH ST E/S	$3,529.82	79.68	87.08	Global MR	2015
MYRTLE AVENUE	3	14TH ST E/S	END	$10,006.53	64.52	100	Major Above Critical	2015
MYRTLE AVENUE	4	JUNIPER AVE E/S	WOODLAND AVE E/S	$8,310.44	65.53	74.61	Global MR	2015
NEWMARK AVENUE	4	EMPIRE BL W/S	MILL ST W/S	$19,107.91	48.19	100	Major Below Critical	2015
NEWMARK AVENUE	5	MILL ST W/S	END	$5,180.77	70.54	79.02	Global MR	2015
NOBLE AVENUE	1	CAMMANN ST W/S	WASSON ST E/S	$4,547.42	70.54	79.02	Global MR	2015
NOBLE AVENUE	2	WASSON ST W/S	WALL ST E/S	$4,634.87	76.63	84.39	Global MR	2015
NOBLE AVENUE	3	WALL ST W/S	MARPLE ST E/S	$4,547.42	74.6	82.6	Global MR	2015
NOBLE AVENUE	4	MARPLE ST W/S	EMPIRE BL E/S	$4,372.52	76.63	84.39	Global MR	2015
NOBLE AVENUE	5	MADISON ST E/S	MORRISON ST W/S	$8,379.34	75.62	83.5	Global MR	2015
NOBLE AVENUE	6	MORRISON ST E/S	SCHONEMAN ST W/S	$6,757.53	68.51	77.23	Global MR	2015
NORMAN AVENUE	2	NEWMARK AVE S/S	OCEAN BL N/S	$128,401.09	50.22	100	Major Below Critical	2015
NUTWOOD AVENUE	1	14TH ST W/S	15TH ST E/S	$17,685.91	38.16	100	Major Below Critical	2015
OAKWAY COURT	1	OAKWAY DR W/S	END	$1,486.66	72.64	80.88	Global MR	2015
OAKWAY DRIVE	2	LINCOLN RD S/S (E)	LINCOLN RD N/S (W)	$23,516.21	60.48	70.16	Global MR	2015
OCEAN BOULEVARD	1	CENTRAL AVE N/S	LINCOLN RD N/S	$80,358.98	77	84.76	Global MR	2015

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OCEAN BOULEVARD	2	LINCOLN RD N/S	WOODLAND RD W/S	$86,467.27	79	86.52	Global MR	2015
OCEAN TERRACE	1	LINCOLN RD N/S	WEST HILLS BL E/S	$4,833.62	75.68	83.56	Global MR	2015
OREGON AVENUE	1	SOUTHWEST BL W/S	END	$65,849.97	60.37	100	Major Above Critical	2015
PACIFIC AVENUE	2	FILLMORE AVE W/S	MORRISON ST W/S	$17,929.99	72.62	80.86	Global MR	2015
PACIFIC AVENUE	3	MORRISON ST E/S	END	$288,946.50	33.12	100	Major Below Critical	2015
PARK AVENUE	1	TELEGRAPH DR S/S	4TH CT W/S	$150,398.43	18.7	100	Major Below Critical	2015
PARK AVENUE	2	4TH CT W/S	4TH ST W/S	$3,047.51	68.5	77.22	Global MR	2015
PARK AVENUE	3	4TH ST W/S	BROADWAY ST W/S	$12,163.56	71.55	79.9	Global MR	2015
PARK AVENUE	4	14TH ST E/S	CEDAR AVE S/S	$104,807.06	47.31	100	Major Below Critical	2015
PARK AVENUE	5	11TH ST W/S	END	$97,078.63	26.05	100	Major Below Critical	2015
PENNSYLVANIA AVENUE	1	SOUTHWEST BL W/S	17TH ST W/S	$287,063.87	8.54	100	Major Below Critical	2015
PENNSYLVANIA AVENUE	2	17TH ST W/S	19TH ST W/S	$50,970.39	52.24	100	Major Below Critical	2015
PINE AVENUE	1	BAYSHORE DR W/S	8TH ST E/S	$9,826.25	69.52	78.12	Global MR	2015
PREFONTAINE DRIVE	1	NAUTICAL LN N/S	FULTON AVE S/S	$298,526.37	23.81	100	Major Below Critical	2015
RADAR ROAD	1	FULTON AVE N/S	OCEAN BL S/S	$636,399.53	22.94	100	Major Below Critical	2015
REDWOOD AVENUE	1	8TH ST W/S	11TH ST E/S	$38,552.82	47.17	100	Major Below Critical	2015
SALMON AVENUE	1	MORRISON ST E/S	SCHONEMAN ST W/S	$6,577.33	72.62	80.86	Global MR	2015
SALMON AVENUE	2	SCHONEMAN ST E/S	END	$7,801.64	76.68	84.44	Global MR	2015
SANFORD AVENUE	1	END NORTH	VIRGINIA AVE N/S	$3,431.77	79.67	87.16	Global MR	2015
SANFORD AVENUE	2	VIRGINIA AVE S/S	LAKESHORE DR N/S	$40,365.00	64.42	73.78	Global MR	2015
SCHETTER AVENUE	1	MARPLE ST E/S	WALL ST W/S	$7,022.53	79.67	87.16	Global MR	2015
SCHETTER AVENUE	2	WALL ST E/S	WASSON ST W/S	$7,441.24	76.62	84.49	Global MR	2015
SCHONEMAN STREET	1	HARRIS AVE S/S	NEWMARK AVE N/S	$246,898.23	31.94	100	Major Below Critical	2015
SCHONEMAN STREET	2	NEWMARK AVE S/S	MICHIGAN AVE N/S	$9,619.55	65.46	74.54	Global MR	2015
SCHONEMAN STREET	3	MICHIGAN AVE S/S	FLANAGAN AVE N/S	$55,188.90	58.43	100	Major Below Critical	2015
SEABREEZE TERRACE	1	TIDEVIEW TERRACE S/S	LAKESHORE DR N/S	$26,724.12	47.14	100	Major Below Critical	2015
SEABREEZE TERRACE	2	LAKESHORE DR S/S	LAKEWOOD LN N/S	$6,752.23	66.45	75.57	Global MR	2015
SEAGATE STREET	3	LAKESHORE DR S/S	END SOUTH	$12,505.41	65.43	74.68	Global MR	2015
SHON-STA WAY	1	CANYON DR E/S	END	$6,688.51	64.54	100	Major Above Critical	2015

City of Coos Bay
Unlimited Budget

2015

SIGNAL WAY	1	DATE AVE S/S	TELEGRAPH DR E/S	$84,198.99	50.21	100	Major Below Critical	2015
SOUTHWEST BOULEVARD	3	MONTANA AVE S/S	WASHINGTON AVE S/S	$193,438.11	46.14	100	Major Below Critical	2015
SOUTHWEST BOULEVARD	4	WASHINGTON AVE S/S	7TH ST E/S	$44,024.66	73.58	81.7	Global MR	2015
SPRUCE AVENUE	1	11TH ST W/S	END	$1,484.01	74.6	82.6	Global MR	2015
TAYLOR AVENUE	1	MARPLE ST W/S	WALL ST W/S	$3,964.42	72.55	80.92	Global MR	2015
TAYLOR AVENUE	2	WALL ST W/S	WASSON ST W/S	$5,088.02	78.65	86.27	Global MR	2015
TELEGRAPH DRIVE	1	DATE AVE (E) S/S	PARK AVE E/S	$167,416.35	37	100	Major Below Critical	2015
TELEGRAPH DRIVE	2	PARK AVE E/S	DATE AVE (W) S/S	$120,898.82	44.11	100	Major Below Critical	2015
THOMPSON ROAD	1	KOOSBAY BL W/S	15TH CT W/S	$24,857.12	79.72	87.12	Global MR	2015
THOMPSON ROAD	2	15TH CT W/S	KINNEY RD E/S	$37,161.13	75.67	83.55	Global MR	2015
THOMPSON ROAD	3	KINNEY RD E/S	WOODLAND DR E/S	$10,971.05	77.7	85.33	Global MR	2015
THOMAS STREET	1	LA CLAIR ST E/S	END	$6,310.26	68.51	100	Major Above Critical	2015
TRICIA PLACE	1	KENTUCKY AVE N/S	CDS	$27,697.04	51.24	100	Major Below Critical	2015
TWIG TERRACE	1	28TH CT W/S	CDS	$6,055.28	65.16	77.44	Global MR	2015
UNDERWOOD AVENUE	1	8TH ST W/S	END	$14,655.89	54.28	100	Major Below Critical	2015
VINE AVENUE	1	34TH ST W/S	OCEAN BL E/S	$7,433.29	79.68	87.08	Global MR	2015
VIRGINIA AVENUE	1	FENWICK AVE E/S	CROCKER AVE W/S	$9,100.14	78.65	86.27	Global MR	2015
WALLACE STREET	1	NEWMARK AVE S/S	OCEAN BL N/S	$39,138.55	61.4	100	Major Above Critical	2015
WALLACE STREET	2	OCEAN BL S/S	END	$53,936.88	44.24	100	Major Below Critical	2015
WALL STREET	1	TAYLOR AVE S/S	HARRIS AVE S/S	$19,557.09	73.57	81.81	Global MR	2015
WALL STREET	2	HARRIS AVE S/S	SCHETTER AVE N/S	$76,583.56	58.32	100	Major Below Critical	2015
WALL STREET	4	NEWMARK AVE S/S	MICHIGAN AVE N/S	$58,304.77	57.33	100	Major Below Critical	2015
WALL STREET	5	MICHIGAN AVE S/S	PACIFIC AVE N/S	$25,097.57	67.49	100	Major Above Critical	2015
WALL STREET	6	PACIFIC AVE S/S	FULTON AVE N/S	$17,577.54	73.59	81.71	Global MR	2015
WASHINGTON AVENUE	1	SOUTHWEST BL W/S	END	$102,785.06	45.12	100	Major Below Critical	2015
WASSON STREET	1	HARRIS AVE S/S	TAYLOR AVE N/S	$105,457.39	53.24	100	Major Below Critical	2015
WASSON STREET	4	NEWMARK AVE S/S	MICHIGAN AVE N/S	$158,989.31	30.92	100	Major Below Critical	2015
WASSON STREET	5	MICHIGAN AVE S/S	NOBLE AVE N/S	$100,375.24	31.94	100	Major Below Critical	2015
WASSON STREET	6	NOBLE AVE N/S	PACIFIC AVE N/S	$119,163.27	44.13	100	Major Below Critical	2015

City of Coos Bay
Unlimited Budget

2015

WASSON STREET	7	PACIFIC AVE S/S	END	$166,815.10	44.13	100	Major Below Critical	2015
WEBSTER AVENUE	1	MADISON ST W/S	END	$7,783.09	75.67	83.54	Global MR	2015
WEBSTER AVENUE	2	MADISON ST E/S	MORRISON ST W/S	$8,132.89	71.61	79.97	Global MR	2015
WEBSTER AVENUE	3	MORRISON ST E/S	END	$6,646.23	71.61	79.97	Global MR	2015
WEST HILLS BOULEVARD	1	OCEAN BL S/S	LINCOLN BL W/S	$53,936.88	49.33	100	Major Below Critical	2015
WHITTY STREET	1	D ST S/S	END	$130,463.44	15.9	100	Major Below Critical	2015
YEW AVENUE	1	KOOSBAY BL E/S	END	$59,539.17	13.83	100	Major Below Critical	2015
YEW AVENUE	2	KOOSBAY BL E/S	END	$146,275.89	21.94	100	Major Below Critical	2015
YEW STREET	1	35TH ST W/S	END	$4,197.62	72.57	80.81	Global MR	2015
ZANNA PLACE	1	KENTUCKY AVE S/S	CDS	$6,093.05	66.48	100	Major Above Critical	2015

$19,625,051.62

City of Coos Bay
5 Year Slurry Seal Budget

2015

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
16TH COURT	1	THOMPSON RD N/S	END	$397.50	73.64	81.76	Global MR	2015
4TH STREET	6	ANDERSON AVE N/S	COMMERCIAL AVE S/S	$13,483.26	65.45	74.53	Global MR	2015
4TH STREET	7	COMMERCIAL AVE N/S	MARKET AVE S/S	$5,925.43	68.5	77.22	Global MR	2015
CENTRAL AVENUE	1	OCEAN BL E/S	12TH ST E/S	$10,971.05	75.62	83.49	Global MR	2015
COMMERCIAL AVENUE	1	1ST ST W/S	BROADWAY ST E/S	$4,118.12	67.49	76.33	Global MR	2015
COMMERCIAL AVENUE	2	BROADWAY ST W/S	7TH ST W/S	$34,837.07	76.63	84.39	Global MR	2015
COMMERCIAL AVENUE	5	10TH ST W/S	11TH ST E/S	$4,457.32	77.65	85.29	Global MR	2015
ELROD AVENUE	3	4TH ST W/S	7TH ST E/S	$13,912.57	60.46	70.13	Global MR	2015
EMPIRE BOULEVARD	1	SCHETTER AVE N/S	NEWMARK AVE N/S	$6,678.03	76.62	84.49	Global MR	2015
JOHNSON AVENUE	6	1ST ST E/S	FRONT ST W/S	$6,413.03	77.65	85.28	Global MR	2015
LAKESHORE DRIVE	3	SEABREEZE TER E/S	CROCKER AVE E/S	$24,417.22	66.45	75.57	Global MR	2015
OCEAN BOULEVARD	1	CENTRAL AVE N/S	LINCOLN RD N/S	$80,358.98	77	84.76	Global MR	2015
SOUTHWEST BOULEVARD	4	WASHINGTON AVE S/S	7TH ST E/S	$44,024.66	73.58	81.7	Global MR	2015
				$249,994.24				

City of Coos Bay
5 Year Slurry Seal Budget

2016

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
10TH STREET	1	ELROD AVE N/S	CENTRAL AVE S/S	$25,743.81	71.48	79.72	Global MR	2016
1STCOURT	1	A ST S/S	END	$1,004.57	61.03	70.48	Global MR	2016
4TH STREET	1	LOCKHART AVE N/S	KRUSE AVE N/S	$14,355.86	75.71	83.47	Global MR	2016
D STREET	5	1ST AVE E/S	WHITTY ST W/S	$12,183.59	74.72	82.6	Global MR	2016
MONTGOMERY AVENUE	5	MORRISON ST W/S	END	$4,304.47	60.93	70.37	Global MR	2016
MORRISON STREET	2	PIRATES CT S/S	HARRIS AVE N/S	$17,710.14	68.25	77	Global MR	2016
MORRISON STREET	6	MICHIGAN AVE N/S	MONTGOMERY AVE S/S	$21,115.94	75.71	83.47	Global MR	2016
OCEAN BOULEVARD	2	LINCOLN RD N/S	WOODLAND RD W/S	$93,384.65	78.16	85.68	Global MR	2016
PACIFIC AVENUE	2	FILLMORE AVE W/S	MORRISON ST W/S	$19,364.38	71.54	79.78	Global MR	2016
THOMPSON ROAD	2	15TH CT W/S	KINNEY RD E/S	$40,134.02	74.71	82.59	Global MR	2016
				$249,301.43				

City of Coos Bay
5 Year Slurry Seal Budget

2017

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
10TH AVENUE	2	E ST S/S	F ST N/S	$6,991.79	61.74	70.94	Global MR	2017
15TH STREET	2	MYRTLE AVE N/S	END	$6,132.49	65	73.84	Global MR	2017
5TH AVENUE	2	D ST S/S	E ST N/S	$6,185.04	60.65	69.97	Global MR	2017
5TH STREET	13	ANDERSON AVE N/S	COMMERCIAL AVE S/S	$12,302.08	61.71	70.91	Global MR	2017
6TH STREET	2	ANDERSON AVE S/S	BENNETT AVE N/S	$3,894.63	62.73	71.81	Global MR	2017
7TH ROAD	2	3RD CT N/S	DATE AVE N/S	$9,894.21	63.83	72.79	Global MR	2017
7TH STREET	4	ELROD AVE N/S	FERGUSON AVE S/S	$6,453.96	62.74	71.82	Global MR	2017
BARHAM TERRACE	1	PARK RD W/S	CDS	$3,993.54	62.83	71.91	Global MR	2017
BENNETT AVENUE	1	4TH ST W/S	6TH ST W/S	$11,034.78	64.99	73.83	Global MR	2017
ELM STREET	1	7TH RD E/S	END	$2,169.86	64.93	73.77	Global MR	2017
ELROD AVENUE	5	10TH ST W/S	12TH ST W/S	$8,886.55	60.62	69.94	Global MR	2017
JOHNSON AVENUE	3	5TH ST W/S	7TH ST W/S	$9,282.20	63.83	72.79	Global MR	2017
LAKESHORE DRIVE	1	TAYLOR AVE N/S	CHICKSES DR W/S	$24,925.62	75.8	83.54	Global MR	2017
LAKESHORE DRIVE	2	CHICKSES DR W/S	SEABREEZE TER E/S	$19,337.14	76.9	84.52	Global MR	2017
LEAF TERRACE	1	28TH CT W/S	END	$7,347.25	63.8	75.44	Global MR	2017
MYRTLE AVENUE	4	JUNIPER AVE E/S	WOODLAND AVE E/S	$9,693.30	62.81	71.89	Global MR	2017
SANFORD AVENUE	2	VIRGINIA AVE S/S	LAKESHORE DR N/S	$47,081.73	61.51	70.88	Global MR	2017
SCHONEMAN STREET	2	NEWMARK AVE S/S	MICHIGAN AVE N/S	$11,220.24	62.74	71.82	Global MR	2017
SEABREEZE TERRACE	2	LAKESHORE DR S/S	LAKEWOOD LN N/S	$7,875.80	63.7	72.82	Global MR	2017
SEAGATE STREET	3	LAKESHORE DR S/S	END SOUTH	$14,586.31	62.6	71.84	Global MR	2017
THOMPSON ROAD	3	KINNEY RD E/S	WOODLAND DR E/S	$12,796.64	75.94	83.58	Global MR	2017
TWIG TERRACE	1	28TH CT W/S	CDS	$7,062.88	60.3	72.59	Global MR	2017

$249,148.04

City of Coos Bay
5 Year Slurry Seal Budget

2018

Branch ID	Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
13THAV	13TH AVENUE	1	D ST S/S	END	$4,606.79	63.73	72.57	Global MR	2018
19THST	19TH STREET	3	JUNIPER AVE S/S	COTTONWOOD AVE S/S	$5,421.32	64.78	73.5	Global MR	2018
34THST	34TH STREET	1	LINDBERG AVE S/S	OCEAN BL N/S	$28,722.33	68.2	76.56	Global MR	2018
4THAV	4TH AVENUE	1	E ST N/S	D ST S/S	$6,389.42	67.14	75.62	Global MR	2018
5THST	5TH STREET	12	BENNETT AVE N/S	ANDERSON AVE S/S	$5,287.79	65.98	74.58	Global MR	2018
6THST	6TH STREET	3	BENNETT AVE S/S	ELROD AVE N/S	$12,338.18	65.92	74.52	Global MR	2018
ARAGAV	ARAGO AVENUE	2	MORRISON ST W/S	MADISON ST E/S	$10,245.10	67.12	75.6	Global MR	2018
AUGUAV	AUGUSTINE AVENUE	1	END NORTH	LAKESHORE DR N/S	$36,320.19	64.61	73.48	Global MR	2018
CEDAAV	CEDAR AVENUE	3	16TH AVE W/S	END	$9,884.57	66	74.6	Global MR	2018
ELROAV	ELROD AVENUE	1	1ST ST W/S	BROADWAY ST E/S	$2,283.37	63.71	72.55	Global MR	2018
FIRST	FIR STREET	1	NEWMARK AVE S/S	WALNUT AVE S/S	$42,412.50	68.2	76.56	Global MR	2018
GARFAV	GARFIELD AVENUE	2	MORRISON ST W/S	MADISON ST E/S	$10,245.10	67.06	75.54	Global MR	2018
INGEAV	INGERSOLL AVENUE	1	1ST ST W/S	BROADWAY ST E/S	$5,835.27	65.92	74.52	Global MR	2018
LINDLN	LINDY LANE	1	OCEAN BL S/S	END	$1,301.92	70.47	78.59	Global MR	2018
MARYLAV	MARYLAND AVENUE	1	MADISON ST E/S	MORRISON ST W/S	$10,555.56	67.06	75.54	Global MR	2018
MERRST	MERRILL STREET	1	OCEAN BL N/S	LINDBERG ST S/S	$15,092.24	67.06	75.54	Global MR	2018
MONTGAV	MONTGOMERY AVENUE	2	MARPLE ST E/S	WALL ST W/S	$5,728.44	68.2	76.56	Global MR	2018
NEWMAV	NEWMARK AVENUE	5	MILL ST W/S	END	$6,526.28	67.06	75.54	Global MR	2018
NOBLAV	NOBLE AVENUE	1	CAMMANN ST W/S	WASSON ST E/S	$5,728.44	67.06	75.54	Global MR	2018
NOBLAV	NOBLE AVENUE	6	MORRISON ST E/S	SCHONEMAN ST W/S	$8,512.54	64.79	73.51	Global MR	2018
PARKAV	PARK AVENUE	2	4TH CT W/S	4TH ST W/S	$3,838.99	64.78	73.5	Global MR	2018
PINEAV	PINE AVENUE	1	BAYSHORE DR W/S	8TH ST E/S	$12,378.24	65.92	74.52	Global MR	2018
					$249,654.58				

City of Coos Bay
5 Year Slurry Seal Budget

2019

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
19TH STREET	4	THOMPSON RD S/S	END	$15,466.79	68.31	76.55	Global MR	2019
8TH STREET	11	FIR AVE N/S	HEMLOCK AVE S/S	$6,229.98	68.3	76.54	Global MR	2019
9TH STREET	2	COMMERCIAL AVE S/S	CENTRAL AVE N/S	$5,307.02	68.3	76.54	Global MR	2019
AUGUSTINE AVENUE	2	LAKESHORE DR S/S	END SOUTH	$15,823.72	68.05	76.42	Global MR	2019
COMPASS CIRCLE	1	RADAR RD E/S	CDS	$5,314.23	67.13	75.49	Global MR	2019
COTTONWOOD AVENUE	1	JUNIPER AVE N/S	END	$35,966.61	69.42	77.54	Global MR	2019
DENISE PLACE	1	KENTUCKY AVE N/S	CDS	$10,700.57	67.08	75.44	Global MR	2019
HIGHLAND AVENUE	3	OCEAN BL E/S	13TH ST E/S	$6,558.06	68.33	76.57	Global MR	2019
JOHNSON AVENUE	2	4TH ST W/S	5TH ST E/S	$9,701.90	68.24	76.48	Global MR	2019
JUNIPER AVENUE	7	MYRTLE AVE S/S	20TH ST E/S	$12,016.51	68.31	76.55	Global MR	2019
LIMNELL STREET	1	FINK ST S/S	END	$3,374.57	67.16	75.52	Global MR	2019
MARKET AVENUE	1	1ST ST W/S	BROADWAY E/S	$5,764.90	65.92	76.49	Global MR	2019
MARPLE STREET	4	NEWMARK AVE N/S	SCHETTER AVE N/S	$19,310.06	68.25	76.49	Global MR	2019
MICHIGAN AVENUE	7	SCHONEMAN ST E/S	END	$11,356.74	68.25	76.49	Global MR	2019
OAKWAY COURT	1	OAKWAY DR W/S	END	$2,022.58	68.32	76.56	Global MR	2019
PARK AVENUE	3	4TH ST W/S	BROADWAY ST W/S	$16,548.39	67.07	75.43	Global MR	2019
SALMON AVENUE	1	MORRISON ST E/S	SCHONEMAN ST W/S	$8,948.39	68.3	76.54	Global MR	2019
TAYLOR AVENUE	1	MARPLE ST W/S	WALL ST W/S	$5,393.55	68.05	76.42	Global MR	2019
WALL STREET	1	TAYLOR AVE S/S	HARRIS AVE S/S	$26,607.21	69.25	77.49	Global MR	2019
WEBSTER AVENUE	2	MADISON ST E/S	MORRISON ST W/S	$11,064.71	67.13	75.49	Global MR	2019
WEBSTER AVENUE	3	MORRISON ST E/S	END	$9,042.13	67.13	75.49	Global MR	2019
YEW STREET	1	35TH ST W/S	END	$5,710.82	68.25	76.49	Global MR	2019

$248,229.44

City of Coos Bay
5 Year Recommended Budget

2015

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
10TH AVENUE	2	E ST S/S	F ST N/S	$5,994.33	64.54	73.73	Global MR	2015
10TH STREET	1	ELROD AVE N/S	CENTRAL AVE S/S	$23,836.87	72.56	80.8	Global MR	2015
12TH COURT	1	FERGUSON AVE N/S	END	$4,507.67	60.46	70.13	Global MR	2015
13TH AVENUE	1	D ST S/S	END	$3,657.02	67.57	76.41	Global MR	2015
15TH STREET	2	MYRTLE AVE N/S	END	$5,257.63	67.56	76.4	Global MR	2015
15TH STREET	3	MYRTLE AVE S/S	END	$7,208.03	60.46	70.14	Global MR	2015
19TH STREET	1	CALIFORNIA AVE S/S	END	$11,543.46	61.38	70.94	Global MR	2015
19TH STREET	3	JUNIPER AVE S/S	COTTONWOOD AVE S/S	$4,303.62	68.5	77.22	Global MR	2015
1STCOURT	1	A ST S/S	END	$930.15	62.52	71.95	Global MR	2015
34TH STREET	1	LINDBERG AVE S/S	OCEAN BL N/S	$22,800.71	71.56	79.91	Global MR	2015
4TH AVENUE	1	E ST N/S	D ST S/S	$5,072.12	70.62	79.1	Global MR	2015
4TH STREET	6	ANDERSON AVE N/S	COMMERCIAL AVE S/S	$13,483.26	65.45	74.53	Global MR	2015
4TH STREET	7	COMMERCIAL AVE N/S	MARKET AVE S/S	$5,925.43	68.5	77.22	Global MR	2015
5TH AVENUE	2	D ST S/S	E ST N/S	$5,302.68	63.53	72.85	Global MR	2015
5TH STREET	12	BENNETT AVE N/S	ANDERSON AVE S/S	$4,197.62	69.58	78.18	Global MR	2015
5TH STREET	13	ANDERSON AVE N/S	COMMERCIAL AVE S/S	$10,547.05	64.51	73.71	Global MR	2015
6TH STREET	2	ANDERSON AVE S/S	BENNETT AVE N/S	$3,339.02	65.45	74.53	Global MR	2015
6TH STREET	3	BENNETT AVE S/S	ELROD AVE N/S	$9,794.45	69.52	78.11	Global MR	2015
7TH ROAD	2	3RD CT N/S	DATE AVE N/S	$8,482.69	66.47	75.43	Global MR	2015
7TH STREET	4	ELROD AVE N/S	FERGUSON AVE S/S	$5,533.23	65.46	74.53	Global MR	2015
9TH STREET	7	DATE AVE S/S	END	$12,521.31	62.52	71.95	Global MR	2015
ARAGO AVENUE	2	MORRISON ST W/S	MADISON ST E/S	$8,132.89	70.6	79.07	Global MR	2015
AUGUSTINE AVENUE	1	END NORTH	LAKESHORE DR N/S	$28,832.14	68.48	77.35	Global MR	2015
BARHAM TERRACE	1	PARK RD W/S	CDS	$3,423.82	65.55	74.62	Global MR	2015
BENNETT AVENUE	1	4TH ST W/S	6TH ST W/S	$9,460.55	67.55	76.39	Global MR	2015

City of Coos Bay
5 Year Recommended Budget

2015

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
CAMMANN STREET	10	PACIFIC AVE S/S	END	$26,235.13	62.41	71.85	Global MR	2015
CEDAR AVENUE	3	16TH AVE W/S	END	$7,846.69	69.6	78.2	Global MR	2015
COMMERCIAL AVENUE	1	1ST ST W/S	BROADWAY ST E/S	$4,118.12	67.49	76.33	Global MR	2015
COMPASS CIRCLE	1	RADAR RD E/S	CDS	$3,906.12	71.61	79.97	Global MR	2015
CROCKER AVENUE	2	HOWARD ST N/S	LAKESHORE DR N/S	$22,260.11	61.37	71.11	Global MR	2015
CROCKER AVENUE	3	LAKESHORE DR S/S	END	$12,799.56	62.38	72	Global MR	2015
DUNN STREET	1	OCEAN BL N/S	LINDBERG ST S/S	$10,631.85	61.4	70.95	Global MR	2015
ELM STREET	1	7TH RD E/S	END	$1,860.31	67.49	76.33	Global MR	2015
ELROD AVENUE	1	1ST ST W/S	BROADWAY ST E/S	$1,812.61	67.55	76.39	Global MR	2015
ELROD AVENUE	3	4TH ST W/S	7TH ST E/S	$13,912.57	60.46	70.13	Global MR	2015
ELROD AVENUE	5	10TH ST W/S	12TH ST W/S	$7,618.79	63.5	72.82	Global MR	2015
FIR STREET	1	NEWMARK AVE S/S	WALNUT AVE S/S	$33,668.41	71.56	79.91	Global MR	2015
GARFIELD AVENUE	2	MORRISON ST W/S	MADISON ST E/S	$8,132.89	70.54	79.02	Global MR	2015
GOLDEN AVENUE	1	7TH ST E/S	5TH ST E/S	$7,632.04	62.4	71.84	Global MR	2015
INGERSOLL AVENUE	1	1ST ST W/S	BROADWAY ST E/S	$4,632.22	69.52	78.11	Global MR	2015
IVY AVENUE	1	BAYSHORE DR W/S	7TH ST E/S	$11,471.91	62.41	71.85	Global MR	2015
JOHNSON AVENUE	3	5TH ST W/S	7TH ST W/S	$7,957.99	66.47	75.42	Global MR	2015
KNOT TERRACE	1	28TH CT W/S	END	$6,521.68	63.11	75.82	Global MR	2015
LAKESHORE DRIVE	3	SEABREEZE TER E/S	CROCKER AVE E/S	$24,417.22	66.45	75.57	Global MR	2015
LEAF TERRACE	1	28TH CT W/S	END	$6,299.08	68.23	79.87	Global MR	2015
LINDBERG AVENUE	2	BRULE ST W/S	END	$9,738.80	61.4	70.95	Global MR	2015
MARKET AVENUE	3	4TH ST W/S	5TH ST E/S	$3,847.82	60.46	70.13	Global MR	2015
MARPLE STREET	2	PACIFIC AVE N/S	MICHIGAN AVE S/S	$26,497.48	60.38	70.06	Global MR	2015
MARPLE STREET	3	MICHIGAN AVE N/S	NEWMARK AVE S/S	$13,308.36	61.4	70.95	Global MR	2015
MARPLE STREET	7	HARRIS AVE S/S	GRANT AVE N/S	$9,497.65	61.4	70.95	Global MR	2015

City of Coos Bay
5 Year Recommended Budget

2015

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
MARYLAND AVENUE	1	MADISON ST E/S	MORRISON ST W/S	$8,379.34	70.54	79.02	Global MR	2015
MERRILL STREET	1	OCEAN BL N/S	LINDBERG ST S/S	$11,980.71	70.54	79.02	Global MR	2015
MONTGOMERY AVENUE	5	MORRISON ST W/S	END	$3,985.62	62.41	71.85	Global MR	2015
MORRISON STREET	2	PIRATES CT S/S	HARRIS AVE N/S	$16,398.28	69.5	78.25	Global MR	2015
MYRTLE AVENUE	4	JUNIPER AVE E/S	WOODLAND AVE E/S	$8,310.44	65.53	74.61	Global MR	2015
NEWMARK AVENUE	5	MILL ST W/S	END	$5,180.77	70.54	79.02	Global MR	2015
NOBLE AVENUE	1	CAMMANN ST W/S	WASSON ST E/S	$4,547.42	70.54	79.02	Global MR	2015
NOBLE AVENUE	6	MORRISON ST E/S	SCHONEMAN ST W/S	$6,757.53	68.51	77.23	Global MR	2015
OAKWAY DRIVE	2	LINCOLN RD S/S (E)	LINCOLN RD N/S (W)	$23,516.21	60.48	70.16	Global MR	2015
PACIFIC AVENUE	2	FILLMORE AVE W/S	MORRISON ST W/S	$17,929.99	72.62	80.86	Global MR	2015
PARK AVENUE	2	4TH CT W/S	4TH ST W/S	$3,047.51	68.5	77.22	Global MR	2015
PINE AVENUE	1	BAYSHORE DR W/S	8TH ST E/S	$9,826.25	69.52	78.12	Global MR	2015
SANFORD AVENUE	2	VIRGINIA AVE S/S	LAKESHORE DR N/S	$40,365.00	64.42	73.78	Global MR	2015
SCHONEMAN STREET	2	NEWMARK AVE S/S	MICHIGAN AVE N/S	$9,619.55	65.46	74.54	Global MR	2015
SEABREEZE TERRACE	2	LAKESHORE DR S/S	LAKEWOOD LN N/S	$6,752.23	66.45	75.57	Global MR	2015
SEAGATE STREET	3	LAKESHORE DR S/S	END SOUTH	$12,505.41	65.43	74.68	Global MR	2015
SOUTHWEST BOULEVARD	4	WASHINGTON AVE S/S	7TH ST E/S	$44,024.66	73.58	81.7	Global MR	2015
TWIG TERRACE	1	28TH CT W/S	CDS	$6,055.28	65.16	77.44	Global MR	2015

$749,895.36

City of Coos Bay
5 Year Recommended Budget

2016

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
12TH AVENUE	2	F ST N/S	E ST S/S	$15,492.11	63.13	100	Major Above Critical	2016
13TH STREET	1	JUNIPER AVE S/S	HEMLOCK AVE S/S	$16,356.60	63.04	100	Major Above Critical	2016
14TH STREET	1	JUNIPER AVE N/S	MYRTLE AVE S/S	$15,884.18	72.6	80.72	Global MR	2016
16TH COURT	1	THOMPSON RD N/S	END	$429.30	72.6	80.72	Global MR	2016
17TH STREET	3	I ST N/S	EVERGREEN ST N/S	$47,985.60	62.08	100	Major Above Critical	2016
19TH STREET	4	THOMPSON RD S/S	END	$12,278.04	71.55	79.79	Global MR	2016
4TH COURT	2	PARK AVE N/S	205' N/O PARK AVE	$4,710.53	64.09	100	Major Above Critical	2016
6TH STREET	6	KOOSBAY BL N/S	KINGWOOD AVE S/S	$19,724.13	63.04	100	Major Above Critical	2016
6TH STREET	7	KINGWOOD AVE N/S	MYRTLE AVE S/S	$17,010.24	64.09	100	Major Above Critical	2016
7TH AVENUE	2	E ST N/S	D ST S/S	$7,469.86	72.61	80.73	Global MR	2016
7TH STREET	5	FERGUSON AVE S/S	HALL ST N/S	$19,310.01	72.54	80.66	Global MR	2016
8TH STREET	9	JOHNSON AVE S/S	END	$1,874.52	69.43	100	Major Above Critical	2016
8TH STREET	11	COMMERCIAL AVE N/S	8TH TERR N/S	$4,945.56	71.54	79.78	Global MR	2016
9TH AVENUE	1	E ST N/S	D ST S/S	$23,238.17	63.13	100	Major Above Critical	2016
9TH STREET	2	COMMERCIAL AVE S/S	CENTRAL AVE N/S	$4,212.88	71.54	79.78	Global MR	2016
AUGUSTINE AVENUE	2	LAKESHORE DR S/S	END SOUTH	$12,561.38	71.43	79.8	Global MR	2016
COMMERCIAL AVENUE	3	7TH ST W/S	8TH ST W/S	$3,592.54	68.32	100	Major Above Critical	2016
COTTONWOOD AVENUE	1	JUNIPER AVE N/S	END	$28,551.45	72.54	80.66	Global MR	2016
CROCKER AVENUE	1	ST JOHN N/S	HOWARD ST N/S	$9,416.03	72.48	80.73	Global MR	2016
DENISE PLACE	1	KENTUCKY AVE N/S	CDS	$8,494.46	70.43	78.79	Global MR	2016
D STREET	1	HARBORVIEW DR W/S	COOS RIVER HWY E/S	$20,162.89	61.02	100	Major Above Critical	2016
EVERGREEN DRIVE	1	TIMBERLINE DR E/S	TIMBERLINE DR S/S	$43,244.75	61.01	100	Major Above Critical	2016
FILBERT AVENUE	2	18TH AVE E/S	END	$11,782.91	72.61	80.73	Global MR	2016
FINK STREET	1	WHITTY ST W/S	BESSIE ST E/S	$23,250.17	61.03	100	Major Above Critical	2016
FIR AVENUE	2	7TH CT W/S	4TH ST W/S	$20,205.21	63.04	100	Major Above Critical	2016
GOLDEN AVENUE	3	4TH ST E/S	BROADWAY ST W/S	$68,644.58	60.92	100	Major Above Critical	2016
HIGHLAND AVENUE	3	OCEAN BL E/S	13TH ST E/S	$5,206.00	71.57	79.81	Global MR	2016
INGERSOLL AVENUE	7	10TH ST E/S	11TH ST W/S	$8,113.81	72.54	80.66	Global MR	2016

City of Coos Bay
5 Year Recommended Budget

2016

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
JOHNSON AVENUE	2	4TH ST W/S	5TH ST E/S	$7,701.68	71.48	79.72	Global MR	2016
JUNIPER AVENUE	5	14TH ST W/S	13TH ST E/S	$7,137.86	72.54	80.66	Global MR	2016
JUNIPER AVENUE	7	MYRTLE AVE S/S	20TH ST E/S	$9,539.09	71.55	79.79	Global MR	2016
KENTUCKY AVENUE	3	MORRISON ST E/S	125' W/O TRICIA PL	$5,426.38	72.54	80.67	Global MR	2016
KOOSBAY BOULEVARD	1	BAYSHORE DR W/S	10TH ST E/S	$7,911.97	69.37	100	Major Above Critical	2016
KOOSBAY BOULEVARD	2	10TH ST E/S	TEAKWOOD AVE S/S	$22,779.75	68.38	100	Major Above Critical	2016
LIMNELL STREET	1	FINK ST S/S	END	$2,678.84	70.51	78.87	Global MR	2016
LINDY LANE	1	OCEAN BL S/S	END	$1,116.19	72.54	80.67	Global MR	2016
MAIN STREET	1	SCHETTER AVE N/S	NEWMARK AVE N/S	$22,818.61	64.09	100	Major Above Critical	2016
MARKET AVENUE	1	1ST ST W/S	BROADWAY E/S	$4,576.36	71.49	82.07	Global MR	2016
MARPLE STREET	4	NEWMARK AVE N/S	SCHETTER AVE N/S	$15,328.95	71.49	79.73	Global MR	2016
MICHIGAN AVENUE	4	CAMMANN ST E/S	MADISON ST E/S	$39,966.50	61.99	100	Major Above Critical	2016
MICHIGAN AVENUE	7	SCHONEMAN ST E/S	END	$9,015.34	71.49	79.73	Global MR	2016
MONTGOMERY AVENUE	2	MARPLE ST E/S	WALL ST W/S	$4,911.22	70.43	78.79	Global MR	2016
MYRTLE AVENUE	3	14TH ST E/S	END	$13,587.66	63.11	100	Major Above Critical	2016
OAKWAY COURT	1	OAKWAY DR W/S	END	$1,605.59	71.56	79.8	Global MR	2016
PARK AVENUE	3	4TH ST W/S	BROADWAY ST W/S	$13,136.64	70.42	78.78	Global MR	2016
SALMON AVENUE	1	MORRISON ST E/S	SCHONEMAN ST W/S	$7,103.52	71.54	79.78	Global MR	2016
SHON-STA WAY	1	CANYON DR E/S	END	$9,075.79	63.14	100	Major Above Critical	2016
TAYLOR AVENUE	1	MARPLE ST W/S	WALL ST W/S	$4,281.57	71.43	79.8	Global MR	2016
WALL STREET	1	TAYLOR AVE S/S	HARRIS AVE S/S	$21,121.66	72.49	80.73	Global MR	2016
WALL STREET	6	PACIFIC AVE S/S	FULTON AVE N/S	$18,983.74	72.54	80.67	Global MR	2016
WASSON STREET	2	HARRIS AVE N/S	SCHETTER AVE S/S	$5,371.33	69.31	100	Major Above Critical	2016
WEBSTER AVENUE	2	MADISON ST E/S	MORRISON ST W/S	$8,783.52	70.49	78.85	Global MR	2016
WEBSTER AVENUE	3	MORRISON ST E/S	END	$7,177.93	70.49	78.85	Global MR	2016
YEW STREET	1	35TH ST W/S	END	$4,533.43	71.49	79.73	Global MR	2016

$749,819.03

City of Coos Bay
5 Year Recommended Budget

2017

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
12TH STREET	1	INGERSOLL AVE N/S	END	$7,465.87	64.92	100	Major Above Critical	2017
CYPRESS POINT	1	A ST N/S	END	$7,936.74	63.93	100	Major Above Critical	2017
EMPIRE BOULEVARD	2	NEWMARK AVE N/S	CITY LIMITS	$551,839.21	50.32	100	Major Below Critical	2017
HALL AVENUE	3	2ND ST E/S	ALLEY E/S	$17,015.57	56.16	100	Major Below Critical	2017
I STREET	2	H ST N/S	I ST S/S	$4,164.13	68.3	100	Major Above Critical	2017
JOHN AVENUE	1	END WEST	LAKESHORE DR W/S	$3,935.69	65.91	100	Major Above Critical	2017
KRUSE AVENUE	1	BROADWAY ST W/S	4TH ST E/S	$59,876.60	63.83	100	Major Above Critical	2017
THOMAS STREET	1	LA CLAIR ST E/S	END	$19,610.52	66.03	100	Major Above Critical	2017
WALL STREET	5	MICHIGAN AVE S/S	PACIFIC AVE N/S	$59,130.54	64.93	100	Major Above Critical	2017
WASSON STREET	3	SCHETTER AVE S/S	NEWMARK AVE N/S	$2,976.31	69.21	100	Major Above Critical	2017
ZANNA PLACE	1	KENTUCKY AVE S/S	CDS	$12,437.24	63.84	100	Major Above Critical	2017
				$746,388.42				

City of Coos Bay
5 Year Recommended Budget

2018

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
10TH STREET	7	JOHNSON AVE N/S	SOUTHWEST BL N/S	$142,427.53	46.6	100	Major Below Critical	2018
10TH STREET	9	INGERSOLL AVE S/S	JOHNSON AVE N/S	$52,301.26	46.71	100	Major Below Critical	2018
7TH STREET	9	KRUSE AVE N/S	LOCKHART AVE N/S	$79,152.35	45.47	100	Major Below Critical	2018
CANYON DRIVE	2	SHONSTA WY N/S	CANYON TERR S/S	$32,913.26	56.94	100	Major Below Critical	2018
CENTRAL AVENUE	2	12TH ST E/S	10TH ST W/S	$142,831.73	36.38	100	Major Below Critical	2018
D STREET	2	6TH AVE W/S	5TH AVE W/S	$34,794.62	55.8	100	Major Below Critical	2018
JUNIPER AVENUE	3	COTTONWODD AVE E/S	BUTLER RD W/S	$1,190.08	69.33	100	Major Above Critical	2018
OAKWAY DRIVE	1	WEST HILLS BL S/S	LINCOLN RD N/S	$2,364.28	69.4	100	Major Above Critical	2018
SOUTHWEST BOULEVARD	3	MONTANA AVE S/S	WASHINGTON AVE S/S	$249,291.53	39.78	100	Major Below Critical	2018
TAYLOR AVENUE	3	WASSON ST E/S	CAMMANN ST W/S	$1,448.35	69.33	100	Major Above Critical	2018
				$738,714.99				

City of Coos Bay
5 Year Recommended Budget

2019

Name	Section ID	From	To	Total	Avg Of Condition Before	Avg Of Condition After	Work Type	Work Year
19TH STREET	1	CALIFORNIA AVE S/S	END	$59,831.31	59.86	100	Major Below Critical	2019
4TH STREET	4	GOLDEN AVE S/S	CURTIS AVE S/S	$9,872.91	69.42	100	Major Above Critical	2019
COMMERCIAL AVENUE	7	12TH ST W/S	14TH ST E/S	$126,670.02	20.22	100	Major Below Critical	2019
ELROD AVENUE	3	4TH ST W/S	7TH ST E/S	$76,856.56	58.89	100	Major Below Critical	2019
KOOSBAY BOULEVARD	3	TEAKWOOD AVE S/S	CITY LIMITS	$424,102.22	35.44	100	Major Below Critical	2019
MORRISON STREET	5	SALMON AVE N/S	MICHIGAN AVE N/S	$50,043.64	44.73	100	Major Below Critical	2019
				$747,376.66				

Appendix D
Historical Sites

Oregon Historic Sites Search Results List

Property Name	Address/Location	City	County	Yr Built	Elig	NR Stat
Cape Arago Lighthouse	Gregory Point	Coos Bay vcty	Coos	1934	ES	NRI
Olsson, Capt Bror W, House	631 S 10th	Coos Bay	Coos	1913	ES	NRI
Seelig-Byler House	1920 N 14th St	Coos Bay	Coos	1909	ES	NRI
Marshfield Elks Temple	195 S 2nd St	Coos Bay	Coos	1920	ES	NRI
Nasburg-Lockhart House	687 N 3rd St	Coos Bay	Coos	1884	ES	NRI
Nerdrum, Hjalte, House	955 S 5th St	Coos Bay	Coos	1912	ES	NRI
Nerdrum-Conrad House	979 S 5th St	Coos Bay	Coos	1912	ES	NRI
Marshfield IOOF Cemetery	750 7th St	Coos Bay	Coos	1888	ES	NRI
Egyptian Theatre	229 S Broadway St	Coos Bay	Coos	1925	ES	NRI
Koski Building	241 N Broadway St	Coos Bay	Coos	1926	ES	NRI
Marshfield Hotel	275 N Broadway St	Coos Bay	Coos	1925	ES	NRI
Hub Department Store Building	125 Central Ave	Coos Bay	Coos	1914	ES	NRI
Coke, J S, Building	150 Central Ave	Coos Bay	Coos	1910	ES	NRI
Chandler Hotel & Annex	187 W Central Ave	Coos Bay	Coos	1909	ES	NRI
Coos Bay National Bank Building	201 W Central Ave	Coos Bay	Coos	1923	ES	NRI
Marshfield City Hall	375 W Central Ave	Coos Bay	Coos	1923	ES	NRI
Myrtle Arms Apartment Building	613 W Central Ave	Coos Bay	Coos	1914	ES	NRI
Marshfield Sun Printing Plant	1049 N Front St	Coos Bay	Coos	1895	ES	NRB
Coos Bay Carnegie Library	515 W Market St	Coos Bay	Coos	1914	ES	NRI
Tower-Flanagan House	476 Newmark Ave	Coos Bay	Coos	1872	ES	NRI
Tower, Major Morton, House	486 Schetter Ave	Coos Bay	Coos	1869	ES	NRI
Tribal Hall Of The Confederated Tribes Of Coos, Lower Umpqua & +	338 Wallace St	Coos Bay	Coos	1940	ES	NRI

22 Records Found

Elig Codes: ES=elig/signif EC=elig/contr NC=not elig/non-contrib NP=not elig/out of period UN=undetermined XD=demolished
NR Stat Codes: NRI=indiv listed NHD=listed in hist dist NRB=listed indiv and in hist dist NHL=Natl Historic Landmark NS=included in NR listing

Oregon Historic Sites Search Results List

Property Name	Address/Location	City	County	Yr Built	Elig	NR Stat
(35-CS-130) The Osprey Site	ADDRESS RESTRICTED	North Bend	Coos		ES	NRI
(35-CS-24) Archeological Site	ADDRESS RESTRICTED	North Bend vcty	Coos		ES	NRI
Coos Bay Bridge	Hwy 101	North Bend	Coos	1936	ES	NRI
Hotel North Bend	768 Virginia Ave	North Bend	Coos	1922	ES	NRI

4 Records Found

Elig Codes: ES=elig/signif EC=elig/contr NC=not elig/non-contrib NP=not elig/out of period UN=undetermined XD=demolished
NR Stat Codes: NRI=indiv listed NHD=listed in hist dist NRB=listed indiv and in hist dist NHL=Natl Historic Landmark NS=included in NR listing

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Technical Memorandum #5: Methodology Memorandum

METHODOLOGY MEMORANDUM

Date: November 14, 2018

To: Peter Schuytema, PE, ODOT TPAU

From: Angela Rogge, PE, David Evans and Associates, Inc.
Sepehr Dastegheibi, David Evans and Associates, Inc.

Subject: Cities of Coos Bay and North Bend Transportation System Plan Updates

This memorandum summarizes the approach for collection and evaluation of information that the Cities of Coos Bay and North Bend Transportation System Plan (TSP) Update will use for traffic analysis purposes.

Study Area

The Project includes two distinct study areas; the City of Coos Bay and the City of North Bend. The cities are located in Coos County, Oregon on the Pacific Ocean. The City of North Bend is surrounded on three sides by Coos Bay, an S-shaped water inlet and estuary where the Coos River enters Coos Bay. Together, they are referred to as one entity called either Coos Bay/North Bend or the Bay Area. The study area is the boundary for the Project, which includes, at a minimum, City Limits, Urban Growth Boundary ("UGB") and urban reserves.

Volume Development

Study Area Intersections

The TSP includes 54 locations for analysis, 26 locations in North Bend and 28 locations in Coos Bay. Since much of the analysis documentation will review both cities concurrently, the intersections are numbered sequentially from 1 to 54 to avoid potential for accidental overlap. The City of North Bend intersections are summarized in Table 1 and the City of Coos Bay intersections in Table 2.

Traffic Data Collection

The transportation and traffic analysis will be based on existing year 2017 conditions for the design hour (30^{th} highest) volumes.

ODOT provided the traffic counts for the purpose of analysis:

- 4-hour PM peak turning movement counts, including bicycles and pedestrians, with 15 minute breakdowns between 2:00 PM and 6:00 PM – **41 locations**
- 16-hour turning movement counts, including bicycles and pedestrians with 15 minute breakdowns from 6:00 AM to 10:00 PM – **13 locations**

The majority of the traffic counts were collected in the year 2017. There were 3 intersections collected in 2016, which will need to be grown to year 2017.

Table 1. Summary of Traffic Counts (City of North Bend)

ID	Count Location	Duration	Date
1	Arthur St at Colorado Lp	4 hr	7/11/2017
2	Oak St/W Airport Way at Colorado Ave/Maple Leaf	4 hr	7/11/2017
3	Maple Leaf at E Airport Way	4 hr	7/11/2017
4	US 101 at Florida Ave	4 hr	7/11/2017
5	Virginia Ave at Arthur St	4 hr	7/11/2017
6	Virginia Ave at Oak St	4 hr	7/11/2017
7	Virginia Ave at Maple St	4 hr	7/11/2017
8	Virginia Ave at Broadway St	16 hr	7/11/2017
9	Virginia Ave at Pony Village Main Driveway	4 hr	7/11/2017
10	Virginia Ave at Harrison Ave	4 hr	7/11/2017
11	Virginia Ave at Meade Ave	4 hr	7/11/2017
12	Virginia Ave at US 101 South	16 hr	7/11/2017
13	Virginia Ave at US 101 North	16 hr	7/11/2017
14	Marion Ave at Safeway Driveway	4 hr	7/11/2017
15	Washington Ave at US 101 South/Sherman Ave	4 hr	7/12/2017
16	Pony Creek Rd at Crowell Ln	4 hr	7/11/2017
17	Oak St at 16th/17th St	4 hr	7/11/2017
18	Broadway St at 16th St	4 hr	7/11/2017
19	Broadway Ave at 17th St	4 hr	7/11/2017
20	US 101 at Mill Casino Entrance	16 hr	4/22/2016
21	Newmark Ave at Oak St	4 hr	7/11/2017
22	Broadway St at Newmark Ave	16 hr	7/11/2017
23	Newmark St at Edgewood Dr	4 hr	7/11/2017
24	Newmark Ave at Brusells St	4 hr	7/11/2017
25	Newmark St at Sherman Ave	16 hr	7/11/2017
26	US 101 at Newmark St	4 hr	4/22/2016

Table 2. Summary of Traffic Counts (City of Coos Bay)

ID	Count Location	Duration	Date
27	Morrison St at Lakeshore Dr	4 hr	7/11/2017
28	Newmark Ave at Cape Arago Hwy/Empire Blvd	4 hr	7/11/2017
29	Newmark Ave at Morrison St	16 hr	5/10/2016

ID	Count Location	Duration	Date
30	Newmark Ave at Ocean Blvd	16 hr	7/11/2017
31	Newmark Ave at Laclair St	4 hr	7/11/2017
32	Empire Blvd at Pacific Ave	4 hr	7/11/2017
33	Thompson Rd at Woodland Dr	4 hr	7/11/2017
34	Koosbay Blvd at Thompson Rd	4 hr	7/11/2017
35	Ocean Blvd at Woodland Dr	4 hr	7/12/2017
36	Ocean Blvd at Butler Rd	4 hr	7/12/2017
37	Koosbay Blvd at 10th St	4 hr	7/12/2017
38	Us 101 at Koosbay Blvd	16 hr	7/11/2017
39	7th St at Commercial Ave	4 hr	9/12/2017
40	Commercial Ave at US 101 South	16 hr	7/11/2017
41	Commercial Ave at US 101 North	4 hr	7/12/2017
42	10th St at Central Ave	16 hr	7/11/2017
43	Central Ave at 7th St	4 hr	7/12/2017
44	7th St at Anderson Ave	4 hr	7/12/2017
45	Elrod Ave at 10th St	4 hr	7/12/2017
46	11th St at Ingersoll Ave	4 hr	7/12/2017
47	7th St at Ingersoll Ave	4 hr	7/12/2017
48	Hall Ave at US 101 South	4 hr	7/12/2017
49	Hall Ave at US 101 North	4 hr	7/12/2017
50	Johnson Ave at US 101 South	16 hr	7/11/2017
51	Johnson Ave at US 101 North	16 hr	7/11/2017
52	7th St at Lockhart Ave/Southwest Blvd	4 hr	7/12/2017
53	6th Ave at D St / Coos River Hwy	4 hr	7/12/2017
54	Coos River Rd at Ross Inlet Rd	4 hr	7/12/2017

Design Hour (30th Highest) Volumes

Data for existing weekday counts will be reviewed to determine which hour is the highest traffic demand hour for the study area. Turning movements, peak hour factors, vehicle classification, and other data describing demand in the study area will be derived for this peak hour for all intersections.

ADT / K-Factor

The K-factor is the percent of ADT in the peak hour. A K-factor will be used to develop an estimate for ADT along roadway segments and intersections for the purpose of calculating crash rates. As no 24-hour counts were collected, the average K-factor developed from the 16-hour counts (see Table 1 and Table 2 for list of these intersection locations). The ODOT Transportation Planning and Analysis Unit's (TPAU) Analysis Procedures Manual (APM) Volume 2 suggests an expansion factor or 1.10 for 16-hour counts.

Two K-factors will be developed: one for use at intersections with state facilities and the other for local intersections.

Inventory of Existing Facilities

The transportation system inventory is a citywide inventory of the unique modal networks (e.g., street, bicycle and pedestrian facilities, transit, rail, marine and air).

Traffic Volumes

Traffic volumes will be developed for two study periods: existing year 2017 and future year 2040. The forecast year is compliant with the 20-year forecast requirement of Transportation Planning Rule (TPR) and allows for easier data sharing between upcoming projects in the region.

Existing Volumes

The existing PM peak hour volumes will be determined from the existing weekday counts and adjusted to design hourly volumes following the methodologies outlined in the ODOT TPAU APM, Volume 2.

Peak Hour Selection

A single system peak hour will be used for analysis purposes. Traffic counts will be reviewed in 15-minute intervals to determine the true peak hour for the entire study area. The final selection of a peak hour will be based on a simple majority of counts that have the same peak hour, with emphasis given to arterials.

Adjustment to Baseline Analysis Year

The project base year is 2017 but three of the counts were counted in 2016. The Future Volume Table is used to adjust the counts to the base year. The intersections of US 101 at Mill Casino Entrance, US 101 at Newmark Avenue and Newmark Avenue at Morrison Street were counted in 2016. Sections of Newmark Avenue are also known as the Cape Arago Highway (Oregon highway 240) and US 101 is Highway 009.

Assuming linear growth in the future, the annual growth factor was calculated based on the 21-year growth factor from ODOT's 2036 Future Volume Table. Table 3 summarizes the growth factor calculation.

Table 3. Annual Growth Factor

Hwy No.	Description	2015	2036	1 Year Growth Factor
240	0.02 mile east of Fir Street	16100	16400	1.001
240	South city limits of Coos Bay	7900	8100	1.001
009	0.01 mile south of Sheridan Avenue	13500	15200	1.006
009	South city limits of North Bend, north city limits of Coos Bay	19800	24300	1.011
			Newmark Ave at Morrison St	1.001
			US 101 at Mill Casino Entrance, US 101 at Newmark St	1.008

Seasonal Adjustment Factors

Since traffic counts were taken during various times of the year, data from varying months will need to be converted to peak month equivalents using calculated seasonal adjustment factors. TPAU has three methods for developing seasonal factors: On-Site ATR Method, ATR Characteristic Table Method, and ATR Seasonal Trend Table Method. To accommodate the varying road types within the study area, different methods were used to develop seasonal factors for US 101, District Highways and local streets.

There are no ATRs in the study area; the closest ATR is south of Coos Bay. For local system traffic, the seasonal trend table will be applied to identify a seasonal adjustment for the commuter trend.

Seasonal factors were calculated for the count months of April, May, July and September. Existing traffic volumes will be multiplied by their appropriate seasonal factor to determine the 30th highest hour volumes.

US 101

There are no ATR locations along US 101 in close proximity to the study area that have similar characteristics to US 101 through the study area. To develop seasonal factors, both the ATR Characteristic Table Method and Seasonal Trend table were considered as viable methods. Based on the characteristics of US 101 through the study area and AADTs within 10% of the study area US 101 volumes, the following methods were selected:

- ATR 06-009 (Coos Bay): For locations along US 101 where the ADT is less than 16,000 vpd (10 intersections)
- ATR 21-009 (North Newport): For locations along US 101 where the ADT is between 16,000 and 20,400 vpd (two intersections)
- Seasonal Trend for Coastal Destination: For locations along US 101 where the ADT exceeds 20,400 vpd (one intersection)

Cape Arago Highway

To develop seasonal factors for study area intersections on Cape Arago Highway, the Seasonal Trend Table was used to apply an average of the coastal destination and commuter trends. These factors will be applied to 13 study area intersections.

Allegany Highway

To develop seasonal factors for the two study area intersections on Allegany, the Seasonal Trend Method was used for the average of the summer and commuter trends.

Local Traffic

The seasonal factors for traffic moving within the local street network were calculated based on the count date using the Seasonal Trend Method for a commuter route. These factors will be applied to 26 study area intersections.

Table 4. Seasonal Factors

Location / Seasonal Adjustment	April	May	July	September
US 101 ***ADT ≤ 16,000 vpd***	1.18	--	1.01	1.08

Location / Seasonal Adjustment	April	May	July	September
ATR 06-009				
US 101 **16,000 vpd < ADT < 20,400 vpd** ***ATR 21-009***	1.30	--	--	--
US 101 ***ADT ≥ 20,400 vpd*** ***Coastal Destination Trend***	--	--	1.02	
Cape Arago Hwy ***Coastal Destination / Commuter Trend***	--	1.15	1.02	--
Allegany Hwy ***Commuter/ Summer Trend***	--	--	1.01	--
Local Traffic ***Commuter Trend***	--	--	1.01	1.03

Balancing

After the seasonal factors are applied, the volumes are input into Synchro and balanced accordingly. For conservative analysis, it is preferable to add traffic to the system instead of remove. This approach is taken whenever possible. Volume imbalances between intersections are managed to represent the volumes into and out of residential developments and commercial lots between study area intersections, whenever applicable.

Future Design Year 2040 Volumes

The future baseline volumes will be developed from existing turning movement volumes and post-processing travel demand forecasting output from the Coos Bay/North Bend model to acquire 2040 volume output.

The post-processing procedures will follow APM and NCHRP Report 255 and 765 guidelines. To convert model volumes to design hour volumes, the two most commonly used methods are the growth method and the difference method.

Both methods will be compared in a spreadsheet and if the difference in values between the two methods is greater than 10 percent, then the value from the difference method will be used, otherwise the values from the methods will be averaged. The forecasted link volumes will reference the NCHRP Report 765 spreadsheet to determine the year 2040 turning movement volumes and the volumes will be rounded to the nearest five vehicles and balanced in Synchro.

Evaluation Comparison Tools

Tools and techniques used to evaluate and compare the alternatives include traffic operations analysis tools for more detailed assessment of area conditions. Due to the potential latent demand shifts, the future baseline model volumes will be compared with the alternative model volumes and adjustment factors created and used as needed.

Traffic Mobility Targets

Cities of North Bend and Coos Bay

Coos Bay Municipal Code states "City streets shall maintain a LOS of "D" during the p.m. peak hour of the day."

The North Bend Municipal Code states "City streets shall maintain a LOS of "D," as defined by the Highway Capacity Manual (2000 Edition), during the p.m. peak hour of the day. A lesser standard may be accepted for local street intersections or driveway access points that intersect with collector or arterial streets, if alternative signalized access is available and these intersections are found to operate safely.

Coos County

None of the TSP study area intersections are under Coos County jurisdiction; all of the study are intersections are within the North Bend and Coos Bay city limits.

State of Oregon

For State facilities, the Oregon Highway Plan (OHP) and the Highway Design Manual (HDM) will be used in the assessment of intersection operations. Both documents base their mobility performance on the calculation of V/C; however, the standards in the HDM are based on higher performance levels than those in the OHP. The mobility targets from the OHP will be applied to the existing and future baseline (no build) analysis while the standards from the HDM will be applied to the evaluation of design alternatives.

Table 5. Applicable Performance Measures

		Volume-to-Capacity Ratio	
State Highways		**OHP[1]**	**HDM[2]**
US 101 (Freight Route on a Statewide Highway)	Non-MPO, Outside STAs, ≤35 mph	0.85	0.70
	Non-MPO, ≥45 mph	0.80	0.70
Cape Arago Highway (District Highway)	Non-MPO, Outside STAs, ≤35 mph	0.95	0.80
Local Interest Roads (Unsignalized, intersects State facility)	Non-MPO, Outside STAs, ≤35 mph	0.95	0.80
	Non-MPO, Outside STAs, ≥45 mph	0.90	0.75
City Streets		**Level of Service[1,2]**	
City of Coos Bay		LOS D	
City of North Bend		LOS D	

Notes:

1. Table 6: Volume to Capacity Ratio Targets Outside Metro, Oregon Highway Plan, 1999.
2. Table 10-2: 20 Year Design-Mobility Standards (Volume-to-Capacity Ratio), Highway Design Manual, 2012
3. Coos Bay Municipal Code, Section 18.12.005.
4. North Bend Municipal Code, Section 10.12.060.

Arterial and Intersection Operations

The operational analysis will evaluate volume-to-capacity (v/c) ratios and level of service (LOS) using the Synchro program (version 10). The files will also be saved in a compatible version for ODOT review. Throughout the analysis process, TPAU and Region 3 Traffic staff will review modeling assumptions, analysis settings, and other assumptions to help ensure consistency of data with other studies under way.

An assessment of adding or removing traffic signals may be needed. Any assessments of new traffic signals will use ODOT's preliminary signal warrant spreadsheets for ODOT facilities and MUTCD warrants for City facilities. Operational analysis results will be compared with applicable mobility standards and specific recommendations for mitigation improvements will be reviewed by the agency with jurisdiction.

Traffic Operations Analysis Procedures

All analysis volumes must be adjusted to the 30th highest hour. Consultant shall use traffic analysis software programs following HCM 6 procedures and must be consistent with TPAU's analysis procedures. As outlined in the scope, signalized intersections must use HCM 2000 methods for obtaining intersection volume-to-capacity ratios unless software can provide HCM 6 intersection v/c ratios. Consultant shall obtain signal timing from ODOT Region 3 Traffic Section.

Consultant shall:

- Coordinate all analysis with TPAU and ODOT Region 3 Traffic Section
- Get approval of existing and future analysis methodology from TPAU and ODOT Region 3 Traffic Section via a Methodology Memorandum prior to beginning analysis
- Obtain approval of analysis and conclusions from TPAU and ODOT Region 3 Traffic Section prior to submitting draft technical memorandums
- Compare traffic operations with OHP v/c and HCM LOS targets.
- Use inputs specified by TPAU for lane capacity, signal timing, etc.
- Evaluate failing, unsignalized intersections using ODOT's ADT-based preliminary signal warrants and the Manual on Uniform Traffic Control Devices (MUTCD Warrant 1).

Bicycle, Pedestrian and Transit Evaluation

Consultant shall analyze transit, bicycle and pedestrian operations in the study area using the Level of Traffic Stress ("LTS") for bicycles and pedestrians and the qualitative multimodal assessment ("QMA") for transit as outlined in the Agency's *Analysis Procedure Manual, Chapter 14*. Average widths are acceptable; block by block analysis detail is not necessary. Analysis must also identify safety concerns and barriers such as system gaps or challenging topography. Transit analysis must use as much general or average data available from Coos County Area Transit as possible.

Consultant shall analyze bicycle and pedestrian movements for all count locations as provided in the traffic counts. Analysis must include:

- Volume
- Type
- Direction

Crash History Analysis

Crash data for this project will be obtained from the ODOT Crash Analysis and Reporting Unit for the most recent five complete years. The most recent Safety Priority Index System ("SPIS") data will be obtained as well for the top 10% of SPIS sites. Data will be requested for study area intersections and both state and non-state arterials and collectors with the City Limits of Coos Bay and North Bend.

The study area evaluation will include an analysis of the most recent five-year crash history on state and non-state roadways at count locations and arterial and collector segments between count locations. This analysis screens for patterns amongst the crashes that are indicative of existing geometric or operational deficiencies. Intersection crash rates will be calculated for each study area intersection and compared against the published 90th Percentile rates in the APM (Version 2). Segment crash rates shall be compared with the ODOT Crash Rate Table II.

The Highway Safety Manual Part B Network Critical Crash Rate and Screening Probability of Specific Crash Types Exceeding Threshold Proportions method will be used in the screening process where sufficient reference populations are available. Based on the crash patterns, the analysis may identify improvements for the build alternatives that could mitigate safety issues.

During the analysis of future alternatives, for each strategy developed to specifically address a safety concern, Consultant shall analyze safety impacts of each design. Any potential countermeasures shall be initially identified from the ODOT ARTS Crash Reduction Factors (CRF) listing or the CRF Appendix. If the countermeasure is not in the CRF list then Consultant shall use the Crash Modification Factors (CMF) in the HSM Part D and/or FHWA CMF Clearinghouse to indicate the potential relative crash percentile reduction for each safety strategy. CMF studies' volume parameters must be within 10% of the roadway volume to which they will be applied.

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Technical Memorandum #6:
Current System Conditions

TECHNICAL MEMORANDUM #6

Current System Conditions (Task 5.5)

Date: January 14, 2019

To: City of Coos Bay
City of North Bend
Oregon Department of Transportation, Region 3

From: Angela Rogge, PE, Sepehr Dastgheibi, EIT, and Matt Hartnett, EIT, David Evans and Associates, Inc.
Brooke Jordan and Drew DeVitis, Jacobs

Subject: Cities of Coos Bay and North Bend Transportation System Plan Updates

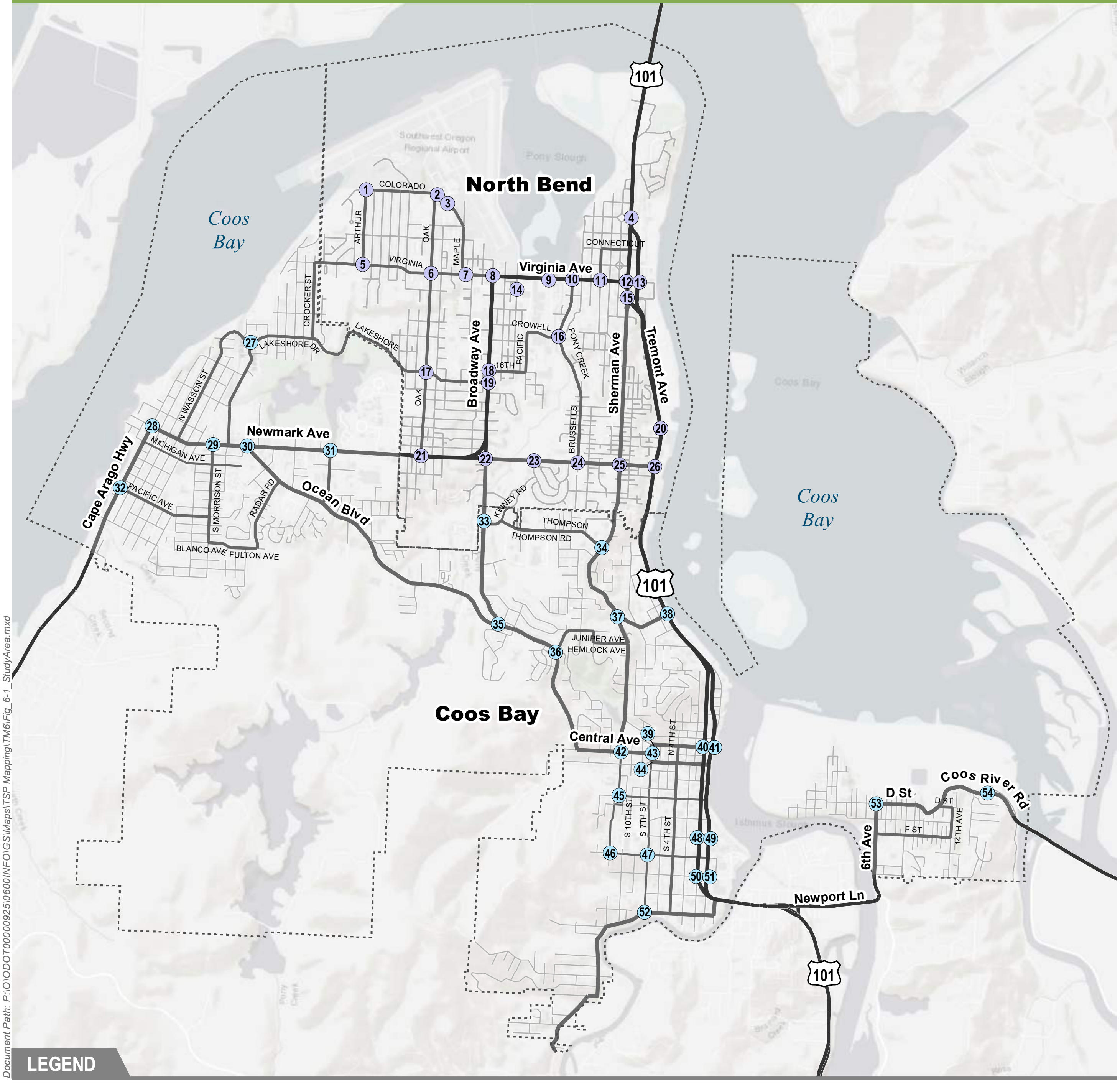
This memorandum presents an evaluation of how the Cities of Coos Bay and North Bend's transportation systems operate under existing conditions. The most recent Transportation System Plans were developed for the Cities of Coos Bay and North Bend in 2004. Five years remain of the current TSP's 2023 planning horizon but recent developments and plans necessitate an update. The Cities must update their TSP to maintain a 20-year planning horizon and comply with the Transportation Planning Rule (TPR).

Study Area

The Project includes two distinct areas, the City of North Bend and the City of Coos Bay. The cities are located in Coos County, Oregon on the Pacific Ocean. The City of North Bend is surrounded on three sides by Coos Bay, sharing its southern border with the City of Coos Bay, which is near where the Coos River enters Coos Bay. Together, they are referred to as one entity called either Coos Bay/North Bend, or the Bay Area. The study area is the boundary for the Project, which includes, at a minimum, City Limits, Urban Growth Boundary ("UGB") and urban reserves.

A TSP examines the City's multimodal transportation system as a whole, considers planning for street maintenance, connectivity, access, safety and the impact of future growth throughout the network. In order to review the system that is most likely to affect an average Bay Area citizen or visitor, and to efficiently use time and resources for analysis, TSPs generally focus on the higher-order, arterial and collector street system. Arterials and collectors, by definition, provide connections across a city and between neighborhoods and activity centers. As such, the arterial and collector street intersections and corridors are the focus of the TSP Update.

Figure 1 summarizes the study intersections for North Bend and Coos Bay, located and on the arterial and collector street network. There are 26 study intersections in North Bend, and 28 in Coos Bay, although residents and visitors often travel through both cities.



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LEGEND

Urban Growth Boundary (UGB)

Study Area Intersections

- North Bend
- Coos Bay

ODOT Functional Classification

- Principal Arterial
- Minor Arterial

City Functional Classification

- Arterial
- Collector
- Neighborhood
- Local

N

0 0.5 1 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 1. Study Intersections

Transportation in the Bay Area

The following sections will evaluate the current transportation system operations by mode. The evaluation relies on data collected in *Technical Memorandum #4: System Inventory* and volume data collected at the study area intersections identified in Figure 1.

Pedestrian Conditions

A robust pedestrian network provides a safe, convenient and accessible system of sidewalks, paths and crossings. The pedestrian experience is also linked to other modal systems. For example, crossing several lanes of traffic increases stress on the pedestrian, while the presence of bicycle lanes improves comfort by providing a buffer between the pedestrian and vehicles. This section reviews the Bay Area pedestrian network at a system-wide level.

Pedestrian Volumes

This section summarizes the trends in pedestrian volumes at the study intersections during the weekday PM peak hour. The information is based on counts collected in the summer of 2017 and detailed summaries of the traffic counts are available in the appendix.

In North Bend, the area with the highest number of pedestrians was along Virginia Avenue between Broadway Avenue and US 101. This segment of Virginia Avenue provides access to the downtown and commercial businesses. All of the study area intersections saw at least one pedestrian during the evening peak hour (4:30 pm – 5:30 pm).

In Coos Bay, the area with the highest number of pedestrians was in downtown near US 101 at Johnson Avenue and near Commercial Avenue. In addition to these commercial areas, the intersection of 7th Street at Anderson Avenue also had a significant portion of the study intersections’ pedestrian volumes. This location connects a residential neighborhood with a grocery market.

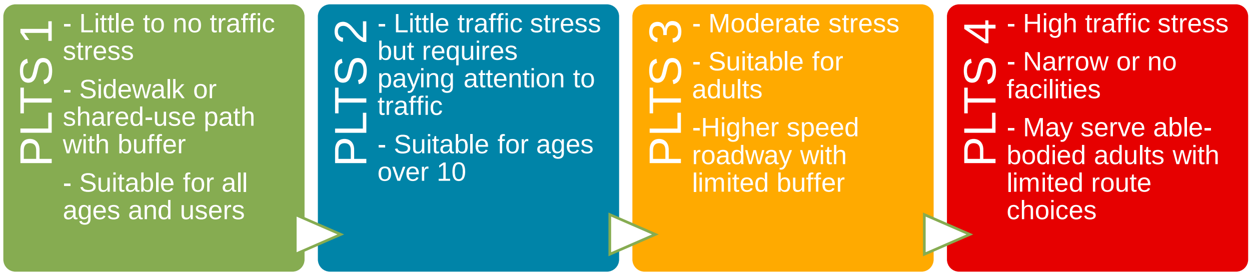
Pedestrian Level of Traffic Stress

Pedestrian facilities were evaluated for all arterials and collectors, as well as any roadways or pathways that provide critical routes or links within the study area. The assessment was done based on the Pedestrian Level of Traffic Stress (PLTS) as outlined in the ODOT Analysis Procedures Manual (APM).

When rating each pedestrian corridor, the following factors were considered:

- Sidewalk condition and width
- Buffer type and width
- Bike lane width
- Parking width
- Number of lanes and posted speed
- Illumination presence
- General land use

The presence of sidewalks alone does not necessarily equate to a comfortable experience for a pedestrian. Walking near busy streets or along narrow sidewalks can cause stress or discomfort. PLTS 2 is considered a reasonable minimum target for pedestrian routes, with areas near schools striving for a PLTS 1 to best serve the higher number of children at these locations.



As shown in Figure 2, in North Bend and Coos Bay, none of the evaluated facilities is PLTS 1. Many of the arterial and collector streets outside of the downtown area have speeds greater than 25 mph or limited to no buffer between the sidewalk and vehicular traffic, which heavily influence PLTS rating. Most links with PLTS 4 fall into one of two categories: (a) there is no sidewalk or (b) there is a sidewalk, but the sidewalk little or no buffer for a high-speed, high-capacity segment.

Intersection Density

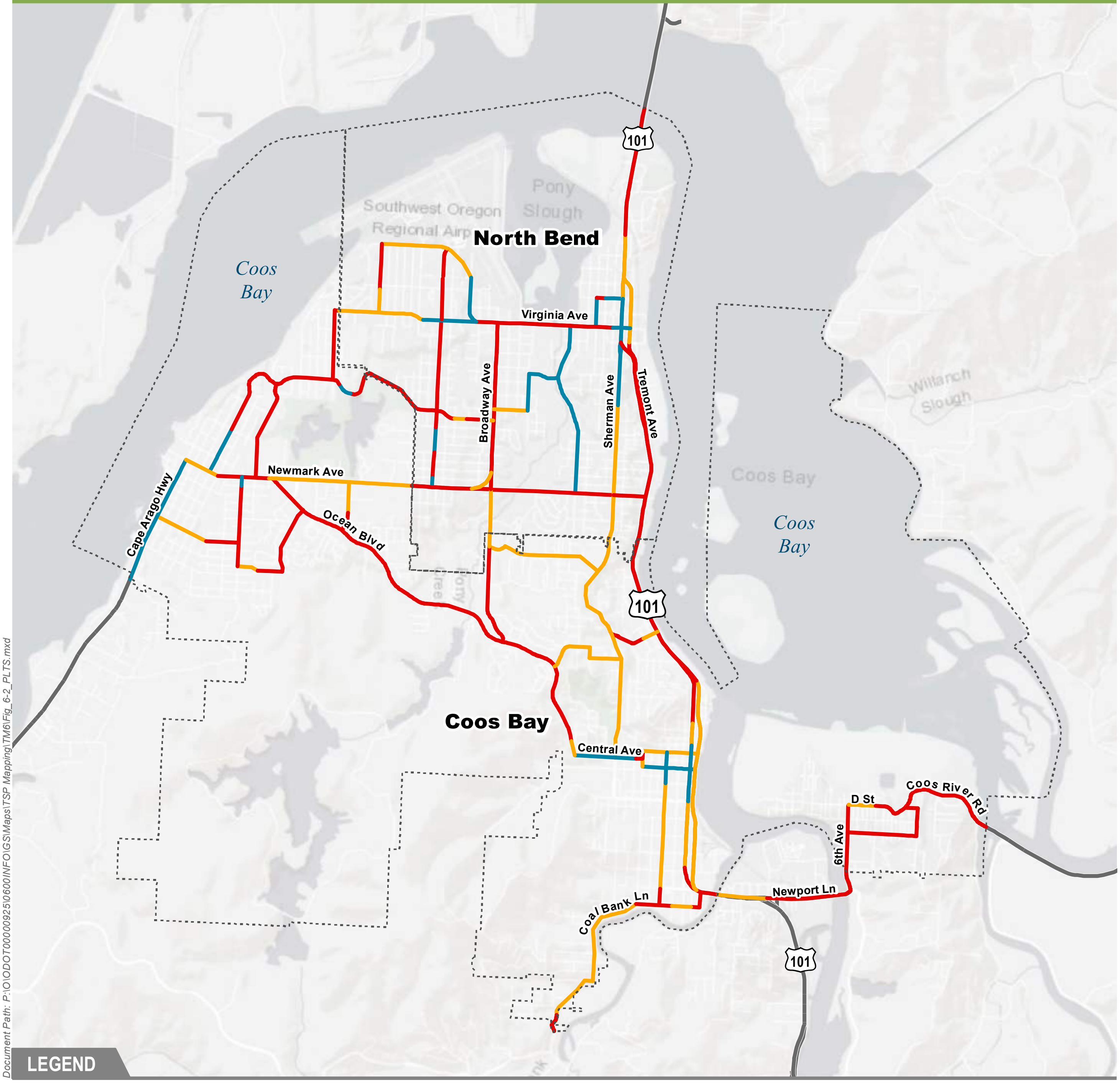
Intersection density is one measure of the connectivity of the roadway, and therefore most of the sidewalk and bike lane, system. An area with high intersection density usually requires less out of direction travel, so distances are shorter and more conducive to taking trips without a car. Figure 3 displays a heat map representing intersection density and highlights gaps in network connectivity.

In North Bend, Pony Creek and the existing terrain create natural barriers to connectivity between neighborhoods. Northwest North Bend has long residential blocks while the neighborhood directly east of Southwestern Oregon Community College has a tighter grid system, which is welcoming for pedestrian travel.

In Coos Bay, Pony Creek, the Empire Lakes and Isthmus Slough are the most prominent natural barriers to connectivity between neighborhoods. Southwest Coos Bay is zoned almost completely as a watershed, which creates a barrier between west and east Coos Bay. The downtown network is a connected grid system and the by far has the highest intersection density in the city.

When it is time to identify potential alternatives, new connections such as shared-use paths could improve route options for pedestrians in established neighborhoods with limited connectivity.

Coos Bay/North Bend TSP



LEGEND

Urban Growth Boundary (UGB)

Pedestrian Level of Traffic Stress (PLTS)

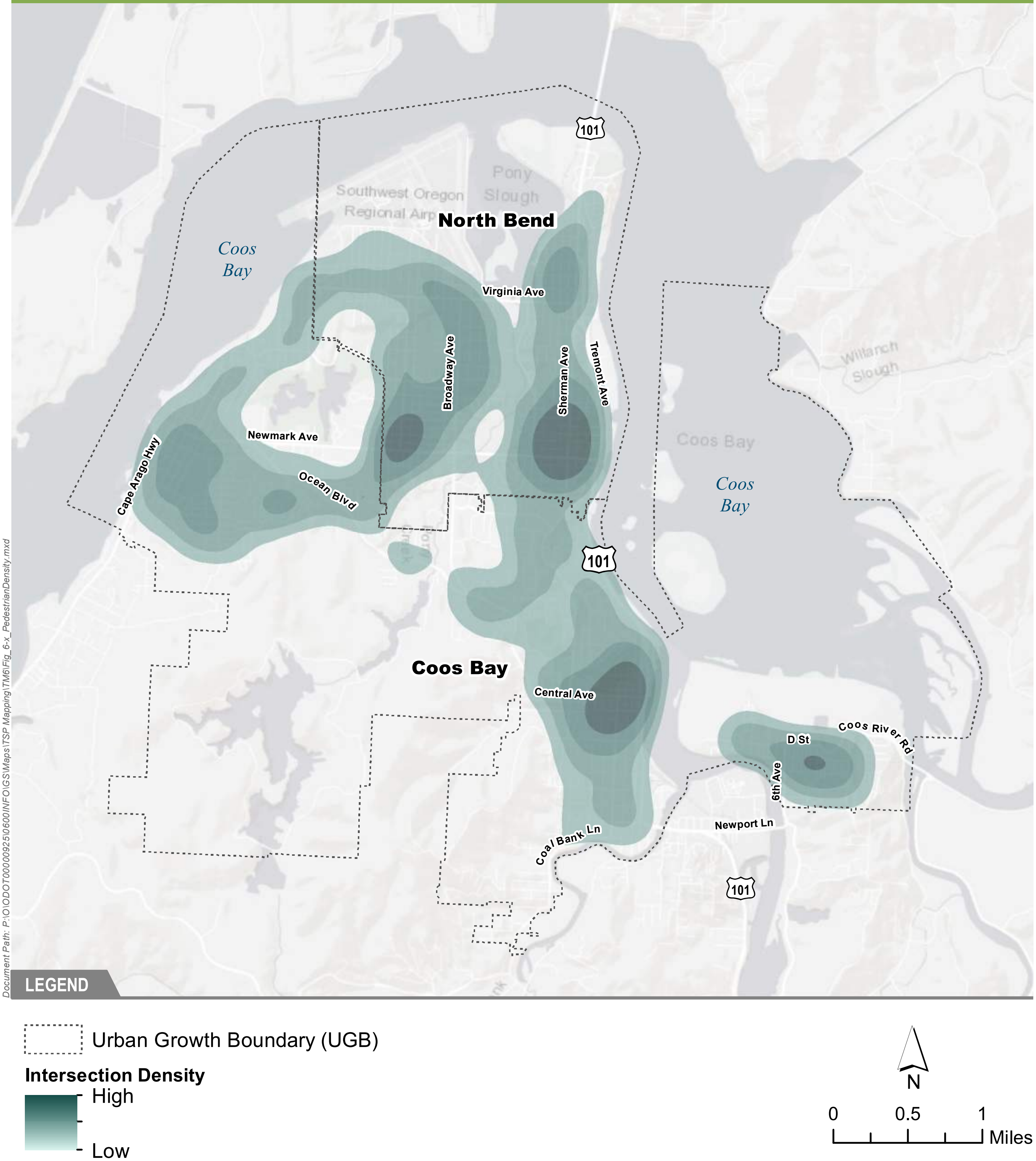
- PLTS 1
- PLTS 2
- PLTS 3
- PLTS 4

N

0 0.5 1 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 2. Pedestrian Level of Traffic Stress



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Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 3. Intersection Density

Bicycle Conditions

Bicycling can provide alternative travel choices to the automobile and supports a healthy lifestyle. Compared to pedestrian travel, bicycling is more suitable for longer trips. This section describes the existing bicycle conditions within the Bay Area. Bicycle facilities include shared streets, bike lanes, shoulders and the trail system.

Bicycle Volumes

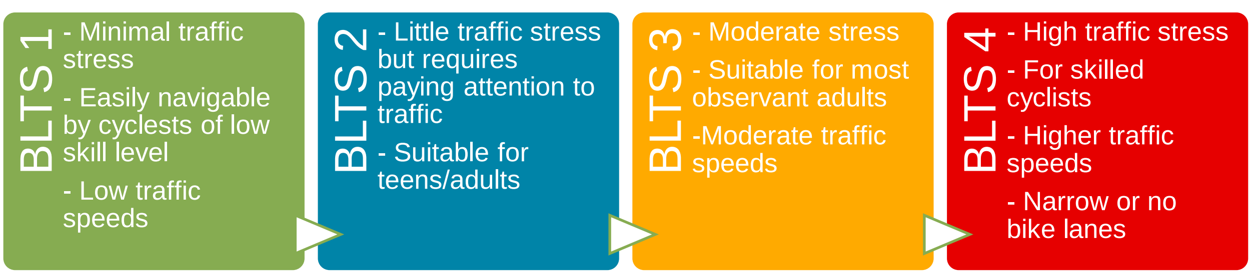
This section summarizes the trends in bicycle volumes at the study intersections during the weekday PM peak hour. The information is based on counts collected in the summer of 2017 and detailed summaries of the traffic counts are available in the appendix.

In North Bend, bicycle volumes range between zero and five at the study area intersections during the peak hour. Most of the volumes were recorded crossing Virginia Avenue between Broadway Street at US 101. This corridor was also the most heavily trafficked pedestrian corridor in North Bend.

In Coos Bay, bicycle volumes range between zero and five at the study area intersections during the peak hour. The intersections with the highest recorded bikes were Newmark Avenue at Ocean Boulevard, US 101 at Koosbay Boulevard and Elrod Avenue at 10th Street.

Bicycle Level of Traffic Stress

Chapter 14 of the ODOT Analysis and Procedures Manual provides a methodology for evaluating the bicycle level of traffic stress (BLTS) for roadways within both urban and rural environments. This methodology, adopted from a report by the Mineta Transportation Institute on "Low Stress Bicycling and Network Connectivity", provides a valuable metric to quantify the perceived safety issues bicyclists face from vehicle traffic on roadways with and without bicycle facilities.[1] The BLTS methodology is based on the premise first articulated by the City of Portland that upwards of 60 percent the population is "interested, but concerned" in bicycling, as they have little stress tolerance and will only feel comfortable on routes that have the greatest perceived safety.



Bicycle Level of Traffic Stress ratings range from LTS 1 (little traffic stress, suitable for all cyclists) to LTS 4 (high stress and suitable for experienced and skilled cyclists). Three classes of criteria are used to determine BLTS based on existing conditions:

1) Facilities containing Bike Lane with Adjacent Parking Lane;
2) Facilities containing Bike Lane without Adjacent Parking Lane;
3) Urban/Suburban Facilities with Mixed Traffic.

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[1] Oregon Department of Transportation. *Analysis Procedures Manual Version 2, Chapter 14.* (2018). https://www.oregon.gov/ODOT/Planning/Documents/APMv2_Ch14.pdf

As existing bike lanes within North Bend and Coos Bay are limited at present, the project team evaluated most of the roadway network in the Cities using the Urban/Suburban Mixed Traffic LTS Criteria as shown below in Table 1. Figure 4 shows the Bicycle Level of Traffic Stress for all arterials and collectors in North Bend and Coos Bay.

Table 1. Urban/Suburban Mixed Traffic BLTS Criteria

Prevailing Speed or Speed Limit (mph)	Unmarked Centerline	1 Lane per Direction	2 lanes per direction	3+ lanes per direction
<25	BLTS 1	BLTS 2	BLTS 3	BLTS 4
30	BLTS 2	BLTS 3	BLTS 4	BLTS 4
>35	BLTS 3	BLTS 4	BLTS 4	BLTS 4

The BLTS methodology does not include explicit consideration of traffic volumes, as the proximity stress is present regardless of how much traffic happens to be occurring at that time. Considerations that are not factored into BLTS analysis, but may influence traffic stress, include topography changes, pavement conditions, and width of vehicle lanes.

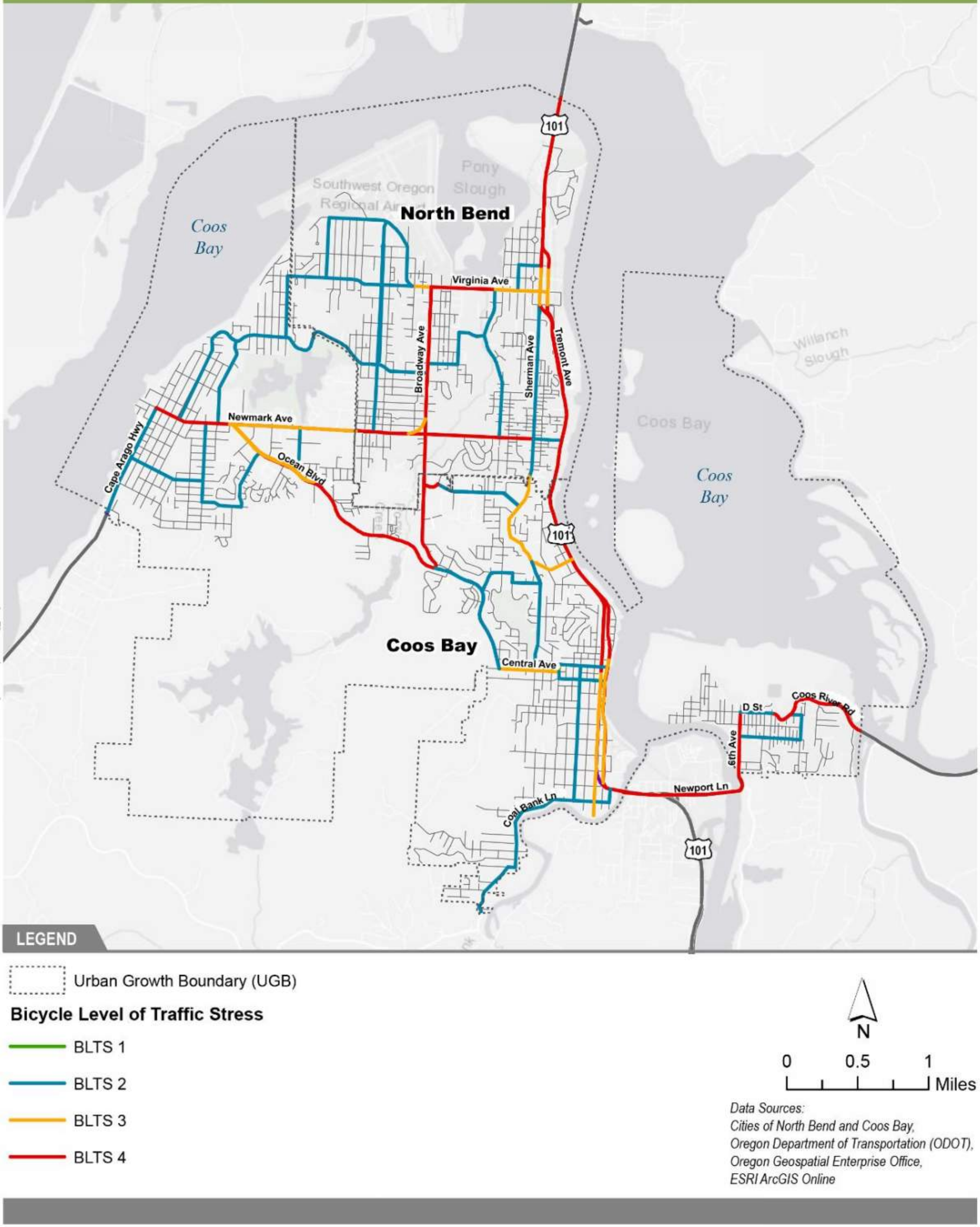


Figure 4. Bicycle Level of Traffic Stress

Transit Conditions

This section reviews the existing transit system conditions and operations. A transit system assessment was completed based on the qualitative multimodal application that is outlined in the ODOT APM and uses available data from *Technical Memorandum #4 (Transportation System Inventory)*.

Transit Qualitative Assessment

A Qualitative Multimodal Assessment (QMA) methodology uses the principles of the 2010 Highway Capacity Manual's Multimodal Level of Service through general roadway characteristics to apply a context-based subjective Excellent, Good, Fair, or Poor rating. A QMA provides a high-level screening tool for Transportation System Plans to assess existing conditions to highlight deficiencies and consider future improvements. Distinct transportation modes, including auto, transit, bicycle, and pedestrian movement, are analyzed through individual QMAs. For a Transit Qualitative Multimodal Assessment, the factors utilized according to ODOT's Analysis Procedure Manual include:

- Frequency and on-time reliability;
- Schedule speed/travel times;
- Transit stop amenities; and
- Connecting pedestrian/bike network.

For the purpose of this memorandum, the transit QMA is primarily focused on the CCAT Bay Area Loop, as it provides transit service between and within the Cities of North Bend and Coos Bay. Secondary consideration has been given to intercity transit service provided by Coos County Area Transit, Curry Public Transit, Pacific Crest, and others. Figure 5 shows the Transit QMA for both Cities, which rates as Fair for the Bay Area Loop service.

As of this writing, CCAT reports that 95 percent of CCAT Bay Area Loop service runs on time. While there is no-real time information about schedule speed and performance, on-time reliability indicates that transit vehicles are operating efficiently to meet the Loop schedule. Both the East and West Loop run daily Monday through Friday and have 1.5-hour headways for a full run, which provides only a fair level of service for a community the size of the Coos Bay Area. Existing service is not offered on weekends or after 5:30 pm on weekdays, and there is no central transit hub for connections between intra- and intercity bus service. In addition, frequencies are limited for intercity service to communities in greater Coos County, as well as service south to Curry County, north to Douglas County, and east to Roseburg and Eugene.

Within North Bend and Coos Bay, CCAT has several transit stops with shelters and benches, serving higher ridership destinations. The connecting pedestrian and bicycle network to Bay Area Loop service, which is limited in several areas, has also been used as a criterion to yield a fair Transit QMA rating. Segments of the Bay Area Loop have limited or incomplete sidewalks on both sides of the street, are largely on arterials with limited crosswalks, and have limited bicycle facilities. In addition, these sections of the Bay Area Loop are on roadways that have not been upgraded to meet standards developed for the 2004 TSP updates.

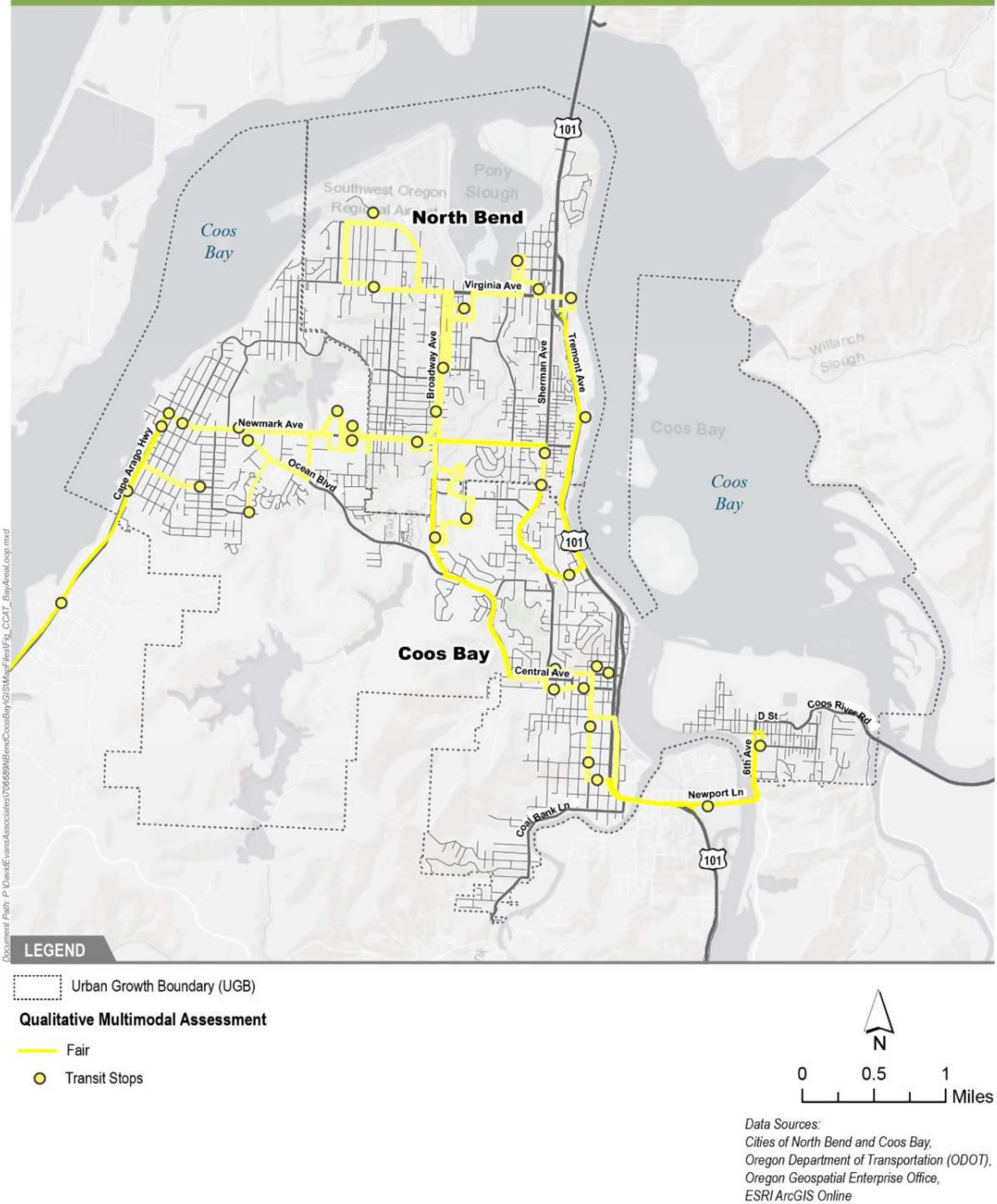


Figure 5. Transit Qualitative Multimodal Assessment

Street and Highway System Conditions

The assessment of traffic conditions includes development of existing traffic volumes and assessment of traffic operations for the 54 study intersections within the North Bend and Coos Bay UGBs.

Volume Development

ODOT generally requires that transportation facilities be analyzed under design hourly volumes (DHVs), known as 30th highest hour volumes. The 30th highest hour volumes are used in traffic operations analysis so that results are valid for all but a few hours of the year. ODOT's APM outlines the procedure for determining 30th highest hour volumes. Further details on the traffic analysis methodology is located in the appendix.

Turn Movement Volumes

Motor vehicle volumes on the roadways in the study area peak during the evening between 4:30 p.m. and 5:30 p.m., but generally vary depending on the time of year. During the summer months, traffic volumes increase due to an influx of vacationers and visitors to the Bay Area.

Figure 6 and Figure 7 show the existing balanced 30th highest hour PM peak volumes developed for this project. The intersections that see the highest vehicular volumes during the peak hour in North Bend are Broadway St at Newmark Ave and US 101 at Newmark Avenue. In Coos Bay, the highest volume intersections are US 101 at Koos Bay Boulevard and US 101 South at Johnson Avenue.

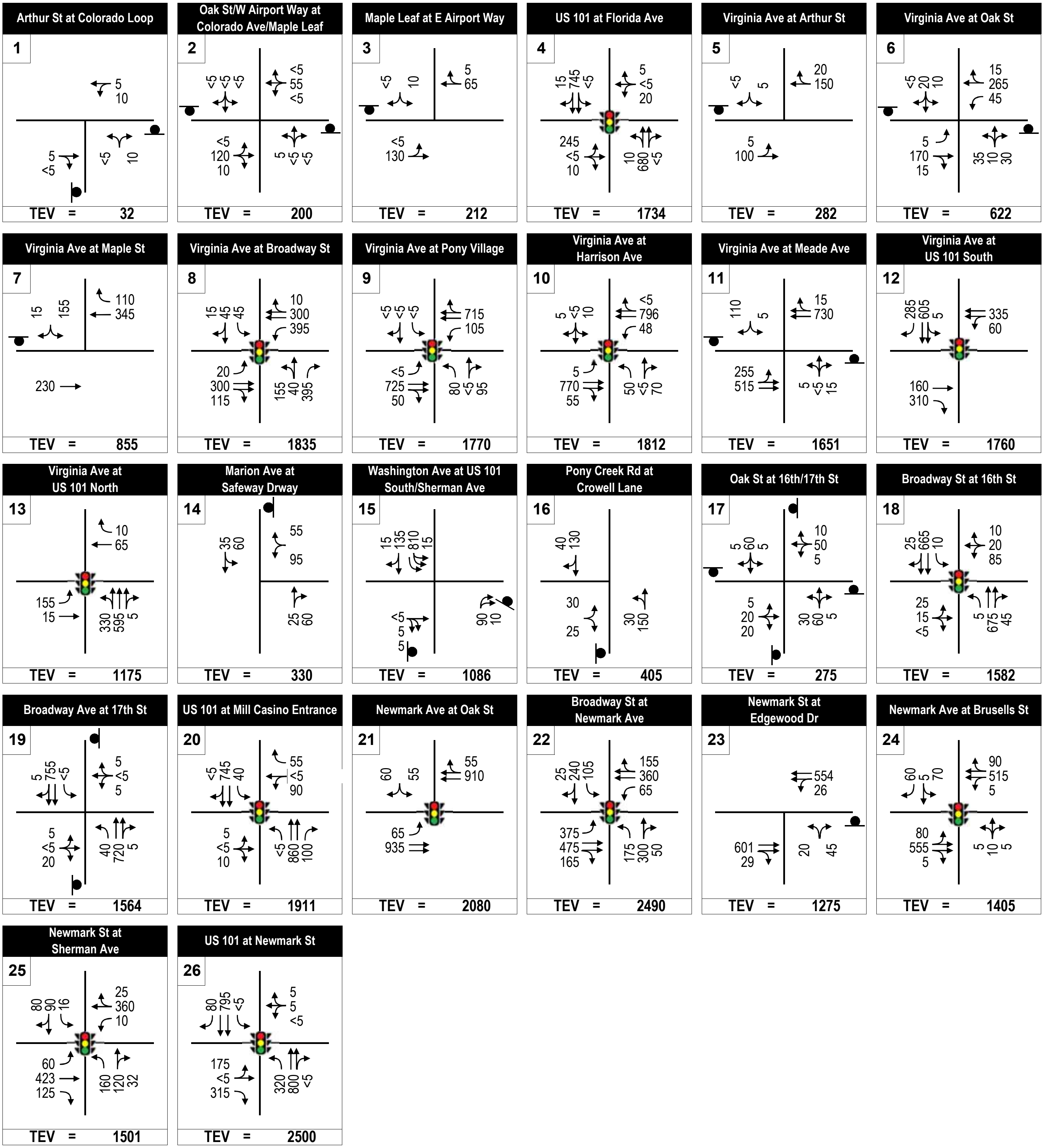
Average Daily Traffic Volumes

The average annual daily traffic (AADT) volumes for state facilities in the study area are currently available for the year 2016. The volumes are summarized in Table 2.

Table 2. Average Annual Daily Traffic Volumes

Location Description	Volume	City
US 101		
North of Florida Ave	14,800 vpd	North Bend
North of Cape Arago Hwy (Virginia Ave) – southbound one-way	9,900 vpd	North Bend
North of Cape Arago Hwy (Virginia Ave) – northbound one-way	6,600 vpd	North Bend
South of Sheridan Ave	13,900 vpd	North Bend
South city limits of North Bend, north city limits of Coos Bay	20,400 vpd	NB/CB
North of Hemlock Ave	20,800 vpd	Coos Bay
South of Anderson Ave – southbound one-way	13,300 vpd	Coos Bay
South of Anderson Ave – northbound one-way	12,100 vpd	Coos Bay
South city limits of Coos Bay	23,600 vpd	Coos Bay
Cape Arago Hwy		
Between US 101 northbound and southbound	5,500 vpd	Coos Bay
West of Meade Ave (on Virginia Ave)	14,500 vpd	Coos Bay
North of 16th St (on Broadway St)	11,300 vpd	Coos Bay
East of Oak St (on Newmark Ave)	16,300 vpd	Coos Bay
South city limits of Coos Bay	8,100 vpd	Coos Bay

Source: *2016 Transportation Volume Tables*, ODOT Transportation Development Division.



Legend

Allowable Movement

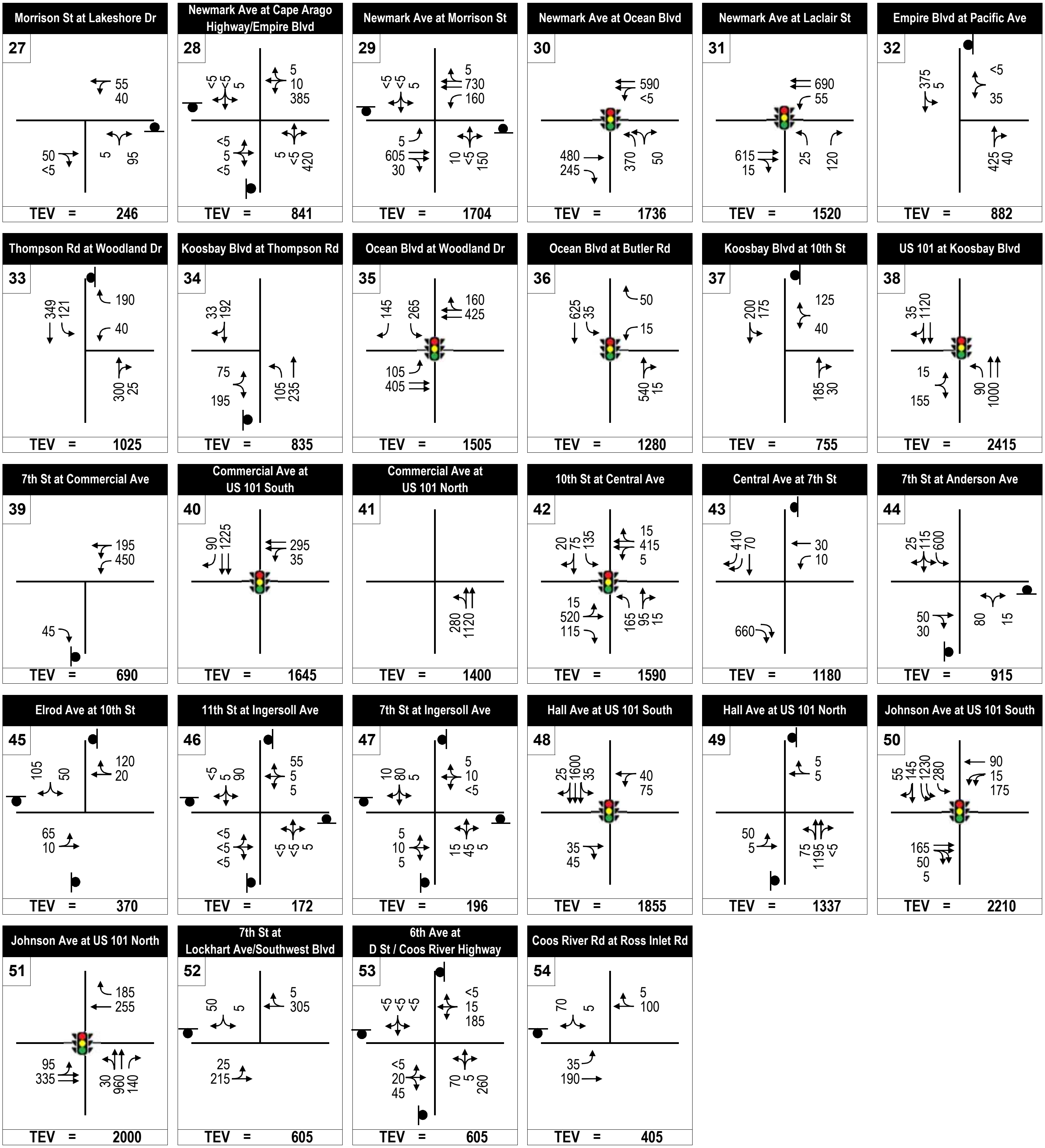
Signalized Intersection

STOP Controlled Approach

TEV Total Entering Volume

Figure 6

Existing (2017)
PM Peak Hour (4:30 - 5:30 PM)
Turn Movement Volumes
North Bend



Legend

Allowable Movement

Signalized Intersection

STOP Controlled Approach

TEV Total Entering Volume

Figure 7

Existing (2017)

PM Peak Hour (4:30 - 5:30 PM)

Turn Movement Volumes

Coos Bay

Truck Traffic (Freight)

The percentage of truck traffic at the study intersections (measured against total entering volume) ranges from 0-13% during the peak hour. Truck traffic volumes are highest along US 101 and at the intersections that access commercial centers, which is consistent with land uses along these corridors.

In North Bend, the intersection of US 101 at Florida Avenue has the highest volume of trucks of all the study area intersections during the peak hour.

In Coos Bay, the intersections experiencing the highest volume of trucks are US 101 at Koosbay Boulevard, US 101 South at Commercial Avenue and US 101 North at Johnson Avenue.

Within both cities, US 101 is classified as a Reduction Review Route (RRR). An RRR is a facility that is required by ORS 366.215 to be reviewed during all planning, project development, development review, and maintenance projects for "hole in the air" capacity. No changes can be made to the US101 corridor that will permanently reduce capacity in any way unless it is required for safety reasons or an exception is made by the Oregon Transportation Commission.

Operational Criteria

Transportation engineers have established various methods for measuring traffic operations of roadways and intersections. Most jurisdictions use either volume-to-capacity (v/c) ratio or level of service (LOS) to establish performance criteria. Both the LOS and v/c ratio concepts require consideration of factors that include traffic demand, capacity of the intersection or roadway, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort, convenience, and operating cost.

Volume-to-Capacity (V/C) Ratio: A comparison of traffic volume to intersection capacity. As the v/c ratio approaches 1.00, traffic becomes more congested and unstable, with longer delays.

Level of Service (LOS): Level of service is a function of control delay, which includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Six standards have been established, ranging from LOS A, where there is little or no delay, to LOS F, where there is delay of more than 50 seconds at unsignalized intersections, or more than 80 seconds at signalized intersections.

It should be noted that, although delays can sometimes be long for some movements at a STOP-controlled intersection, the v/c ratio might indicate that there is adequate capacity to process the demand for that movement. Similarly, at signalized intersections, some movements, particularly side street approaches or left turns onto side streets, may experience longer delays because they receive only a small portion of the green time during a signal cycle, but their v/c ratio may be relatively low. For these reasons, it is important to examine both v/c ratio and LOS when evaluating overall intersection operations. Both are reported in the following section.

Traffic Mobility Targets

Cities of North Bend and Coos Bay

The North Bend Municipal Code states "City streets shall maintain a LOS of "D," as defined by the Highway Capacity Manual (2000 Edition), during the p.m. peak hour of the day. A lesser standard may be accepted for local street intersections or driveway access points that intersect with collector or arterial streets, if alternative signalized access is available and these intersections are found to operate safely.

Coos Bay Municipal Code states "City streets shall maintain a LOS of "D" during the p.m. peak hour of the day."

Coos County

None of the TSP study area intersections are under Coos County jurisdiction; all of the study area intersections are within the North Bend and Coos Bay city limits.

State of Oregon

For State facilities, the Oregon Highway Plan (OHP) will be used in the assessment of intersection operations. Table 3 summarizes the applicable mobility targets for ODOT facilities, which are based on the v/c.

Table 3. Applicable Mobility Targets for State Highways

State Highways		Mobility Target[1]
US 101 (Freight Route on a Statewide Highway)	Non-MPO, Outside STAs, ≤35 mph	0.85
	Non-MPO, ≥45 mph	0.80
Cape Arago Highway (District Highway)	Non-MPO, Outside STAs, ≤35 mph	0.95
Local Interest Roads (Unsignalized, intersects State facility)	Non-MPO, Outside STAs, ≤35 mph	0.95
	Non-MPO, Outside STAs, ≥45 mph	0.90

Source: Table 6: Volume to Capacity Ratio Targets Outside Metro, Oregon Highway Plan, 1999.

Traffic Operations Analysis Procedures

All operations for unsignalized intersections were evaluated using the methodology outlined in the *Highway Capacity Manual, 6th Edition* (HCM) and all operations for signalized intersections were evaluated using methodology outlined in the *HCM 2000,* along with the procedures outlined in ODOT's APM. The Synchro analysis software was selected to perform the intersection analysis since it can provide the v/c ratio and LOS output of an HCM analysis.

The signal timing for the existing conditions analysis was collected from the most recent signal timing worksheets provided by ODOT; in order to most accurately reflect current conditions, timing was not optimized for analysis.

The appendix provides detailed descriptions of our analysis methodology.

Driving Conditions

Table 4 and Table 5 report the operational results for the critical movement (worst movement that must stop or yield the right of travel to other traffic flows). Critical movements at unsignalized intersections are typically the minor-street left turns or, in the case of single-lane approaches, the minor street approaches. These movements are required to yield to all other movements at the intersection, thus are subject to the longest delays, and have the least capacity. Left turns from the major street are also subject to delays, since motorists making these maneuvers must also yield to oncoming major-street traffic.

Analysis for the PM peak period shows that all of the study area intersections currently meet applicable mobility thresholds.

Table 4 summarizes the traffic operations for North Bend. Although none of the intersections exceeds the mobility targets, there are a couple locations nearing them: Broadway Street at Newmark Avenue and US 101 at Newmark Avenue. Coincidentally, these intersections are the highest volume intersections in the city. Both of these intersections are signalized. The operations indicate that certain movements may experiences longer delays but overall, the intersection is able to serve the traffic passing through during one cycle length.

Table 4. Existing PM Peak Hour Traffic Operations – North Bend

ID	Intersection Name	Critical Movement[1]	V/C[2]	LOS[2]	Mobility Target[3]
1	Arthur St at Colorado Lp	NBLR	0.01	A	LOS D
2	Oak St/W Airport Way at Colorado Ave/Maple Leaf	NBLTR	0.01	B	LOS D
3	Maple Leaf at E Airport Way	SBLR	0.02	B	LOS D
4	US 101 at Florida Ave	Overall	0.61	B	0.85
5	Virginia Ave at Arthur St	SBLR	0.01	B	LOS D
6	Virginia Ave at Oak St	NBLTR	0.17	B	LOS D
7	Virginia Ave at Maple St	SBLR	0.30	B	LOS D
8	Virginia Ave at Broadway St	Overall	0.70	B	0.95
9	Virginia Ave at Pony Village Main Driveway	Overall	0.49	A	0.95
10	Virginia Ave at Harrison Ave	Overall	0.45	B	0.95
11	Virginia Ave at Meade Ave	EBTL	0.35	B	0.95
		SBLTR	0.36	C	0.95
12	Virginia Ave at US 101 South	Overall	0.40	B	0.85
13	Virginia Ave at US 101 North	Overall	0.43	A	0.85
14	Marion Ave at Safeway Driveway	WBLR	0.20	B	LOS D
15	Washington Ave at US 101 South/Sherman Ave	SBL	0.02	A	0.85
		EBTR	0.03	B	0.95
16	Pony Creek Rd at Crowell Ln	EBLR	0.11	B	LOS D
17	Oak St at 16th/17th St	NBLTR	0.13	A	LOS D
18	Broadway St at 16th St	Overall	0.46	A	0.95
19	Broadway Ave at 17th St	NBL	0.06	A	0.95
		EBLTR	0.11	C	0.95

ID	Intersection Name	Critical Movement[1]	V/C[2]	LOS[2]	Mobility Target[3]
20	US 101 at Mill Casino Entrance	Overall	0.49	A	0.80
21	Newmark Ave at Oak St	Overall	0.56	A	LOS D
22	Broadway St at Newmark Ave	Overall	0.83	D	0.95
23	Newmark St at Edgewood Dr	NBLR	0.17	C	LOS D
24	Newmark Ave at Brusells St	Overall	0.40	A	LOS D
25	Newmark St at Sherman Ave	Overall	0.59	C	LOS D
26	US 101 at Newmark St	Overall	0.70	C	0.80

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.
Notes:
1. At intersections, the results are reported for the worst operating movements on major and minor approaches that must stop or yield the right of travel to other traffic flows. For signalized intersections, the overall operations are reported.
2. The v/c ratios and LOS are based on the results of the macrosimulation analysis using Synchro, which does not account for the influence of adjacent intersection operations.
3. Mobility target is reported for the critical movement; Unsignalized intersections may have two different mobility targets for the major and minor approaches (Action 1F.1, Oregon Highway Plan, 1999)

Table 5 summarizes the traffic operations for Coos Bay. Although none of the intersections exceeds the mobility targets, there are a couple locations nearing them: 7th Street at Anderson Avenue and Johnson Avenue at US 101 South. The intersection of 7th Street at Anderson Avenue is stop-controlled intersection with free flowing traffic on Anderson Avenue that side street traffic must wait for. Johnson Avenue at US 101 South is a five-legged intersection and one of the busiest intersections in Coos Bay.

Table 5. Existing PM Peak Hour Traffic Operations – Coos Bay

ID	Intersection Name	Critical Movement[1]	V/C[2]	LOS[2]	Mobility Target[3]
27	Morrison St at Lakeshore Dr	NBLR	0.11	A	LOS D
28	Newmark Ave at Cape Arago Hwy/Empire Blvd	EBLTR	0.04	C	LOS D
29	Newmark Ave at Morrison St	NBLTR	0.38	C	LOS D
30	Newmark Ave at Ocean Blvd	Overall	0.54	A	LOS D
31	Newmark Ave at Laclair St	Overall	0.30	A	LOS D
32	Empire Blvd at Pacific Ave	WBLR	0.12	C	LOS D
33	Thompson Rd at Woodland Dr	WBR	0.28	B	LOS D
34	Koosbay Blvd at Thompson Rd	EBLR	0.49	C	LOS D
35	Ocean Blvd at Woodland Dr	Overall	0.57	B	LOS D
36	Ocean Blvd at Butler Rd	Overall	0.54	A	LOS D
37	Koosbay Blvd at 10th St	WBLR	0.36	C	LOS D
38	Us 101 at Koosbay Blvd	Overall	0.60	A	0.80
39	7th St at Commercial Ave	EBR	0.06	A	LOS D

ID	Intersection Name	Critical Movement[1]	V/C[2]	LOS[2]	Mobility Target[3]
40	Commercial Ave at US 101 South	Overall	0.55	B	0.85
41	Commercial Ave at US 101 North	--	--	A	0.85
42	10th St at Central Ave	Overall	0.62	B	LOS D
43	Central Ave at 7th St	WBL	0.01	A	LOS D
44	7th St at Anderson Ave	NBLTR	0.40	D	LOS D
45	Elrod Ave at 10th St	SBLR	0.21	A	LOS D
46	11th St at Ingersoll Ave	SBLTR	0.13	A	LOS D
47	7th St at Ingersoll Ave	SBLTR	0.13	A	LOS D
48	Hall Ave at US 101 South	Overall	0.52	A	0.85
49	Hall Ave at US 101 North	NBL EBLT	0.05 0.28	A D	0.85 0.95
50	Johnson Ave at US 101 South	Overall	0.54	F	0.85
51	Johnson Ave at US 101 North	Overall	0.61	B	0.85
52	7th St at Lockhart Ave/Southwest Blvd	SBLR	0.10	B	LOS D
53	6th Ave at D St / Coos River Hwy	WBLTR	0.24	B	LOS D
54	Coos River Rd at Ross Inlet Rd	SBLR	0.10	A	LOS D

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.
Notes:

1. At intersections, the results are reported for the worst operating movements on major and minor approaches that must stop or yield the right of travel to other traffic flows. For signalized intersections, the overall operations are reported.
2. The v/c ratios and LOS are based on the results of the macrosimulation analysis using Synchro, which does not account for the influence of adjacent intersection operations.
3. Mobility target is reported for the critical movement; Unsignalized intersections may have two different mobility targets for the major and minor approaches (Action 1F.1, Oregon Highway Plan, 1999)

Air Conditions

Southwest Oregon Regional Airport (OTH) is located on approximately 620 acres of land extending out into Coos Bay, in the northern sections of North Bend and Coos Bay, roughly one mile west of US 101. Owned and operated by the Coos County Airport District (CCAD), OTH is the only commercial service airport on the Oregon Coast.[2] Currently, there is no direct commercial passenger service between OTH and Portland. The airport also accommodates private aircraft arrivals and departures and serves as a base for US Coast Guard operations.

The Southwest Oregon Regional Airport (OTH) Master Plan, completed in 2013, determined the capacity of roads accessing the airport to be adequate throughout the 20-year planning horizon identified in the document. Parking and rental vehicles are available on airport property. Sidewalks connect the airport's

[2] Coos County Airport District Master Plan

passenger terminal with sidewalk facilities off airport property. OTH is not served by any local public transportation service.

OTH uses two runways to serve arriving and departing fixed wing aircraft, both of which are designed to accommodate Airport Reference Code B-III aircraft. The airport's 2013 documents a number of airport facility needs, which include runway improvements to meet design standards for C-III aircraft, taxiway improvements, and upgrades to runway lighting systems. In 2018, OTH received two Federal grant awards to improve airfield lighting and signage and complete an environmental assessment for primary runway safety area improvements.[3]

Improvement and expansion of the airport are identified objectives in the Comprehensive Plans and TSPs for both the Cities of Coos Bay and North Bend. Additionally, the OTH Master Plan's goal is to evaluate improvements necessary to respond to changes in the aircraft and airline industries.

Rail Conditions

One railroad line, the Coos Bay Rail Line, passes through the Bay Area. The line runs parallel to US 101 and has 15 at-grade crossings where rail line intersects a number of local roads in North Bend (6) and Coos Bay (9). This spring/summer (2018) the rail line has been shut down due to a failure of the swing span bridge crossing Coos Bay (the bridge has been stuck). Repairs are expected to be complete by the time the TSPs are finalized.

Detailed information on frequency of service was not available. No passenger rail service is available in the study area; the closest available is AMTRAK located in Eugene, Oregon.

At-Grade Crossings

Table 6 summarizes the characteristics of the 15 at-grade rail crossings of public streets. Only one of the at-grade crossings has active traffic control devices, meaning warning devices such as flashing lights or gates activate when a train is arriving.

Passive and active signs and devices are installed based on the type of environment. For some locations, passive signs are enough. Crossings with a lot of traffic or a history of crashes/incidents may necessitate an active warning system. The Federal Railroad Administration (FRA) maintains records of crashes or other incidents involving trains. No incidents have been reported in North Bend or Coos Bay in the past ten years.[4]

Table 6. At-Grade Rail Crossings in North Bend and Coos Bay

Crossing Number	Street	Warning Device(s)	Multimodal Conditions[1]	City
756117X	Sheridan Ave	Cross bucks; stop signs	Shared roadway (narrow)	North Bend
756155G	California St	Cross bucks; stop signs	Passive sidewalk crossing both sides	North Bend
756156N	Virginia Ave	Cross bucks; stop signs	Passive sidewalk crossing both sides	North Bend

[3] https://cooscountyairportdistrict.com/airport-receives-federal-grants-for-airfield-improvements/
[4] Federal Railroad Administration Office of Safety and Analysis. Annual WBAPS 2018. Oct. 2018.

Crossing Number	Street	Warning Device(s)	Multimodal Conditions[1]	City
756157V	Washington Ave	Cross bucks; stop signs	Passive sidewalk crossing both sides	North Bend
756161K	Lewis St	Gates; Flashing Lights; Cross bucks	Passive sidewalk crossing on south side	North Bend
756163Y	Newmark St	Flashing Lights; Cross bucks; traffic signal	Passive sidewalk crossing on north side	North Bend
756128K	Market Ave at Front St	None	Shared roadway; no pavement markings; sidewalks on Front St	Coos Bay
756129S	Alder Ave at Front St	Cross buck; stop sign	Shared roadway; sidewalks	Coos Bay
756130L	Birch Ave at Front St	Cross buck; stop sign	Shared roadway; sidewalks on Front St (south leg)	Coos Bay
756131T	Cedar Ave at Front St	Cross buck; stop sign	Shared roadway; sidewalk on southwest corner	Coos Bay
756135V	Date Ave at Front St	Cross buck; stop sign	Shared roadway; no pavement markings	Coos Bay
756136C	Fir St at Front St	Cross buck; yield sign	Shared roadway; no pavement markings	Coos Bay
756140S	US 101 at Hemlock Ave	Cross bucks	Shared roadway	Coos Bay
756141Y	US 101 at Us Plywood-Central Dock Rd	None	Shared roadway; no pavement markings	Coos Bay
927324R	Anderson Avenue	Cross bucks; yield Signs	Passive pedestrian crossing; no motor vehicle access	Coos Bay

Sources: Bing Maps, ODOT TransGis and FRA Public Grade Crossing Inventory By State and County (2018)
1. Shared roadway signifies right-of-way is shared by a variety of modes (motor vehicles, bicycles and/or pedestrians)

Marine Conditions

Coos Bay and North Bend are set on Coos Bay, a major inlet draining into the Pacific Ocean. The Bay's navigation channel is designed and maintained by the US Army Corps of Engineers and facilitates significant maritime trade activity at six marine terminals, seven deep-draft berths, and a number of barge facilities.[5] The Port of Coos Bay moves more than 1.5 million tons of cargo annually – more than any other seaport in Oregon.

The Cities' Comprehensive Plans identify need for additional port facilities, given current levels of activity and its importance to the region. They also identify need for additional capacity for commercial fishing and recreational boats in the Bay Area.

[5] Oregon International Port of Coos Bay. Maritime Commerce. https://www.portofcoosbay.com/maritime-commerce/

Pipeline

There is one major natural gas pipeline that serves North Bend and Coos Bay and numerous secondary natural gas distribution lines that spur off the mainline to provide gas to residences and businesses. The major pipeline is part of a system operated by Northwest Natural Gas Company and travels north-south from south Coos Bay to Newmark Avenue, where it then extends west.[6]

No changes to the pipeline system are planned within North Bend or Coos Bay at this time, however a liquefied natural gas (LNG) terminal is proposed on the North Spit, which is north of the study area, across the bay from OTH. The proposed pipeline is a 36-inch diameter pipeline that would extend from the LNG terminal to the Ruby Pipeline and the Gas Transmission Northwest (GTN) Pipeline near Malin, Oregon.

Safety Evaluation

A safety analysis was conducted to determine whether any significant, documented safety issues exist within the study area and to inform future measures or general strategies for improving overall safety. This analysis includes a review of crash records, critical crash rates, and ODOT Safety Priority Index System (SPIS) data.

Crash History

The crash analysis included a review of crash history data supplied by the ODOT Crash Analysis and Reporting Unit for the period between January 1, 2012, and December 31, 2016, which were the five most recent full years for which crash data were available at the time of the analysis. Detailed reports are contained in the appendix.

There were 1,744 documented crashes with the North Bend and Coos Bay UGBs between 2012 and 2016, which are shown in Figure 8. Approximately 49 percent of the crashes occurred in North Bend, and the other 51 percent in Coos Bay. In total, there were five crashes resulting in fatalities. The fatalities occurred at the following locations:

- US 101 South, south of Johnson Avenue
- Virginia Avenue (Cape Arago Highway) at Meade Avenue
- Newmark Avenue (Cape Arago Highway) at Oak Street
- US 101 at Florida Avenue
- Ocean Boulevard at 19th Street

The crash data for the sections of US 101 and Newport Lane/Coos River Highway (OR 241) is also included because the roads connect the Coos Bay UGB. There are an additional 78 crashes for this segment and they are documented in Figure 8.

[6] *National Pipeline Mapping System Public Map Viewer*, https://pvnpms.phmsa.dot.gov/PublicViewer/, Pipeline and Hazardous Materials Safety Administration, 2018.

Exhibit 1 summarizes collision types in the UGBs. The majority of the crashes were rear end or turning related collisions.

Reviewing the data from study area intersections, there were 609 crashes. Of those, approximately 63 percent occurred in North Bend, and the remaining 37 percent in Coos Bay.

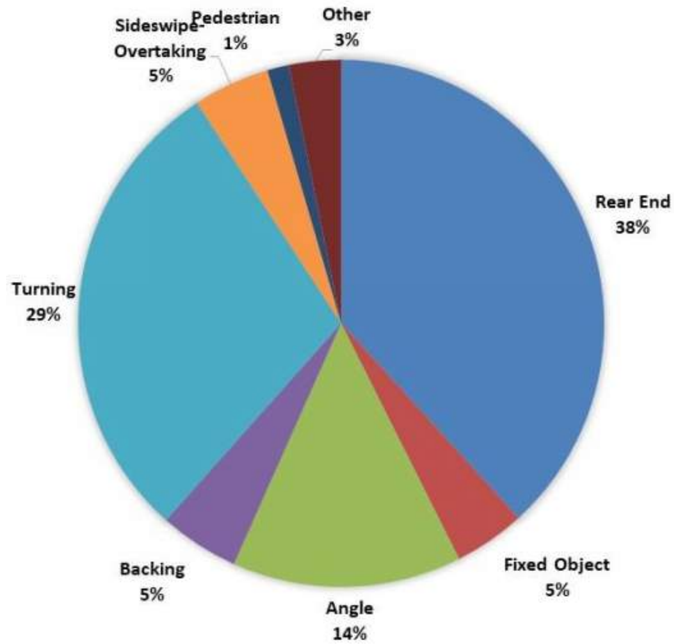
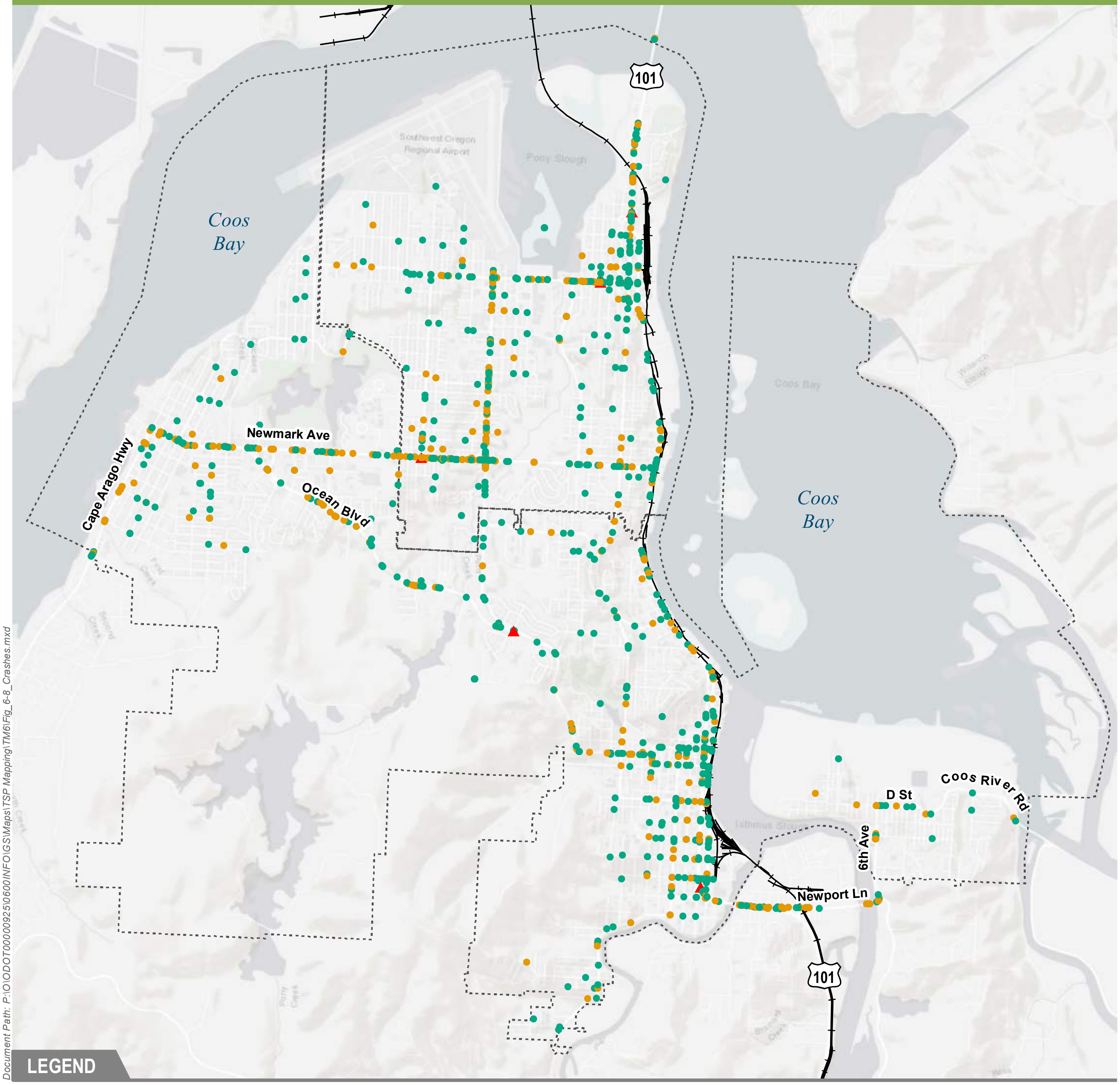


Exhibit 1. Summary of North Bend and Coos Bay Collision Types

Coos Bay/North Bend TSP



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LEGEND

Urban Growth Boundary (UGB)

Crash Severity

- Fatal
- Non-Fatal Injury
- Property Damage Only

N

0 0.5 1 Miles

ODOT Crash Analysis and Reporting Unit - January 1, 2012, and December 31, 2016

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 8. Study Area Crashes

Network Screening

Crash rates are a measure of the number of crashes in relation to amount of traffic volume served. Table 7 summarizes important crash information and notes whether the measured crash rate exceeds the critical crash rate and/or the ODOT 90th percentile crash rate. If it exceeds one of these thresholds, it is an indication that a problem might exist and that further study is warranted.

The Highway Safety Manual (HSM) Part B describes the critical crash rate method as a means of identifying locations that warrant further investigation. The critical crash rate is specific to the combined study areas (North Bend and Coos Bay UGBs) and considers average crash rates at comparable sites, traffic volume, and a confidence interval. The statewide 90th percentile crash rate represents similar intersections across Oregon. Calculations and detailed collision reports are available in the appendix.

Table 7. Crash History at Study Area Intersections (2012-2016)

ID	Intersection	Crashes	Fatal	Serious Injury	Crash Rate[1,2]
1	Arthur St at Colorado Lp	0	0	0	0.00
2	Oak St/W Airport Way at Colorado Ave/Maple Leaf	0	0	0	0.00
3	Maple Leaf at E Airport Way	0	0	0	0.00
4	US 101 at Florida Ave	15	0	0	0.39
5	Virginia Ave at Arthur St	1	0	0	0.15
6	Virginia Ave at Oak St	5	0	0	0.35
7	Virginia Ave at Maple St	3	0	0	0.15
8	Virginia Ave at Broadway St	24	0	0	0.60
9	Virginia Ave at Pony Village Main Driveway	10	0	0	0.25
10	Virginia Ave at Harrison Ave	15	0	0	0.38
11	Virginia Ave at Meade Ave	16	1	1	0.36
12	Virginia Ave at US 101 South	60	0	0	***1.51***
13	Virginia Ave at US 101 North	8	0	1	0.32
14	Marion Ave at Safeway Driveway	0	0	0	0.00
15	Washington Ave at US 101 South/Sherman Ave	16	0	0	***0.69***
16	Pony Creek Rd at Crowell Ln	3	0	0	***0.33***
17	Oak St at 16th/17th St	1	0	0	0.16
18	Broadway St at 16th St	13	0	0	0.38
19	Broadway Ave at 17th St	9	0	0	0.27
20	US 101 at Mill Casino Entrance	6	0	0	0.15
21	Newmark Ave at Oak St	11	1	0	0.23
22	Broadway St at Newmark Ave	64	0	4	***1.12***
23	Newmark St at Edgewood Dr	6	0	0	0.20
24	Newmark Ave at Brusells St	20	0	1	0.62
25	Newmark St at Sherman Ave	22	0	1	0.65
26	US 101 at Newmark St	57	0	1	***1.11***
27	Morrison St at Lakeshore Dr	1	0	0	0.18
28	Newmark Ave at Cape Arago Hwy/Empire Blvd	4	0	1	0.21
29	Newmark Ave at Morrison St	9	0	0	0.26
30	Newmark Ave at Ocean Blvd	17	0	0	0.44
31	Newmark Ave at Laclair St	17	0	0	0.50
32	Empire Blvd at Pacific Ave	3	0	0	0.15
33	Thompson Rd at Woodland Dr	11	0	0	***0.49***
34	Koosbay Blvd at Thompson Rd	3	0	0	0.16

ID	Intersection	Crashes	Fatal	Serious Injury	Crash Rate[1,2]
35	Ocean Blvd at Woodland Dr	17	0	0	0.51
36	Ocean Blvd at Butler Rd	6	0	0	0.21
37	Koosbay Blvd at 10th St	8	0	0	***0.48***
38	Us 101 at Koosbay Blvd	6	0	0	0.11
39	7th St at Commercial Ave	1	0	0	0.07
40	Commercial Ave at US 101 South	11	0	0	0.31
41	Commercial Ave at US 101 North	4	0	0	0.00
42	10th St at Central Ave	17	0	0	0.49
43	Central Ave at 7th St	7	0	0	0.28
44	7th St at Anderson Ave	5	0	0	0.25
45	Elrod Ave at 10th St	1	0	0	0.12
46	11th St at Ingersoll Ave	1	0	0	0.27
47	7th St at Ingersoll Ave	2	0	0	***0.47***
48	Hall Ave at US 101 South	13	0	0	0.34
49	Hall Ave at US 101 North	8	0	0	0.25
50	Johnson Ave at US 101 South	17	0	0	0.38
51	Johnson Ave at US 101 North	32	0	0	***0.67***
52	7th St at Lockhart Ave/Southwest Blvd	0	0	0	0.00
53	6th Ave at D St / Coos River Hwy	6	0	0	***0.45***
54	Coos River Rd at Ross Inlet Rd	0	0	0	0.00
	Total	**609**	**2**	**10**	**--**

Bold/Italic/Underlined = Exceeds Statewide 90th Percentile Crash Rate; ***BLACK SHADED*** = Exceeds Critical Crash Rate

Source: ODOT Transportation Development Division, Crash Analysis and Reporting Unit 2012-2016

In North Bend, there are five intersections that exceed the statewide 90th percentile crash rate, three of which also exceed the critical crash rate. These intersections and further details of their crash history are summarized below.

Virginia Avenue at US 101 South: Exceeds statewide 90th percentile crash rate and critical crash rate. Of the 60 crashes at this intersection, the majority were angle (22) and sideswipe-overtaking (13) collisions. These collision types were mostly due to drivers disregarding the signal or improper lane changes.

Washington Avenue at US 101 South/Sherman Avenue: Exceeds statewide 90th percentile crash rate. There is no distinct pattern in collision type; however, most were due to not yielding the right-of-way or disregarding a stop sign.

Pony Creek Road at Crowell Lane: Just exceeds statewide 90th percentile crash rate. There were three crashes reported in the five-year analysis period at this residential location. All three crashes occurred during low light/dark conditions and were due to improper driving (speeding or failing to yield right-of-way).

Broadway Street at Newmark Avenue: Exceeds statewide 90th percentile crash rate and critical crash rate. Of the 64 crashes at this intersection, the majority were rear end (37) and turning (15) collisions. The rear end collision types were mostly due to drivers following too closely or inattention. The turning collisions are mostly attributed to failing to yield the right-of-way. This intersection recorded the highest number of crashes in both North Bend and Coos Bay and resulted in four serious injuries.

US 101 at Newmark Street: Exceeds statewide 90th percentile crash rate and critical crash rate. Of the 57 crashes at this intersection, the majority were turning (31) and rear end (18) collisions. The rear end collision types were mostly due to drivers following too closely or inattention. The turning collisions are mostly attributed to failing to yield the right-of-way. This intersection recorded one serious injury.

In Coos Bay, there are five intersections that exceed the statewide 90th percentile crash rate, three of which also exceed the critical crash rate. These intersections and further details of their crash history are summarized below.

Thompson Avenue at Woodland Drive: Exceeds statewide 90th percentile crash rate and critical crash rate. All eleven of the crashes recorded at this intersection were turning collisions caused by drivers failing to yield the right-of-way.

Koosbay Boulevard at 10th Street: Exceeds statewide 90th percentile crash rate and critical crash rate. Six of the eight crashes were rear end collisions, and the remaining two were turning collisions. A range of improper driver behavior was the cause (following too closely, failing to yield right-of-way, inattention and speeding).

7th Street at Ingersoll Avenue: Exceeds statewide 90th percentile crash rate. There were two crashes recorded that were the result of drivers failing to yield the right-of-way. This intersection was flagged because it is a low volume intersection.

Johnson Avenue at US 101 North: Exceeds statewide 90th percentile crash rate and critical crash rate. Of the 32 crashes at this intersection, the majority were rear end (12) and angle (11) collisions. These collision types were mostly due to drivers following too closely (rear end) or disregarding the signal (angle). This intersection had the highest recorded number of crashes in Coos Bay.

6th Avenue at D Street / Coos River Highway: Exceeds statewide 90th percentile crash rate. Of the six crashes at this intersection, three were turning and three were rear end collisions. There was not a clear pattern for the cause of these crashes.

These intersections account for 259 of the 609 crashes recorded at study area intersections (43 percent). Countermeasures for the intersections that exceed crash rate thresholds will be developed during the development of transportation alternatives.

Segment Analysis

Crash rates can be calculated for both intersections and segments. The ODOT APM clarifies that segments should ideally be close to one mile in length. In the North Bend and Coos Bay urban areas, obtaining one-mile segments of roadway without intersections is not possible and short sections typically skew the crash rates. That said, the majority of urban crashes are intersection related and captured in Table 7 for the study intersections.

Crash Trends

Excess Proportion of Specific Crash Types

The Excess Proportion of Specific Crash Types method quantifies the extent to which a specific crash type (the target crash type) is overrepresented at an analysis site, compared to the average representation within a reference population.[1] Excess proportion of specific crash type analysis does not consider the overall frequency or rate of crashes; instead, it considers only the type of crashes observed. ODOT provides a limited spreadsheet tool that implements excess proportion of specific crash types; the outputs from this spreadsheet are available the appendix.

For the study area, 24 intersections have greater than a 90-percent probability of a greater than expected proportion of specific crash types. The results are summarized below:

Table 8. Excess Proportion Crash Locations

		COLLISION TYPE Probability[1]; Excess Proportion[2]				
ID	Intersection	Angle	Fixed Object	Rear End	Sideswipe - Overtaking	Turning
4	US 101 at Florida Ave				1.00; 0.19	
6	Virginia Ave at Oak St	0.98; 0.33				
8	Virginia Ave at Broadway St		0.94; 0.05			
11	Virginia Ave at Meade Ave			1.00; 0.18		
12	Virginia Ave at US 101 South	1.00; 0.15	0.96; 0.02			
15	Washington Ave at US 101 South/Sherman Ave				1.00; 0.24	
19	Broadway Ave at 17th St			1.00; 0.17		
22	Broadway St at Newmark Ave			1.00; 0.32	0.96; 0.02	
23	Newmark St at Edgewood Dr			0.96; 0.31		
24	Newmark Ave at Brusells St	0.95; 0.11				0.97; 0.22
25	Newmark St at Sherman Ave	0.99; 0.19	0.95; 0.07			
26	US 101 at Newmark St					1.00; 0.25
28	Newmark Ave at Cape Arago Hwy/Empire Blvd					0.95; 0.55
30	Newmark Ave at Ocean Blvd			0.99; 0.30		
31	Newmark Ave at Laclair St			1.00; 0.46		
33	Thompson Rd at Woodland Dr					1.00; 0.52
35	Ocean Blvd at Woodland Dr		0.99; 0.09			0.97; 0.24
37	Koosbay Blvd at 10th St			0.99; 0.39		
40	Commercial Ave at US 101 South	1.00; 0.48				
43	Central Ave at 7th St	0.91; 0.08				
48	Hall Ave at US 101 South	1.00; 0.39				
50	Johnson Ave at US 101 South	0.91; 0.01				
51	Johnson Ave at US 101 North	0.98; 0.13				
53	6th Ave at D St / Coos River Hwy			1.00; 0.17		

1. Excess Proportion analysis assumed greater than 90% minimum probability
2. Excess Proportion analysis assumed 10% minimum excess proportion

[1] ODOT Analysis Procedure Manual Version 2, Section 4.3.5, p. 4-37, 2018.

The probability indicates the chance that the long term expected proportion of a specific crash type at a certain intersection will be greater than the long term expected proportion of the same crash type at other intersections of the same type in the study area.

The greater the excess proportion value, the greater likelihood that the site will benefit from a countermeasure targeted at the collision type under consideration.[2]

For instance, at the intersection of Commercial Avenue at US 101 South, there is a 100% chance that the long term expected proportion of angle crashes would be greater than the long term expected proportion of angle crashes at three-legged signalized intersections when compared to the rest of the three-legged signalized intersections in the study area. In addition, the 0.48 value of excess proportion for this intersection, which is the highest among other three-legged signalized intersections that have a probability of over 90 percent for the angle crash type, indicates that the likelihood that this intersection benefits from a countermeasure targeted at the angle crash type is greater than other same-type intersections.

It should be noted that there are five intersections with two specific crash types with a probability of more than 90 percent: Virginia Avenue at US 101 South, Broadway Street at Newmark Avenue, Newmark Avenue at Brusells Street, Newmark Street at Sherman Avenue, and Ocean Boulevard at Woodland Drive.

Pedestrian Crash Trends

Between 2012 and 2016, there were 36 document crashes involving pedestrians in the study area. The most common reason for the crash was due to vehicles not yielding the right-of-way, with the next most common cause being the pedestrian was illegally in the roadway. Figure 9 summarizes the locations.

In North Bend, there were 21 documented crashes involving pedestrians, two of which were fatalities. Of the 15 pedestrian crashes in Coos Bay, one resulted in a fatality. The majority of pedestrian crashes occurred in commercial or downtown areas. There was one on US 101 between the Coos Bay UGBs.

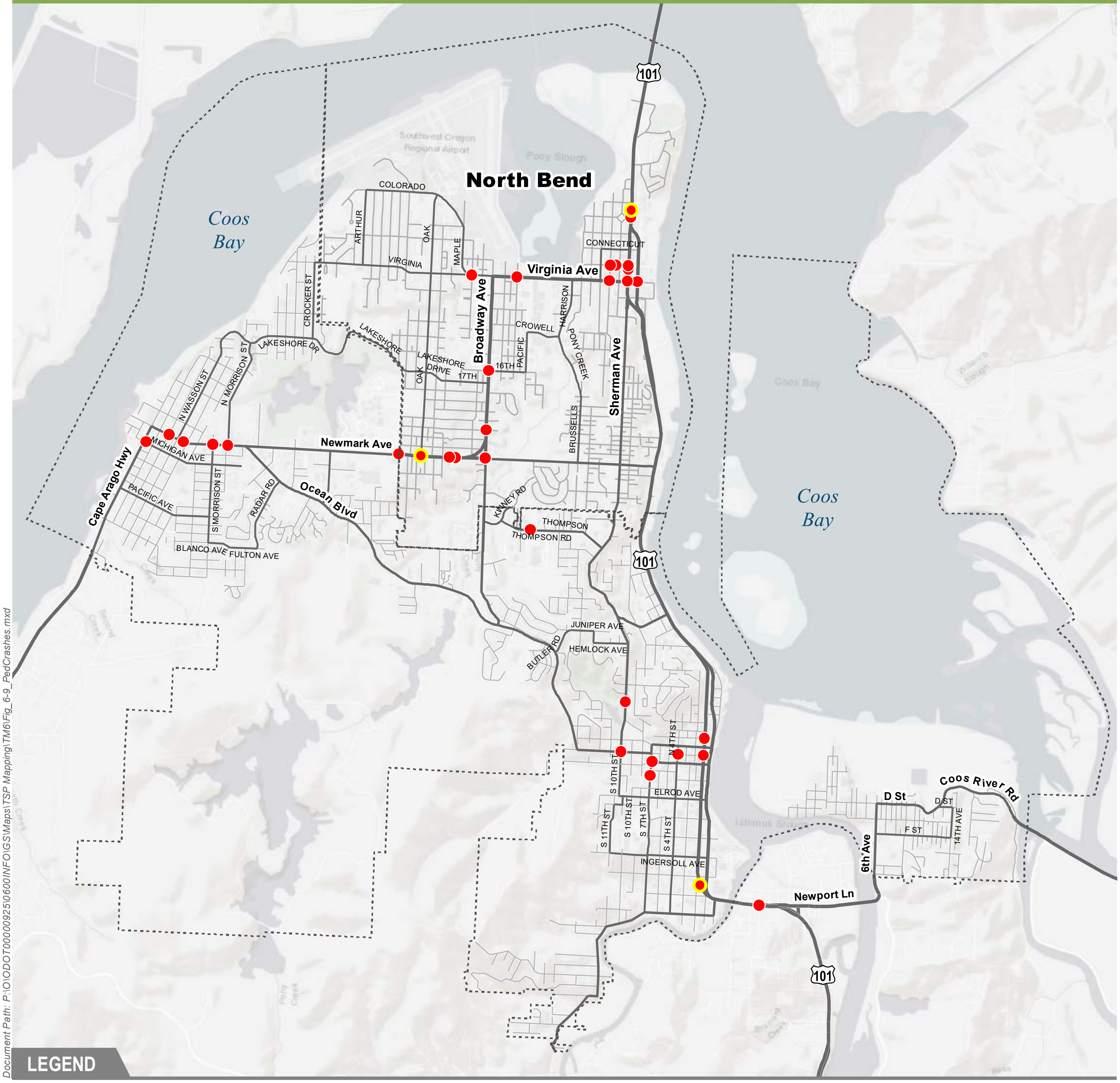
Bicycle Crash Trends

Between 2012 and 2016, there were 18 documented crashes involving bicyclists (referred to as pedal-cyclists) in North Bend and 18 crashes involving bicyclists in Coos Bay. Between both Cities, none of the crashes involving pedal-cyclists resulted in fatalities. Pedal-cyclist crashes represent roughly two-percent of all documented crashes in North Bend and Coos Bay between 2012 and 2016. Figure 10 displays the location of each bicycle crash in North Bend and Coos Bay.

Additionally, a heat map analysis of the density of crashes was created to show 5-year bicycle crash patterns (Figure 11). The heat map analysis shows a high incidence of bicycle crashes in downtown Coos Bay around Central Avenue and around the intersection of Broadway Avenue and Newmark Avenue in North Bend. In addition, the analysis illustrates a medium incidence of bicycle crashes around Newmark Avenue and Ocean Boulevard in Coos Bay, and along Virginia Avenue in North Bend. The heat map is based on bicycle crashes, and thus tends to identify hot-spots where bicycle crashes are more common but does not distinguish the crash rate relative to total traffic volumes and is not intended to substitute for Critical Crash Rate or Excess Proportion Crash Location analysis.

[2] Highway Safety Manual 4-58

Coos Bay/North Bend TSP



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LEGEND

Urban Growth Boundary (UGB)

Severity

- Non-Fatal
- Fatal

N

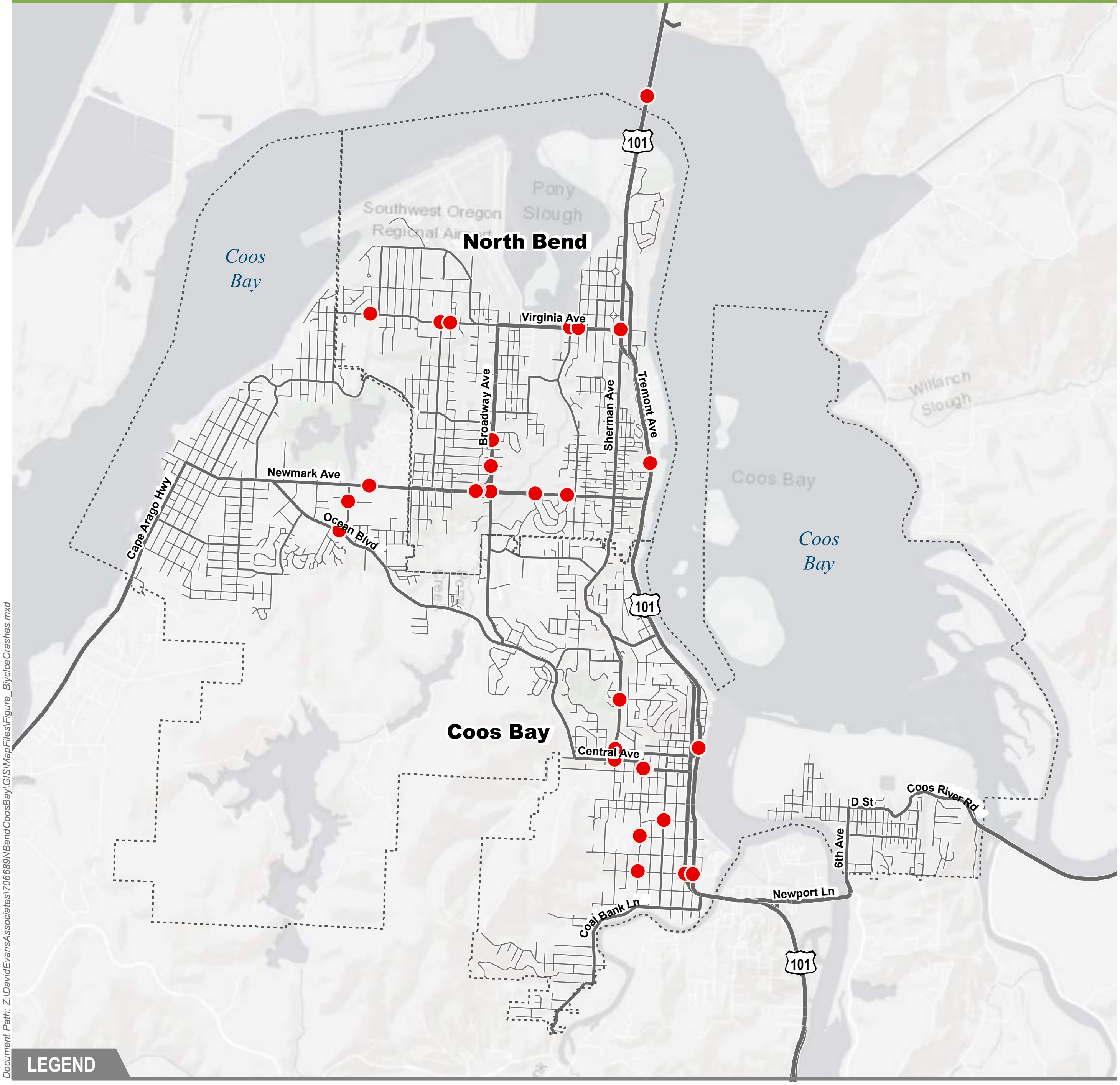
0 0.5 1 Miles

ODOT Crash Analysis and Reporting Unit - January 1, 2012, and December 31, 2016

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 9. Five-Year Pedestrian Crashes

Coos Bay/North Bend TSP



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LEGEND

Urban Growth Boundary (UGB)

Bicycle Crashes (Non-Fatal)

N

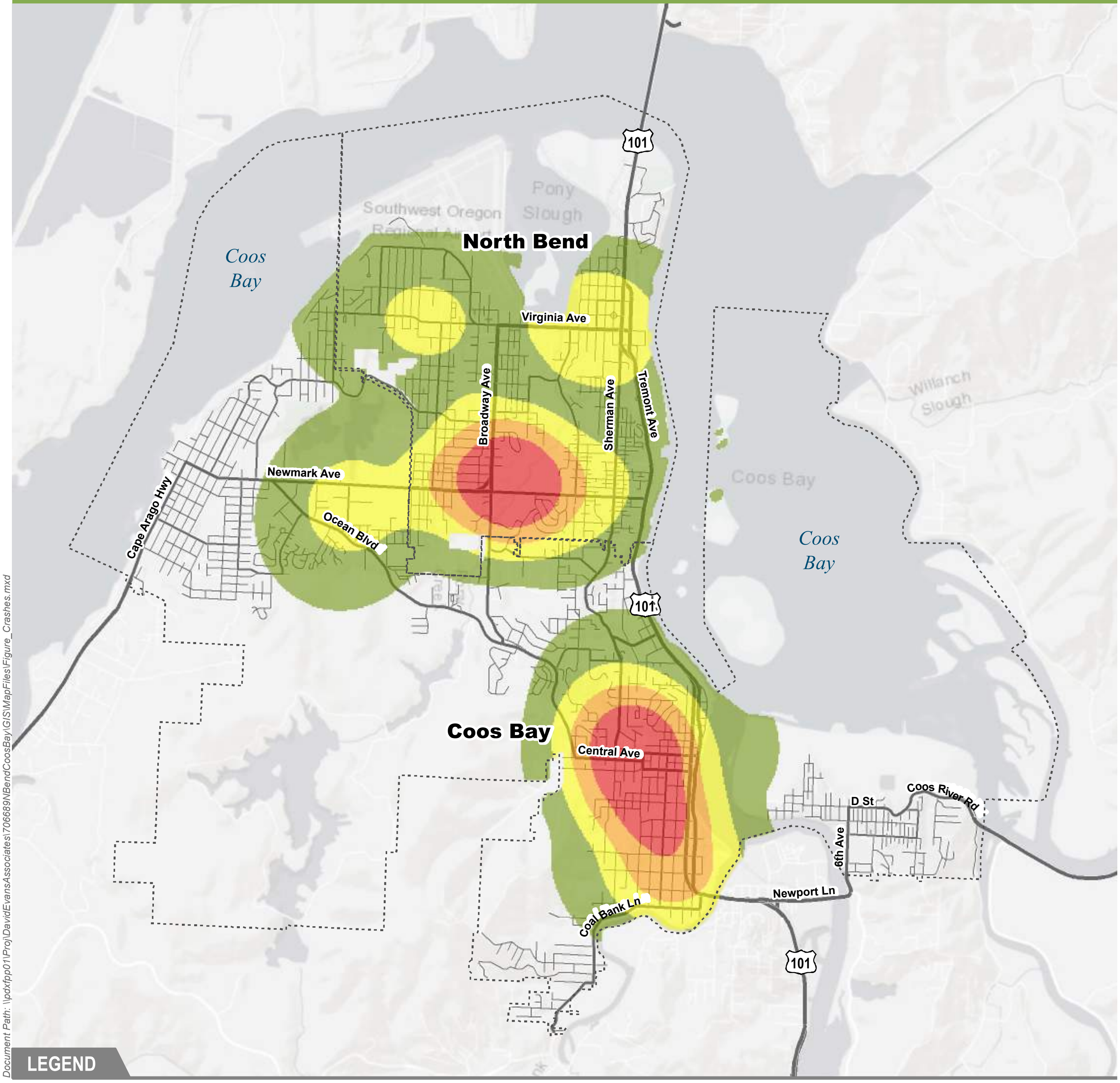
0 0.5 1 Miles

ODOT Crash Analysis and Reporting Unit - January 1, 2012, and December 31, 2016

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 10. Five-Year Bicycle Crashes

Coos Bay/North Bend TSP



LEGEND

Urban Growth Boundary (UGB)

Five Year Bicycle Crash Pattern Frequency

- Low
- Medium
- High
- Very High

ODOT Crash Analysis and Reporting Unit - January 1, 2012, and December 31, 2016

N

0 0.5 1 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 11. Five-Year Bicycle Crash Pattern

Safety Priority Index System

The SPIS is a method used in Oregon to identify safety problem areas along state highways. Highways are evaluated in approximately one-tenth mile increments (often grouped into larger segments). Each year these segments are ranked by assigning a SPIS score based on the frequency and severity crashes observed, while considering traffic volume. When a segment is ranked in the top 10% of the index, a crash analysis is typically warranted and corrective actions are considered. Table 9 and Table 10 summarize these locations on State facilities and off-State facilities, respectively.

In North Bend, there are six top 10% SPIS locations. In Coos Bay, there three top 10% SPIS locations. The sections of US 101 and Newport Lane/Coos River Highway (OR 241) connecting the Coos Bay UGB has two top 10% SPIS locations.

Table 9. Top 10% SPIS Sites – State Facilities (2016)

Highway	Cross Street	Beginning Mile Point	End Mile Point	ADT	Total Crashes	Fatal & Injury A[1] Crashes	City
US 101	California Ave	235.31	235.49	9,900	43	0	North Bend
US 101	Newmark St	236.41	236.59	20,600	32	1	North Bend
US 101	Kruse Ave	238.98	239.09	17,511	6	2	Coos Bay
US 101	Harriet Rd	239.28	239.47	26,300	26	2	Coos County
OR 540	McPherson Ave	0.07	0.25	16,000	19	2	North Bend
OR 540	State St	1.69	1.87	18,300	35	3	North Bend
OR 241	Ellen St	0.09	0.19	9,033	13	1	Coos County

Source: ODOT SPIS Report

1. Incapacitating or serious Injury

Table 10. Top 10% SPIS Sites – Off-State Facilities (2016)

Road Name	Cross Street(s)	ADT	Total Crashes	Fatal & Injury A[1] Crashes	City
Sherman Ave	Commercial St – Exchange St	6,000	10	1	North Bend
Newmark St	Brussels St	13,800	11	1	North Bend
S 10th St	Commercial Ave	5,000	11	1	Coos Bay
Ingersoll St	S 2nd St	1,100	5	1	Coos Bay

Source: ODOT SPIS Report

1. Incapacitating or serious Injury

Summary of Existing Deficiencies

This memorandum and *Technical Memorandum #4: System Inventory,* identified deficiencies in connectivity, operations, conditions and safety for various aspects of the current transportation system. The concerns for each mode are summarized below.

Pedestrian

- In reviewing arterials and collectors, the streets with significant sidewalk gaps on both sides are Oak Street, Lakeshore Drive
- Important pedestrian routes such as Virginia Avenue, Newmark Avenue, Ocean Boulevard, Newport Lane/Coos River Highway (OR 241) measured at PLTS 4
- PLTS 2 or better preferred near in the downtown core, near medical facilities, assisted living/retirement centers, schools and transit stops.
- Trail or share-use paths system lacking connections between neighborhoods and commercial areas.

Bicycle

- Segments with BLTS 4 on Cape Arago Highway, Newmark Avenue, Ocean Boulevard and US 101.
- Limited to no formal bicycle facilities throughout most City streets in North Bend and Coos Bay

Transit

- Limited or incomplete bicycle/pedestrian access to transit stops.
- No weekend fixed-route service.
- Transit service could be improved with decreased headways and additional route along US 101, Ocean Boulevard and Sherman Avenue.

Bridges

- Functionally Obsolete:
    - Coos Bay, Hwy 9 (US 101) (McCullough)
    - Catching Slough, Hwy 241
    - Hwy 241 over CBRL
- Structurally Deficient:
    - Isthmus Slough, Hwy 241 (Eastside)

Motor Vehicle

- Limited east-west connectivity between Broadway Avenue and Sherman Avenue
- None of the study area intersections currently exceeds applicable mobility targets; however, the intersections of Broadway Street at Newmark Avenue, 7th Street at Anderson Avenue, Hall Avenue at US 101 North and Johnson Avenue at US 101 South have certain movements where drivers will experience delays during the PM Peak Hour.
- Poor pavement condition (2015 data) on California Avenue, between Sherman Avenue, US 101 and the dock facility, on Sheridan Avenue between US 101 and the port facility, and Maple Leaf/Maple Street between Airport Way and Virginia Avenue.
- Functional classification: “collector” term should be renamed as “major collector” and “neighborhood route” should be renamed as “minor collector” for consistency with State and

Federal classifications. Coos Bay's classification of Koosbay Boulevard between 10th Street and US 101 (arterial) differs from the State's classification as an urban collector.

- Both Cities have Pavement Management Plans and citizen concerns of potholes on local streets.
  - North Bend arterials and collectors with fair or worse pavement conditions (as defined by North Bend Pavement Management Plan, 2014): Newmark Street (Sheridan Avenue to US 101), Harrison Avenue, Arthur Street, Colorado Avenue, Brussells Street, Oak Street, 17th Street 16th Street, Pacific Street and Crowell Lane. Sections of Broadway/Cape Arago Highway (OR 240) from Virginia Avenue to West city limits.
  - Coos Bay arterials and collectors with critical PCI (as defined by Coos Bay Pavement Condition Survey, 2015)): Central Avenue, Southwest Boulevard, Koosbay Boulevard, Blanco Avenue, Radar Road, Schoneman Street, LaClair Street, F Street, Butler Road, Juniper Avenue and Fulton Avenue.

Freight

- Two high priority Highway Over-Dimension Load Pinch Points (HOLPP):
  - US 101 MP 236.28, Lewis Street signal head in North Bend - The signal currently is 4" below the minimum height requirement for both directions.
  - US 101 MP 238.40, Curtis Avenue signal head in Coos Bay - The signal head clearance is currently 17'-0" in both directions.
- Highest heavy vehicles volumes at the following intersections: US 101 at Florida Avenue, Koosbay Boulevard, US 101 South at Commercial Avenue and US 101 North at Johnson Avenue.
- Mixing of bike traffic and freight on Maple Leaf Avenue/Maple Street, between Airport Way and Virginia Avenue.
- Rail crossing safety at port and dock facilities on California Avenue and Sheridan Avenue.
- Turning movement radii for US 101 one-way couplet in North Bend.

Air

- No direct commercial passenger service between OTH and northwest hubs (Portland, Oregon).
- OTH is not served by any local public transportation service.

Marine

- The Cities' Comprehensive Plans identify need for additional port facilities, given current levels of activity and its importance to the region and a need for additional capacity for commercial fishing and recreational boats in the Bay Area.

Rail

- No passenger rail service is available in the study area; the closest available is AMTRAK located in Eugene, Oregon
- Two at-grade crossings do not have warning devices: Market Avenue at Front Street and US 101 at US Plywood-Central Dock Road.

Safety

- Ten intersections in the study area have observed crash rates that exceed the Statewide 90th Percentile Crash Rate, five of which also exceed the critical crash rate.
- There are five top 10% SPIS sites on State facilities, and four off-State facilities.

- Newmark Street at Sherman Avenue and Newmark Avenue at Broadway Street suffer from two specific crash types with a probability of more than 90 percent.
- There are five intersections with two specific crash types with a probability of more than 90 percent.

TECHNICAL MEMORANDUM #6
APPENDIX

Draft Current System Conditions (Task 5.5)

Appendix A Traffic Methodology Memo (Technical Memorandum #5) *See Final TM 5*

Appendix B Volumes

Appendix C Volume Development

Appendix D Synchro Worksheets

Appendix E Crash Data and Calculations

Appendix A

Traffic Methodology Memo (Technical Memorandum #5)

See Final TM 5

Appendix B
Volumes

Project: CBNB
Job #: ODOT00000925
Subject: *PM Turning Movement Volumes*
Created: 6/12/2018

System Peak Hour= 4:30 PM

Updated: 10/24/2018

E-W ID	Synchro ID	Intersection	Direction	Movement	2:00 PM	2:15 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	Max
1	10	Arthur St at Colorado Loop		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10		EB	EBT	2	4	3	0	0	1	1	4	5	4	1	1	1	2	2	2	
	10	Count Date : 07/11/2017		EBR	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	
	10	2017		WBL	2	2	2	0	1	2	3	2	0	1	1	1	3	3	3	1	
	10		WB	WBT	2	3	1	0	0	4	3	6	1	5	1	3	1	2	0	5	
	10			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10	PM Peak Hour: 3:30 PM-4:30 PM		NBL	1	0	1	0	0	0	1	1	0	0	0	0	1	0	0	1	
	10	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10	Volume Difference: 14		NBR	5	0	0	0	0	1	3	1	3	0	0	5	4	1	0	4	
	10			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10	*0.73*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**32**	***15 min SUM***		***12***	***9***	***8***	***0***	***1***	***9***	***12***	***15***	***9***	***10***	***3***	***11***	***10***	***8***	***5***	***13***	
	Max 15 min	**11**	**TEV**					**29**	**18**	**18**	**22**	**37**	**45**	**46**	**37**	**33**	**34**	**32**	**34**	**36**	**46**
2	20	Oak St/W Airport Way at Colorado Ave/Maple Leaf		EBL	2	0	2	0	1	2	2	1	1	2	0	0	0	1	0	0	
	20		EB	EBT	25	13	24	16	13	17	14	14	27	20	51	21	34	14	18	13	
	20	Count Date : 07/11/2017		EBR	4	1	2	1	2	1	1	1	2	1	1	1	10	0	1	0	
	20	2017		WBL	0	0	0	0	1	1	2	1	1	1	1	0	0	1	0	0	
	20		WB	WBT	22	10	13	14	18	24	11	13	17	9	12	10	14	16	7	18	
	20			WBR	0	0	0	0	0	0	1	0	2	2	0	0	1	0	1	0	
	20	PM Peak Hour: 4:15 PM-5:15 PM		NBL	3	3	0	1	0	2	1	1	2	3	1	0	2	2	2	1	
	20	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	1	0	2	1	0	0	0	0	0	1	0	0	0	1	1	0	
	20	Volume Difference: 5		NBR	0	1	1	0	1	0	0	0	0	0	0	0	1	0	1	0	
	20			SBL	2	0	0	0	0	2	0	0	1	1	0	0	0	0	1	0	
	20	PHF:	SB	SBT	0	0	0	1	0	1	0	1	0	0	0	0	1	1	0	3	
	20	*0.75*		SBR	1	0	0	1	0	1	2	1	2	1	0	0	0	0	1	0	
	PHV	**197**	***15 min SUM***		***60***	***28***	***44***	***35***	***36***	***51***	***34***	***33***	***55***	***41***	***66***	***32***	***63***	***36***	***33***	***35***	
	Max 15 min	**66**	**TEV**					**167**	**143**	**166**	**156**	**154**	**173**	**163**	**195**	**194**	**202**	**197**	**164**	**167**	**202**
3	30	Maple Leaf at E Airport Way		EBL	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
	30		EB	EBT	27	14	25	17	15	19	16	14	27	20	53	22	35	17	21	11	
	30	Count Date : 07/11/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	30	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	30		WB	WBT	22	11	13	13	22	25	14	16	19	12	15	10	17	21	12	17	
	30			WBR	2	2	2	4	0	3	4	4	4	2	0	2	0	2	1	3	
	30	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	30	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	30	Volume Difference: 0		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	30			SBL	3	1	4	2	1	2	4	4	6	3	2	2	4	4	1	0	
	30	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	30	*0.74*		SBR	1	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	
	PHV	**206**	***15 min SUM***		***56***	***29***	***46***	***36***	***38***	***50***	***38***	***38***	***56***	***38***	***70***	***36***	***56***	***44***	***35***	***31***	
	Max 15 min	**70**	**TEV**					**167**	**149**	**170**	**162**	**164**	**182**	**170**	**202**	**200**	**200**	**206**	**171**	**166**	**206**
4	40	US 101 at Florida Ave		EBL	45	52	45	44	41	51	39	54	53	45	56	54	61	73	77	50	
	40		EB	EBT	1	0	0	0	1	2	0	0	0	2	0	0	1	0	0	0	
	40	Count Date : 07/11/2017		EBR	1	2	4	1	4	0	0	2	2	1	3	2	5	1	0	0	
	40	2017		WBL	5	4	4	7	6	6	5	2	6	5	1	5	7	5	7	3	
	40		WB	WBT	1	0	0	0	1	1	0	1	0	0	0	0	0	0	2	0	
	40			WBR	0	0	1	0	0	0	1	0	0	0	1	2	0	0	1	0	
	40	PM Peak Hour: 4:15 PM-5:15 PM		NBL	1	4	3	2	0	3	3	3	2	0	6	3	1	2	1	1	
	40	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	148	165	141	160	144	157	126	173	130	179	151	130	203	188	133	138	
	40	Volume Difference: 14		NBR	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	
	40			SBL	0	1	1	0	0	0	1	0	0	0	0	0	0	0	1	0	
	40	PHF:	SB	SBT	174	150	186	176	215	185	183	173	222	207	187	209	185	156	155	158	
	40	*0.92*		SBR	1	3	3	3	1	4	3	4	5	3	3	4	3	3	5	0	
	PHV	**1711**	***15 min SUM***		***377***	***381***	***388***	***394***	***413***	***409***	***361***	***412***	***420***	***442***	***408***	***409***	***466***	***428***	***383***	***350***	
	Max 15 min	**466**	**TEV**					**1540**	**1576**	**1604**	**1577**	**1595**	**1602**	**1635**	**1682**	**1679**	**1725**	**1711**	**1686**	**1627**	**1725**
5	50	Virginia Ave at Arthur St		EBL	0	0	0	0	0	1	0	0	1	0	2	1	2	1	1	1	
	50		EB	EBT	20	23	28	27	22	30	24	31	28	23	25	30	20	25	19	20	
	50	Count Date : 07/11/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	50	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	50		WB	WBT	25	31	27	24	27	30	31	38	31	40	32	32	41	44	30	31	
	50			WBR	4	2	0	4	5	1	2	0	5	3	3	5	2	8	1	4	
	50	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	50	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	50	Volume Difference: 0		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	50			SBL	1	2	2	1	3	4	5	2	4	2	2	2	0	3	2	1	
	50	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	50	*0.87*		SBR	1	1	0	1	0	2	2	1	0	0	0	2	0	0	1	1	
	PHV	**282**	***15 min SUM***		***51***	***59***	***57***	***57***	***57***	***68***	***64***	***72***	***69***	***68***	***64***	***72***	***65***	***81***	***54***	***58***	
	Max 15 min	**81**	**TEV**					**224**	**230**	**239**	**246**	**261**	**273**	**273**	**273**	**273**	**269**	**282**	**272**	**258**	**282**
6	60	Virginia Ave at Oak St		EBL	0	2	2	0	1	0	0	0	0	0	2	1	0	2	0	0	
	60		EB	EBT	37	32	33	41	39	49	40	45	42	32	43	54	28	44	43	33	
	60	Count Date : 07/11/2017		EBR	3	5	4	5	5	3	6	3	7	10	5	4	5	3	2	4	
	60	2017		WBL	10	11	9	8	4	8	12	9	8	16	9	15	10	12	17	7	
	60		WB	WBT	41	40	35	43	48	48	47	60	58	48	60	67	69	66	49	58	
	60			WBR	1	2	3	3	2	3	3	1	1	3	3	3	4	3	6	6	
	60	PM Peak Hour: 4:30 PM-5:30 PM		NBL	4	0	7	9	5	6	5	6	5	8	5	6	8	15	4	9	
	60	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	5	5	3	0	1	2	2	3	7	3	1	3	2	5	2	2	
	60	Volume Difference: 0		NBR	12	10	9	2	11	11	14	11	7	4	7	5	10	10	12	6	

Project: CBNB
Job #: ODOT00000925
Subject: *PM Turning Movement Volumes*
Created: 6/12/2018

System Peak Hour= 4:30 PM

Updated: 10/24/2018

E-W ID	Synchro ID	Intersection	Direction	Movement	2:00 PM	2:15 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	Max
	60			SBL	1	4	3	1	2	1	8	0	1	0	3	1	3	2	2	2	
	60	PHF:	SB	SBT	2	3	3	1	4	5	2	3	7	0	3	3	8	6	4	5	
	60	*0.92*		SBR	0	2	0	0	1	1	0	0	1	0	1	0	1	0	0	0	
	PHV	**620**	***15 min SUM***		***116***	***116***	***111***	***113***	***123***	***137***	***139***	***141***	***144***	***124***	***142***	***162***	***148***	***168***	***141***	***132***	
	Max 15 min	**168**	**TEV**					**456**	**463**	**484**	**512**	**540**	**561**	**548**	**551**	**572**	**576**	**620**	**619**	**589**	**620**
7	70	Virginia Ave at Maple St		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	70		EB	EBT	54	55	51	52	56	65	78	72	58	43	59	62	46	60	67	46	
	70	Count Date : 07/11/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	70	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	70		WB	WBT	59	54	50	64	55	62	69	75	80	80	78	84	97	83	77	73	
	70			WBR	37	19	21	20	35	30	26	23	30	21	25	18	25	39	27	24	
	70	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	70	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	70	Volume Difference: 0		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	70			SBL	32	24	34	25	25	23	34	20	38	34	58	28	44	25	25	21	
	70	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	70	*0.94*		SBR	1	2	3	2	4	0	3	1	1	2	5	3	6	1	2	1	
	PHV	**846**	***15 min SUM***		***183***	***154***	***159***	***163***	***175***	***180***	***210***	***191***	***207***	***180***	***225***	***195***	***218***	***208***	***198***	***165***	
	Max 15 min	**225**	**TEV**					**659**	**651**	**677**	**728**	**756**	**788**	**788**	**803**	**807**	**818**	**846**	**819**	**789**	**846**
8	80	Virginia Ave at Broadway St		EBL	4	1	4	3	3	4	2	2	2	4	3	6	4	7	8	6	
	80		EB	EBT	59	53	69	61	61	68	75	78	74	60	92	65	71	67	65	57	
	80	Count Date : 07/11/2017		EBR	25	24	26	26	29	24	24	24	36	30	39	23	27	23	22	16	
	80	2017		WBL	131	90	97	82	84	95	85	114	85	102	101	101	113	70	83	61	
	80		WB	WBT	68	47	48	64	60	66	60	55	75	83	73	61	89	73	65	61	
	80			WBR	0	2	1	4	2	3	0	2	4	2	4	2	2	2	3	0	
	80	PM Peak Hour: 4:15 PM-5:15 PM		NBL	31	32	27	25	28	22	37	32	36	29	29	37	32	52	40	31	
	80	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	6	12	5	7	11	11	9	7	11	12	4	14	12	11	13	7	
	80	Volume Difference: 17		NBR	105	99	92	99	101	91	90	91	96	100	98	79	108	100	90	85	
	80			SBL	6	11	4	8	8	14	11	7	9	11	8	11	9	14	8	8	
	80	PHF:	SB	SBT	12	5	10	5	11	6	7	7	7	8	11	13	13	6	12	9	
	80	*0.93*		SBR	6	4	5	1	8	2	4	4	6	5	4	5	3	4	5	9	
	PHV	**1795**	***15 min SUM***		***453***	***380***	***388***	***385***	***406***	***406***	***404***	***423***	***441***	***446***	***466***	***417***	***483***	***429***	***414***	***350***	
	Max 15 min	**483**	**TEV**					**1606**	**1559**	**1585**	**1601**	**1639**	**1674**	**1714**	**1776**	**1770**	**1812**	**1795**	**1743**	**1676**	**1812**
9	90	Virginia Ave at Pony Village		EBL									0	0	0	0	0	0	0	0	
	90		EB	EBT									164	170	180	174	198	174	179	155	
	90	Count Date : 08/09/2018		EBR									25	21	11	14	5	22	15	17	
	90	2018		WBL									21	21	14	26	35	30	27	25	
	90		WB	WBT									159	146	202	147	196	171	176	129	
	90			WBR									0	0	0	0	0	0	0	0	
	90	PM Peak Hour: 4:45 PM-5:45 PM		NBL									19	14	17	19	19	24	27	24	
	90	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT									0	0	0	0	0	0	0	1	
	90	Volume Difference: 3		NBR									22	23	25	27	25	18	28	15	
	90			SBL									0	0	0	0	0	0	0	0	
	90	PHF:	SB	SBT									0	0	0	0	0	0	0	0	
	90	*0.93*		SBR									0	0	0	0	0	0	0	0	
	PHV	**1773**	***15 min SUM***		***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***410***	***395***	***449***	***407***	***478***	***439***	***452***	***366***	
	Max 15 min	**478**	**TEV**					**0**	**0**	**0**	**0**	**0**	**410**	**805**	**1254**	**1661**	**1729**	**1773**	**1776**	**1735**	**1776**
10	100	Virginia Ave at Harrison Ave		EBL	1	0	0	0	1	1	0	1	1	1	1	2	1	1	2	1	
	100		EB	EBT	179	204	172	163	163	179	191	191	206	182	197	169	194	195	165	180	
	100	Count Date : 07/11/2017		EBR	12	9	13	12	12	9	13	6	12	12	15	13	10	15	5	7	
	100	2017		WBL	16	8	20	11	16	19	17	15	21	17	11	10	11	16	10	13	
	100		WB	WBT	233	166	183	183	189	169	182	186	195	222	199	189	238	177	152	153	
	100			WBR	0	2	1	0	1	0	0	1	0	1	0	0	1	0	2	1	
	100	PM Peak Hour: 4:15 PM-5:15 PM		NBL	9	13	12	10	14	13	7	13	13	8	9	13	10	16	12	7	
	100	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	1	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	
	100	Volume Difference: 21		NBR	15	14	22	15	28	18	18	19	9	22	14	15	17	23	17	18	
	100			SBL	3	1	2	1	2	1	2	2	0	0	3	3	3	1	2	1	
	100	PHF:	SB	SBT	1	1	0	0	0	1	1	1	0	0	0	0	1	0	1	1	
	100	*0.92*		SBR	1	1	3	0	0	1	0	1	0	0	0	1	2	0	3	1	
	PHV	**1797**	***15 min SUM***		***471***	***419***	***428***	***395***	***426***	***411***	***431***	***437***	***457***	***465***	***450***	***415***	***488***	***444***	***372***	***384***	
	Max 15 min	**488**	**TEV**					**1713**	**1668**	**1660**	**1663**	**1705**	**1736**	**1790**	**1809**	**1787**	**1818**	**1797**	**1719**	**1688**	**1818**
11	110	Virginia Ave at Meade Ave		EBL	48	71	47	52	50	64	47	70	75	60	64	44	69	71	73	56	
	110		EB	EBT	131	135	129	126	132	127	136	133	128	124	139	122	126	120	108	123	
	110	Count Date : 07/11/2017		EBR	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
	110	2017		WBL	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
	110		WB	WBT	176	136	153	164	161	149	165	157	185	199	173	173	198	173	140	135	
	110			WBR	1	3	3	6	4	9	4	3	4	3	6	1	4	3	1	2	
	110	PM Peak Hour: 3:45 PM-4:45 PM		NBL	3	4	2	1	3	0	1	3	1	1	1	3	0	1	0	1	
	110	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	1	
	110	Volume Difference: 45		NBR	0	0	1	2	2	0	2	6	1	1	4	2	5	3	0	0	
	110			SBL	3	3	1	4	0	0	1	0	0	2	2	1	1	2	2	0	
	110	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	110	*0.91*		SBR	42	30	39	25	34	40	33	25	39	26	28	24	40	17	16	18	
	PHV	**1620**	***15 min SUM***		***404***	***382***	***375***	***381***	***387***	***389***	***389***	***398***	***433***	***417***	***417***	***370***	***443***	***390***	***341***	***336***	
	Max 15 min	**443**	**TEV**					**1542**	**1525**	**1532**	**1546**	**1563**	**1609**	**1637**	**1665**	**1637**	**1647**	**1620**	**1544**	**1510**	**1665**
12	120	Virginia Ave atUS 101 South		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	120		EB	EBT	31	49	42	49	47	43	45	38	38	50	46	40	30	44	33	40	
	120	Count Date : 07/11/2017		EBR	67	70	71	62	58	67	67	63	62	59	79	76	78	74	70	60	

Project: CBNB
Job #: ODOT00000925
Subject: *PM Turning Movement Volumes*
Created: 6/12/2018

System Peak Hour= 4:30 PM

Updated: 10/24/2018

E-W ID	Synchro ID	Intersection	Direction	Movement	2:00 PM	2:15 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	Max
	120	2017		WBL	4	9	7	6	6	11	9	6	11	10	10	14	18	16	8	12	
	120		WB	WBT	61	64	68	82	75	60	62	65	80	96	74	75	94	88	64	64	
	120			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	120	PM Peak Hour: 4:15 PM-5:15 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	120	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	120	Volume Difference: 59		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	120			SBL	8	6	6	6	1	2	2	3	3	4	2	1	3	1	1	1	
	120	PHF:	SB	SBT	123	110	133	134	164	138	133	130	156	184	134	152	180	133	114	105	
	120	*0.92*		SBR	79	53	66	70	82	81	81	75	93	79	69	75	71	67	75	70	
	PHV	**1744**	***15 min SUM***		***373***	***361***	***393***	***409***	***433***	***402***	***399***	***380***	***443***	***482***	***414***	***433***	***474***	***423***	***365***	***352***	
	Max 15 min	**474**	**TEV**					**1536**	**1596**	**1637**	**1643**	**1614**	**1624**	**1704**	**1719**	**1772**	**1803**	**1744**	**1695**	**1614**	**1803**
13	130	Virginia Ave atUS 101 North		EBL	31	46	43	48	46	34	45	35	33	54	41	36	34	44	34	38	
	130		EB	EBT	11	11	5	7	3	7	3	6	5	1	4	5	3	2	1	3	
	130	Count Date : 07/11/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	130	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	130		WB	WBT	9	8	5	2	7	9	10	13	16	15	14	11	28	13	5	9	
	130			WBR	2	2	2	1	1	2	0	0	2	0	2	1	6	2	1	0	
	130	PM Peak Hour: 4:30 PM-5:30 PM		NBL	64	65	66	82	73	62	68	56	78	86	73	84	79	90	67	68	
	130	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	134	153	129	146	119	130	122	161	126	130	141	106	185	159	117	118	
	130	Volume Difference: 0		NBR	2	5	2	7	3	9	8	7	3	3	2	1	2	1	0	2	
	130			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	130	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	130	*0.87*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**1169**	***15 min SUM***		***253***	***290***	***252***	***293***	***252***	***253***	***256***	***278***	***263***	***289***	***277***	***244***	***337***	***311***	***225***	***238***	
	Max 15 min	**337**	**TEV**					**1088**	**1087**	**1050**	**1054**	**1039**	**1050**	**1086**	**1107**	**1073**	**1147**	**1169**	**1117**	**1111**	**1169**
14	140	Marion Ave atSafeway Drway		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	140		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	140	Count Date : 07/11/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	140	2017		WBL	27	21	18	21	23	16	19	24	20	25	22	28	24	18	40	25	
	140		WB	WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	140			WBR	12	11	9	10	15	13	16	20	11	9	17	15	13	11	18	16	
	140	PM Peak Hour: 4:45 PM-5:45 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	140	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	9	7	5	10	7	6	9	6	8	3	8	6	8	4	6	5	
	140	Volume Difference: 9		NBR	11	11	14	11	13	8	25	20	9	13	15	16	13	14	11	7	
	140			SBL	12	14	10	14	20	18	10	19	12	11	16	11	17	17	16	11	
	140	PHF:	SB	SBT	12	10	8	4	5	8	9	6	3	8	9	6	10	9	5	6	
	140	*0.94*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**327**	***15 min SUM***		***83***	***74***	***64***	***70***	***83***	***69***	***88***	***95***	***63***	***69***	***87***	***82***	***85***	***73***	***96***	***70***	
	Max 15 min	**87**	**TEV**					**291**	**291**	**286**	**310**	**335**	**315**	**315**	**314**	**301**	**323**	**327**	**336**	**324**	**336**
15	150	Washington Ave at US 101 South/Sherman Ave		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	150			EBT	0	2	0	1	2	0	0	0	1	0	0	1	0	0	2	1	
	150		EB	EBRish	2	4	3	0	0	2	3	0	0	0	2	2	1	0	0	1	
	150	Count Date : 07/12/2017		EBR	0	1	4	0	3	6	0	2	2	2	0	1	2	1	2	3	
	150	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	150		WB	WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	150			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	150	PM Peak Hour: 4:15 PM-5:15 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	150	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	150	Volume Difference: 60		NBR	10	15	24	8	20	23	22	15	21	26	19	29	24	15	18	20	
	150			NBRish	3	6	0	0	1	1	1	4	1	3	3	3	1	3	3	3	
	150			SBL	5	4	8	6	3	3	7	4	4	6	4	4	3	4	5	7	
	150		SB	SBTish	182	193	171	150	206	181	185	200	179	189	196	191	207	160	146	146	
	150	PHF:		SBT	30	28	26	34	33	27	37	29	20	44	29	42	25	27	42	30	
	150	*0.92*		SBR	1	1	2	3	2	1	6	3	1	5	5	2	2	5	1	5	
	PHV	**1013**	***15 min SUM***		***233***	***254***	***238***	***202***	***270***	***244***	***261***	***257***	***229***	***275***	***258***	***275***	***265***	***215***	***219***	***216***	
	Max 15 min	**275**	**TEV**					**927**	**964**	**954**	**977**	**1032**	**991**	**1022**	**1019**	**1037**	**1073**	**1013**	**974**	**915**	**1073**
16	160	Pony Creek Rd at Crowell Lane		EBL	6	1	2	3	10	10	4	6	6	9	3	8	4	15	9	5	
	160		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	160	Count Date : 07/11/2017		EBR	3	3	7	5	3	5	6	5	4	4	4	8	4	7	6	4	
	160	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	160		WB	WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	160			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	160	PM Peak Hour: 4:45 PM-5:45 PM		NBL	9	4	4	2	6	5	6	6	2	4	6	8	10	8	9	2	
	160	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	41	39	40	41	30	31	34	44	24	22	28	38	38	44	33	25	
	160	Volume Difference: 18		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	160			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	160	PHF:	SB	SBT	49	43	49	49	41	33	19	33	66	32	33	30	27	41	39	28	
	160	*0.78*		SBR	3	1	3	7	7	11	10	10	8	8	11	8	5	14	7	5	
	PHV	**402**	***15 min SUM***		***111***	***91***	***105***	***107***	***97***	***95***	***79***	***104***	***110***	***79***	***85***	***100***	***88***	***129***	***103***	***69***	
	Max 15 min	**129**	**TEV**					**414**	**400**	**404**	**378**	**375**	**388**	**372**	**378**	**374**	**352**	**402**	**420**	**389**	**420**
17	170	Oak St at 16th/17th St		EBL	2	1	0	0	1	2	0	0	3	1	0	2	0	4	4	1	
	170		EB	EBT	4	4	4	6	6	8	2	12	7	7	4	7	5	5	5	4	
	170	Count Date : 07/11/2017		EBR	8	7	7	9	6	4	9	7	13	8	1	6	4	10	5	3	
	170	2017		WBL	0	1	2	0	0	2	0	1	0	2	1	4	0	2	1	4	
	170		WB	WBT	10	6	12	8	10	13	7	13	8	8	10	14	11	13	4	9	
	170			WBR	1	0	3	2	4	2	2	4	2	5	1	3	4	3	4	4	
	170	PM Peak Hour: 4:45 PM-5:45 PM		NBL	2	7	4	2	8	6	7	6	8	7	5	5	13	5	7	11	
	170	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	13	9	17	10	15	8	17	13	13	9	7	15	18	17	10	20	
	170	Volume Difference: 10		NBR	1	2	0	2	1	0	1	1	0	1	1	0	0	3	5	0	

Project: CBNB
Job #: ODOT00000925
Subject: *PM Turning Movement Volumes*
Created: 6/12/2018

System Peak Hour= 4:30 PM

Updated: 10/24/2018

E-W ID	Synchro ID	Intersection	Direction	Movement	2:00 PM	2:15 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	Max
	170			SBL	0	0	1	2	0	1	1	1	2	0	2	2	1	1	0	1	
	170	PHF:	SB	SBT	10	9	16	15	8	14	17	9	16	14	14	14	14	16	13	9	
	170	*0.86*		SBR	0	1	0	0	2	1	0	1	0	4	2	1	1	0	0	3	
	PHV	**271**	***15 min SUM***		***51***	***47***	***66***	***56***	***61***	***61***	***63***	***68***	***72***	***66***	***48***	***73***	***71***	***79***	***58***	***69***	
	Max 15 min	**79**	**TEV**					**220**	**230**	**244**	**241**	**253**	**264**	**269**	**254**	**259**	**258**	**271**	**281**	**277**	**281**
18	180	Broadway St at 16th St		EBL	4	3	3	4	3	3	6	4	8	3	3	8	5	7	3	3	
	180		EB	EBT	3	0	2	1	1	4	1	2	3	2	2	4	4	3	4	3	
	180	Count Date : 07/11/2017		EBR	3	1	1	0	0	1	2	3	2	0	1	0	1	0	0	0	
	180	2017		WBL	29	25	21	19	23	26	17	29	15	20	24	22	11	26	24	23	
	180		WB	WBT	4	1	2	5	1	3	3	2	2	3	6	7	3	5	5	5	
	180			WBR	2	1	1	0	5	5	3	5	0	1	4	2	3	3	4	0	
	180	PM Peak Hour: 4:15 PM-5:15 PM		NBL	2	2	1	1	2	2	1	3	3	1	0	1	3	2	1	4	
	180	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	159	170	157	167	160	167	169	155	174	170	157	145	196	162	153	132	
	180	Volume Difference: 20		NBR	9	12	12	12	4	12	12	12	15	16	8	11	10	13	10	14	
	180			SBL	0	2	2	1	1	3	3	3	0	2	3	3	3	1	1	2	
	180	PHF:	SB	SBT	188	158	157	142	161	137	138	169	144	158	165	169	189	130	157	114	
	180	*0.89*		SBR	1	1	2	4	5	0	0	2	3	2	4	7	8	6	3	2	
	PHV	**1550**	***15 min SUM***		***404***	***376***	***361***	***356***	***366***	***363***	***355***	***389***	***369***	***378***	***377***	***379***	***436***	***358***	***365***	***302***	
	Max 15 min	**436**	**TEV**					**1497**	**1459**	**1446**	**1440**	**1473**	**1476**	**1491**	**1513**	**1503**	**1570**	**1550**	**1538**	**1461**	**1570**
19	190	Broadway Ave at 17th St		EBL	2	1	0	2	1	3	2	2	4	0	5	1	0	0	2	0	
	190		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	190	Count Date : 07/11/2017		EBR	7	2	4	4	5	3	1	8	1	8	3	5	5	7	3	5	
	190	2017		WBL	1	1	1	1	0	2	1	0	3	1	0	1	2	0	0	0	
	190		WB	WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	190			WBR	2	1	1	0	1	2	1	0	1	0	0	1	3	0	1	2	
	190	PM Peak Hour: 4:15 PM-5:15 PM		NBL	6	6	12	6	7	12	7	11	9	8	7	10	11	12	10	10	
	190	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	174	183	171	177	167	179	178	171	191	180	161	158	205	180	163	150	
	190	Volume Difference: 22		NBR	2	3	0	1	1	2	0	2	1	3	0	1	0	2	0	0	
	190			SBL	1	1	1	1	2	0	1	0	0	0	1	1	0	0	0	0	
	190	PHF:	SB	SBT	216	190	184	160	178	163	158	194	159	181	189	189	204	159	181	132	
	190	*0.88*		SBR	1	1	0	3	1	1	0	4	1	1	0	1	2	0	1	6	
	PHV	**1526**	***15 min SUM***		***412***	***389***	***374***	***355***	***363***	***367***	***349***	***392***	***370***	***382***	***366***	***368***	***432***	***360***	***361***	***305***	
	Max 15 min	**432**	**TEV**					**1530**	**1481**	**1459**	**1434**	**1471**	**1478**	**1493**	**1510**	**1486**	**1548**	**1526**	**1521**	**1458**	**1548**
20	200	US 101 at Mill Casino Entrance		EBL	0	2	1	1	1	2	2	2	0	3	3	0	2	0	0	0	
	200		EB	EBT	1	2	1	0	0	2	1	2	1	0	1	0	0	1	0	2	
	200	Count Date : 04/22/2016		EBR	2	2	2	3	1	0	2	0	2	5	1	1	1	4	3	1	
	200	2016		WBL	27	19	19	0	20	15	28	20	17	26	18	17	20	20	28	10	
	200		WB	WBT	1	1	0	2	1	2	1	0	1	0	0	0	0	0	1	0	
	200			WBR	9	13	12	10	7	11	9	7	8	9	12	14	11	10	9	1	
	200	PM Peak Hour: 2:45 PM-3:45 PM		NBL	2	3	3	1	1	0	2	0	3	1	0	0	1	1	0	0	
	200	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	190	189	173	181	174	176	153	159	184	162	200	169	175	182	151	155	
	200	Volume Difference: 94		NBR	25	16	21	24	21	16	26	26	19	16	27	19	23	14	16	18	
	200			SBL	6	14	16	13	11	12	10	8	5	10	7	7	10	8	8	5	
	200	PHF:	SB	SBT	141	154	129	262	164	149	185	163	155	172	164	141	164	161	171	93	
	200	*0.93*		SBR	0	1	0	0	0	1	1	0	0	0	0	0	0	1	1	0	
	PHV	**1610**	***15 min SUM***		***404***	***416***	***377***	***497***	***401***	***386***	***420***	***387***	***395***	***404***	***433***	***368***	***407***	***402***	***388***	***285***	
	Max 15 min	**433**	**TEV**					**1694**	**1691**	**1661**	**1704**	**1594**	**1588**	**1606**	**1619**	**1600**	**1612**	**1610**	**1565**	**1482**	**1704**
21	210	Newmark Ave at Oak St		EBL	12	13	12	12	9	12	13	15	19	11	12	11	21	18	15	16	
	210		EB	EBT	241	265	231	252	214	270	209	257	263	206	223	199	281	212	217	238	
	210	Count Date : 07/11/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	210	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	210		WB	WBT	235	187	239	229	216	198	219	212	204	216	212	223	236	222	201	184	
	210			WBR	5	6	14	7	18	11	11	9	10	9	8	17	11	18	12	12	
	210	PM Peak Hour: 2:00 PM-3:00 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	210	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	210	Volume Difference: 38		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	210			SBL	17	17	13	15	8	12	14	9	20	13	8	21	9	16	9	10	
	210	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	210	*0.89*		SBR	16	11	14	13	14	11	14	11	15	20	12	13	16	19	15	14	
	PHV	**2038**	***15 min SUM***		***526***	***499***	***523***	***528***	***479***	***514***	***480***	***513***	***531***	***475***	***475***	***484***	***574***	***505***	***469***	***474***	
	Max 15 min	**574**	**TEV**					**2076**	**2029**	**2044**	**2001**	**1986**	**2038**	**1999**	**1994**	**1965**	**2008**	**2038**	**2032**	**2022**	**2076**
22	220	Broadway St at Newmark Ave		EBL	107	91	98	117	94	107	84	120	110	89	84	88	103	91	94	115	
	220		EB	EBT	100	130	96	123	99	106	86	123	130	105	116	93	148	109	88	112	
	220	Count Date : 07/11/2017		EBR	50	56	48	58	46	64	38	35	54	38	34	44	52	34	30	45	
	220	2017		WBL	21	25	19	20	11	15	19	17	21	13	18	20	11	15	13	7	
	220		WB	WBT	105	79	78	82	92	104	98	84	81	92	78	82	92	99	95	69	
	220			WBR	24	25	31	41	39	52	30	28	36	34	27	41	39	44	30	25	
	220	PM Peak Hour: 2:00 PM-3:00 PM		NBL	42	42	42	42	44	45	39	40	36	31	44	47	35	47	32	30	
	220	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	55	78	65	57	52	68	81	63	79	72	74	70	72	78	42	54	
	220	Volume Difference: 54		NBR	10	9	9	15	18	8	10	7	9	11	16	11	13	9	13	11	
	220			SBL	27	30	33	19	23	20	31	23	22	24	20	28	28	29	25	13	
	220	PHF:	SB	SBT	73	76	55	69	61	56	59	58	68	63	67	48	59	59	45	55	
	220	*0.93*		SBR	6	8	4	5	4	2	3	3	3	4	4	12	7	2	1	5	
	PHV	**2441**	***15 min SUM***		***620***	***649***	***578***	***648***	***583***	***647***	***578***	***601***	***649***	***576***	***582***	***584***	***659***	***616***	***508***	***541***	
	Max 15 min	**659**	**TEV**					**2495**	**2458**	**2456**	**2456**	**2409**	**2475**	**2404**	**2408**	**2391**	**2401**	**2441**	**2367**	**2324**	**2495**
23	230	Newmark St at Edgewood Dr		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	230		EB	EBT	143	124	157	133	139	136	140	152	135	119	132	140	185	157	159	130	
	230	Count Date : 07/11/2017		EBR	8	7	6	8	5	6	8	3	7	3	3	8	7	11	7	6	

Project: CBNB
Job #: ODOT00000925
Subject: *PM Turning Movement Volumes*
Created: 6/12/2018

System Peak Hour= 4:30 PM

Updated: 10/24/2018

E-W ID	Synchro ID	Intersection	Direction	Movement	2:00 PM	2:15 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	Max
	230	2017		WBL	6	1	4	4	3	6	5	5	4	3	8	5	7	6	5	3	
	230		WB	WBT	123	132	133	111	144	123	137	128	133	101	134	127	123	134	133	114	
	230			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	230	PM Peak Hour: 4:45 PM-5:45 PM		NBL	6	9	6	10	10	8	5	2	5	4	2	6	7	6	13	0	
	230	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	230	Volume Difference: 34		NBR	5	8	4	4	8	2	9	5	10	6	12	12	11	12	8	11	
	230			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	230	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	230	*0.92*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**1255**	***15 min SUM***		***291***	***281***	***310***	***270***	***309***	***281***	***304***	***295***	***294***	***236***	***291***	***298***	***340***	***326***	***325***	***264***	
	Max 15 min	**340**	**TEV**					**1152**	**1170**	**1170**	**1164**	**1189**	**1174**	**1129**	**1116**	**1119**	**1165**	**1255**	**1289**	**1255**	**1289**
24	240	Newmark Ave at Brusells St		EBL	19	12	14	16	14	13	16	19	14	11	18	21	22	19	20	13	
	240		EB	EBT	122	150	133	137	133	119	114	145	152	126	131	116	161	141	130	113	
	240	Count Date : 07/11/2017		EBR	2	1	0	0	0	1	0	0	0	4	2	3	1	0	3	1	
	240	2017		WBL	1	0	1	0	1	0	0	0	1	0	1	0	0	3	2	0	
	240		WB	WBT	120	112	126	118	119	124	136	120	115	94	110	125	127	146	118	87	
	240			WBR	27	24	28	20	21	22	16	23	11	14	19	19	23	26	20	23	
	240	PM Peak Hour: 4:45 PM-5:45 PM		NBL	0	3	1	1	2	0	1	0	4	2	2	0	1	2	0	2	
	240	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	1	1	1	0	1	1	1	1	1	0	4	1	3	4	0	1	
	240	Volume Difference: 10		NBR	2	0	0	1	0	0	2	1	0	1	0	3	0	0	1	0	
	240			SBL	24	30	25	27	20	23	18	19	24	12	20	18	13	18	20	23	
	240	PHF:	SB	SBT	2	2	2	1	1	3	2	0	2	2	1	2	1	0	0	0	
	240	*0.93*		SBR	23	17	20	26	15	15	12	14	20	24	12	15	19	13	16	14	
	PHV	**1386**	***15 min SUM***		***343***	***352***	***351***	***347***	***327***	***321***	***318***	***342***	***344***	***290***	***320***	***323***	***371***	***372***	***330***	***277***	
	Max 15 min	**372**	**TEV**					**1393**	**1377**	**1346**	**1313**	**1308**	**1325**	**1294**	**1296**	**1277**	**1304**	**1386**	**1396**	**1350**	**1396**
25	250	Newmark St at Sherman Ave		EBL	9	10	17	3	18	14	6	17	20	4	16	10	19	15	15	13	
	250		EB	EBT	116	112	110	118	100	84	92	107	117	106	103	88	94	106	96	107	
	250	Count Date : 07/11/2017		EBR	38	44	25	35	37	32	29	33	42	26	32	28	37	28	39	24	
	250	2017		WBL	8	1	3	2	5	1	5	3	3	3	3	2	3	4	3	4	
	250		WB	WBT	75	73	86	80	91	97	92	93	78	69	80	95	87	93	94	66	
	250			WBR	7	2	8	5	3	3	5	5	3	4	7	6	9	3	6	4	
	250	PM Peak Hour: 2:00 PM-3:00 PM		NBL	39	34	40	40	36	23	40	35	40	29	36	31	39	50	23	28	
	250	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	23	17	21	22	18	21	29	20	20	26	31	17	36	34	19	22	
	250	Volume Difference: 320		NBR	16	8	10	4	8	10	11	12	8	5	10	3	10	9	7	5	
	250			SBL	75	109	44	11	6	5	8	5	1	3	6	3	5	2	6	3	
	250	PHF:	SB	SBT	51	72	36	28	22	22	15	29	16	25	18	25	28	20	33	18	
	250	*0.93*		SBR	25	18	32	17	11	28	15	12	12	13	11	15	23	29	19	10	
	PHV	**1459**	***15 min SUM***		***482***	***500***	***432***	***365***	***355***	***340***	***347***	***371***	***360***	***313***	***353***	***323***	***390***	***393***	***360***	***304***	
	Max 15 min	**393**	**TEV**					**1779**	**1652**	**1492**	**1407**	**1413**	**1418**	**1391**	**1397**	**1349**	**1379**	**1459**	**1466**	**1447**	**1779**
26	260	US 101 at Newmark St		EBL	47	37	39	36	33	43	42	42	42	26	48	49	38	28	36	29	
	260		EB	EBT	0	0	0	1	0	1	1	1	0	0	0	0	1	0	0	0	
	260	Count Date : 04/22/2016		EBR	73	67	67	78	83	74	100	99	84	76	63	75	83	79	69	67	
	260	2016		WBL	0	1	1	0	1	0	1	1	0	2	0	2	0	0	1	0	
	260		WB	WBT	0	0	0	1	2	2	0	0	0	0	0	2	1	0	0	1	
	260			WBR	2	0	0	2	0	1	2	2	1	2	0	0	3	0	0	0	
	260	PM Peak Hour: 2:45 PM-3:45 PM		NBL	67	66	98	101	70	66	66	55	66	58	69	79	73	77	67	72	
	260	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	176	178	161	181	164	149	148	141	176	158	182	155	163	176	153	91	
	260	Volume Difference: 79		NBR	0	1	1	1	1	0	1	1	0	0	0	1	0	0	0	0	
	260			SBL	1	1	1	2	0	2	2	2	2	2	0	0	0	0	1	0	
	260	PHF:	SB	SBT	158	143	131	240	171	151	170	175	169	188	174	143	179	175	190	131	
	260	*0.98*		SBR	20	22	22	17	20	13	33	21	18	15	13	21	17	25	26	8	
	PHV	**2194**	***15 min SUM***		***544***	***516***	***521***	***660***	***545***	***502***	***566***	***540***	***558***	***527***	***549***	***527***	***558***	***560***	***543***	***399***	
	Max 15 min	**560**	**TEV**					**2241**	**2242**	**2228**	**2273**	**2153**	**2166**	**2191**	**2174**	**2161**	**2161**	**2194**	**2188**	**2060**	**2273**
27	1010	Morrison St at Lakeshore Dr		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1010		EB	EBT	8	8	10	13	8	10	17	13	16	8	16	12	12	10	9	5	
	1010	Count Date : 07/11/2017		EBR	2	0	1	0	0	1	2	3	0	0	0	0	0	1	0	0	
	1010	2017		WBL	10	10	9	12	6	7	11	15	6	11	10	7	10	11	11	4	
	1010		WB	WBT	14	15	14	7	14	26	12	17	10	18	13	12	12	15	12	9	
	1010			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1010	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	4	3	1	2	2	2	0	0	2	0	1	0	2	5	
	1010	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1010	Volume Difference: 0		NBR	10	10	8	14	23	10	14	13	9	14	16	24	24	29	9	15	
	1010			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1010	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1010	*0.90*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**237**	***15 min SUM***		***44***	***43***	***46***	***49***	***52***	***56***	***58***	***63***	***41***	***51***	***57***	***55***	***59***	***66***	***43***	***38***	
	Max 15 min	**66**	**TEV**					**182**	**190**	**203**	**215**	**229**	**218**	**213**	**212**	**204**	**222**	**237**	**223**	**206**	**237**
28	1020	Newmark Ave at Cape Arago Highway/Empire Blvd		EBL	0	0	1	0	1	0	1	0	0	1	0	0	0	1	0	1	
	1020		EB	EBT	5	6	2	4	4	8	5	6	3	4	2	0	2	0	1	2	
	1020	Count Date : 07/11/2017		EBR	0	1	1	1	1	0	0	1	1	1	0	0	0	0	0	0	
	1020	2017		WBL	93	101	110	89	112	97	85	94	72	146	93	106	108	72	144	78	
	1020		WB	WBT	4	3	6	6	5	6	3	4	2	1	1	5	3	1	2	4	
	1020			WBR	0	2	3	1	0	1	1	1	1	1	1	1	0	1	1	0	
	1020	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	1	0	3	0	0	1	1	0	0	2	0	1	0	0	1	
	1020	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	1	0	0	0	0	1	0	2	0	0	0	0	1	0	0	
	1020	Volume Difference: 0		NBR	80	97	79	60	85	68	122	80	76	25	154	61	71	124	94	98	
	1020			SBL	0	0	1	0	0	0	1	0	0	0	2	0	0	2	0	0	
	1020	PHF:	SB	SBT	3	0	1	1	0	1	0	1	0	1	0	1	0	1	0	0	
	280	*0.80*		SBR	0	0	1	0	2	3	0	0	2	0	0	0	0	0	0	0	

Project: CBNB
Job #: ODOT00000925
Subject: *PM Turning Movement Volumes*
Created: 6/12/2018

ystem Peak Hour= 4:30 PM

Updated: 10/24/2018

E-W ID	Synchro ID	Intersection	Direction	Movement	2:00 PM	2:15 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	Max
	PHV	**817**	***15 min SUM***		***185***	***212***	***205***	***165***	***210***	***184***	***220***	***188***	***159***	***180***	***255***	***174***	***185***	***203***	***242***	***184***	
	Max 15 min	**255**	**TEV**					**767**	**792**	**764**	**779**	**802**	**751**	**747**	**782**	**768**	**794**	**817**	**804**	**814**	**817**
29	1030	Newmark Ave at Morrison St		EBL	1	0	0	1	0	1	0	0	1	0	2	0	1	0	0	0	
	1030		EB	EBT	147	157	126	155	154	151	140	139	132	126	132	141	131	122	120	116	
	1030	Count Date : 05/10/2016		EBR	9	7	7	5	6	7	7	4	5	5	7	8	6	6	7	4	
	1030	2016		WBL	29	30	30	25	30	34	33	28	33	42	42	25	28	45	42	38	
	1030		WB	WBT	148	120	143	165	169	146	164	169	141	128	174	135	157	170	159	158	
	1030			WBR	0	2	0	0	1	0	0	1	0	2	2	0	1	0	1	1	
	1030	PM Peak Hour: 2:45 PM-3:45 PM		NBL	1	1	1	1	0	1	0	2	1	1	4	3	1	1	2	1	
	1030	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1030	Volume Difference: 79		NBR	38	27	31	71	34	25	29	23	38	32	26	30	32	42	35	36	
	1030			SBL	0	4	0	0	0	1	0	0	1	0	1	1	0	1	0	1	
	1030	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1030	*0.95*		SBR	0	0	0	1	1	0	0	0	1	0	1	0	1	0	0	0	
	PHV	**1479**	***15 min SUM***		***373***	***348***	***338***	***424***	***395***	***366***	***373***	***366***	***353***	***336***	***391***	***343***	***358***	***387***	***366***	***355***	
	Max 15 min	**391**	**TEV**					**1483**	**1505**	**1523**	**1558**	**1500**	**1458**	**1428**	**1446**	**1423**	**1428**	**1479**	**1454**	**1466**	**1558**
30	1040	Newmark Ave at Ocean Blvd		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1040		EB	EBT	116	132	110	122	127	115	129	125	124	81	135	118	88	131	129	127	
	1040	Count Date : 07/11/2017		EBR	77	65	73	55	64	59	68	68	66	58	64	57	58	61	73	56	
	1040	2017		WBL	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
	1040		WB	WBT	120	123	138	137	143	130	137	130	122	161	137	135	155	152	147	127	
	1040			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1040	PM Peak Hour: 4:45 PM-5:45 PM		NBL	66	70	83	56	84	81	67	69	68	59	90	76	96	103	82	54	
	1040	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1040	Volume Difference: 6		NBR	25	24	15	14	13	16	11	16	20	14	15	11	13	9	16	11	
	1040			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1040	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1040	*0.93*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**1705**	***15 min SUM***		***405***	***414***	***419***	***384***	***431***	***401***	***412***	***408***	***400***	***373***	***441***	***397***	***411***	***456***	***447***	***375***	
	Max 15 min	**456**	**TEV**					**1622**	**1648**	**1635**	**1628**	**1652**	**1621**	**1593**	**1622**	**1611**	**1622**	**1705**	**1711**	**1689**	**1711**
31	1050	Newmark Ave at Laclair St		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1050		EB	EBT	165	177	164	151	152	150	142	152	170	124	148	165	125	163	163	160	
	1050	Count Date : 07/11/2017		EBR	2	6	6	3	8	4	5	9	5	2	7	3	1	6	6	3	
	1050	2017		WBL	20	18	18	16	15	16	16	10	8	10	15	16	13	12	10	12	
	1050		WB	WBT	152	142	164	160	145	164	155	161	149	189	161	155	177	184	158	146	
	1050			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1050	PM Peak Hour: 4:45 PM-5:45 PM		NBL	6	4	8	8	8	6	6	4	3	2	6	1	14	2	12	7	
	1050	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1050	Volume Difference: 24		NBR	28	23	23	29	28	24	25	21	36	22	20	31	45	23	32	28	
	1050			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1050	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1050	*0.96*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**1493**	***15 min SUM***		***373***	***370***	***383***	***367***	***356***	***364***	***349***	***357***	***371***	***349***	***357***	***371***	***375***	***390***	***381***	***356***	
	Max 15 min	**390**	**TEV**					**1493**	**1476**	**1470**	**1436**	**1426**	**1441**	**1426**	**1434**	**1448**	**1452**	**1493**	**1517**	**1502**	**1517**
32	1060	Empire Blvd at Pacific Ave		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1060		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1060	Count Date : 07/11/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1060	2017		WBL	8	11	6	8	7	6	3	5	8	13	8	12	6	9	21	9	
	1060		WB	WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1060			WBR	0	0	0	0	1	0	1	0	0	0	0	1	1	0	2	0	
	1060	PM Peak Hour: 4:45 PM-5:45 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1060	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	77	101	80	75	75	72	118	89	71	34	152	59	70	136	87	96	
	1060	Volume Difference: 62		NBR	6	6	7	3	4	7	10	8	12	5	15	2	7	15	4	3	
	1060			SBL	0	0	0	0	0	0	0	1	1	0	0	2	1	0	2	0	
	1060	PHF:	SB	SBT	87	105	107	119	134	78	68	95	65	176	56	155	103	56	177	79	
	1060	*0.94*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**866**	***15 min SUM***		***178***	***223***	***200***	***205***	***221***	***163***	***200***	***198***	***157***	***228***	***231***	***231***	***188***	***216***	***293***	***187***	
	Max 15 min	**231**	**TEV**					**806**	**849**	**789**	**789**	**782**	**718**	**783**	**814**	**847**	**878**	**866**	**928**	**884**	**928**
33	1070	Thompson Rd at Woodland Dr		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1070		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1070	Count Date : 07/11/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1070	2017		WBL	12	8	8	9	5	11	12	3	3	7	11	11	6	11	7	8	
	1070		WB	WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1070			WBR	49	43	46	39	49	51	48	42	43	38	48	54	45	39	24	27	
	1070	PM Peak Hour: 2:00 PM-3:00 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1070	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	73	77	80	70	72	60	84	60	80	70	78	78	72	70	49	52	
	1070	Volume Difference: 72		NBR	6	17	5	9	6	6	9	6	4	6	8	12	4	2	8	4	
	1070			SBL	31	38	35	46	28	30	24	31	32	32	31	25	38	26	24	33	
	1070	PHF:	SB	SBT	91	124	80	88	100	86	85	92	100	93	77	84	103	79	77	67	
	1070	*0.94*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**1012**	***15 min SUM***		***262***	***307***	***254***	***261***	***260***	***244***	***262***	***234***	***262***	***246***	***253***	***264***	***268***	***227***	***189***	***191***	
	Max 15 min	**268**	**TEV**					**1084**	**1082**	**1019**	**1027**	**1000**	**1002**	**1004**	**995**	**1025**	**1031**	**1012**	**948**	**875**	**1084**
34	1080	Koosbay Blvd at Thompson Rd		EBL	16	9	20	11	12	14	13	18	17	7	23	9	27	16	12	10	
	1080		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1080	Count Date : 07/11/2017		EBR	34	27	44	36	43	41	47	38	42	36	60	38	54	43	44	38	
	1080	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1080		WB	WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1080			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Project: CBNB
Job #: ODOT00000925
Subject: *PM Turning Movement Volumes*
Created: 6/12/2018

System Peak Hour= 4:30 PM

Updated: 10/24/2018

E-W ID	Synchro ID	Intersection	Direction	Movement	2:00 PM	2:15 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	Max
	1080	PM Peak Hour: 2:00 PM-3:00 PM		NBL	43	29	35	45	29	35	28	28	22	23	29	27	19	31	26	15	
	1080	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	53	51	43	47	52	46	51	49	54	61	56	45	68	63	49	44	
	1080	Volume Difference: 68		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1080			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1080	PHF:	SB	SBT	80	103	72	51	52	43	52	56	46	37	42	50	58	53	61	40	
	1080	*0.91*		SBR	17	13	15	18	13	14	5	15	12	9	11	9	7	6	11	9	
	PHV	**844**	***15 min SUM***		***243***	***232***	***229***	***208***	***201***	***193***	***196***	***204***	***193***	***173***	***221***	***178***	***233***	***212***	***203***	***156***	
	Max 15 min	**233**	**TEV**					**912**	**870**	**831**	**798**	**794**	**786**	**766**	**791**	**765**	**805**	**844**	**826**	**804**	**912**
35	1090	Ocean Blvd at Woodland Dr		EBL	0	0	0	0	17	17	20	17	18	21	25	26	25	27	18	13	
	1090		EB	EBT	89	87	88	79	80	88	102	96	98	103	105	90	109	99	112	73	
	1090	Count Date : 07/12/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1090	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1090		WB	WBT	99	120	127	100	107	94	89	107	107	114	98	90	116	117	96	94	
	1090			WBR	48	40	43	41	41	34	45	33	40	28	42	32	48	37	29	40	
	1090	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1090	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1090	Volume Difference: 0		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1090			SBL	72	52	69	58	55	52	77	77	68	59	54	63	78	66	58	54	
	1090	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1090	*0.91*		SBR	31	27	21	33	33	41	40	31	35	36	33	29	33	50	28	18	
	PHV	**1492**	***15 min SUM***		***339***	***326***	***348***	***311***	***333***	***326***	***373***	***361***	***366***	***361***	***357***	***330***	***409***	***396***	***341***	***292***	
	Max 15 min	**409**	**TEV**					**1324**	**1318**	**1318**	**1343**	**1393**	**1426**	**1461**	**1445**	**1414**	**1457**	**1492**	**1476**	**1438**	**1492**
36	1100	Ocean Blvd at Butler Rd		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1100		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1100	Count Date : 07/12/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1100	2017		WBL	1	2	2	0	4	3	7	3	2	1	2	4	5	3	3	3	
	1100		WB	WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1100			WBR	7	11	9	8	11	5	9	11	9	16	9	11	15	15	8	6	
	1100	PM Peak Hour: 4:45 PM-5:45 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1100	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	146	144	164	132	140	122	120	133	148	128	120	111	163	140	120	123	
	1100	Volume Difference: 11		NBR	2	1	2	0	5	2	4	3	3	4	3	4	3	3	0	3	
	1100			SBL	11	4	9	5	12	5	11	13	7	7	10	7	9	11	10	8	
	1100	PHF:	SB	SBT	150	138	140	143	121	134	164	156	155	151	145	150	178	146	159	127	
	1100	*0.85*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**1267**	***15 min SUM***		***317***	***300***	***326***	***288***	***293***	***271***	***315***	***319***	***324***	***307***	***289***	***287***	***373***	***318***	***300***	***270***	
	Max 15 min	**373**	**TEV**					**1231**	**1207**	**1178**	**1167**	**1198**	**1229**	**1265**	**1239**	**1207**	**1256**	**1267**	**1278**	**1261**	**1278**
37	1110	Koosbay Blvd at 10th St		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1110		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1110	Count Date : 07/12/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1110	2017		WBL	5	4	6	5	4	4	10	7	7	3	13	10	10	7	3	6	
	1110		WB	WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1110			WBR	24	34	29	29	30	33	34	30	29	24	31	30	37	27	16	21	
	1110	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1110	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	54	59	46	44	50	53	46	40	62	44	51	41	47	42	34	35	
	1110	Volume Difference: 0		NBR	4	5	3	8	9	3	6	8	5	8	8	7	8	8	7	7	
	1110			SBL	30	34	39	34	39	40	45	31	40	38	34	46	47	45	43	22	
	1110	PHF:	SB	SBT	46	49	39	42	43	47	49	54	44	50	46	39	69	42	34	46	
	1110	*0.85*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**745**	***15 min SUM***		***163***	***185***	***162***	***162***	***175***	***180***	***190***	***170***	***187***	***167***	***183***	***173***	***218***	***171***	***137***	***137***	
	Max 15 min	**218**	**TEV**					**672**	**684**	**679**	**707**	**715**	**727**	**714**	**707**	**710**	**741**	**745**	**699**	**663**	**745**
38	1120	US 101 at Koosbay Blvd		EBL	4	8	10	5	11	10	11	3	9	3	2	5	4	5	8	8	
	1120		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1120	Count Date : 07/11/2017		EBR	38	42	51	32	33	30	44	42	36	28	28	34	41	50	38	26	
	1120	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1120		WB	WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1120			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1120	PM Peak Hour: 4:30 PM-5:30 PM		NBL	34	27	21	31	20	21	17	17	18	28	20	20	27	19	22	16	
	1120	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	242	242	241	242	263	227	253	233	208	254	228	233	269	251	208	180	
	1120	Volume Difference: 0		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1120			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1120	PHF:	SB	SBT	225	190	251	249	272	227	230	265	267	262	261	270	294	272	223	217	
	1120	*0.91*		SBR	5	7	5	5	12	5	9	6	6	4	11	6	12	4	5	1	
	PHV	**2366**	***15 min SUM***		***548***	***516***	***579***	***564***	***611***	***520***	***564***	***566***	***544***	***579***	***550***	***568***	***647***	***601***	***504***	***448***	
	Max 15 min	**647**	**TEV**					**2207**	**2270**	**2274**	**2259**	**2261**	**2194**	**2253**	**2239**	**2241**	**2344**	**2366**	**2320**	**2200**	**2366**
39	1130	7th St at Commercial Ave		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1130		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1130	Count Date : 09/12/2017		EBR	9	11	14	11	19	6	16	10	15	8	15	12	8	10	11	9	
	1130	2017		WBL	132	124	128	108	100	102	107	120	120	124	101	102	131	103	90	94	
	1130		WB	WBT	54	54	55	41	41	40	46	37	50	39	42	43	50	52	37	48	
	1130			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1130	PM Peak Hour: 2:00 PM-3:00 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1130	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1130	Volume Difference: 72		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1130			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1130	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1130	*0.88*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**669**	***15 min SUM***		***195***	***189***	***197***	***160***	***160***	***148***	***169***	***167***	***185***	***171***	***158***	***157***	***189***	***165***	***138***	***151***	
	Max 15 min	**189**	**TEV**					**741**	**706**	**665**	**637**	**644**	**669**	**692**	**681**	**671**	**675**	**669**	**649**	**643**	**741**

Project: CBNB
Job #: ODOT00000925
Subject: *PM Turning Movement Volumes*
Created: 6/12/2018

System Peak Hour= 4:30 PM

Updated: 10/24/2018

E-W ID	Synchro ID	Intersection	Direction	Movement	2:00 PM	2:15 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	Max
40	1140	Commercial Ave at US 101 South		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1140		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1140	Count Date : 07/11/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1140	2017		WBL	6	5	9	7	5	3	6	8	6	7	8	4	10	12	8	3	
	1140		WB	WBT	76	80	84	80	75	84	63	72	64	87	74	77	73	67	65	67	
	1140			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1140	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1140	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1140	Volume Difference: 0		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1140			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1140	PHF:	SB	SBT	258	240	264	268	269	256	268	296	286	259	280	303	311	317	280	236	
	1140	*0.95*		SBR	24	23	23	28	27	38	24	34	19	26	17	21	19	30	19	17	
	PHV	**1623**	***15 min SUM***		***364***	***348***	***380***	***383***	***376***	***381***	***361***	***410***	***375***	***379***	***379***	***405***	***413***	***426***	***372***	***323***	
	Max 15 min	**426**	**TEV**					**1475**	**1487**	**1520**	**1501**	**1528**	**1527**	**1525**	**1543**	**1538**	**1576**	**1623**	**1616**	**1534**	**1623**
41	1150	Commercial Ave at US 101 North		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1150		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1150	Count Date : 07/12/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1150	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1150		WB	WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1150			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1150	PM Peak Hour: 2:15 PM-3:15 PM		NBL	77	76	78	69	80	67	72	65	83	84	71	62	64	79	58	66	
	1150	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	239	302	315	274	298	256	272	278	265	273	288	259	299	263	256	208	
	1150	Volume Difference: 107		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1150			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1150	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1150	*0.95*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**1385**	***15 min SUM***		***316***	***378***	***393***	***343***	***378***	***323***	***344***	***343***	***348***	***357***	***359***	***321***	***363***	***342***	***314***	***274***	
	Max 15 min	**363**	**TEV**					**1430**	**1492**	**1437**	**1388**	**1388**	**1358**	**1392**	**1407**	**1385**	**1400**	**1385**	**1340**	**1293**	**1492**
42	1160	10th St at Central Ave		EBL	2	0	1	2	1	1	2	1	7	0	3	4	4	4	2	1	
	1160		EB	EBT	127	137	138	117	135	126	129	113	130	124	110	129	132	144	122	95	
	1160	Count Date : 07/11/2017		EBR	21	27	27	27	23	18	24	28	24	20	22	33	30	29	26	24	
	1160	2017		WBL	0	0	1	0	3	1	0	1	0	0	0	2	3	1	0	0	
	1160		WB	WBT	98	112	105	108	98	102	107	85	88	111	105	96	109	101	91	77	
	1160			WBR	4	6	7	5	4	7	4	0	4	3	1	4	6	5	2	4	
	1160	PM Peak Hour: 4:45 PM-5:45 PM		NBL	30	38	34	28	56	38	41	31	25	43	39	41	43	42	32	29	
	1160	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	24	14	20	16	30	20	20	25	11	25	20	23	31	20	24	28	
	1160	Volume Difference: 1		NBR	5	1	1	3	1	2	3	3	1	1	5	5	2	4	1	0	
	1160			SBL	37	33	49	34	42	36	28	35	33	30	32	33	33	34	36	24	
	1160	PHF:	SB	SBT	23	20	21	13	17	16	12	15	18	17	18	20	20	16	16	20	
	1160	*0.94*		SBR	8	4	6	4	2	6	5	5	8	6	1	4	6	7	5	7	
	PHV	**1576**	***15 min SUM***		***379***	***392***	***410***	***357***	***412***	***373***	***375***	***342***	***349***	***380***	***356***	***394***	***419***	***407***	***357***	***309***	
	Max 15 min	**419**	**TEV**					**1538**	**1571**	**1552**	**1517**	**1502**	**1439**	**1446**	**1427**	**1479**	**1549**	**1576**	**1577**	**1492**	**1577**
43	1170	Central Ave at 7th St		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1170		EB	EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1170	Count Date : 07/12/2017		EBR	151	143	148	154	132	138	165	161	155	142	177	130	159	145	141	130	
	1170	2017		WBL	7	3	0	3	5	3	3	1	4	3	2	1	4	3	0	1	
	1170		WB	WBT	11	5	0	2	11	4	5	12	7	9	6	7	7	9	9	3	
	1170			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1170	PM Peak Hour: 3:45 PM-4:45 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1170	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1170	Volume Difference: 63		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1170			SBL	0	3	3	0	2	0	1	3	0	2	0	0	0	0	0	2	
	1170	PHF:	SB	SBT	31	27	18	17	25	9	24	27	23	15	18	15	19	15	15	10	
	1170	*0.91*		SBR	117	102	125	97	97	98	95	98	108	117	98	97	121	92	84	92	
	PHV	**1125**	***15 min SUM***		***317***	***283***	***294***	***273***	***272***	***252***	***293***	***302***	***297***	***288***	***301***	***250***	***310***	***264***	***249***	***238***	
	Max 15 min	**310**	**TEV**					**1167**	**1122**	**1091**	**1090**	**1119**	**1144**	**1180**	**1188**	**1136**	**1149**	**1125**	**1073**	**1061**	**1188**
44	1180	7th St at Anderson Ave		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1180		EB	EBT	14	11	10	15	10	9	14	10	13	11	12	14	12	10	9	14	
	1180	Count Date : 07/12/2017		EBR	7	6	5	4	5	7	5	6	4	10	8	7	8	5	8	5	
	1180	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1180		WB	WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1180			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1180	PM Peak Hour: 3:30 PM-4:30 PM		NBL	28	30	27	22	29	23	33	25	23	32	18	20	24	17	16	16	
	1180	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1180	Volume Difference: 56		NBR	8	8	4	3	4	7	5	3	4	2	4	4	4	4	6	5	
	1180			SBL	165	161	140	153	137	134	167	169	160	145	177	127	153	137	141	127	
	1180	PHF:	SB	SBT	25	22	27	28	30	27	31	24	26	20	26	22	33	31	25	18	
	1180	*0.90*		SBR	5	5	4	3	6	4	4	6	2	3	5	6	7	6	0	5	
	PHV	**901**	***15 min SUM***		***252***	***243***	***217***	***228***	***221***	***211***	***259***	***243***	***232***	***223***	***250***	***200***	***241***	***210***	***205***	***190***	
	Max 15 min	**250**	**TEV**					**940**	**909**	**877**	**919**	**934**	**945**	**957**	**948**	**905**	**914**	**901**	**856**	**846**	**957**
45	1190	Elrod Ave at 10th St		EBL	16	18	15	21	19	10	20	18	19	12	15	18	18	13	16	19	
	1190		EB	EBT	0	3	5	2	2	4	4	3	1	2	2	1	3	3	5	3	
	1190	Count Date : 07/12/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1190	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1190		WB	WBT	1	3	0	3	3	4	0	2	2	1	5	8	6	3	4	7	
	1190			WBR	25	22	17	31	23	25	23	20	24	19	20	28	32	38	21	25	
	1190	PM Peak Hour: 4:45 PM-5:45 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1190	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1190	Volume Difference: 19		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Project: CBNB
Job #: ODOT00000925
Subject: *PM Turning Movement Volumes*
Created: 6/12/2018

System Peak Hour= 4:30 PM

Updated: 10/24/2018

E-W ID	Synchro ID	Intersection	Direction	Movement	2:00 PM	2:15 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	Max
	1190			SBL	17	16	18	9	7	17	13	15	13	12	10	9	18	12	20	9	
	1190	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1190	*0.85*		SBR	18	20	18	12	16	27	15	31	21	24	16	27	30	30	21	26	
	PHV	**365**	***15 min SUM***		***77***	***82***	***73***	***78***	***70***	***87***	***75***	***89***	***80***	***70***	***68***	***91***	***107***	***99***	***87***	***89***	
	Max 15 min	**107**	**TEV**					**310**	**303**	**308**	**310**	**321**	**331**	**314**	**307**	**309**	**336**	**365**	**384**	**382**	**384**
46	1200	11th St at Ingersoll Ave		EBL	0	0	1	0	0	1	0	0	3	3	0	0	1	0	0	1	
	1200		EB	EBT	0	1	2	2	0	1	0	0	1	1	0	0	0	0	0	0	
	1200	Count Date : 07/12/2017		EBR	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1200	2017		WBL	0	0	0	1	0	1	2	0	2	1	0	2	0	4	0	3	
	1200		WB	WBT	1	0	0	0	2	2	0	2	1	2	2	3	2	0	1	0	
	1200			WBR	17	16	13	21	16	5	20	17	12	12	11	19	13	11	12	22	
	1200	PM Peak Hour: 5:00 PM-6:00 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1200	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	
	1200	Volume Difference: 8		NBR	1	0	0	0	1	0	0	0	1	1	1	2	0	0	1	1	
	1200			SBL	11	18	12	13	12	27	11	28	16	21	13	19	29	27	19	23	
	1200	PHF:	SB	SBT	2	0	3	0	1	0	0	1	0	0	1	3	0	1	0	1	
	1200	*0.85*		SBR	1	2	1	0	0	2	1	0	3	0	0	0	0	0	1	1	
	PHV	**166**	***15 min SUM***		***33***	***37***	***34***	***38***	***32***	***39***	***34***	***48***	***39***	***41***	***29***	***49***	***45***	***43***	***34***	***52***	
	Max 15 min	**49**	**TEV**					**142**	**141**	**143**	**143**	**153**	**160**	**162**	**157**	**158**	**164**	**166**	**171**	**174**	**174**
47	1210	7th St at Ingersoll Ave		EBL	7	2	4	2	2	4	2	5	1	3	2	3	2	0	4	0	
	1210		EB	EBT	5	3	1	5	0	2	0	2	2	2	2	3	0	3	3	1	
	1210	Count Date : 07/12/2017		EBR	0	1	0	0	0	0	3	0	0	0	2	0	1	0	2	2	
	1210	2017		WBL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1210		WB	WBT	3	1	2	1	2	1	2	1	4	2	3	2	2	5	3	2	
	1210			WBR	0	0	0	0	1	0	1	0	0	0	2	1	2	2	0	0	
	1210	PM Peak Hour: 4:45 PM-5:45 PM		NBL	1	0	2	1	1	1	2	3	0	2	0	9	3	3	3	2	
	1210	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	9	11	7	13	12	12	9	12	13	11	7	6	18	12	9	17	
	1210	Volume Difference: 9		NBR	0	0	1	1	1	2	1	0	1	0	2	0	0	1	0	0	
	1210			SBL	3	1	1	0	2	1	1	1	1	1	1	0	2	1	1	1	
	1210	PHF:	SB	SBT	14	16	16	16	26	21	10	17	15	15	18	23	23	13	23	13	
	1210	*0.85*		SBR	5	2	2	2	3	2	2	3	0	0	1	6	3	2	1	3	
	PHV	**191**	***15 min SUM***		***47***	***38***	***36***	***41***	***50***	***46***	***33***	***44***	***37***	***36***	***40***	***53***	***56***	***42***	***49***	***41***	
	Max 15 min	**56**	**TEV**					**162**	**165**	**173**	**170**	**173**	**160**	**150**	**157**	**166**	**185**	**191**	**200**	**188**	**200**
48	1220	Hall Ave at US 101 South		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1220		EB	EBT	11	7	5	5	6	12	9	13	11	9	9	11	6	9	16	4	
	1220	Count Date : 07/12/2017		EBR	13	15	9	13	13	10	14	12	11	15	10	10	15	12	12	16	
	1220	2017		WBL	26	17	21	18	14	13	17	12	16	15	20	20	19	15	11	12	
	1220		WB	WBT	11	9	19	16	7	5	11	12	4	22	12	11	9	7	11	8	
	1220			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1220	PM Peak Hour: 4:45 PM-5:45 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1220	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1220	Volume Difference: 3		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1220			SBL	9	10	6	10	4	8	7	9	10	10	10	6	10	8	3	7	
	1220	PHF:	SB	SBT	373	348	365	318	342	370	324	389	379	387	346	415	394	430	360	307	
	1220	*0.95*		SBR	4	9	4	7	8	7	6	8	7	11	5	5	11	5	2	4	
	PHV	**1840**	***15 min SUM***		***447***	***415***	***429***	***387***	***394***	***425***	***388***	***455***	***438***	***469***	***412***	***478***	***464***	***486***	***415***	***358***	
	Max 15 min	**486**	**TEV**					**1678**	**1625**	**1635**	**1594**	**1662**	**1706**	**1750**	**1774**	**1797**	**1823**	**1840**	**1843**	**1723**	**1843**
49	1230	Hall Ave at US 101 North		EBL	16	11	14	13	6	11	10	17	13	13	13	11	11	16	16	7	
	1230		EB	EBT	1	2	1	2	3	1	1	1	4	0	2	2	1	0	1	0	
	1230	Count Date : 07/12/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1230	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1230		WB	WBT	1	1	1	1	1	2	1	1	1	2	0	2	1	1	1	0	
	1230			WBR	1	0	0	0	1	2	1	1	2	0	2	1	2	0	1	0	
	1230	PM Peak Hour: 3:30 PM-4:30 PM		NBL	22	16	32	23	11	13	15	17	12	27	22	19	16	15	13	12	
	1230	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	264	340	330	292	301	271	337	310	332	320	315	302	278	290	253	274	
	1230	Volume Difference: 114		NBR	0	0	1	2	1	0	0	0	0	0	0	0	0	2	1	0	
	1230			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1230	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1230	*0.94*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**1324**	***15 min SUM***		***305***	***370***	***379***	***333***	***324***	***300***	***365***	***347***	***364***	***362***	***354***	***337***	***309***	***324***	***286***	***293***	
	Max 15 min	**354**	**TEV**					**1387**	**1406**	**1336**	**1322**	**1336**	**1376**	**1438**	**1427**	**1417**	**1362**	**1324**	**1256**	**1212**	**1438**
50	1240	Johnson Ave at US 101 South		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1240		EB	EBT	42	39	40	39	35	42	52	38	40	39	43	37	44	41	29	28	
	1240			EBR	1	3	2	0	3	1	2	1	1	2	0	3	1	1	0	2	
	1240	Count Date : 07/11/2017		EBRish	11	13	10	9	7	11	11	11	16	10	7	9	15	19	22	13	
	1240	2017		WBL	2	10	3	2	5	5	5	6	5	1	4	2	5	5	2	4	
	1240		WB	WBLish	39	31	40	42	37	48	36	48	49	44	37	44	50	41	53	63	
	1240			WBT	14	15	20	15	19	19	20	14	28	23	17	23	18	29	26	25	
	1240			WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1240	PM Peak Hour: 4:45 PM-5:45 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1240	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1240	Volume Difference: 74		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1240			SBL	65	87	60	68	89	62	67	72	56	63	56	70	75	75	71	58	
	1240		SB	SBT	30	29	33	34	37	36	37	29	47	35	40	31	38	34	31	21	
	1240	PHF:		SBTish	220	236	237	278	274	253	258	266	284	288	259	327	308	326	304	273	
	1240	*0.94*		SBR	20	14	13	14	9	16	8	14	16	10	15	21	7	11	14	11	
	PHV	**2188**	***15 min SUM***		***444***	***477***	***458***	***501***	***515***	***493***	***496***	***499***	***542***	***515***	***478***	***567***	***561***	***582***	***552***	***498***	
	Max 15 min	**582**	**TEV**					**1880**	**1951**	**1967**	**2005**	**2003**	**2030**	**2052**	**2034**	**2102**	**2121**	**2188**	**2262**	**2193**	**2262**

Project: CBNB
Job #: ODOT00000925
Subject: *PM Turning Movement Volumes*
Created: 6/12/2018

System Peak Hour= 4:30 PM

Updated: 10/24/2018

E-W ID	Synchro ID	Intersection	Direction	Movement	2:00 PM	2:15 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	Max
51	1250	Johnson Ave at US 101 North		EBL	27	27	26	30	25	24	29	22	23	24	20	23	29	20	22	16	
	1250		EB	EBT	79	86	73	75	95	77	83	82	78	74	70	83	89	89	78	65	
	1250	Count Date : 07/11/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1250	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1250		WB	WBT	52	54	61	56	54	63	53	62	77	64	53	63	65	71	72	84	
	1250			WBR	51	63	52	36	49	52	53	57	35	63	45	47	45	47	56	50	
	1250	PM Peak Hour: 3:30 PM-4:30 PM		NBL	5	3	2	7	9	5	10	8	7	4	13	8	5	6	6	7	
	1250	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	215	221	226	246	233	237	253	230	251	250	246	242	243	221	187	214	
	1250	Volume Difference: 23		NBR	36	24	33	27	25	35	27	32	24	29	30	34	29	45	28	25	
	1250			SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1250	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1250	*0.98*		SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	PHV	**1981**	***15 min SUM***		***465***	***478***	***473***	***477***	***490***	***493***	***508***	***493***	***495***	***508***	***477***	***500***	***505***	***499***	***449***	***461***	
	Max 15 min	**505**	**TEV**					**1893**	**1918**	**1933**	**1968**	**1984**	**1989**	**2004**	**1973**	**1980**	**1990**	**1981**	**1953**	**1914**	**2004**
52	1260	7th St at Lockhart Ave/Southwest Blvd		EBL	3	8	7	11	5	11	7	9	7	3	4	8	9	6	9	12	
	1260		EB	EBT	35	40	46	46	47	41	52	59	50	57	48	56	61	46	47	62	
	1260	Count Date : 07/12/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1260	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1260		WB	WBT	46	49	49	53	58	59	79	57	64	58	66	63	88	84	64	60	
	1260			WBR	3	1	0	6	2	3	4	1	1	4	1	1	2	0	1	2	
	1260	PM Peak Hour: 4:45 PM-5:45 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1260	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1260	Volume Difference: 9		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1260			SBL	1	2	2	3	5	1	2	2	2	0	3	3	0	0	2	3	
	1260	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1260	*0.87*		SBR	9	8	8	11	13	10	3	10	8	8	7	15	13	15	15	7	
	PHV	**599**	***15 min SUM***		***97***	***108***	***112***	***130***	***130***	***125***	***147***	***138***	***132***	***130***	***129***	***146***	***173***	***151***	***138***	***146***	
	Max 15 min	**173**	**TEV**					**447**	**480**	**497**	**532**	**540**	**542**	**547**	**529**	**537**	**578**	**599**	**608**	**608**	**608**
53	1270	6th Ave at D St / Coos River Highway		EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1270		EB	EBT	3	4	4	2	0	4	3	3	4	1	5	3	5	5	0	1	
	1270	Count Date : 07/12/2017		EBR	12	12	5	15	9	11	10	12	12	10	6	14	15	12	14	19	
	1270	2017		WBL	40	54	33	35	46	39	42	40	34	57	76	34	26	46	34	34	
	1270		WB	WBT	3	2	3	4	6	1	0	5	5	2	4	3	4	5	2	4	
	1270			WBR	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
	1270	PM Peak Hour: 4:30 PM-5:30 PM		NBL	14	9	13	14	12	10	19	18	9	15	12	24	14	20	21	21	
	1270	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	2	0	1	1	2	1	2	2	1	0	2	1	1	0	0	
	1270	Volume Difference: 0		NBR	67	29	52	44	39	45	47	47	55	65	52	61	71	71	59	59	
	1270			SBL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1270	PHF:	SB	SBT	2	1	0	0	1	2	2	0	0	0	0	1	0	0	2	1	
	1270	*0.93*		SBR	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
	PHV	**593**	***15 min SUM***		***141***	***115***	***110***	***115***	***115***	***114***	***124***	***127***	***122***	***151***	***155***	***142***	***136***	***160***	***132***	***139***	
	Max 15 min	**160**	**TEV**					**481**	**455**	**454**	**468**	**480**	**487**	**524**	**555**	**570**	**584**	**593**	**570**	**567**	**593**
54	1280	Coos River Rd at Ross Inlet Rd		EBL	5	3	3	8	5	4	3	5	4	11	11	9	6	7	9	5	
	1280		EB	EBT	38	33	27	33	33	39	29	38	38	40	33	47	51	55	42	55	
	1280	Count Date : 07/12/2017		EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1280	2017		WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1280		WB	WBT	38	40	32	23	42	31	29	32	27	41	21	20	20	37	22	24	
	1280			WBR	1	1	0	3	2	0	1	0	1	4	1	2	1	0	1	0	
	1280	PM Peak Hour: 4:15 PM-5:15 PM		NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1280	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1280	Volume Difference: 2		NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1280			SBL	1	1	1	0	1	1	2	1	0	2	2	0	0	2	2	1	
	1280	PHF:	SB	SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1280	*0.84*		SBR	2	4	4	4	6	5	5	6	6	9	50	9	8	4	3	1	
	PHV	**396**	***15 min SUM***		***85***	***82***	***67***	***71***	***89***	***80***	***69***	***82***	***76***	***107***	***118***	***87***	***86***	***105***	***79***	***86***	
	Max 15 min	**118**	**TEV**					**305**	**309**	**307**	**309**	**320**	**307**	**334**	**383**	**388**	**398**	**396**	**357**	**356**	**398**

				Bicycles										Pedestrians									
			Traffic Count Length	Peak Hour (4:30 - 5:30 PM)					Total Traffic Count Volume (4hr or 16 hr)					Peak Hour (4:30 - 5:30 PM)					Total Traffic Count Volume (4hr or 16 hr)				
	ID	Intersection		North	South	East	West	Total	North	South	East	West	Total	North	South	East	West	Total	North	South	East	West	Total
North Bend	1	Arthur Street at Colorado Loop	4 hr	0	1	2	1	4	0	1	6	6	13	0	2	0	2	4	0	15	7	2	24
	2	Oak Street/W Airport Way at Colorado Avenue/Maple Leaf	4 hr	0	0	1	1	2	2	2	1	4	9	3	3	0	0	6	3	9	0	1	13
	3	Maple Leaf at E Airport Way	4 hr	0	0	1	4	5	1	0	6	16	23	2	0	0	0	2	3	0	2	1	6
	4	US 101 at Florida Avenue	4 hr	2	0	0	0	2	16	0	0	3	19	8	0	2	2	12	20	6	13	13	52
	5	Virginia Avenue at Arthur Street	4 hr	0	0	3	1	4	0	0	5	1	6	1	0	0	0	1	6	0	0	0	6
	6	Virginia Avenue at Oak Street	4 hr	0	2	1	0	3	0	2	3	1	6	2	0	2	0	4	11	18	5	6	40
	7	Virginia Avenue at Maple Street	4 hr	1	0	0	0	1	3	0	0	1	4	6	0	0	1	7	25	0	0	5	30
	8	Virginia Avenue at Broadway Street	16 hr	0	0	2	1	3	1	1	16	18	36	7	8	0	5	20	128	125	2	90	345
	9	Virginia Avenue at Pony Village Main Driveway	4 hr	0	0	2	2	4	0	0	3	6	9	0	11	0	0	11	0	19	0	0	19
	10	Virginia Avenue at Harrison Avenue	4 hr	0	0	1	2	3	0	2	9	4	15	18	11	4	14	47	76	59	20	49	204
	11	Virginia Avenue at Meade Avenue	4 hr	0	1	2	2	5	0	1	5	5	11	10	11	3	0	24	60	54	3	0	117
	12	Virginia Avenue at US 101 South	16 hr	1	0	3	1	5	11	0	7	5	23	5	7	7	13	32	156	54	75	109	394
	13	Virginia Avenue at US 101 North	16 hr	0	0	0	0	0	0	3	1	1	5	1	4	2	2	9	54	31	20	31	136
	14	Marion Avenue at Safeway Driveway	4 hr	0	0	0	0	0	3	0	1	0	4	2	4	2	0	8	11	16	9	0	36
	15	Washington Avenue at US 101 South/Sherman Avenue	4 hr	1	0	0	0	1	1	1	0	2	4	5	2	2	12	21	7	7	2	27	43
	16	Pony Creek Road at Crowell Lane	4 hr	0	3	0	1	4	4	4	0	1	9	0	0	0	4	4	0	0	0	19	19
	17	Oak Street at 16th/17th Street	4 hr	1	0	0	0	1	1	0	1	2	4	1	0	0	0	1	5	5	2	2	14
	18	Broadway Street at 16th Street	4 hr	3	1	0	1	5	10	3	3	3	19	4	0	8	0	12	10	1	17	10	38
	19	Broadway Avenue at 17th Street	4 hr	3	0	0	0	3	13	4	0	0	17	0	0	8	2	10	0	0	26	22	48
	20	US 101 at Mill Casino Entrance	16 hr	0	0	0	0	0	1	3	2	0	6	0	8	0	0	8	2	105	2	26	135
	21	Newmark Avenue at Oak Street	4 hr	0	0	2	1	3	1	0	12	3	16	3	0	2	0	5	31	0	10	0	41
	22	Broadway Street at Newmark Avenue	16 hr	0	0	0	0	0	2	6	3	10	21	0	8	5	2	15	62	64	75	37	238
	23	Newmark Street at Edgewood Drive	4 hr	0	0	0	0	0	0	0	0	3	3	0	2	0	0	2	0	25	0	0	25
	24	Newmark Avenue at Brusells Street	4 hr	0	0	0	1	1	2	1	1	2	6	0	4	0	2	6	1	19	1	12	33
	25	Newmark Street at Sherman Avenue	16 hr	0	0	0	1	1	6	7	0	7	20	0	1	1	4	6	13	35	24	42	114
	26	US 101 at Newmark Street	4 hr	0	0	0	0	0	0	2	0	0	2	0	0	0	3	3	3	3	1	19	26
Coos Bay	27	Morrison Street at Lakeshore Drive	4 hr	0	0	3	0	3	0	0	6	2	8	0	2	0	0	2	0	5	0	0	5
	28	Newmark Avenue at Cape Arago Highway/Empire Boulevard	4 hr	0	0	4	0	4	0	4	12	0	16	0	0	0	0	0	7	1	0	3	11
	29	Newmark Avenue at Morrison Street	16 hr	0	0	1	0	1	0	3	15	3	21	9	3	0	0	12	83	71	11	13	178
	30	Newmark Avenue at Ocean Boulevard	16 hr	0	2	1	4	7	0	21	34	41	96	0	1	4	0	5	0	35	49	8	92
	31	Newmark Avenue at Laclair Street	4 hr	0	0	5	1	6	0	1	18	6	25	0	6	9	0	15	0	29	42	4	75
	32	Empire Boulevard at Pacific Avenue	4 hr	4	0	0	0	4	9	2	0	0	11	0	0	2	0	2	1	0	4	0	5
	33	Thompson Road at Woodland Drive	4 hr	0	0	0	0	0	1	3	0	0	4	0	0	1	0	1	0	0	11	0	11
	34	Koosbay Boulevard at Thompson Road	4 hr	0	0	0	0	0	5	3	0	0	8	1	0	0	1	2	1	0	0	13	14
	35	Ocean Boulevard at Woodland Drive	4 hr	1	0	0	1	2	1	0	1	3	5	2	0	0	2	4	2	0	0	4	6
	36	Ocean Boulevard at Butler Road	4 hr	0	1	0	0	1	5	3	1	0	9	0	0	0	0	0	1	0	4	0	5
	37	Koosbay Boulevard at 10th Street	4 hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
	38	Us 101 at Koosbay Blvd	16 hr	7	0	0	0	7	26	11	0	2	39	0	0	0	1	1	0	1	0	48	49
	39	7th Street at Commercial Avenue	4 hr	0	0	3	0	3	0	0	6	4	10	0	0	0	2	2	0	10	0	14	24
	40	Commercial Avenue at US 101 South	16 hr	4	0	1	0	5	39	0	4	0	43	8	4	11	14	37	77	76	116	191	460
	41	Commercial Avenue at US 101 North	4 hr	0	0	0	0	0	0	0	20	0	20	0	0	0	0	0	2	0	0	9	11
	42	10th Street at Central Avenue	16 hr	2	1	0	0	3	7	5	3	5	20	3	3	0	0	6	32	25	64	91	212
	43	Central Avenue at 7th Street	4 hr	0	0	0	0	0	3	0	0	1	4	7	4	4	0	15	34	14	23	4	75
	44	7th Street at Anderson Avenue	4 hr	1	1	0	1	3	4	2	0	5	11	0	16	0	10	26	0	86	0	61	147
	45	Elrod Avenue at 10th Street	4 hr	6	0	0	1	7	7	0	1	3	11	1	0	1	2	4	7	0	5	6	18
	46	11th Street at Ingersoll Avenue	4 hr	0	0	0	0	0	1	0	1	0	2	0	0	1	0	1	0	0	8	0	8
	47	7th Street at Ingersoll Avenue	4 hr	1	0	0	0	1	3	3	0	1	7	0	2	4	0	6	0	11	10	3	24
	48	Hall Avenue at US 101 South	4 hr	0	0	0	0	0	6	0	0	0	6	7	1	2	7	17	22	9	15	20	66
	49	Hall Avenue at US 101 North	4 hr	0	0	0	0	0	0	20	0	0	20	0	0	3	2	5	9	1	8	9	27
	50	Johnson Avenue at US 101 South	16 hr	2	0	0	0	2	16	0	3	7	26	10	8	12	1	31	43	59	25	42	169
	51	Johnson Avenue at US 101 North	16 hr	0	3	0	0	3	0	15	8	5	28	6	10	1	5	22	50	86	44	27	207
	52	7th Street at Lockhart Avenue/Southwest Boulevard	4 hr	0	0	0	2	2	0	0	3	6	9	0	0	0	0	0	1	0	0	3	4
	53	6th Avenue at D street / Coos River Highway	4 hr	0	0	0	0	0	0	0	0	1	1	6	0	0	0	6	11	0	0	0	11
	54	Coos River Road at Ross Inlet Road	4 hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1

Direction represents the leg of the intersection the pedestrian or bicycle crosses

Appendix C
Volume Development

N-S ID	Synchro ID	Intersection	Direction	Movement	Existing Counts 1-Hr Volume PM Peak	Existing Heavy Vehicle Count	Existing Heavy Vehicle Percentage	FHWA 5-13 Heavy Vehicle Count	FHWA 5-13 Heavy Vehicle Percentage	Base Year Adjustment Factor	Seasonal Adjustment Factor	30DHV PM Peak	Balancing Adjustments	30th Highest Hour 2017 Balanced Volumes PM Peak	Volumes for FIGURE
1	10	Arthur St at Colorado Loop		EBL	0	0	0%	1	0%	1.00	1.01	0	0	0	0
	10		EB	EBT	5	0	0%	0	0%	1.00	1.01	5	0	5	5
	10	Count Date : 07/11/2017		EBR	1	0	0%	0	0%	1.00	1.01	1	0	1	<5
	10	2017		WBL	8	0	0%	0	0%	1.00	1.01	10	0	10	10
	10		WB	WBT	7	0	0%	1	14%	1.00	1.01	5	0	5	5
	10			WBR	0	0	0%	1	0%	1.00	1.01	0	0	0	0
	10	PM Peak Hour: 3:30 PM-4:30 PM		NBL	1	0	0%	0	0%	1.00	1.01	1	0	1	<5
	10	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	1	0%	1.00	1.01	0	0	0	0
	10			NBR	10	0	0%	0	0%	1.00	1.01	10	0	10	10
	10			SBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	10	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	10	0.73		SBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	10														
	10		**TEV**	**TEV**	**32**	**0**	0%	4	13%			**32**	**0**	**32**	**32**
2	20	Oak St/W Airport Way at Colorado Ave/Maple Leaf		EBL	1	0	0%	0	0%	1.00	1.01	1	0	1	<5
	20		EB	EBT	120	0	0%	0	0%	1.00	1.01	120	0	120	120
	20	Count Date : 07/11/2017		EBR	12	0	0%	0	0%	1.00	1.01	10	0	10	10
	20	2017		WBL	2	0	0%	1	50%	1.00	1.01	2	0	2	<5
	20		WB	WBT	52	0	0%	1	2%	1.00	1.01	55	0	55	55
	20			WBR	1	0	0%	0	0%	1.00	1.01	1	0	1	<5
	20	PM Peak Hour: 4:15 PM-5:15 PM		NBL	5	0	0%	0	0%	1.00	1.01	5	0	5	5
	20	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	1	0	0%	0	0%	1.00	1.01	1	0	1	<5
	20			NBR	1	0	0%	0	0%	1.00	1.01	1	0	1	<5
	20			SBL	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	20	PHF:	SB	SBT	2	0	0%	0	0%	1.00	1.01	2	0	2	<5
	20	0.75		SBR	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	20														
	20		**TEV**	**TEV**	**197**	**0**	0%	2	1%			**198**	**2**	**200**	**200**
3	30	Maple Leaf at E Airport Way		EBL	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	30		EB	EBT	127	0	0%	0	0%	1.00	1.01	130	0	130	130
	30	Count Date : 07/11/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	30	2017		WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	30		WB	WBT	63	0	0%	2	3%	1.00	1.01	65	0	65	65
	30			WBR	4	0	0%	1	25%	1.00	1.01	5	0	5	5
	30	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	30	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	30			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	30			SBL	12	0	0%	0	0%	1.00	1.01	10	0	10	10
	30	PHF:	SB	SBT	0	0	0%	1	0%	1.00	1.01	0	0	0	0
	30	0.74		SBR	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	30														
	30		**TEV**	**TEV**	**206**	**0**	0%	4	2%			**210**	**2**	**212**	**212**
4	40	US 101 at Florida Ave		EBL	244	2	1%	6	2%	1.00	1.01	245	0	245	245
	40		EB	EBT	1	0	0%	0	0%	1.00	1.01	1	0	1	<5
	40	Count Date : 07/11/2017		EBR	11	0	0%	1	9%	1.00	1.01	10	0	10	10
	40	2017		WBL	18	0	0%	1	6%	1.00	1.01	20	0	20	20
	40		WB	WBT	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	40			WBR	3	0	0%	0	0%	1.00	1.01	5	0	5	5
	40	PM Peak Hour: 4:15 PM-5:15 PM		NBL	12	0	0%	0	0%	1.00	1.01	10	0	10	10
	40	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	672	22	3%	45	7%	1.00	1.01	680	0	680	680
	40			NBR	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	40			SBL	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	40	PHF:	SB	SBT	737	28	4%	52	7%	1.00	1.01	745	0	745	745
	40	0.92		SBR	13	0	0%	1	8%	1.00	1.01	15	0	15	15
	40														
	40		**TEV**	**TEV**	**1711**	**52**	3%	106	6%			**1731**	**3**	**1734**	**1734**
5	50	Virginia Ave at Arthur St		EBL	6	0	0%	0	0%	1.00	1.01	5	0	5	5
	50		EB	EBT	100	0	0%	1	1%	1.00	1.01	100	0	100	100
	50	Count Date : 07/11/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	50	2017		WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	50		WB	WBT	149	0	0%	0	0%	1.00	1.01	150	0	150	150
	50			WBR	18	0	0%	0	0%	1.00	1.01	20	0	20	20
	50	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	50	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	50			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	50			SBL	7	0	0%	0	0%	1.00	1.01	5	0	5	5
	50	PHF:	SB	SBT	0	0	0%	1	0%	1.00	1.01	0	0	0	0
	50	0.87		SBR	2	0	0%	0	0%	1.00	1.01	2	0	2	<5
	50														
	50		**TEV**	**TEV**	**282**	**0**	0%	2	1%			**282**	**0**	**282**	**282**
6	60	Virginia Ave at Oak St		EBL	5	0	0%	0	0%	1.00	1.01	5	0	5	5
	60		EB	EBT	169	0	0%	1	1%	1.00	1.01	170	0	170	170
	60	Count Date : 07/11/2017		EBR	17	0	0%	0	0%	1.00	1.01	15	0	15	15
	60	2017		WBL	46	0	0%	0	0%	1.00	1.01	45	0	45	45
	60		WB	WBT	262	0	0%	0	0%	1.00	1.01	265	0	265	265
	60			WBR	13	0	0%	0	0%	1.00	1.01	15	0	15	15
	60	PM Peak Hour: 4:30 PM-5:30 PM		NBL	34	0	0%	0	0%	1.00	1.01	35	0	35	35
	60	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	11	0	0%	1	9%	1.00	1.01	10	0	10	10
	60			NBR	32	0	0%	0	0%	1.00	1.01	30	0	30	30
	60			SBL	9	0	0%	0	0%	1.00	1.01	10	0	10	10
	60	PHF:	SB	SBT	20	0	0%	0	0%	1.00	1.01	20	0	20	20
	60	0.92		SBR	2	0	0%	0	0%	1.00	1.01	2	0	2	<5
	60														
	60		**TEV**	**TEV**	**620**	**0**	0%	2	0%			**622**	**0**	**622**	**622**
7	70	Virginia Ave at Maple St		EBL	0	0	0%	1	0%	1.00	1.01	0	0	0	0
	70		EB	EBT	227	0	0%	1	0%	1.00	1.01	230	0	230	230
	70	Count Date : 07/11/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	70	2017		WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	70		WB	WBT	342	0	0%	0	0%	1.00	1.01	345	0	345	345
	70			WBR	107	0	0%	3	3%	1.00	1.01	110	0	110	110
	70	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	70	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	70			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	70			SBL	155	0	0%	2	1%	1.00	1.01	155	0	155	155
	70	PHF:	SB	SBT	0	0	0%	1	0%	1.00	1.01	0	0	0	0
	70	0.94		SBR	15	0	0%	0	0%	1.00	1.01	15	0	15	15
	70														
	70		**TEV**	**TEV**	**846**	**0**	0%	8	1%			**855**	**0**	**855**	**855**

N-S ID	Synchro ID	Intersection	Direction	Movement	Existing Counts 1-Hr Volume PM Peak	Existing Heavy Vehicle Count	Existing Heavy Vehicle Percentage	FHWA 5-13 Heavy Vehicle Count	FHWA 5-13 Heavy Vehicle Percentage	Base Year Adjustment Factor	Seasonal Adjustment Factor	30DHV PM Peak	Balancing Adjustments	30th Highest Hour 2017 Balanced Volumes PM Peak	Volumes for FIGURE
8	80	Virginia Ave at Broadway St		EBL	20	0	0%	0	0%	1.00	1.02	20	0	20	20
	80		EB	EBT	295	1	0%	0	0%	1.00	1.02	300	0	300	300
	80	Count Date : 07/11/2017		EBR	112	1	1%	1	1%	1.00	1.02	115	0	115	115
	80	2017		WBL	385	4	1%	5	1%	1.00	1.02	395	0	395	395
	80		WB	WBT	296	1	0%	0	0%	1.00	1.02	300	0	300	300
	80			WBR	10	0	0%	0	0%	1.00	1.02	10	0	10	10
	80	PM Peak Hour: 4:15 PM-5:15 PM		NBL	150	0	0%	1	1%	1.00	1.02	155	0	155	155
	80	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	41	0	0%	0	0%	1.00	1.02	40	0	40	40
	80			NBR	385	2	1%	1	0%	1.00	1.02	395	0	395	395
	80			SBL	42	0	0%	0	0%	1.00	1.02	45	0	45	45
	80	PHF:	SB	SBT	43	0	0%	0	0%	1.00	1.02	45	0	45	45
	80	0.93		SBR	16	0	0%	0	0%	1.00	1.02	15	0	15	15
	80														
	80		**TEV**	**TEV**	**1795**	**9**	1%	8	0%			**1835**	**0**	**1835**	**1835**
9	90	Virginia Ave at Pony Village		EBL	0	0	0%	1	0%	1.00	1.00	0	0	0	0
	90		EB	EBT	726	9	1%	6	1%	1.00	1.00	725	0	725	725
	90	Count Date : 08/09/2018		EBR	52	0	0%	1	2%	1.00	1.00	50	0	50	50
	90	2018		WBL	105	1	1%	3	3%	1.00	1.00	105	0	105	105
	90		WB	WBT	716	21	3%	11	2%	1.00	1.00	715	0	715	715
	90			WBR	0	0	0%	1	0%	1.00	1.00	0	0	0	0
	90	PM Peak Hour: 4:45 PM-5:45 PM		NBL	79	2	3%	0	0%	1.00	1.00	80	0	80	80
	90	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	1	0%	1.00	1.00	0	0	0	0
	90			NBR	95	0	0%	2	2%	1.00	1.00	95	0	95	95
	90			SBL	0	0	0%	0	0%	1.00	1.00	0	0	0	0
	90	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.00	0	0	0	0
	90	0.93		SBR	0	0	0%	0	0%	1.00	1.00	0	0	0	0
	90														
	90		**TEV**	**TEV**	**1773**	**33**	2%	26	1%			**1770**	**0**	**1770**	**1770**
10	100	Virginia Ave at Harrison Ave		EBL	5	0	0%	0	0%	1.00	1.02	5	0	5	5
	100		EB	EBT	755	2	0%	11	1%	1.00	1.02	770	0	770	770
	100	Count Date : 07/11/2017		EBR	53	0	0%	0	0%	1.00	1.02	55	0	55	55
	100	2017		WBL	48	0	0%	1	2%	1.00	1.02	50	-2	48	48
	100		WB	WBT	803	3	0%	13	2%	1.00	1.02	820	-24	796	796
	100			WBR	1	0	0%	0	0%	1.00	1.02	1	0	1	<5
	100	PM Peak Hour: 4:15 PM-5:15 PM		NBL	48	0	0%	0	0%	1.00	1.02	50	0	50	50
	100	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	1	0	0%	0	0%	1.00	1.02	1	0	1	<5
	100			NBR	69	0	0%	0	0%	1.00	1.02	70	0	70	70
	100			SBL	10	1	10%	1	10%	1.00	1.02	10	0	10	10
	100	PHF:	SB	SBT	1	0	0%	0	0%	1.00	1.02	1	0	1	<5
	100	0.92		SBR	3	0	0%	0	0%	1.00	1.02	5	0	5	5
	100														
	100		**TEV**	**TEV**	**1797**	**6**	0%	26	1%			**1838**	**-26**	**1812**	**1812**
11	110	Virginia Ave at Meade Ave		EBL	248	0	0%	4	2%	1.00	1.02	255	0	255	255
	110		EB	EBT	507	2	0%	10	2%	1.00	1.02	515	0	515	515
	110	Count Date : 07/11/2017		EBR	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	110	2017		WBL	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	110		WB	WBT	717	4	1%	18	3%	1.00	1.02	730	0	730	730
	110			WBR	14	0	0%	0	0%	1.00	1.02	15	0	15	15
	110	PM Peak Hour: 3:45 PM-4:45 PM		NBL	5	0	0%	0	0%	1.00	1.02	5	0	5	5
	110	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.02	0	1	1	<5
	110			NBR	14	0	0%	1	7%	1.00	1.02	15	0	15	15
	110			SBL	6	0	0%	0	0%	1.00	1.02	5	0	5	5
	110	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	110	0.91		SBR	109	0	0%	2	2%	1.00	1.02	110	0	110	110
	110														
	110		**TEV**	**TEV**	**1620**	**6**	0%	35	2%			**1650**	**1**	**1651**	**1651**
12	120	Virginia Ave at US 101 South		EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	120		EB	EBT	160	1	1%	3	2%	1.00	1.01	160	0	160	160
	120	Count Date : 07/11/2017		EBR	307	1	0%	3	1%	1.00	1.01	310	0	310	310
	120	2017		WBL	58	0	0%	1	2%	1.00	1.01	60	0	60	60
	120		WB	WBT	331	1	0%	6	2%	1.00	1.01	335	0	335	335
	120			WBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	120	PM Peak Hour: 4:15 PM-5:15 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	120	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	120			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	120			SBL	7	0	0%	1	14%	1.00	1.01	5	0	5	5
	120	PHF:	SB	SBT	599	22	4%	43	7%	1.00	1.01	605	0	605	605
	120	0.92		SBR	282	3	1%	9	3%	1.00	1.01	285	0	285	285
	120														
	120		**TEV**	**TEV**	**1744**	**28**	2%	66	4%			**1760**	**0**	**1760**	**1760**
13	130	Virginia Ave at US 101 North		EBL	155	1	1%	3	2%	1.00	1.01	155	0	155	155
	130		EB	EBT	14	0	0%	1	7%	1.00	1.01	15	0	15	15
	130	Count Date : 07/11/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	130	2017		WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	130		WB	WBT	66	0	0%	0	0%	1.00	1.01	65	0	65	65
	130			WBR	11	0	0%	0	0%	1.00	1.01	10	0	10	10
	130	PM Peak Hour: 4:30 PM-5:30 PM		NBL	326	1	0%	6	2%	1.00	1.01	330	0	330	330
	130	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	591	21	4%	38	6%	1.00	1.01	595	0	595	595
	130			NBR	6	0	0%	0	0%	1.00	1.01	5	0	5	5
	130			SBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	130	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	130	0.87		SBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	130														
	130		**TEV**	**TEV**	**1169**	**23**	2%	48	4%			**1175**	**0**	**1175**	**1175**
14	140	Marion Ave at Safeway Drwy		EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	140		EB	EBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	140	Count Date : 07/11/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	140	2017		WBL	92	0	0%	1	1%	1.00	1.01	95	0	95	95
	140		WB	WBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	140			WBR	56	1	2%	1	2%	1.00	1.01	55	0	55	55
	140	PM Peak Hour: 4:45 PM-5:45 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	140	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	26	0	0%	0	0%	1.00	1.01	25	0	25	25
	140			NBR	58	0	0%	0	0%	1.00	1.01	60	0	60	60
	140			SBL	61	0	0%	0	0%	1.00	1.01	60	0	60	60
	140	PHF:	SB	SBT	34	0	0%	0	0%	1.00	1.01	35	0	35	35
	140	0.94		SBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	140														
	140		**TEV**	**TEV**	**327**	**1**	0%	2	1%			**330**	**0**	**330**	**330**

N-S ID	Synchro ID	Intersection	Direction	Movement	Existing Counts 1-Hr Volume PM Peak	Existing Heavy Vehicle Count	Existing Heavy Vehicle Percentage	FHWA 5-13 Heavy Vehicle Count	FHWA 5-13 Heavy Vehicle Percentage	Base Year Adjustment Factor	Seasonal Adjustment Factor	30DHV PM Peak	Balancing Adjustments	30th Highest Hour 2017 Balanced Volumes PM Peak	Volumes for FIGURE
15	150	Washington Ave at US 101 South/Sherman Ave		EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	150		EB	EBT	1	0	0%	0	0%	1.00	1.01	1	0	1	<5
	150	Count Date : 07/12/2017		EBR	5	0	0%	0	0%	1.00	1.01	5	0	5	5
	150	2017		EBR2	4	0	0%	0	0%	1.00	1.01	5	0	5	5
	150			WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	150		WB	WBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	150	PM Peak Hour: 4:15 PM-5:15 PM		WBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	150	PM Peak Hour Used: 4:30 PM-5:30 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	150		NB	NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	150			NBR	87	1	1%	3	3%	1.00	1.01	90	0	90	90
	150			NBR2	10	0	0%	0	0%	1.00	1.01	10	0	10	10
	150			SBL2	15	1	7%	2	13%	1.00	1.01	15	0	15	15
	150	PHF:	SB	SBL	754	14	2%	31	4%	1.00	1.01	760	50	810	810
	150	0.92		SBT	123	0	0%	0	0%	1.00	1.01	125	10	135	135
	150			SBR	14	0	0%	0	0%	1.00	1.01	15	0	15	15
	150														
	150		TEV	TEV	1013	16	2%	36	4%			1020	60	1086	1086
16	160	Pony Creek Rd at Crowell Lane		EBL	30	0	0%	1	3%	1.00	1.01	30	0	30	30
	160		EB	EBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	160	Count Date : 07/11/2017		EBR	23	0	0%	0	0%	1.00	1.01	25	0	25	25
	160	2017		WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	160		WB	WBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	160			WBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	160	PM Peak Hour: 4:45 PM-5:45 PM		NBL	32	0	0%	0	0%	1.00	1.01	30	0	30	30
	160	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	148	0	0%	0	0%	1.00	1.01	150	0	150	150
	160			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	160			SBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	160	PHF:	SB	SBT	131	0	0%	1	1%	1.00	1.01	130	0	130	130
	160	0.78		SBR	38	0	0%	0	0%	1.00	1.01	40	0	40	40
	160														
	160		TEV	TEV	402	0	0%	2	0%			405	0	405	405
17	170	Oak St at 16th/17th St		EBL	6	0	0%	1	17%	1.00	1.01	5	0	5	5
	170		EB	EBT	21	0	0%	0	0%	1.00	1.01	20	0	20	20
	170	Count Date : 07/11/2017		EBR	21	0	0%	0	0%	1.00	1.01	20	0	20	20
	170	2017		WBL	7	0	0%	0	0%	1.00	1.01	5	0	5	5
	170		WB	WBT	48	0	0%	0	0%	1.00	1.01	50	0	50	50
	170			WBR	11	0	0%	0	0%	1.00	1.01	10	0	10	10
	170	PM Peak Hour: 4:45 PM-5:45 PM		NBL	28	0	0%	1	4%	1.00	1.01	30	0	30	30
	170	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	57	0	0%	0	0%	1.00	1.01	60	0	60	60
	170			NBR	4	0	0%	0	0%	1.00	1.01	5	0	5	5
	170			SBL	6	0	0%	0	0%	1.00	1.01	5	0	5	5
	170	PHF:	SB	SBT	58	0	0%	0	0%	1.00	1.01	60	0	60	60
	170	0.86		SBR	4	0	0%	0	0%	1.00	1.01	5	0	5	5
	170														
	170		TEV	TEV	271	0	0%	2	1%			275	0	275	275
18	180	Broadway St at 16th St		EBL	23	0	0%	0	0%	1.00	1.02	25	0	25	25
	180		EB	EBT	13	0	0%	0	0%	1.00	1.02	15	0	15	15
	180	Count Date : 07/11/2017		EBR	2	0	0%	0	0%	1.00	1.02	2	0	2	<5
	180	2017		WBL	83	0	0%	1	1%	1.00	1.02	85	0	85	85
	180		WB	WBT	21	0	0%	0	0%	1.00	1.02	20	0	20	20
	180			WBR	12	0	0%	0	0%	1.00	1.02	10	0	10	10
	180	PM Peak Hour: 4:15 PM-5:15 PM		NBL	6	0	0%	0	0%	1.00	1.02	5	0	5	5
	180	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	660	1	0%	12	2%	1.00	1.02	675	0	675	675
	180			NBR	42	0	0%	1	2%	1.00	1.02	45	0	45	45
	180			SBL	10	0	0%	0	0%	1.00	1.02	10	0	10	10
	180	PHF:	SB	SBT	653	5	1%	15	2%	1.00	1.02	665	0	665	665
	180	0.89		SBR	25	0	0%	0	0%	1.00	1.02	25	0	25	25
	180														
	180		TEV	TEV	1550	6	0%	29	2%			1582	0	1582	1582
19	190	Broadway Ave at 17th St		EBL	6	0	0%	0	0%	1.00	1.02	5	0	5	5
	190		EB	EBT	0	0	0%	0	0%	1.00	1.02	0	1	1	<5
	190	Count Date : 07/11/2017		EBR	20	0	0%	1	5%	1.00	1.02	20	0	20	20
	190	2017		WBL	3	0	0%	0	0%	1.00	1.02	5	0	5	5
	190		WB	WBT	0	0	0%	0	0%	1.00	1.02	0	1	1	<5
	190			WBR	4	0	0%	0	0%	1.00	1.02	5	0	5	5
	190	PM Peak Hour: 4:15 PM-5:15 PM		NBL	40	0	0%	1	3%	1.00	1.02	40	0	40	40
	190	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	704	1	0%	8	1%	1.00	1.02	720	0	720	720
	190			NBR	3	0	0%	0	0%	1.00	1.02	5	0	5	5
	190			SBL	2	0	0%	1	50%	1.00	1.02	2	0	2	<5
	190	PHF:	SB	SBT	741	5	1%	15	2%	1.00	1.02	755	0	755	755
	190	0.88		SBR	3	0	0%	0	0%	1.00	1.02	5	0	5	5
	190														
	190		TEV	TEV	1526	6	0%	26	2%			1562	2	1564	1564
20	200	US 101 at Mill Casino Entrance		EBL	5	0	0%	0	0%	1.008	1.18	5	0	5	5
	200		EB	EBT	2	0	0%	0	0%	1.008	1.18	2	0	2	<5
	200	Count Date : 04/22/2016		EBR	7	0	0%	0	0%	1.008	1.18	10	0	10	10
	200	2016		WBL	75	0	0%	0	0%	1.008	1.18	90	0	90	90
	200		WB	WBT	0	0	0%	0	0%	1.008	1.18	0	1	1	<5
	200			WBR	47	0	0%	0	0%	1.008	1.18	55	0	55	55
	200	PM Peak Hour: 2:45 PM-3:45 PM		NBL	2	0	0%	0	0%	1.008	1.18	2	0	2	<5
	200	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	726	10	1%	27	4%	1.008	1.18	865	-5	860	860
	200			NBR	83	0	0%	0	0%	1.008	1.18	100	0	100	100
	200			SBL	32	0	0%	1	3%	1.008	1.18	40	0	40	40
	200	PHF:	SB	SBT	630	16	3%	29	5%	1.008	1.18	750	-5	745	745
	200	0.93		SBR	1	0	0%	0	0%	1.008	1.18	1	0	1	<5
	200														
	200		TEV	TEV	1610	26	2%	57	4%			1920	-9	1911	1911
21	210	Newmark Ave at Oak St		EBL	62	0	0%	1	2%	1.00	1.02	65	0	65	65
	210		EB	EBT	915	2	0%	10	1%	1.00	1.02	935	0	935	935
	210	Count Date : 07/11/2017		EBR	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	210	2017		WBL	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	210		WB	WBT	893	6	1%	16	2%	1.00	1.02	910	0	910	910
	210			WBR	54	0	0%	0	0%	1.00	1.02	55	0	55	55
	210	PM Peak Hour: 2:00 PM-3:00 PM		NBL	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	210	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	210			NBR	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	210			SBL	54	0	0%	0	0%	1.00	1.02	55	0	55	55
	210	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.02	0	0	0	0

N-S ID	Synchro ID	Intersection	Direction	Movement	Existing Counts 1-Hr Volume PM Peak	Existing Heavy Vehicle Count	Existing Heavy Vehicle Percentage	FHWA 5-13 Heavy Vehicle Count	FHWA 5-13 Heavy Vehicle Percentage	Base Year Adjustment Factor	Seasonal Adjustment Factor	30DHV PM Peak	Balancing Adjustments	30th Highest Hour 2017 Balanced Volumes PM Peak	Volumes for FIGURE
	210	0.89		SBR	60	0	0%	0	0%	1.00	1.02	60	0	60	60
	210														
	210		TEV	TEV	2038	8	0%	27	1%			2080	0	2080	2080
22	220	Broadway St at Newmark Ave		EBL	366	1	0%	6	2%	1.00	1.02	375	0	375	375
	220		EB	EBT	466	0	0%	5	1%	1.00	1.02	475	0	475	475
	220	Count Date : 07/11/2017		EBR	164	0	0%	0	0%	1.00	1.02	165	0	165	165
	220	2017		WBL	64	0	0%	2	3%	1.00	1.02	65	0	65	65
	220		WB	WBT	351	1	0%	4	1%	1.00	1.02	360	0	360	360
	220			WBR	151	0	0%	2	1%	1.00	1.02	155	0	155	155
	220	PM Peak Hour: 2:00 PM-3:00 PM		NBL	173	0	0%	2	1%	1.00	1.02	175	0	175	175
	220	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	294	0	0%	2	1%	1.00	1.02	300	0	300	300
	220			NBR	49	0	0%	0	0%	1.00	1.02	50	0	50	50
	220			SBL	105	1	1%	2	2%	1.00	1.02	105	0	105	105
	220	PHF:	SB	SBT	233	1	0%	3	1%	1.00	1.02	240	0	240	240
	220	0.93		SBR	25	0	0%	1	4%	1.00	1.02	25	0	25	25
	220														
	220		TEV	TEV	2441	4	0%	29	1%			2490	0	2490	2490
23	230	Newmark St at Edgewood Dr		EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	230		EB	EBT	614	0	0%	5	1%	1.00	1.01	620	-19	601	601
	230	Count Date : 07/11/2017		EBR	29	0	0%	0	0%	1.00	1.01	30	-1	29	29
	230	2017		WBL	26	0	0%	0	0%	1.00	1.01	25	1	26	26
	230		WB	WBT	518	0	0%	5	1%	1.00	1.01	525	29	554	554
	230			WBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	230	PM Peak Hour: 4:45 PM-5:45 PM		NBL	21	0	0%	0	0%	1.00	1.01	20	0	20	20
	230	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	230			NBR	47	0	0%	0	0%	1.00	1.01	45	0	45	45
	230			SBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	230	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	230	0.92		SBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	230														
	230		TEV	TEV	1255	0	0%	10	1%			1265	10	1275	1275
24	240	Newmark Ave at Brusells St		EBL	80	0	0%	0	0%	1.00	1.01	80	0	80	80
	240		EB	EBT	549	0	0%	4	1%	1.00	1.01	555	0	555	555
	240	Count Date : 07/11/2017		EBR	6	0	0%	0	0%	1.00	1.01	5	0	5	5
	240	2017		WBL	4	0	0%	0	0%	1.00	1.01	5	0	5	5
	240		WB	WBT	508	2	0%	5	1%	1.00	1.01	515	0	515	515
	240			WBR	87	0	0%	1	1%	1.00	1.01	90	0	90	90
	240	PM Peak Hour: 4:45 PM-5:45 PM		NBL	5	0	0%	1	20%	1.00	1.01	5	0	5	5
	240	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	12	0	0%	0	0%	1.00	1.01	10	0	10	10
	240			NBR	3	0	0%	0	0%	1.00	1.01	5	0	5	5
	240			SBL	69	0	0%	0	0%	1.00	1.01	70	0	70	70
	240	PHF:	SB	SBT	4	0	0%	1	25%	1.00	1.01	5	0	5	5
	240	0.93		SBR	59	0	0%	1	2%	1.00	1.01	60	0	60	60
	240														
	240		TEV	TEV	1386	2	0%	13	1%			1405	0	1405	1405
25	250	Newmark St at Sherman Ave		EBL	60	0	0%	0	0%	1.00	1.01	60	0	60	60
	250		EB	EBT	391	0	0%	3	1%	1.00	1.01	395	28	423	423
	250	Count Date : 07/11/2017		EBR	125	0	0%	0	0%	1.00	1.01	125	0	125	125
	250	2017		WBL	12	0	0%	0	0%	1.00	1.01	10	0	10	10
	250		WB	WBT	355	2	1%	4	1%	1.00	1.01	360	0	360	360
	250			WBR	25	0	0%	0	0%	1.00	1.01	25	0	25	25
	250	PM Peak Hour: 2:00 PM-3:00 PM		NBL	156	0	0%	1	1%	1.00	1.01	160	0	160	160
	250	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	118	0	0%	0	0%	1.00	1.01	120	0	120	120
	250			NBR	32	0	0%	2	6%	1.00	1.01	30	2	32	32
	250			SBL	16	0	0%	0	0%	1.00	1.01	15	1	16	16
	250	PHF:	SB	SBT	91	0	0%	0	0%	1.00	1.01	90	0	90	90
	250	0.93		SBR	78	0	0%	1	1%	1.00	1.01	80	0	80	80
	250														
	250		TEV	TEV	1459	2	0%	11	1%			1470	31	1501	1501
26	260	US 101 at Newmark St		EBL	163	1	1%	3	2%	1.008	1.18	195	-20	175	175
	260		EB	EBT	1	0	0%	0	0%	1.008	1.18	1	0	1	<5
	260	Count Date : 04/22/2016		EBR	300	0	0%	2	1%	1.008	1.18	355	-40	315	315
	260	2016		WBL	2	0	0%	0	0%	1.008	1.18	2	0	2	<5
	260		WB	WBT	3	0	0%	0	0%	1.008	1.18	5	0	5	5
	260			WBR	3	0	0%	0	0%	1.008	1.18	5	0	5	5
	260	PM Peak Hour: 2:45 PM-3:45 PM		NBL	298	0	0%	4	1%	1.008	1.18	355	-35	320	320
	260	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	676	12	2%	24	4%	1.008	1.18	805	-5	800	800
	260			NBR	1	0	0%	1	100%	1.008	1.18	1	0	1	<5
	260			SBL	0	0	0%	0	0%	1.008	1.18	0	1	1	<5
	260	PHF:	SB	SBT	671	17	3%	25	4%	1.008	1.18	800	-5	795	795
	260	0.98		SBR	76	1	1%	1	1%	1.008	1.18	90	-10	80	80
	260														
	260		TEV	TEV	2194	31	1%	60	3%			2614	-114	2500	2500
27	1010	Morrison St at Lakeshore Dr		EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1010		EB	EBT	50	1	2%	3	6%	1.00	1.01	50	0	50	50
	1010	Count Date : 07/11/2017		EBR	1	0	0%	0	0%	1.00	1.01	1	0	1	<5
	1010	2017		WBL	38	0	0%	0	0%	1.00	1.01	40	0	40	40
	1010		WB	WBT	52	1	2%	2	4%	1.00	1.01	55	0	55	55
	1010			WBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1010	PM Peak Hour: 4:30 PM-5:30 PM		NBL	3	0	0%	0	0%	1.00	1.01	5	0	5	5
	1010	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1010			NBR	93	0	0%	0	0%	1.00	1.01	95	0	95	95
	1010			SBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1010	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1010	0.90		SBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1010														
	1010		TEV	TEV	237	2	1%	5	2%			246	0	246	246
28	1020	Newmark Ave at Cape Arago Highway/Empire Blvd		EBL	1	0	0%	0	0%	1.00	1.02	1	0	1	<5
	1020		EB	EBT	4	0	0%	0	0%	1.00	1.02	5	0	5	5
	1020	Count Date : 07/11/2017		EBR	0	0	0%	0	0%	1.00	1.02	0	1	1	<5
	1020	2017		WBL	379	4	1%	9	2%	1.00	1.02	385	0	385	385
	1020		WB	WBT	10	0	0%	0	0%	1.00	1.02	10	0	10	10
	1020			WBR	3	0	0%	0	0%	1.00	1.02	5	0	5	5
	1020	PM Peak Hour: 4:30 PM-5:30 PM		NBL	3	0	0%	0	0%	1.00	1.02	5	0	5	5
	1020	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	1	0	0%	0	0%	1.00	1.02	1	0	1	<5
	1020			NBR	410	0	0%	2	0%	1.00	1.02	420	0	420	420
	1020			SBL	4	0	0%	0	0%	1.00	1.02	5	0	5	5

N-S ID	Synchro ID	Intersection	Direction	Movement	Existing Counts 1-Hr Volume PM Peak	Existing Heavy Vehicle Count	Existing Heavy Vehicle Percentage	FHWA 5-13 Heavy Vehicle Count	FHWA 5-13 Heavy Vehicle Percentage	Base Year Adjustment Factor	Seasonal Adjustment Factor	30DHV PM Peak	Balancing Adjustments	30th Highest Hour 2017 Balanced Volumes PM Peak	Volumes for FIGURE
	1020	PHF:	SB	SBT	2	0	0%	0	0%	1.00	1.02	2	0	2	<5
	1020	0.80		SBR	0	0	0%	0	0%	1.00	1.02	0	1	1	<5
	1020														
	1020		TEV	TEV	817	4	0%	11	1%			839	2	841	841
29	1030	Newmark Ave at Morrison St		EBL	3	0	0%	0	0%	1.001	1.15	5	0	5	5
	1030		EB	EBT	526	2	0%	7	1%	1.001	1.15	605	0	605	605
	1030	Count Date : 05/10/2016		EBR	27	0	0%	0	0%	1.001	1.15	30	0	30	30
	1030	2016		WBL	140	0	0%	1	1%	1.001	1.15	160	0	160	160
	1030		WB	WBT	636	2	0%	10	2%	1.001	1.15	730	0	730	730
	1030			WBR	3	0	0%	0	0%	1.001	1.15	5	0	5	5
	1030	PM Peak Hour: 2:45 PM-3:45 PM		NBL	9	0	0%	0	0%	1.001	1.15	10	0	10	10
	1030	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.001	1.15	0	1	1	<5
	1030			NBR	130	0	0%	1	1%	1.001	1.15	150	0	150	150
	1030			SBL	3	0	0%	0	0%	1.001	1.15	5	0	5	5
	1030	PHF:	SB	SBT	0	0	0%	0	0%	1.001	1.15	0	1	1	<5
	1030	0.95		SBR	2	0	0%	0	0%	1.001	1.15	2	0	2	<5
	1030														
	1030		TEV	TEV	1479	4	0%	19	1%			1702	2	1704	1704
30	1040	Newmark Ave at Ocean Blvd		EBL	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1040		EB	EBT	472	0	0%	5	1%	1.00	1.02	480	0	480	480
	1040	Count Date : 07/11/2017		EBR	240	0	0%	4	2%	1.00	1.02	245	0	245	245
	1040	2017		WBL	1	0	0%	0	0%	1.00	1.02	1	0	1	<5
	1040		WB	WBT	579	2	0%	10	2%	1.00	1.02	590	0	590	590
	1040			WBR	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1040	PM Peak Hour: 4:45 PM-5:45 PM		NBL	365	0	0%	4	1%	1.00	1.02	370	0	370	370
	1040	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1040			NBR	48	0	0%	0	0%	1.00	1.02	50	0	50	50
	1040			SBL	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1040	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1040	0.93		SBR	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1040														
	1040		TEV	TEV	1705	2	0%	23	1%			1736	0	1736	1736
31	1050	Newmark Ave at Laclair St		EBL	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1050		EB	EBT	601	0	0%	6	1%	1.00	1.02	615	0	615	615
	1050	Count Date : 07/11/2017		EBR	17	0	0%	0	0%	1.00	1.02	15	0	15	15
	1050	2017		WBL	56	1	2%	3	5%	1.00	1.02	55	0	55	55
	1050		WB	WBT	677	4	1%	9	1%	1.00	1.02	690	0	690	690
	1050			WBR	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1050	PM Peak Hour: 4:45 PM-5:45 PM		NBL	23	0	0%	0	0%	1.00	1.02	25	0	25	25
	1050	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1050			NBR	119	1	1%	1	1%	1.00	1.02	120	0	120	120
	1050			SBL	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1050	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1050	0.96		SBR	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1050														
	1050		TEV	TEV	1493	6	0%	19	1%			1520	0	1520	1520
32	1060	Empire Blvd at Pacific Ave		EBL	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1060		EB	EBT	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1060	Count Date : 07/11/2017		EBR	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1060	2017		WBL	35	0	0%	0	0%	1.00	1.02	35	0	35	35
	1060		WB	WBT	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1060			WBR	2	0	0%	0	0%	1.00	1.02	2	0	2	<5
	1060	PM Peak Hour: 4:45 PM-5:45 PM		NBL	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1060	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	417	1	0%	4	1%	1.00	1.02	425	0	425	425
	1060			NBR	39	0	0%	0	0%	1.00	1.02	40	0	40	40
	1060			SBL	3	0	0%	0	0%	1.00	1.02	5	0	5	5
	1060	PHF:	SB	SBT	370	3	1%	7	2%	1.00	1.02	375	0	375	375
	1060	0.94		SBR	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1060														
	1060		TEV	TEV	866	4	0%	11	1%			882	0	882	882
33	1070	Thompson Rd at Woodland Dr		EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1070		EB	EBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1070	Count Date : 07/11/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1070	2017		WBL	39	0	0%	1	3%	1.00	1.01	40	0	40	40
	1070		WB	WBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1070			WBR	186	0	0%	0	0%	1.00	1.01	190	0	190	190
	1070	PM Peak Hour: 2:00 PM-3:00 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1070	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	298	0	0%	3	1%	1.00	1.01	300	0	300	300
	1070			NBR	26	0	0%	0	0%	1.00	1.01	25	0	25	25
	1070			SBL	120	0	0%	2	2%	1.00	1.01	120	1	121	121
	1070	PHF:	SB	SBT	343	0	0%	4	1%	1.00	1.01	345	4	349	349
	1070	0.94		SBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1070														
	1070		TEV	TEV	1012	0	0%	10	1%			1020	5	1025	1025
34	1080	Koosbay Blvd at Thompson Rd		EBL	75	0	0%	1	1%	1.00	1.01	75	0	75	75
	1080		EB	EBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1080	Count Date : 07/11/2017		EBR	195	0	0%	0	0%	1.00	1.01	195	0	195	195
	1080	2017		WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1080		WB	WBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1080			WBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1080	PM Peak Hour: 2:00 PM-3:00 PM		NBL	106	1	1%	1	1%	1.00	1.01	105	0	105	105
	1080	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	232	0	0%	0	0%	1.00	1.01	235	0	235	235
	1080			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1080			SBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1080	PHF:	SB	SBT	203	0	0%	0	0%	1.00	1.01	205	-13	192	192
	1080	0.91		SBR	33	0	0%	0	0%	1.00	1.01	35	-2	33	33
	1080														
	1080		TEV	TEV	844	1	0%	2	0%			850	-15	835	835
35	1090	Ocean Blvd at Woodland Dr		EBL	103	0	0%	0	0%	1.00	1.01	105	0	105	105
	1090		EB	EBT	403	2	0%	6	1%	1.00	1.01	405	0	405	405
	1090	Count Date : 07/12/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1090	2017		WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1090		WB	WBT	421	0	0%	1	0%	1.00	1.01	425	0	425	425
	1090			WBR	159	0	0%	0	0%	1.00	1.01	160	0	160	160
	1090	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1090	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1090			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0

N-S ID	Synchro ID	Intersection	Direction	Movement	Existing Counts 1-Hr Volume PM Peak	Existing Heavy Vehicle Count	Existing Heavy Vehicle Percentage	FHWA 5-13 Heavy Vehicle Count	FHWA 5-13 Heavy Vehicle Percentage	Base Year Adjustment Factor	Seasonal Adjustment Factor	30DHV PM Peak	Balancing Adjustments	30th Highest Hour 2017 Balanced Volumes PM Peak	Volumes for FIGURE
	1090			SBL	261	0	0%	1	0%	1.00	1.01	265	0	265	265
	1090	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1090	0.91		SBR	145	0	0%	0	0%	1.00	1.01	145	0	145	145
	1090														
	1090		TEV	TEV	1492	2	0%	8	1%			1505	0	1505	1505
36	1100	Ocean Blvd at Butler Rd		EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1100		EB	EBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1100	Count Date : 07/12/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1100	2017		WBL	14	0	0%	0	0%	1.00	1.01	15	0	15	15
	1100		WB	WBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1100			WBR	50	0	0%	0	0%	1.00	1.01	50	0	50	50
	1100	PM Peak Hour: 4:45 PM-5:45 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1100	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	534	4	1%	6	1%	1.00	1.01	540	0	540	540
	1100			NBR	13	0	0%	0	0%	1.00	1.01	15	0	15	15
	1100			SBL	37	0	0%	0	0%	1.00	1.01	35	0	35	35
	1100	PHF:	SB	SBT	619	4	1%	10	2%	1.00	1.01	625	0	625	625
	1100	0.85		SBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1100														
	1100		TEV	TEV	1267	8	1%	16	1%			1280	0	1280	1280
37	1110	Koosbay Blvd at 10th St		EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1110		EB	EBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1110	Count Date : 07/12/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1110	2017		WBL	40	0	0%	1	3%	1.00	1.01	40	0	40	40
	1110		WB	WBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1110			WBR	125	0	0%	3	2%	1.00	1.01	125	0	125	125
	1110	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1110	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	181	0	0%	1	1%	1.00	1.01	185	0	185	185
	1110			NBR	31	0	0%	0	0%	1.00	1.01	30	0	30	30
	1110			SBL	172	0	0%	0	0%	1.00	1.01	175	0	175	175
	1110	PHF:	SB	SBT	196	0	0%	0	0%	1.00	1.01	200	0	200	200
	1110	0.85		SBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1110														
	1110		TEV	TEV	745	0	0%	5	1%			755	0	755	755
38	1120	US 101 at Koosbay Blvd		EBL	16	0	0%	0	0%	1.00	1.02	15	0	15	15
	1120		EB	EBT	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1120	Count Date : 07/11/2017		EBR	153	1	1%	3	2%	1.00	1.02	155	0	155	155
	1120	2017		WBL	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1120		WB	WBT	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1120			WBR	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1120	PM Peak Hour: 4:30 PM-5:30 PM		NBL	86	1	1%	4	5%	1.00	1.02	90	0	90	90
	1120	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	981	23	2%	41	4%	1.00	1.02	1000	0	1000	1000
	1120			NBR	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1120			SBL	0	0	0%	0	0%	1.00	1.02	0	0	0	0
	1120	PHF:	SB	SBT	1097	25	2%	51	5%	1.00	1.02	1120	0	1120	1120
	1120	0.91		SBR	33	0	0%	0	0%	1.00	1.02	35	0	35	35
	1120														
	1120		TEV	TEV	2366	50	2%	99	4%			2415	0	2415	2415
39	1130	7th St at Commercial Ave		EBL	0	0	0%	0	0%	1.00	1.03	0	0	0	0
	1130		EB	EBT	0	0	0%	0	0%	1.00	1.03	0	0	0	0
	1130	Count Date : 09/12/2017		EBR	45	1	2%	2	4%	1.00	1.03	45	0	45	45
	1130	2017		WBL	437	0	0%	3	1%	1.00	1.03	450	0	450	450
	1130		WB	WBT	187	0	0%	1	1%	1.00	1.03	195	0	195	195
	1130			WBR	0	0	0%	0	0%	1.00	1.03	0	0	0	0
	1130	PM Peak Hour: 2:00 PM-3:00 PM		NBL	0	0	0%	0	0%	1.00	1.03	0	0	0	0
	1130	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.03	0	0	0	0
	1130			NBR	0	0	0%	0	0%	1.00	1.03	0	0	0	0
	1130			SBL	0	0	0%	0	0%	1.00	1.03	0	0	0	0
	1130	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.03	0	0	0	0
	1130	0.88		SBR	0	0	0%	0	0%	1.00	1.03	0	0	0	0
	1130														
	1130		TEV	TEV	669	1	0%	6	1%			690	0	690	690
40	1140	Commercial Ave at US 101 South		EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1140		EB	EBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1140	Count Date : 07/11/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1140	2017		WBL	34	0	0%	1	3%	1.00	1.01	35	0	35	35
	1140		WB	WBT	291	0	0%	9	3%	1.00	1.01	295	0	295	295
	1140			WBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1140	PM Peak Hour: 4:30 PM-5:30 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1140	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1140			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1140			SBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1140	PHF:	SB	SBT	1211	18	1%	33	3%	1.00	1.01	1225	0	1225	1225
	1140	0.95		SBR	87	0	0%	2	2%	1.00	1.01	90	0	90	90
	1140														
	1140		TEV	TEV	1623	18	1%	45	3%			1645	0	1645	1645
41	1150	Commercial Ave at US 101 North		EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1150		EB	EBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1150	Count Date : 07/12/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1150	2017		WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1150		WB	WBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1150			WBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1150	PM Peak Hour: 2:15 PM-3:15 PM		NBL	276	1	0%	4	1%	1.00	1.01	280	0	280	280
	1150	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	1109	37	3%	70	6%	1.00	1.01	1120	0	1120	1120
	1150			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1150			SBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1150	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1150	0.95		SBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1150														
	1150		TEV	TEV	1385	38	3%	74	5%			1400	0	1400	1400
42	1160	10th St at Central Ave		EBL	15	0	0%	0	0%	1.00	1.01	15	0	15	15
	1160		EB	EBT	515	0	0%	6	1%	1.00	1.01	520	0	520	520
	1160	Count Date : 07/11/2017		EBR	114	0	0%	2	2%	1.00	1.01	115	0	115	115
	1160	2017		WBL	6	0	0%	0	0%	1.00	1.01	5	0	5	5
	1160		WB	WBT	411	2	0%	12	3%	1.00	1.01	415	0	415	415
	1160			WBR	16	0	0%	0	0%	1.00	1.01	15	0	15	15
	1160	PM Peak Hour: 4:45 PM-5:45 PM		NBL	165	0	0%	0	0%	1.00	1.01	165	0	165	165
	1160	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	94	0	0%	0	0%	1.00	1.01	95	0	95	95

N-S ID	Synchro ID	Intersection	Direction	Movement	Existing Counts 1-Hr Volume PM Peak	Existing Heavy Vehicle Count	Existing Heavy Vehicle Percentage	FHWA 5-13 Heavy Vehicle Count	FHWA 5-13 Heavy Vehicle Percentage	Base Year Adjustment Factor	Seasonal Adjustment Factor	30DHV PM Peak	Balancing Adjustments	30th Highest Hour 2017 Balanced Volumes PM Peak	Volumes for FIGURE
	1160			NBR	16	0	0%	0	0%	1.00	1.01	15	0	15	15
	1160		SB	SBL	132	0	0%	0	0%	1.00	1.01	135	0	135	135
	1160	PHF:		SBT	74	0	0%	0	0%	1.00	1.01	75	0	75	75
	1160	0.94		SBR	18	0	0%	1	6%	1.00	1.01	20	0	20	20
	1160														
	1160		TEV	TEV	1576	2	0%	21	1%			1590	0	1590	1590
43	1170	Central Ave at 7th St	EB	EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1170			EBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1170	Count Date : 07/12/2017		EBR	611	2	0%	6	1%	1.00	1.01	615	45	660	660
	1170	2017	WB	WBL	10	0	0%	0	0%	1.00	1.01	10	0	10	10
	1170			WBT	29	0	0%	0	0%	1.00	1.01	30	0	30	30
	1170			WBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1170	PM Peak Hour: 3:45 PM-4:45 PM	NB	NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1170	PM Peak Hour Used: 4:30 PM-5:30 PM		NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1170			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1170		SB	SBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1170	PHF:		SBT	67	1	1%	2	3%	1.00	1.01	70	0	70	70
	1170	0.91		SBR	408	1	0%	4	1%	1.00	1.01	410	0	410	410
	1170														
	1170		TEV	TEV	1125	4	0%	12	1%			1135	45	1180	1180
44	1180	7th St at Anderson Ave	EB	EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1180			EBT	48	0	0%	0	0%	1.00	1.01	50	0	50	50
	1180	Count Date : 07/12/2017		EBR	28	0	0%	0	0%	1.00	1.01	30	0	30	30
	1180	2017	WB	WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1180			WBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1180			WBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1180	PM Peak Hour: 3:30 PM-4:30 PM	NB	NBL	79	0	0%	1	1%	1.00	1.01	80	0	80	80
	1180	PM Peak Hour Used: 4:30 PM-5:30 PM		NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1180			NBR	16	0	0%	1	6%	1.00	1.01	15	0	15	15
	1180		SB	SBL	594	2	0%	8	1%	1.00	1.01	600	0	600	600
	1180	PHF:		SBT	112	0	0%	0	0%	1.00	1.01	115	0	115	115
	1180	0.90		SBR	24	0	0%	1	4%	1.00	1.01	25	0	25	25
	1180														
	1180		TEV	TEV	901	2	0%	11	1%			915	0	915	915
45	1190	Elrod Ave at 10th St	EB	EBL	64	0	0%	2	3%	1.00	1.01	65	0	65	65
	1190			EBT	9	0	0%	0	0%	1.00	1.01	10	0	10	10
	1190	Count Date : 07/12/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1190	2017	WB	WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1190			WBT	22	0	0%	0	0%	1.00	1.01	20	0	20	20
	1190			WBR	118	0	0%	1	1%	1.00	1.01	120	0	120	120
	1190	PM Peak Hour: 4:45 PM-5:45 PM	NB	NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1190	PM Peak Hour Used: 4:30 PM-5:30 PM		NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1190			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1190		SB	SBL	49	0	0%	1	2%	1.00	1.01	50	0	50	50
	1190	PHF:		SBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1190	0.85		SBR	103	0	0%	2	2%	1.00	1.01	105	0	105	105
	1190														
	1190		TEV	TEV	365	0	0%	6	2%			370	0	370	370
46	1200	11th St at Ingersoll Ave	EB	EBL	1	0	0%	0	0%	1.00	1.01	1	0	1	<5
	1200			EBT	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	1200	Count Date : 07/12/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	1200	2017	WB	WBL	6	0	0%	0	0%	1.00	1.01	5	0	5	5
	1200			WBT	7	0	0%	0	0%	1.00	1.01	5	0	5	5
	1200			WBR	54	0	0%	0	0%	1.00	1.01	55	0	55	55
	1200	PM Peak Hour: 5:00 PM-6:00 PM	NB	NBL	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	1200	PM Peak Hour Used: 4:30 PM-5:30 PM		NBT	2	0	0%	0	0%	1.00	1.01	2	0	2	<5
	1200			NBR	3	0	0%	0	0%	1.00	1.01	5	0	5	5
	1200		SB	SBL	88	0	0%	2	2%	1.00	1.01	90	0	90	90
	1200	PHF:		SBT	5	0	0%	0	0%	1.00	1.01	5	0	5	5
	1200	0.85		SBR	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	1200														
	1200		TEV	TEV	166	0	0%	2	1%			168	4	172	172
47	1210	7th St at Ingersoll Ave	EB	EBL	7	0	0%	0	0%	1.00	1.01	5	0	5	5
	1210			EBT	8	0	0%	0	0%	1.00	1.01	10	0	10	10
	1210	Count Date : 07/12/2017		EBR	3	0	0%	0	0%	1.00	1.01	5	0	5	5
	1210	2017	WB	WBL	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	1210			WBT	12	0	0%	0	0%	1.00	1.01	10	0	10	10
	1210			WBR	7	0	0%	0	0%	1.00	1.01	5	0	5	5
	1210	PM Peak Hour: 4:45 PM-5:45 PM	NB	NBL	15	0	0%	0	0%	1.00	1.01	15	0	15	15
	1210	PM Peak Hour Used: 4:30 PM-5:30 PM		NBT	43	1	2%	1	2%	1.00	1.01	45	0	45	45
	1210			NBR	3	0	0%	0	0%	1.00	1.01	5	0	5	5
	1210		SB	SBL	4	0	0%	0	0%	1.00	1.01	5	0	5	5
	1210	PHF:		SBT	77	1	1%	1	1%	1.00	1.01	80	0	80	80
	1210	0.85		SBR	12	0	0%	0	0%	1.00	1.01	10	0	10	10
	1210														
	1210		TEV	TEV	191	2	1%	2	1%			195	1	196	196
48	1220	Hall Ave at US 101 South	EB	EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1220			EBT	35	0	0%	0	0%	1.00	1.01	35	0	35	35
	1220	Count Date : 07/12/2017		EBR	47	0	0%	1	2%	1.00	1.01	45	0	45	45
	1220	2017	WB	WBL	74	0	0%	0	0%	1.00	1.01	75	0	75	75
	1220			WBT	39	0	0%	0	0%	1.00	1.01	40	0	40	40
	1220			WBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1220	PM Peak Hour: 4:45 PM-5:45 PM	NB	NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1220	PM Peak Hour Used: 4:30 PM-5:30 PM		NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1220			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1220		SB	SBL	34	0	0%	0	0%	1.00	1.01	35	0	35	35
	1220	PHF:		SBT	1585	20	1%	49	3%	1.00	1.01	1600	0	1600	1600
	1220	0.95		SBR	26	0	0%	0	0%	1.00	1.01	25	0	25	25
	1220														
	1220		TEV	TEV	1840	20	1%	50	3%			1855	0	1855	1855
49	1230	Hall Ave at US 101 North	EB	EBL	51	0	0%	0	0%	1.00	1.01	50	0	50	50
	1230			EBT	5	0	0%	0	0%	1.00	1.01	5	0	5	5
	1230	Count Date : 07/12/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1230	2017	WB	WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1230			WBT	4	0	0%	0	0%	1.00	1.01	5	0	5	5
	1230			WBR	5	0	0%	0	0%	1.00	1.01	5	0	5	5
	1230	PM Peak Hour: 3:30 PM-4:30 PM		NBL	72	0	0%	0	0%	1.00	1.01	75	0	75	75

N-S ID	Synchro ID	Intersection	Direction	Movement	Existing Counts 1-Hr Volume PM Peak	Existing Heavy Vehicle Count	Existing Heavy Vehicle Percentage	FHWA 5-13 Heavy Vehicle Count	FHWA 5-13 Heavy Vehicle Percentage	Base Year Adjustment Factor	Seasonal Adjustment Factor	30DHV PM Peak	Balancing Adjustments	30th Highest Hour 2017 Balanced Volumes PM Peak	Volumes for FIGURE
	1230	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	1185	27	2%	55	5%	1.00	1.01	1195	0	1195	1195
	1230			NBR	2	2	100%	2	100%	1.00	1.01	2	0	2	<5
	1230			SBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1230	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1230	0.94		SBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1230														
	1230		**TEV**	**TEV**	**1324**	**29**	2%	57	4%			**1337**	**0**	**1337**	**1337**
50	1240	Johnson Ave at US 101 South		EBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1240		EB	EBT	165	2	1%	5	3%	1.00	1.01	165	0	165	165
	1240	Count Date : 07/11/2017		EBR	50	0	0%	0	0%	1.00	1.01	50	0	50	50
	1240	2017		EBR2	5	0	0%	0	0%	1.00	1.01	5	0	5	5
	1240			WBL2	172	3	2%	3	2%	1.00	1.01	175	0	175	175
	1240		WB	WBL	16	0	0%	1	6%	1.00	1.01	15	0	15	15
	1240			WBT	87	0	0%	1	1%	1.00	1.01	90	0	90	90
	1240	PM Peak Hour: 4:45 PM-5:45 PM		WBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1240	PM Peak Hour Used: 4:30 PM-5:30 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1240		NB	NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1240			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1240			SBL2	276	0	0%	4	1%	1.00	1.01	280	0	280	280
	1240	PHF:	SB	SBL	1220	3	0%	6	0%	1.00	1.01	1230	0	1230	1230
	1240	0.94		SBT	143	23	16%	36	25%	1.00	1.01	145	0	145	145
	1240			SBR	54	0	0%	0	0%	1.00	1.01	55	0	55	55
	1240														
	1240		**TEV**	**TEV**	**2188**	**31**	1%	56	3%			**1995**	**0**	**2210**	**2210**
51	1250	Johnson Ave at US 101 North		EBL	92	2	2%	4	4%	1.00	1.01	95	0	95	95
	1250		EB	EBT	331	0	0%	5	2%	1.00	1.01	335	0	335	335
	1250	Count Date : 07/11/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1250	2017		WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1250		WB	WBT	252	0	0%	0	0%	1.00	1.01	255	0	255	255
	1250			WBR	184	1	1%	3	2%	1.00	1.01	185	0	185	185
	1250	PM Peak Hour: 3:30 PM-4:30 PM		NBL	32	2	6%	3	9%	1.00	1.01	30	0	30	30
	1250	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	952	27	3%	57	6%	1.00	1.01	960	0	960	960
	1250			NBR	138	0	0%	3	2%	1.00	1.01	140	0	140	140
	1250			SBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1250	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1250	0.98		SBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1250														
	1250		**TEV**	**TEV**	**1981**	**32**	2%	75	4%			**2000**	**0**	**2000**	**2000**
52	1260	7th St at Lockhart Ave/Southwest Blvd		EBL	27	0	0%	0	0%	1.00	1.01	25	0	25	25
	1260		EB	EBT	211	4	2%	10	5%	1.00	1.01	215	0	215	215
	1260	Count Date : 07/12/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1260	2017		WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1260		WB	WBT	301	1	0%	2	1%	1.00	1.01	305	0	305	305
	1260			WBR	4	0	0%	0	0%	1.00	1.01	5	0	5	5
	1260	PM Peak Hour: 4:45 PM-5:45 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1260	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1260			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1260			SBL	6	0	0%	1	17%	1.00	1.01	5	0	5	5
	1260	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1260	0.87		SBR	50	0	0%	0	0%	1.00	1.01	50	0	50	50
	1260														
	1260		**TEV**	**TEV**	**599**	**5**	1%	13	2%			**605**	**0**	**605**	**605**
53	1270	6th Ave at D St / Coos River Highway		EBL	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	1270		EB	EBT	18	0	0%	1	6%	1.00	1.01	20	0	20	20
	1270	Count Date : 07/12/2017		EBR	47	0	0%	2	4%	1.00	1.01	45	0	45	45
	1270	2017		WBL	182	6	3%	8	4%	1.00	1.01	185	0	185	185
	1270		WB	WBT	16	0	0%	1	6%	1.00	1.01	15	0	15	15
	1270			WBR	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	1270	PM Peak Hour: 4:30 PM-5:30 PM		NBL	70	1	1%	1	1%	1.00	1.01	70	0	70	70
	1270	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	4	0	0%	0	0%	1.00	1.01	5	0	5	5
	1270			NBR	255	2	1%	4	2%	1.00	1.01	260	0	260	260
	1270			SBL	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	1270	PHF:	SB	SBT	1	0	0%	0	0%	1.00	1.01	1	0	1	<5
	1270	0.93		SBR	0	0	0%	0	0%	1.00	1.01	0	1	1	<5
	1270														
	1270		**TEV**	**TEV**	**593**	**9**	2%	17	3%			**601**	**4**	**605**	**605**
54	1280	Coos River Rd at Ross Inlet Rd		EBL	33	0	0%	0	0%	1.00	1.01	35	0	35	35
	1280		EB	EBT	186	6	3%	9	5%	1.00	1.01	190	0	190	190
	1280	Count Date : 07/12/2017		EBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1280	2017		WBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1280		WB	WBT	98	4	4%	5	5%	1.00	1.01	100	0	100	100
	1280			WBR	4	0	0%	0	0%	1.00	1.01	5	0	5	5
	1280	PM Peak Hour: 4:15 PM-5:15 PM		NBL	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1280	PM Peak Hour Used: 4:30 PM-5:30 PM	NB	NBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1280			NBR	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1280			SBL	4	0	0%	0	0%	1.00	1.01	5	0	5	5
	1280	PHF:	SB	SBT	0	0	0%	0	0%	1.00	1.01	0	0	0	0
	1280	0.84		SBR	71	1	1%	2	3%	1.00	1.01	70	0	70	70
	1280														
	1280		**TEV**	**TEV**	**396**	**11**	3%	16	4%			**405**	**0**	**405**	**405**

Appendix D
Synchro Worksheets

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	10	0	5	0	1	10	5	1	0
Future Vol, veh/h	0	0	0	10	0	5	0	1	10	5	1	0
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	14	0	7	0	1	14	7	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	7	0	0	3	0	0	37	38	3	41	35	6
Stage 1	-	-	-	-	-	-	3	3	-	32	32	-
Stage 2	-	-	-	-	-	-	34	35	-	9	3	-
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	1627	-	-	1632	-	-	973	858	1087	968	861	1083
Stage 1	-	-	-	-	-	-	1025	897	-	990	872	-
Stage 2	-	-	-	-	-	-	987	870	-	1017	897	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1627	-	-	1629	-	-	961	849	1085	948	852	1081
Mov Cap-2 Maneuver	-	-	-	-	-	-	961	849	-	948	852	-
Stage 1	-	-	-	-	-	-	1023	895	-	990	864	-
Stage 2	-	-	-	-	-	-	975	862	-	1003	895	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	4.8	8.5	8.9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1058	1627	-	-	1629	-	-	931
HCM Lane V/C Ratio	0.014	-	-	-	0.008	-	-	0.009
HCM Control Delay (s)	8.5	0	-	-	7.2	0	-	8.9
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	120	10	2	55	1	5	1	1	1	2	1
Future Vol, veh/h	1	120	10	2	55	1	5	1	1	1	2	1
Conflicting Peds, #/hr	3	0	3	3	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	160	13	3	73	1	7	1	1	1	3	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	176	0	0	254	255	170	253	261	77
Stage 1	-	-	-	-	-	-	172	172	-	83	83	-
Stage 2	-	-	-	-	-	-	82	83	-	170	178	-
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	1535	-	-	1412	-	-	703	652	879	704	647	990
Stage 1	-	-	-	-	-	-	835	760	-	930	830	-
Stage 2	-	-	-	-	-	-	931	830	-	837	756	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1531	-	-	1408	-	-	696	646	876	698	641	987
Mov Cap-2 Maneuver	-	-	-	-	-	-	696	646	-	698	641	-
Stage 1	-	-	-	-	-	-	832	757	-	926	826	-
Stage 2	-	-	-	-	-	-	925	826	-	833	753	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	10.1	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	709	1531	-	-	1408	-	-	719
HCM Lane V/C Ratio	0.013	0.001	-	-	0.002	-	-	0.007
HCM Control Delay (s)	10.1	7.4	0	-	7.6	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	130	65	5	10	1
Future Vol, veh/h	1	130	65	5	10	1
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	176	88	7	14	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	97	0	-	0	272	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	178	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1509	-	-	-	722	968
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	858	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1506	-	-	-	718	966
Mov Cap-2 Maneuver	-	-	-	-	718	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	856	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1506	-	-	-	735
HCM Lane V/C Ratio	0.001	-	-	-	0.02
HCM Control Delay (s)	7.4	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	1	10	20	1	5	10	680	1	1	745	15
Future Volume (vph)	245	1	10	20	1	5	10	680	1	1	745	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	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.98			1.00			1.00	
Flt Protected		0.95			0.96			1.00			1.00	
Satd. Flow (prot)		1638			1638			3227			3189	
Flt Permitted		0.71			0.76			0.94			0.95	
Satd. Flow (perm)		1227			1295			3041			3044	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	266	1	11	22	1	5	11	739	1	1	810	16
RTOR Reduction (vph)	0	2	0	0	3	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	276	0	0	25	0	0	751	0	0	824	0
Confl. Peds. (#/hr)	8					8	2		2	2		2
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	3%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		14.4			14.4			19.8			19.8	
Effective Green, g (s)		14.9			14.9			20.3			20.3	
Actuated g/C Ratio		0.34			0.34			0.47			0.47	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.5			2.5			6.1			6.1	
Lane Grp Cap (vph)		423			446			1428			1430	
v/s Ratio Prot												
v/s Ratio Perm		c0.23			0.02			0.25			c0.27	
v/c Ratio		0.65			0.06			0.53			0.58	
Uniform Delay, d1		12.0			9.5			8.1			8.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.2			0.0			0.9			1.1	
Delay (s)		15.2			9.5			9.0			9.5	
Level of Service		B			A			A			A	
Approach Delay (s)		15.2			9.5			9.0			9.5	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	43.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	100	150	20	5	2
Future Vol, veh/h	5	100	150	20	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	115	172	23	6	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	195	0	-	0	311	184
Stage 1	-	-	-	-	184	-
Stage 2	-	-	-	-	127	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1390	-	-	-	686	864
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	904	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1390	-	-	-	683	864
Mov Cap-2 Maneuver	-	-	-	-	683	-
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	904	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1390	-	-	-	726
HCM Lane V/C Ratio	0.004	-	-	-	0.011
HCM Control Delay (s)	7.6	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	170	15	45	265	15	35	10	30	10	20	2
Future Vol, veh/h	5	170	15	45	265	15	35	10	30	10	20	2
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	40	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	185	16	49	288	16	38	11	33	11	22	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	306	0	0	201	0	0	609	607	195	623	607	298
Stage 1	-	-	-	-	-	-	203	203	-	396	396	-
Stage 2	-	-	-	-	-	-	406	404	-	227	211	-
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	1266	-	-	1383	-	-	410	414	851	401	414	746
Stage 1	-	-	-	-	-	-	804	737	-	633	607	-
Stage 2	-	-	-	-	-	-	626	603	-	780	731	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1264	-	-	1383	-	-	380	397	849	365	397	745
Mov Cap-2 Maneuver	-	-	-	-	-	-	380	397	-	365	397	-
Stage 1	-	-	-	-	-	-	801	734	-	629	585	-
Stage 2	-	-	-	-	-	-	580	581	-	735	728	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.1	13.8	14.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	491	1264	-	-	1383	-	-	398
HCM Lane V/C Ratio	0.166	0.004	-	-	0.035	-	-	0.087
HCM Control Delay (s)	13.8	7.9	-	-	7.7	-	-	14.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0.3

Intersection						
Int Delay, s/veh	2.7					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	230	345	110	155	15
Future Vol, veh/h	0	230	345	110	155	15
Conflicting Peds, #/hr	6	0	0	6	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	245	367	117	165	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	618	374
Stage 1	-	-	-	-	373	-
Stage 2	-	-	-	-	245	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	-	456	677
Stage 1	0	-	-	-	701	-
Stage 2	0	-	-	-	800	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	451	672
Mov Cap-2 Maneuver	-	-	-	-	543	-
Stage 1	-	-	-	-	697	-
Stage 2	-	-	-	-	795	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	596
HCM Lane V/C Ratio	-	-	-	0.303
HCM Control Delay (s)	-	-	-	13.7
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	300	115	395	300	10	155	40	395	45	45	15
Future Volume (vph)	20	300	115	395	300	10	155	40	395	45	45	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	5.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			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	0.96		1.00	1.00			1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1662	3162		1646	3305			1677	1473	1662	1677	
Flt Permitted	0.95	1.00		0.95	1.00			0.73	1.00	0.52	1.00	
Satd. Flow (perm)	1662	3162		1646	3305			1268	1473	904	1677	
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)	22	323	124	425	323	11	167	43	425	48	48	16
RTOR Reduction (vph)	0	37	0	0	2	0	0	0	90	0	11	0
Lane Group Flow (vph)	22	410	0	425	332	0	0	210	335	48	53	0
Confl. Peds. (#/hr)	7		8	8		7	5					5
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Split	NA		Split	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	2	2		6	6			8	8 6		4	
Permitted Phases							8			4		
Actuated Green, G (s)	14.9	14.9		24.0	24.0			16.0	45.5	16.0	16.0	
Effective Green, g (s)	15.4	15.4		25.5	25.5			17.0	40.0	17.0	17.0	
Actuated g/C Ratio	0.22	0.22		0.36	0.36			0.24	0.57	0.24	0.24	
Clearance Time (s)	4.5	4.5		5.5	5.5			5.0		5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5		2.5	2.5	
Lane Grp Cap (vph)	366	696		600	1205			308	842	219	407	
v/s Ratio Prot	0.01	c0.13		c0.26	0.10				0.23		0.03	
v/s Ratio Perm								c0.17		0.05		
v/c Ratio	0.06	0.59		0.71	0.28			0.68	0.40	0.22	0.13	
Uniform Delay, d1	21.5	24.4		19.0	15.7			24.0	8.3	21.1	20.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.1		3.5	0.1			5.6	0.2	0.4	0.1	
Delay (s)	21.6	25.5		22.6	15.8			29.6	8.5	21.5	20.8	
Level of Service	C	C		C	B			C	A	C	C	
Approach Delay (s)		25.3			19.6			15.5			21.1	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	14.5
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 (vph)	0	725	50	105	715	0	80	0	95	0	0	0
Future Volume (vph)	0	725	50	105	715	0	80	0	95	0	0	0
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				
Lane Util. Factor		0.95		1.00	0.95		1.00	1.00				
Frpb, ped/bikes		1.00		1.00	1.00		1.00	0.98				
Flpb, ped/bikes		1.00		1.00	1.00		0.99	1.00				
Frt		0.99		1.00	1.00		1.00	0.85				
Flt Protected		1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3262		1646	3228		1603	1460				
Flt Permitted		1.00		0.95	1.00		0.76	1.00				
Satd. Flow (perm)		3262		1646	3228		1278	1460				
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)	0	780	54	113	769	0	86	0	102	0	0	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	85	0	0	0	0
Lane Group Flow (vph)	0	829	0	113	769	0	86	17	0	0	0	0
Confl. Peds. (#/hr)						7	9		8	8		9
Heavy Vehicles (%)	0%	1%	0%	1%	3%	0%	3%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)		26.3		7.4	38.7		8.3	8.3				
Effective Green, g (s)		27.3		8.4	39.7		9.3	9.3				
Actuated g/C Ratio		0.48		0.15	0.70		0.16	0.16				
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0				
Vehicle Extension (s)		6.1		2.5	6.1		2.5	2.5				
Lane Grp Cap (vph)		1562		242	2248		208	238				
v/s Ratio Prot		c0.25		c0.07	0.24			0.01				
v/s Ratio Perm							c0.07					
v/c Ratio		0.53		0.47	0.34		0.41	0.07				
Uniform Delay, d1		10.4		22.3	3.4		21.4	20.2				
Progression Factor		1.00		1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.8		1.0	0.3		1.0	0.1				
Delay (s)		11.2		23.3	3.7		22.4	20.3				
Level of Service		B		C	A		C	C				
Approach Delay (s)		11.2			6.2			21.2			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
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 (vph)	5	770	55	48	796	1	50	1	70	10	1	5
Future Volume (vph)	5	770	55	48	796	1	50	1	70	10	1	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	6.5		4.5	6.5		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1649	3283		1662	3324		1651	1470			1519	
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.86	
Satd. Flow (perm)	1649	3283		1662	3324		1297	1470			1342	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	837	60	52	865	1	54	1	76	11	1	5
RTOR Reduction (vph)	0	5	0	0	0	0	0	60	0	0	4	0
Lane Group Flow (vph)	5	892	0	52	866	0	54	17	0	0	13	0
Confl. Peds. (#/hr)	18		11	11		18	14		4	4		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.7	32.0		4.4	35.7		13.8	13.8			13.8	
Effective Green, g (s)	0.7	32.0		4.4	35.7		13.8	13.8			13.8	
Actuated g/C Ratio	0.01	0.49		0.07	0.54		0.21	0.21			0.21	
Clearance Time (s)	4.5	6.5		4.5	6.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.8		2.5	4.8		2.5	2.5			2.5	
Lane Grp Cap (vph)	17	1599		111	1806		272	308			281	
v/s Ratio Prot	0.00	c0.27		c0.03	c0.26			0.01				
v/s Ratio Perm							c0.04				0.01	
v/c Ratio	0.29	0.56		0.47	0.48		0.20	0.06			0.05	
Uniform Delay, d1	32.3	11.9		29.5	9.3		21.4	20.7			20.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	3.5	0.7		2.3	0.4		0.3	0.1			0.0	
Delay (s)	35.7	12.6		31.8	9.7		21.7	20.8			20.8	
Level of Service	D	B		C	A		C	C			C	
Approach Delay (s)		12.7			10.9			21.1			20.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	15.5
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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	255	515	0	0	730	15	5	1	15	5	0	110
Future Vol, veh/h	255	515	0	0	730	15	5	1	15	5	0	110
Conflicting Peds, #/hr	10	0	11	11	0	10	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	280	566	0	0	802	16	5	1	16	5	0	121

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	828	0	-	-	-	0	1527	1954	286	1667	1946	419
Stage 1	-	-	-	-	-	-	1126	1126	-	820	820	-
Stage 2	-	-	-	-	-	-	401	828	-	847	1126	-
Critical Hdwy	4.1	-	-	-	-	-	7.5	6.5	6.9	7.5	6.5	6.9
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	2.2	-	-	-	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	812	-	0	0	-	-	82	65	717	64	66	589
Stage 1	-	-	0	0	-	-	222	282	-	340	392	-
Stage 2	-	-	0	0	-	-	602	389	-	327	282	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	804	-	-	-	-	-	39	32	715	36	32	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	39	32	-	36	32	-
Stage 1	-	-	-	-	-	-	109	139	-	166	388	-
Stage 2	-	-	-	-	-	-	477	385	-	155	139	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.9	0	43.6	20.9
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	116	804	-	-	-	351
HCM Lane V/C Ratio	0.199	0.349	-	-	-	0.36
HCM Control Delay (s)	43.6	11.9	1.5	-	-	20.9
HCM Lane LOS	E	B	A	-	-	C
HCM 95th %tile Q(veh)	0.7	1.6	-	-	-	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	160	310	60	335	0	0	0	0	5	605	285
Future Volume (vph)	0	160	310	60	335	0	0	0	0	5	605	285
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
Lane Util. Factor		1.00	1.00		0.95						0.95	1.00
Frpb, ped/bikes		1.00	0.98		1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		0.99						1.00	1.00
Satd. Flow (prot)		1733	1460		3297						3197	1473
Flt Permitted		1.00	1.00		0.87						1.00	1.00
Satd. Flow (perm)		1733	1460		2889						3197	1473
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	174	337	65	364	0	0	0	0	5	658	310
RTOR Reduction (vph)	0	0	125	0	0	0	0	0	0	0	0	107
Lane Group Flow (vph)	0	174	212	0	429	0	0	0	0	0	663	203
Confl. Peds. (#/hr)	5		7	7		5	13		7	7		13
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	4%	1%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Prot
Protected Phases		8			4						2	2
Permitted Phases			8	4						2		
Actuated Green, G (s)		15.6	15.6		15.6						45.4	45.4
Effective Green, g (s)		16.1	16.1		16.1						45.9	45.9
Actuated g/C Ratio		0.23	0.23		0.23						0.66	0.66
Clearance Time (s)		4.5	4.5		4.5						4.5	4.5
Vehicle Extension (s)		2.5	2.5		2.5						6.1	6.1
Lane Grp Cap (vph)		398	335		664						2096	965
v/s Ratio Prot		0.10										0.14
v/s Ratio Perm			0.15		c0.15						0.21	
v/c Ratio		0.44	0.63		0.65						0.32	0.21
Uniform Delay, d1		23.1	24.3		24.4						5.2	4.8
Progression Factor		1.00	1.00		0.97						1.00	1.00
Incremental Delay, d2		0.6	3.4		1.9						0.4	0.5
Delay (s)		23.6	27.7		25.4						5.6	5.3
Level of Service		C	C		C						A	A
Approach Delay (s)		26.3			25.4			0.0			5.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
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 (vph)	155	15	0	0	65	10	330	595	5	0	0	0
Future Volume (vph)	155	15	0	0	65	10	330	595	5	0	0	0
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				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91				
Frpb, ped/bikes	1.00	1.00			1.00	0.99		1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		1.00				
Flt Protected	0.95	1.00			1.00	1.00		0.98				
Satd. Flow (prot)	1645	1750			1750	1468		4570				
Flt Permitted	0.71	1.00			1.00	1.00		0.98				
Satd. Flow (perm)	1226	1750			1750	1468		4570				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	178	17	0	0	75	11	379	684	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	9	0	1	0	0	0	0
Lane Group Flow (vph)	178	17	0	0	75	2	0	1068	0	0	0	0
Confl. Peds. (#/hr)	1		4	4		1	2		2	2		2
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA			NA	Perm	Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8					4	6					
Actuated Green, G (s)	14.9	14.9			14.9	14.9		46.1				
Effective Green, g (s)	15.4	15.4			15.4	15.4		46.6				
Actuated g/C Ratio	0.22	0.22			0.22	0.22		0.67				
Clearance Time (s)	4.5	4.5			4.5	4.5		4.5				
Vehicle Extension (s)	2.5	2.5			2.5	2.5		6.5				
Lane Grp Cap (vph)	269	385			385	322		3042				
v/s Ratio Prot		0.01			0.04							
v/s Ratio Perm	c0.15					0.00		0.23				
v/c Ratio	0.66	0.04			0.19	0.01		0.35				
Uniform Delay, d1	24.9	21.5			22.2	21.3		5.1				
Progression Factor	0.46	0.29			1.00	1.00		1.00				
Incremental Delay, d2	5.3	0.0			0.2	0.0		0.3				
Delay (s)	16.8	6.3			22.4	21.3		5.4				
Level of Service	B	A			C	C		A				
Approach Delay (s)		15.9			22.3			5.4			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	6.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	95	55	25	60	60	35
Future Vol, veh/h	95	55	25	60	60	35
Conflicting Peds, #/hr	2	4	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	101	59	27	64	64	37

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	228	65	0	0	93	0
Stage 1	61	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	-	-	2.2	-
Pot Cap-1 Maneuver	765	999	-	-	1514	-
Stage 1	967	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	729	993	-	-	1511	-
Mov Cap-2 Maneuver	729	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	865	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	4.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	808	1511	-
HCM Lane V/C Ratio	-	-	0.197	0.042	-
HCM Control Delay (s)	-	-	10.5	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	10	0	0	0	0	0	0	16	943	16
Future Vol, veh/h	0	1	10	0	0	0	0	0	0	16	943	16
Conflicting Peds, #/hr	5	0	2	2	0	5	12	0	2	2	0	12
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	-	-	16983	-	-	16983	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	11	0	0	0	0	0	0	17	1025	17

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	1082	535	2	0	0
Stage 1	-	1080	-	-	-	-
Stage 2	-	2	-	-	-	-
Critical Hdwy	-	6.54	7.14	5.34	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.02	3.92	3.12	-	-
Pot Cap-1 Maneuver	0	216	419	1151	-	-
Stage 1	0	293	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	414	1151	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	14	0.2
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	414	1151	-	-
HCM Lane V/C Ratio	0.029	0.015	-	-
HCM Control Delay (s)	14	8.2	0.1	-
HCM Lane LOS	B	A	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-

Intersection						
Int Delay, s/veh	2.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	25	30	150	130	40
Future Vol, veh/h	30	25	30	150	130	40
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	38	32	38	192	167	51

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	465	197	222	0	-	0
Stage 1	197	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	559	849	1359	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	537	846	1354	-	-	-
Mov Cap-2 Maneuver	537	-	-	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	1.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1354	-	644	-	-
HCM Lane V/C Ratio	0.028	-	0.109	-	-
HCM Control Delay (s)	7.7	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	20	20	5	50	10	30	60	5	5	60	5
Future Vol, veh/h	5	20	20	5	50	10	30	60	5	5	60	5
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	23	23	6	58	12	35	70	6	6	70	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.7	7.9	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	32%	11%	8%	7%
Vol Thru, %	63%	44%	77%	86%
Vol Right, %	5%	44%	15%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	95	45	65	70
LT Vol	30	5	5	5
Through Vol	60	20	50	60
RT Vol	5	20	10	5
Lane Flow Rate	110	52	76	81
Geometry Grp	1	1	1	1
Degree of Util (X)	0.129	0.061	0.09	0.097
Departure Headway (Hd)	4.217	4.166	4.307	4.28
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	836	863	835	842
Service Time	2.311	2.174	2.315	2.28
HCM Lane V/C Ratio	0.132	0.06	0.091	0.096
HCM Control Delay	7.9	7.4	7.7	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.2	0.3	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	15	2	85	20	10	5	675	45	10	665	25
Future Volume (vph)	25	15	2	85	20	10	5	675	45	10	665	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	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.99		1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1688			1666		1662	3287		1662	3275	
Flt Permitted		0.82			0.75		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1419			1297		1662	3287		1662	3275	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	28	17	2	96	22	11	6	758	51	11	747	28
RTOR Reduction (vph)	0	2	0	0	4	0	0	4	0	0	2	0
Lane Group Flow (vph)	0	45	0	0	125	0	6	805	0	11	773	0
Confl. Peds. (#/hr)	4					4			8	8		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		9.0			9.0		0.7	24.0		0.8	24.1	
Effective Green, g (s)		9.5			9.5		1.2	25.0		1.3	25.1	
Actuated g/C Ratio		0.20			0.20		0.03	0.52		0.03	0.53	
Clearance Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		2.5			2.5		2.5	4.6		2.5	4.6	
Lane Grp Cap (vph)		282			257		41	1719		45	1719	
v/s Ratio Prot							0.00	c0.24		c0.01	0.24	
v/s Ratio Perm		0.03			c0.10							
v/c Ratio		0.16			0.49		0.15	0.47		0.24	0.45	
Uniform Delay, d1		15.9			17.0		22.8	7.2		22.8	7.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			1.1		1.2	0.4		2.1	0.3	
Delay (s)		16.0			18.0		24.0	7.6		24.8	7.4	
Level of Service		B			B		C	A		C	A	
Approach Delay (s)		16.0			18.0			7.7			7.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	47.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1	20	5	1	5	40	720	5	2	755	5
Future Vol, veh/h	5	1	20	5	1	5	40	720	5	2	755	5
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	8	8	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	6	1	23	6	1	6	45	818	6	2	858	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1367	1789	434	1353	1789	420	866	0	0	832	0	0
Stage 1	867	867	-	919	919	-	-	-	-	-	-	-
Stage 2	500	922	-	434	870	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	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	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	108	82	576	110	82	588	786	-	-	809	-	-
Stage 1	318	373	-	296	353	-	-	-	-	-	-	-
Stage 2	527	352	-	576	372	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	101	76	575	99	76	584	785	-	-	803	-	-
Mov Cap-2 Maneuver	101	76	-	99	76	-	-	-	-	-	-	-
Stage 1	299	372	-	277	330	-	-	-	-	-	-	-
Stage 2	490	329	-	550	371	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.2	30.8	0.5	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	785	-	-	267	152	803	-	-
HCM Lane V/C Ratio	0.058	-	-	0.111	0.082	0.003	-	-
HCM Control Delay (s)	9.9	-	-	20.2	30.8	9.5	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0.3	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	2	10	90	1	55	2	860	100	40	745	1
Future Volume (vph)	5	2	10	90	1	55	2	860	100	40	745	1
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	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		0.99			1.00	1.00	1.00	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		0.92			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1568			1661	1488	1662	3292	1488	1662	3228	
Flt Permitted		0.92			0.72	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1459			1247	1488	1662	3292	1488	1662	3228	
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)	5	2	11	97	1	59	2	925	108	43	801	1
RTOR Reduction (vph)	0	9	0	0	0	49	0	0	49	0	0	0
Lane Group Flow (vph)	0	9	0	0	98	10	2	925	59	43	802	0
Confl. Peds. (#/hr)			8	8								
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4			6			
Actuated Green, G (s)		8.6			8.6	8.6	0.6	28.3	28.3	4.0	31.7	
Effective Green, g (s)		9.1			9.1	9.1	1.1	30.3	30.3	4.5	33.7	
Actuated g/C Ratio		0.16			0.16	0.16	0.02	0.54	0.54	0.08	0.60	
Clearance Time (s)		4.5			4.5	4.5	4.5	6.0	6.0	4.5	6.0	
Vehicle Extension (s)		2.5			2.5	2.5	2.5	4.8	4.8	2.5	4.8	
Lane Grp Cap (vph)		237			203	242	32	1784	806	133	1946	
v/s Ratio Prot							0.00	c0.28		c0.03	c0.25	
v/s Ratio Perm		0.01			c0.08	0.01			0.04			
v/c Ratio		0.04			0.48	0.04	0.06	0.52	0.07	0.32	0.41	
Uniform Delay, d1		19.7			21.3	19.7	26.9	8.2	6.1	24.3	5.9	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0			1.3	0.0	0.6	0.5	0.1	1.0	0.3	
Delay (s)		19.8			22.6	19.8	27.5	8.6	6.2	25.3	6.1	
Level of Service		B			C	B	C	A	A	C	A	
Approach Delay (s)		19.8			21.5			8.4			7.1	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	55.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	935	910	55	55	60
Future Volume (vph)	65	935	910	55	55	60
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.93	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1662	3325	3261		1589	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1662	3325	3261		1589	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	73	1051	1022	62	62	67
RTOR Reduction (vph)	0	0	4	0	51	0
Lane Group Flow (vph)	73	1051	1080	0	78	0
Confl. Peds. (#/hr)	3			3	2	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		4	
Permitted Phases						
Actuated Green, G (s)	4.6	38.9	29.3		7.8	
Effective Green, g (s)	5.6	39.4	29.8		8.8	
Actuated g/C Ratio	0.10	0.70	0.53		0.16	
Clearance Time (s)	5.0	4.5	4.5		5.0	
Vehicle Extension (s)	2.5	4.0	4.0		2.5	
Lane Grp Cap (vph)	165	2331	1729		248	
v/s Ratio Prot	0.04	c0.32	c0.33		c0.05	
v/s Ratio Perm						
v/c Ratio	0.44	0.45	0.62		0.31	
Uniform Delay, d1	23.8	3.7	9.3		21.0	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	1.4	0.2	0.8		0.5	
Delay (s)	25.2	3.9	10.1		21.5	
Level of Service	C	A	B		C	
Approach Delay (s)		5.2	10.1		21.5	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	56.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
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 (vph)	375	475	165	65	360	155	175	300	50	105	240	25
Future Volume (vph)	375	475	165	65	360	155	175	300	50	105	240	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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		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	0.96		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3158		1662	3175		1662	1707		1646	1723	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	3158		1662	3175		1662	1707		1646	1723	
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)	403	511	177	70	387	167	188	323	54	113	258	27
RTOR Reduction (vph)	0	23	0	0	34	0	0	4	0	0	2	0
Lane Group Flow (vph)	403	665	0	70	520	0	188	373	0	113	283	0
Confl. Peds. (#/hr)			8	8			2		5	5		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	33.9	52.2		8.8	27.1		17.7	32.5		13.5	28.3	
Effective Green, g (s)	34.4	52.7		9.3	27.6		18.2	33.0		14.0	28.8	
Actuated g/C Ratio	0.28	0.42		0.07	0.22		0.15	0.26		0.11	0.23	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	457	1331		123	701		241	450		184	396	
v/s Ratio Prot	c0.24	0.21		0.04	c0.16		c0.11	c0.22		0.07	0.16	
v/s Ratio Perm												
v/c Ratio	0.88	0.50		0.57	0.74		0.78	0.83		0.61	0.71	
Uniform Delay, d1	43.4	26.5		55.9	45.4		51.5	43.4		52.9	44.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.7	0.3		4.8	4.2		14.5	11.8		5.1	5.6	
Delay (s)	61.1	26.8		60.7	49.6		66.0	55.1		58.0	49.9	
Level of Service	E	C		E	D		E	E		E	D	
Approach Delay (s)		39.5			50.9			58.7			52.2	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	48.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	601	29	26	554	20	45
Future Vol, veh/h	601	29	26	554	20	45
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	653	32	28	602	22	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	687	0	1028	345
Stage 1	-	-	-	-	671	-
Stage 2	-	-	-	-	357	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	916	-	233	657
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	685	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	914	-	222	656
Mov Cap-2 Maneuver	-	-	-	-	222	-
Stage 1	-	-	-	-	452	-
Stage 2	-	-	-	-	685	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	15.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	410	-	-	914	-
HCM Lane V/C Ratio	0.172	-	-	0.031	-
HCM Control Delay (s)	15.6	-	-	9.1	0.2
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	555	5	5	515	90	5	10	5	70	5	60
Future Volume (vph)	80	555	5	5	515	90	5	10	5	70	5	60
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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00			1.00			1.00	0.99
Flpb, ped/bikes		1.00			1.00			1.00			1.00	1.00
Frt		1.00			0.98			0.97			1.00	0.85
Flt Protected		0.99			1.00			0.99			0.96	1.00
Satd. Flow (prot)		3300			3250			1673			1672	1468
Flt Permitted		0.83			0.95			0.92			0.72	1.00
Satd. Flow (perm)		2753			3093			1555			1267	1468
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)	86	597	5	5	554	97	5	11	5	75	5	65
RTOR Reduction (vph)	0	1	0	0	19	0	0	4	0	0	0	54
Lane Group Flow (vph)	0	687	0	0	637	0	0	17	0	0	80	11
Confl. Peds. (#/hr)			4	4			2					2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		4
Actuated Green, G (s)		22.4			22.4			6.2			6.2	6.2
Effective Green, g (s)		22.4			22.4			6.2			6.2	6.2
Actuated g/C Ratio		0.61			0.61			0.17			0.17	0.17
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1684			1892			263			214	248
v/s Ratio Prot												
v/s Ratio Perm		c0.25			0.21			0.01			c0.06	0.01
v/c Ratio		0.41			0.34			0.06			0.37	0.04
Uniform Delay, d1		3.7			3.5			12.8			13.5	12.7
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2			0.1			0.1			1.1	0.1
Delay (s)		3.8			3.6			12.9			14.6	12.8
Level of Service		A			A			B			B	B
Approach Delay (s)		3.8			3.6			12.9			13.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	36.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
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 (vph)	60	423	125	10	360	25	160	120	32	16	90	80
Future Volume (vph)	60	423	125	10	360	25	160	120	32	16	90	80
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	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1750	1455	1662	1717		1662	1687		1662	1614	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1750	1455	1662	1717		1662	1687		1662	1614	
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)	65	455	134	11	387	27	172	129	34	17	97	86
RTOR Reduction (vph)	0	0	78	0	2	0	0	8	0	0	32	0
Lane Group Flow (vph)	65	455	56	11	412	0	172	155	0	17	151	0
Confl. Peds. (#/hr)			1	1			4		1	1		4
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	6.6	33.6	33.6	1.1	28.1		12.7	26.2		2.3	15.8	
Effective Green, g (s)	7.1	34.1	34.1	1.6	28.6		13.2	26.7		2.8	16.3	
Actuated g/C Ratio	0.09	0.42	0.42	0.02	0.35		0.16	0.33		0.03	0.20	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	6.0	6.0	2.5	6.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	145	734	611	32	604		270	554		57	323	
v/s Ratio Prot	c0.04	c0.26		0.01	c0.24		c0.10	0.09		0.01	c0.09	
v/s Ratio Perm			0.04									
v/c Ratio	0.45	0.62	0.09	0.34	0.68		0.64	0.28		0.30	0.47	
Uniform Delay, d1	35.2	18.5	14.2	39.3	22.4		31.8	20.1		38.2	28.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	2.7	0.2	4.6	4.8		4.3	0.2		2.1	0.8	
Delay (s)	36.8	21.2	14.4	43.9	27.2		36.0	20.3		40.4	29.4	
Level of Service	D	C	B	D	C		D	C		D	C	
Approach Delay (s)		21.3			27.7			28.4			30.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	81.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
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 (vph)	175	1	315	2	5	5	320	800	1	1	795	80
Future Volume (vph)	175	1	315	2	5	5	320	800	1	1	795	80
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	5.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.94		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1651	1488		1638		1662	3259		1662	3228	1435
Flt Permitted		1.00	1.00		0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1733	1488		1638		1662	3259		1662	3228	1435
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	179	1	321	2	5	5	327	816	1	1	811	82
RTOR Reduction (vph)	0	0	274	0	5	0	0	0	0	0	0	52
Lane Group Flow (vph)	0	180	47	0	7	0	327	817	0	1	811	30
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	3%	1%
Turn Type	custom	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	8	8		7!	7		1	6		5	2	
Permitted Phases	3	7!	8									2
Actuated Green, G (s)		13.4	12.0		1.4		23.0	54.3		0.8	32.1	32.1
Effective Green, g (s)		15.4	13.0		2.4		24.0	55.8		1.8	33.6	32.1
Actuated g/C Ratio		0.17	0.15		0.03		0.27	0.63		0.02	0.38	0.36
Clearance Time (s)		5.0	5.0		5.0		5.0	5.5		5.0	5.5	5.5
Vehicle Extension (s)		2.5	2.5		5.0		2.5	4.8		2.5	4.8	4.8
Lane Grp Cap (vph)		287	217		44		448	2043		33	1218	517
v/s Ratio Prot		c0.09			0.00		c0.20	0.25		0.00	c0.25	
v/s Ratio Perm		c0.02	0.03									0.02
v/c Ratio		0.63	0.22		0.16		0.73	0.40		0.03	0.67	0.06
Uniform Delay, d1		34.1	33.5		42.3		29.6	8.3		42.7	23.0	18.6
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		3.7	0.4		3.6		5.5	0.3		0.3	1.8	0.1
Delay (s)		37.8	33.9		45.9		35.1	8.5		43.0	24.8	18.7
Level of Service		D	C		D		D	A		D	C	B
Approach Delay (s)		35.3			45.9			16.1			24.3	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Intersection						
Int Delay, s/veh	4.9					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	1	40	55	5	95
Future Vol, veh/h	50	1	40	55	5	95
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	56	1	44	61	6	106

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	59	0	208	59
Stage 1	-	-	-	-	59	-
Stage 2	-	-	-	-	149	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1558	-	785	1012
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	884	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1555	-	761	1010
Mov Cap-2 Maneuver	-	-	-	-	761	-
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	884	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	994	-	-	1555	-
HCM Lane V/C Ratio	0.112	-	-	0.029	-
HCM Control Delay (s)	9.1	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1	1	2	1	5	5	420	1	5	385	10
Future Vol, veh/h	5	1	1	2	1	5	5	420	1	5	385	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	6	1	1	3	1	6	6	525	1	6	481	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1041	1038	488	1039	1044	526	494	0	0	526	0	0
Stage 1	500	500	-	538	538	-	-	-	-	-	-	-
Stage 2	541	538	-	501	506	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	210	233	584	211	231	556	1080	-	-	1051	-	-
Stage 1	557	546	-	531	526	-	-	-	-	-	-	-
Stage 2	529	526	-	556	543	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	204	229	584	207	227	556	1080	-	-	1051	-	-
Mov Cap-2 Maneuver	204	229	-	207	227	-	-	-	-	-	-	-
Stage 1	553	542	-	527	522	-	-	-	-	-	-	-
Stage 2	518	522	-	549	539	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.3	15.7	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1080	-	-	229	347	1051	-	-
HCM Lane V/C Ratio	0.006	-	-	0.038	0.029	0.006	-	-
HCM Control Delay (s)	8.4	0	-	21.3	15.7	8.4	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	605	30	160	730	5	10	1	150	5	1	2
Future Vol, veh/h	5	605	30	160	730	5	10	1	150	5	1	2
Conflicting Peds, #/hr	9	0	3	3	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	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	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	637	32	168	768	5	11	1	158	5	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	782	0	0	672	0	0	1387	1784	338	1445	1798	396
Stage 1	-	-	-	-	-	-	666	666	-	1116	1116	-
Stage 2	-	-	-	-	-	-	721	1118	-	329	682	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
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	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	845	-	-	928	-	-	104	83	664	94	81	609
Stage 1	-	-	-	-	-	-	420	460	-	225	285	-
Stage 2	-	-	-	-	-	-	389	285	-	664	453	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	838	-	-	925	-	-	87	67	662	60	65	604
Mov Cap-2 Maneuver	-	-	-	-	-	-	87	67	-	60	65	-
Stage 1	-	-	-	-	-	-	416	456	-	222	231	-
Stage 2	-	-	-	-	-	-	316	231	-	501	449	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.7	17.7	56.7
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	452	838	-	-	925	-	-	78
HCM Lane V/C Ratio	0.375	0.006	-	-	0.182	-	-	0.108
HCM Control Delay (s)	17.7	9.3	-	-	9.8	-	-	56.7
HCM Lane LOS	C	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.7	0	-	-	0.7	-	-	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	480	245	1	590	370	50
Future Volume (vph)	480	245	1	590	370	50
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		0.95	0.97	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.98	
Flt Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	1750	1457		3325	3185	
Flt Permitted	1.00	1.00		0.95	0.96	
Satd. Flow (perm)	1750	1457		3174	3185	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	516	263	1	634	398	54
RTOR Reduction (vph)	0	0	0	0	14	0
Lane Group Flow (vph)	516	263	0	635	438	0
Confl. Peds. (#/hr)		1	1			4
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	NA	Free	Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases		Free	6			
Actuated Green, G (s)	18.1	41.3		18.1	14.2	
Effective Green, g (s)	18.6	41.3		18.6	14.7	
Actuated g/C Ratio	0.45	1.00		0.45	0.36	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	4.0			4.0	3.5	
Lane Grp Cap (vph)	788	1457		1429	1133	
v/s Ratio Prot	c0.29				c0.14	
v/s Ratio Perm		0.18		0.20		
v/c Ratio	0.65	0.18		0.44	0.39	
Uniform Delay, d1	8.8	0.0		7.8	9.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	0.3		0.3	0.3	
Delay (s)	11.0	0.3		8.1	10.2	
Level of Service	B	A		A	B	
Approach Delay (s)	7.4			8.1	10.2	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	41.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	615	15	55	690	25	120
Future Volume (vph)	615	15	55	690	25	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0		-0.5	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3311		1630	3292	1662	1450
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3311		1630	3292	1662	1450
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	641	16	57	719	26	125
RTOR Reduction (vph)	1	0	0	0	0	34
Lane Group Flow (vph)	656	0	57	719	26	91
Confl. Peds. (#/hr)		6	6			9
Heavy Vehicles (%)	0%	0%	2%	1%	0%	1%
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						6
Actuated Green, G (s)	24.6		4.1	33.2	4.4	33.2
Effective Green, g (s)	25.6		9.1	34.2	4.9	34.2
Actuated g/C Ratio	0.54		0.19	0.73	0.10	0.73
Clearance Time (s)	5.0		4.5	5.0	4.5	5.0
Vehicle Extension (s)	4.2		2.5	4.2	2.5	4.2
Lane Grp Cap (vph)	1799		314	2390	172	1052
v/s Ratio Prot	c0.20		0.03	c0.22	c0.02	
v/s Ratio Perm						0.06
v/c Ratio	0.36		0.18	0.30	0.15	0.09
Uniform Delay, d1	6.1		15.9	2.3	19.2	1.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2		0.2	0.1	0.3	0.1
Delay (s)	6.3		16.1	2.4	19.5	1.9
Level of Service	A		B	A	B	A
Approach Delay (s)	6.3			3.4	5.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	47.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	2	425	40	5	375
Future Vol, veh/h	35	2	425	40	5	375
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	37	2	452	43	5	399

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	885	476	0	0	497	0
Stage 1	476	-	-	-	-	-
Stage 2	409	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	318	593	-	-	1077	-
Stage 1	629	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	315	592	-	-	1075	-
Mov Cap-2 Maneuver	315	-	-	-	-	-
Stage 1	624	-	-	-	-	-
Stage 2	675	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	323	1075	-
HCM Lane V/C Ratio	-	-	0.122	0.005	-
HCM Control Delay (s)	-	-	17.7	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	190	300	25	121	349
Future Vol, veh/h	40	190	300	25	121	349
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	60	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	43	202	319	27	129	371

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	963	334	0	0	347	0
Stage 1	334	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	286	712	-	-	1223	-
Stage 1	730	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	255	711	-	-	1222	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	535	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	255	711	1222	-
HCM Lane V/C Ratio	-	-	0.167	0.284	0.105	-
HCM Control Delay (s)	-	-	21.9	12.1	8.3	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	1.2	0.4	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	75	195	105	235	192	33
Future Vol, veh/h	75	195	105	235	192	33
Conflicting Peds, #/hr	1	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	82	214	115	258	211	36

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	719	230	248	0	-	0
Stage 1	230	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.11	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.209	-	-	-
Pot Cap-1 Maneuver	398	814	1324	-	-	-
Stage 1	813	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	363	813	1323	-	-	-
Mov Cap-2 Maneuver	363	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.5	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1323	-	605	-	-
HCM Lane V/C Ratio	0.087	-	0.49	-	-
HCM Control Delay (s)	8	-	16.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.7	-	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	105	405	425	160	265	145
Future Volume (vph)	105	405	425	160	265	145
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.96		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1662	3325	3169		1662	1468
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1662	3325	3169		1662	1468
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	115	445	467	176	291	159
RTOR Reduction (vph)	0	0	46	0	0	118
Lane Group Flow (vph)	115	445	597	0	291	41
Confl. Peds. (#/hr)	2			2		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	7.2	28.1	16.9		13.1	13.1
Effective Green, g (s)	7.2	29.1	17.9		13.1	13.1
Actuated g/C Ratio	0.14	0.58	0.36		0.26	0.26
Clearance Time (s)	4.0	5.0	5.0		4.0	4.0
Vehicle Extension (s)	2.5	5.2	5.2		2.5	2.5
Lane Grp Cap (vph)	238	1927	1129		433	383
v/s Ratio Prot	c0.07	0.13	c0.19		c0.18	
v/s Ratio Perm						0.03
v/c Ratio	0.48	0.23	0.53		0.67	0.11
Uniform Delay, d1	19.8	5.1	12.8		16.6	14.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.1	0.9		3.7	0.1
Delay (s)	20.9	5.3	13.7		20.3	14.2
Level of Service	C	A	B		C	B
Approach Delay (s)		8.5	13.7		18.2	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	50.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	50	540	15	35	625
Future Volume (vph)	15	50	540	15	35	625
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1662	1488	1727		1662	1733
Flt Permitted	0.95	1.00	1.00		0.38	1.00
Satd. Flow (perm)	1662	1488	1727		669	1733
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	18	59	635	18	41	735
RTOR Reduction (vph)	0	54	1	0	0	0
Lane Group Flow (vph)	18	5	652	0	41	735
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	4		2			2
Permitted Phases		4			2	
Actuated Green, G (s)	3.2	3.2	27.9		27.9	27.9
Effective Green, g (s)	3.2	3.2	28.9		28.9	28.9
Actuated g/C Ratio	0.08	0.08	0.72		0.72	0.72
Clearance Time (s)	4.0	4.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	5.2		5.2	5.2
Lane Grp Cap (vph)	132	118	1244		482	1248
v/s Ratio Prot	c0.01		0.38			c0.42
v/s Ratio Perm		0.00			0.06	
v/c Ratio	0.14	0.04	0.52		0.09	0.59
Uniform Delay, d1	17.2	17.0	2.5		1.7	2.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.1	0.8		0.2	1.2
Delay (s)	17.6	17.2	3.3		1.8	3.9
Level of Service	B	B	A		A	A
Approach Delay (s)	17.3		3.3			3.8
Approach LOS	B		A			A

Intersection Summary			
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection						
Int Delay, s/veh	5.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	125	185	30	175	200
Future Vol, veh/h	40	125	185	30	175	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	147	218	35	206	235

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	883	236	0	0	253	0
Stage 1	236	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	319	808	-	-	1324	-
Stage 1	808	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	262	808	-	-	1324	-
Mov Cap-2 Maneuver	262	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.5	0	3.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	537	1324	-
HCM Lane V/C Ratio	-	-	0.361	0.156	-
HCM Control Delay (s)	-	-	15.5	8.2	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.6	0.6	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	155	90	1000	1120	35
Future Volume (vph)	15	155	90	1000	1120	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0		4.0	4.5	4.5	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.88		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1514		1646	3260	3245	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1514		1646	3260	3245	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	16	170	99	1099	1231	38
RTOR Reduction (vph)	150	0	0	0	2	0
Lane Group Flow (vph)	36	0	99	1099	1267	0
Confl. Peds. (#/hr)			1			1
Heavy Vehicles (%)	0%	1%	1%	2%	2%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	8		1	6	2	
Permitted Phases						
Actuated Green, G (s)	6.9		7.5	46.2	34.2	
Effective Green, g (s)	7.4		8.0	46.7	34.7	
Actuated g/C Ratio	0.12		0.13	0.75	0.55	
Clearance Time (s)	4.5		4.5	5.0	5.0	
Vehicle Extension (s)	2.5		2.5	4.8	4.8	
Lane Grp Cap (vph)	178		210	2431	1798	
v/s Ratio Prot	c0.02		0.06	c0.34	c0.39	
v/s Ratio Perm						
v/c Ratio	0.20		0.47	0.45	0.70	
Uniform Delay, d1	24.9		25.3	3.0	10.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.4		1.2	0.3	1.5	
Delay (s)	25.3		26.6	3.3	11.8	
Level of Service	C		C	A	B	
Approach Delay (s)	25.3			5.2	11.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	62.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	45	450	195	0	0
Future Vol, veh/h	0	45	450	195	0	0
Conflicting Peds, #/hr	0	0	0	0	2	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	16974	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	0	51	511	222	0	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	-	222	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.22	4.1	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.318	2.2	-
Pot Cap-1 Maneuver	0	818	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	818	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s	9.7	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	818	-	-
HCM Lane V/C Ratio	0.063	-	-
HCM Control Delay (s)	9.7	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	35	295	0	0	0	0	0	1225	90
Future Volume (vph)	0	0	0	35	295	0	0	0	0	0	1225	90
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
Lane Util. Factor					0.95						0.95	1.00
Frpb, ped/bikes					1.00						1.00	0.98
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					3305						3292	1457
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					3305						3292	1457
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)	0	0	0	37	311	0	0	0	0	0	1289	95
RTOR Reduction (vph)	0	0	0	0	20	0	0	0	0	0	0	25
Lane Group Flow (vph)	0	0	0	0	328	0	0	0	0	0	1289	70
Confl. Peds. (#/hr)	8		4	4		8	14		11	11		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					9.8						51.2	51.2
Effective Green, g (s)					10.3						51.7	51.7
Actuated g/C Ratio					0.15						0.74	0.74
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					0.2						0.2	0.2
Lane Grp Cap (vph)					486						2431	1076
v/s Ratio Prot											c0.39	
v/s Ratio Perm					0.10							0.05
v/c Ratio					0.68						0.53	0.07
Uniform Delay, d1					28.3						3.9	2.5
Progression Factor					1.20						1.00	1.00
Incremental Delay, d2					2.8						0.8	0.1
Delay (s)					36.8						4.8	2.6
Level of Service					D						A	A
Approach Delay (s)		0.0			36.8			0.0			4.6	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
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 (vph)	15	520	115	5	415	15	165	95	15	135	75	20
Future Volume (vph)	15	520	115	5	415	15	165	95	15	135	75	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	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.98		1.00		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	
Frt		1.00	0.85		0.99		1.00	0.98		1.00	0.97	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1747	1451		3303		1662	1714		1662	1695	
Flt Permitted		0.98	1.00		0.95		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1722	1451		3141		1662	1714		1662	1695	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	16	553	122	5	441	16	176	101	16	144	80	21
RTOR Reduction (vph)	0	0	60	0	2	0	0	7	0	0	13	0
Lane Group Flow (vph)	0	569	62	0	460	0	176	110	0	144	88	0
Confl. Peds. (#/hr)	3		3	3		3						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2		2	6								
Actuated Green, G (s)		29.0	29.0		29.0		10.7	7.5		8.2	5.0	
Effective Green, g (s)		29.5	29.5		29.5		11.2	8.0		8.7	5.5	
Actuated g/C Ratio		0.51	0.51		0.51		0.19	0.14		0.15	0.09	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		6.5	6.5		6.5		5.0	2.5		2.5	2.5	
Lane Grp Cap (vph)		872	735		1592		319	235		248	160	
v/s Ratio Prot							c0.11	c0.06		0.09	0.05	
v/s Ratio Perm		c0.33	0.04		0.15							
v/c Ratio		0.65	0.08		0.29		0.55	0.47		0.58	0.55	
Uniform Delay, d1		10.6	7.4		8.3		21.2	23.1		23.1	25.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.0	0.2		0.3		3.5	1.1		2.9	3.3	
Delay (s)		13.6	7.5		8.6		24.7	24.2		25.9	28.4	
Level of Service		B	A		A		C	C		C	C	
Approach Delay (s)		12.5			8.6			24.5			27.0	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	10	30	0	0	0	0	0	70	410
Future Vol, veh/h	0	0	0	10	30	0	0	0	0	0	70	410
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	91	91	91	92	92	92	91	91	91
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	0	1	1
Mvmt Flow	0	0	0	11	33	0	0	0	0	0	77	451

Major/Minor	Minor1			Major2		
Conflicting Flow All	81	77	-	-	-	0
Stage 1	0	0	-	-	-	-
Stage 2	81	77	-	-	-	-
Critical Hdwy	6.4	6.5	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	-	-	-	-
Pot Cap-1 Maneuver	926	817	0	0	-	0
Stage 1	-	-	0	0	-	0
Stage 2	947	835	0	0	-	0
Platoon blocked, %					-	
Mov Cap-1 Maneuver	926	0	-	-	-	-
Mov Cap-2 Maneuver	926	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	947	0	-	-	-	-

Approach	WB	SB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	WBLn1	WBLn2	SBT
Capacity (veh/h)	926	-	-
HCM Lane V/C Ratio	0.012	-	-
HCM Control Delay (s)	8.9	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

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	30	50	15	80	0	0	0	0	115	600	25
Future Vol, veh/h	0	30	50	15	80	0	0	0	0	115	600	25
Conflicting Peds, #/hr	0	0	16	16	0	0	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	0	0	0	0	0	0
Mvmt Flow	0	33	56	17	89	0	0	0	0	128	667	28

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	-	947	374	622	961	-				0	0	0
Stage 1	-	947	-	0	0	-				-	-	-
Stage 2	-	0	-	622	961	-				-	-	-
Critical Hdwy	-	6.5	6.9	7.5	6.5	-				4.1	-	-
Critical Hdwy Stg 1	-	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.5	5.5	-				-	-	-
Follow-up Hdwy	-	4	3.3	3.5	4	-				2.2	-	-
Pot Cap-1 Maneuver	0	263	629	375	258	0				-	-	-
Stage 1	0	342	-	-	-	0				-	-	-
Stage 2	0	-	-	446	337	0				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	-	260	623	308	255	-				-	-	-
Mov Cap-2 Maneuver	-	260	-	308	255	-				-	-	-
Stage 1	-	339	-	-	-	-				-	-	-
Stage 2	-	-	-	366	334	-				-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	16.2	27.7	
HCM LOS	C	D	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	409	262	-	-	-
HCM Lane V/C Ratio	0.217	0.403	-	-	-
HCM Control Delay (s)	16.2	27.7	-	-	-
HCM Lane LOS	C	D	-	-	-
HCM 95th %tile Q(veh)	0.8	1.8	-	-	-

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	65	10	20	120	50	105
Future Vol, veh/h	65	10	20	120	50	105
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	76	12	24	141	59	124
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.2	7.7	8.2
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	87%	0%	32%
Vol Thru, %	13%	14%	0%
Vol Right, %	0%	86%	68%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	75	140	155
LT Vol	65	0	50
Through Vol	10	20	0
RT Vol	0	120	105
Lane Flow Rate	88	165	182
Geometry Grp	1	1	1
Degree of Util (X)	0.114	0.178	0.208
Departure Headway (Hd)	4.632	3.884	4.098
Convergence, Y/N	Yes	Yes	Yes
Cap	776	926	877
Service Time	2.649	1.898	2.113
HCM Lane V/C Ratio	0.113	0.178	0.208
HCM Control Delay	8.2	7.7	8.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.6	0.8

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	1	1	5	5	55	1	2	5	90	5	1
Future Vol, veh/h	1	1	1	5	5	55	1	2	5	90	5	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	1	1	6	6	65	1	2	6	106	6	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	7	6.9	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	33%	8%	94%
Vol Thru, %	25%	33%	8%	5%
Vol Right, %	62%	33%	85%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	3	65	96
LT Vol	1	1	5	90
Through Vol	2	1	5	5
RT Vol	5	1	55	1
Lane Flow Rate	9	4	76	113
Geometry Grp	1	1	1	1
Degree of Util (X)	0.01	0.004	0.077	0.133
Departure Headway (Hd)	3.775	4.037	3.621	4.227
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	942	875	977	849
Service Time	1.823	2.115	1.689	2.249
HCM Lane V/C Ratio	0.01	0.005	0.078	0.133
HCM Control Delay	6.9	7.1	7	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0	0.2	0.5

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	5	10	5	1	10	5	15	45	5	5	80	10
Future Vol, veh/h	5	10	5	1	10	5	15	45	5	5	80	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	6	12	6	1	12	6	18	53	6	6	94	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.2	7.5	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	25%	6%	5%
Vol Thru, %	69%	50%	62%	84%
Vol Right, %	8%	25%	31%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	20	16	95
LT Vol	15	5	1	5
Through Vol	45	10	10	80
RT Vol	5	5	5	10
Lane Flow Rate	76	24	19	112
Geometry Grp	1	1	1	1
Degree of Util (X)	0.086	0.027	0.021	0.124
Departure Headway (Hd)	4.058	4.138	4.066	3.979
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	879	853	867	899
Service Time	2.1	2.223	2.154	2.014
HCM Lane V/C Ratio	0.086	0.028	0.022	0.125
HCM Control Delay	7.5	7.3	7.2	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0.1	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	35	45	75	40	0	0	0	0	35	1600	25
Future Volume (vph)	0	35	45	75	40	0	0	0	0	35	1600	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	
Lane Util. Factor		1.00			1.00						0.91	
Frpb, ped/bikes		0.99			1.00						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		0.92			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1606			1693						4714	
Flt Permitted		1.00			0.75						1.00	
Satd. Flow (perm)		1606			1316						4714	
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)	0	37	47	79	42	0	0	0	0	37	1684	26
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	61	0	0	121	0	0	0	0	0	1746	0
Confl. Peds. (#/hr)	7		1	1		7	7		2	2		7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.4	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.5	
Vehicle Extension (s)		0.2			0.2						0.2	
Lane Grp Cap (vph)		208			171						3562	
v/s Ratio Prot		0.04										
v/s Ratio Perm					c0.09						0.37	
v/c Ratio		0.30			0.71						0.49	
Uniform Delay, d1		27.5			29.2						3.3	
Progression Factor		1.00			1.18						1.87	
Incremental Delay, d2		0.3			10.1						0.5	
Delay (s)		27.8			44.4						6.7	
Level of Service		C			D						A	
Approach Delay (s)		27.8			44.4			0.0			6.7	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	5	0	0	5	5	75	1195	2	0	0	0
Future Vol, veh/h	50	5	0	0	5	5	75	1195	2	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	3	3	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	100	0	0	0
Mvmt Flow	53	5	0	0	5	5	80	1271	2	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	800	1438	-	-	1437	640	2	0	0
Stage 1	2	2	-	-	1435	-	-	-	-
Stage 2	798	1436	-	-	2	-	-	-	-
Critical Hdwy	7.5	6.5	-	-	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	-	-	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	280	134	0	0	135	423	1634	-	-
Stage 1	-	-	0	0	201	-	-	-	-
Stage 2	350	201	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	232	111	-	-	112	422	1631	-	-
Mov Cap-2 Maneuver	232	111	-	-	112	-	-	-	-
Stage 1	-	-	-	-	167	-	-	-	-
Stage 2	278	167	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	28.5	26.6	0.9
HCM LOS	D	D	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	1631	-	-	211	177
HCM Lane V/C Ratio	0.049	-	-	0.277	0.06
HCM Control Delay (s)	7.3	0.5	-	28.5	26.6
HCM Lane LOS	A	A	-	D	D
HCM 95th %tile Q(veh)	0.2	-	-	1.1	0.2

Movement	EBT	EBR	EBR2	WBL2	WBL	WBT	SBL2	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	165	50	5	175	15	90	280	1230	145	55
Future Volume (vph)	165	50	5	175	15	90	280	1230	145	55
Ideal Flow (vphpl)	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	
Lane Util. Factor	0.95				1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	0.99				1.00	1.00	1.00	1.00	0.98	
Flpb, ped/bikes	1.00				0.99	1.00	0.99	1.00	1.00	
Frt	0.96				1.00	1.00	1.00	1.00	0.96	
Flt Protected	1.00				0.95	1.00	0.95	0.95	1.00	
Satd. Flow (prot)	3145				1586	1750	1611	3225	1629	
Flt Permitted	1.00				0.95	1.00	0.95	0.95	1.00	
Satd. Flow (perm)	3145				1586	1750	1611	3225	1629	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	176	53	5	186	16	96	298	1309	154	59
RTOR Reduction (vph)	3	0	0	0	0	0	0	0	20	0
Lane Group Flow (vph)	231	0	0	0	202	96	298	1309	193	0
Confl. Peds. (#/hr)		8	8	8	8		12	12		1
Heavy Vehicles (%)	1%	0%	2%	2%	19%	0%	2%	0%	2%	0%
Turn Type	NA			Perm	NA	NA	custom	Prot	NA	
Protected Phases	8					4		2		
Permitted Phases				4			2			
Actuated Green, G (s)	10.0				0.0	10.0	50.0	50.0	0.0	
Effective Green, g (s)	10.5				0.0	10.5	51.5	51.5	0.0	
Actuated g/C Ratio	0.15				0.00	0.15	0.74	0.74	0.00	
Clearance Time (s)	4.5					4.5	5.5	5.5		
Vehicle Extension (s)	2.5					2.5	6.1	6.1		
Lane Grp Cap (vph)	471				0	262	1185	2372	0	
v/s Ratio Prot	c0.07					0.05		c0.41		
v/s Ratio Perm							0.18			
v/c Ratio	0.49				no cap	0.37	0.25	0.55	no cap	
Uniform Delay, d1	27.3				Error	26.8	3.0	4.1	Error	
Progression Factor	1.00					0.39	1.26	1.53		
Incremental Delay, d2	0.6				Error	0.5	0.5	0.8	Error	
Delay (s)	27.9				Error	11.0	4.2	7.1	Error	
Level of Service	C				F	B	A	A	F	
Approach Delay (s)	27.9					Error			Error	
Approach LOS	C					F			F	

Intersection Summary			
HCM 2000 Control Delay	Error	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.6%	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 (vph)	95	335	0	0	255	185	30	960	140	0	0	0
Future Volume (vph)	95	335	0	0	255	185	30	960	140	0	0	0
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			
Lane Util. Factor		0.95			1.00	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	0.99			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.99			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		3272			1750	1446		3220	1468			
Flt Permitted		0.71			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		2361			1750	1446		3220	1468			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	97	342	0	0	260	189	31	980	143	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	120	0	0	53	0	0	0
Lane Group Flow (vph)	0	439	0	0	260	69	0	1011	90	0	0	0
Confl. Peds. (#/hr)	6		10	10		6	5		1	1		5
Heavy Vehicles (%)	2%	0%	0%	0%	0%	1%	6%	3%	0%	0%	0%	0%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	3	8			4			6				
Permitted Phases	8					4	6		6			
Actuated Green, G (s)		17.2			17.2	17.2		42.8	42.8			
Effective Green, g (s)		17.7			17.7	17.7		44.3	44.3			
Actuated g/C Ratio		0.25			0.25	0.25		0.63	0.63			
Clearance Time (s)		4.5			4.5	4.5		5.5	5.5			
Vehicle Extension (s)		2.5			2.5	2.5		5.0	5.0			
Lane Grp Cap (vph)		596			442	365		2037	929			
v/s Ratio Prot					0.15							
v/s Ratio Perm		c0.19				0.05		0.31	0.06			
v/c Ratio		0.74			0.59	0.19		0.50	0.10			
Uniform Delay, d1		24.0			23.0	20.5		6.9	5.0			
Progression Factor		1.29			1.00	1.00		1.00	1.00			
Incremental Delay, d2		4.4			1.7	0.2		0.9	0.2			
Delay (s)		35.4			24.6	20.7		7.7	5.2			
Level of Service		D			C	C		A	A			
Approach Delay (s)		35.4			23.0			7.4			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	215	305	5	5	50
Future Vol, veh/h	25	215	305	5	5	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	29	247	351	6	6	57

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	357	0	-	0	659	354
Stage 1	-	-	-	-	354	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1213	-	-	-	432	694
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	752	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1213	-	-	-	420	694
Mov Cap-2 Maneuver	-	-	-	-	420	-
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	752	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1213	-	-	-	655
HCM Lane V/C Ratio	0.024	-	-	-	0.097
HCM Control Delay (s)	8	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	20	45	185	15	0	70	0	260	0	0	0
Future Vol, veh/h	0	20	45	185	15	0	70	0	260	0	0	0
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	93	93	93	92	93	92	93	92	92	92
Heavy Vehicles, %	2	0	0	0	3	2	1	2	1	2	2	2
Mvmt Flow	0	22	48	199	16	0	75	0	280	0	0	0

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	-	1	1	36	1	-				0	0	0
Stage 1	-	1	-	0	0	-				-	-	-
Stage 2	-	0	-	36	1	-				-	-	-
Critical Hdwy	-	6.5	6.2	7.1	6.53	-				4.12	-	-
Critical Hdwy Stg 1	-	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.53	-				-	-	-
Follow-up Hdwy	-	4	3.3	3.5	4.027	-				2.218	-	-
Pot Cap-1 Maneuver	0	899	1090	975	893	0				-	-	-
Stage 1	0	899	-	-	-	0				-	-	-
Stage 2	0	-	-	985	893	0				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	-	899	1090	915	893	-				-	-	-
Mov Cap-2 Maneuver	-	899	-	915	893	-				-	-	-
Stage 1	-	899	-	-	-	-				-	-	-
Stage 2	-	-	-	919	893	-				-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	8.8	10.2	0
HCM LOS	A	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1023	913	-	-	-
HCM Lane V/C Ratio	0.068	0.236	-	-	-
HCM Control Delay (s)	8.8	10.2	0	-	-
HCM Lane LOS	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	0.9	-	-	-

Intersection						
Int Delay, s/veh	2.4					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	190	100	5	5	70
Future Vol, veh/h	35	190	100	5	5	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	3	4	0	0	1
Mvmt Flow	42	226	119	6	6	83

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	125	0	-	0	432	122
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	310	-
Critical Hdwy	4.1	-	-	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.309
Pot Cap-1 Maneuver	1474	-	-	-	584	932
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1474	-	-	-	568	932
Mov Cap-2 Maneuver	-	-	-	-	568	-
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	748	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1474	-	-	-	894
HCM Lane V/C Ratio	0.028	-	-	-	0.1
HCM Control Delay (s)	7.5	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Appendix E
Crash Data and Calculations

Oregon Department of Transportation

Region 3

2016 - On-State, Top 10% SPIS Groups - By Hwy, MP

Rte	Rdwy	BMP	EMP	Length	ADT	Crash	Fatal	A	B	C	PDO	City	County	Connection	Percent	SPIS
231 Elkton-Sutherlin																
OR-138	1	13.65	13.79	0.14	1,800	7	0	1	2	1	3		Douglas	TYEE RD.	90	50.75
240 Cape Arago																
OR-540	1	0.07	0.25	0.18	16,000	19	1	1	3	6	8	North Bend	Coos	MCPHERSON AVE.	95	66.28
OR-540	1	1.69	1.87	0.18	18,300	35	0	3	0	12	20	North Bend	Coos	HWY. 240(BROADWAY ST.) M.P. (2)1.70	95	78.51
241 Coos River																
OR-241	1	0.09	0.19	0.10	9,033	13	0	1	2	2	8		Coos	ELLEN ST.	90	47.96
270 Lake Of The Woods																
	1	-7.21	-7.07	0.14	5,700	6	0	2	1	1	2		Jackson		90	54.79
	1	-0.59	-0.41	0.18	4,600	6	0	2	1	1	2		Jackson	ANTELOPE RD.	90	58.69
OR-140	1	0.94	1.12	0.18	5,800	6	0	2	2	0	2		Jackson	LAKEVIEW DR.	90	54.69
OR-140	1	2.20	2.38	0.18	5,900	9	0	4	0	1	4		Jackson	KERSHAW RD.	95	72.07
OR-140	1	3.50	3.59	0.09	5,900	9	0	1	2	6	0		Jackson	RILEY RD.	90	51.96
271 Sams Valley																
OR-234	1	10.57	10.77	0.20	2,811	4	0	2	1	0	1		Jackson	LEG (TO TABLE ROCK RD.)	90	54.01
OR-234	1	12.52	12.68	0.16	2,500	9	0	1	2	3	3		Jackson	ANTIOCH RD.	90	54.48
OR-234	1	14.57	14.73	0.16	2,500	6	0	1	2	2	1		Jackson	MODOC RD.	90	47.15
272 Jacksonville																
OR-238	1	0.04	0.21	0.17	23,800	44	0	0	10	17	17	Grants Pass	Josephine	HWY. 272 M.P. 0.19	95	74.47
OR-238	1	0.15	0.36	0.21	19,022	37	0	2	7	17	11	Grants Pass	Josephine	HWY. 272 M.P. 0.19	95	79.92
OR-238	1	34.78	34.96	0.18	8,366	16	0	3	4	4	5		Jackson	LEG (TO W MAIN ST.)	95	79.39
482 Redwood Spur																
US-199	1	-0.11	0.07	0.18	26,700	29	1	0	4	14	10	Grants Pass	Josephine	PARKDALE DR.	95	74.21
US-199	1	0.78	0.96	0.18	23,000	39	0	1	5	17	16	Grants Pass	Josephine	F ST.	95	78.99

**Crash data shown in the SPIS group report results from the summation of crash data between the begin and end mile points of the Group.
**ADT, SPIS Score, and Percent data shown in the SPIS group report are the highest values from all sites within the Group.

001 Pacific

Rte	Rdwy	BMP	EMP	Length	ADT	Crash	Fatal	A	B	C	PDO	City	County	Connection	Percent	SPIS
I-5	1	3.91	4.02	0.11	14,600	6	1	1	2	0	2		Jackson		90	50.53
I-5	1	5.41	5.55	0.14	15,000	14	1	1	4	1	7		Jackson		95	62.82
I-5	1	6.93	7.06	0.13	15,000	16	0	1	2	3	10		Jackson		90	48.96
I-5	1	30.23	30.34	0.11	42,555	6	0	2	0	1	3	Medford	Jackson		90	46.74
I-5	1	30.27	30.38	0.11	37,711	6	0	2	0	1	3	Medford	Jackson		90	46.88
I-5	1	39.93	40.09	0.16	35,900	14	0	1	3	4	6		Jackson		90	46.49
I-5	1	68.06	68.19	0.13	19,300	15	0	1	3	2	9		Josephine		90	46.77
I-5	1	107.92	108.09	0.17	26,300	12	0	4	0	3	5		Douglas		95	65.53
	1	120.36	120.48	0.12	40,200	5	1	2	0	2	0		Douglas	001XE CONN. M.P. 2C120.51	95	60.23
I-5	1	123.90	124.06	0.16	41,400	16	1	0	4	5	6		Douglas		90	50.42
I-5	1	124.98	125.11	0.13	47,800	13	1	1	1	6	4	Roseburg	Douglas		95	61.58

009 Oregon Coast

Rte	Rdwy	BMP	EMP	Length	ADT	Crash	Fatal	A	B	C	PDO	City	County	Connection	Percent	SPIS
US-101	1	235.31	235.49	0.18	9,900	43	0	0	5	13	25	North Bend	Coos	CALIFORNIA AVE.	95	71.78
US-101	1	236.41	236.59	0.18	20,600	32	0	1	9	6	16	North Bend	Coos	NEWMARK ST.	95	72.09
US-101	1	238.98	239.09	0.11	17,511	6	1	1	0	1	3	Coos Bay	Coos	HWY. 009 M.P. (2)239.08	90	48.94
US-101	1	239.28	239.47	0.19	26,300	26	0	2	5	6	13		Coos	HARRIET RD.	95	72.90
US-101	1	317.41	317.55	0.14	2,300	3	0	2	0	0	1		Curry		90	49.84
US-101	1	356.83	357.01	0.18	17,000	21	0	1	3	8	9	Brookings	Curry	5TH ST.	90	54.92

021 Green Springs

Rte	Rdwy	BMP	EMP	Length	ADT	Crash	Fatal	A	B	C	PDO	City	County	Connection	Percent	SPIS
OR-66	1	0.91	1.08	0.17	10,233	20	0	1	1	8	10	Ashland	Jackson	YMCA WAY	95	59.75

022 Crater Lake

Rte	Rdwy	BMP	EMP	Length	ADT	Crash	Fatal	A	B	C	PDO	City	County	Connection	Percent	SPIS
OR-62	1	0.05	0.14	0.09	31,800	29	0	1	6	12	10	Medford	Jackson		95	72.57
OR-62	1	0.36	0.65	0.29	37,800	74	0	2	8	29	35	Medford	Jackson	HWY. 022 M.P. 0.36	95	77.42

**Crash data shown in the SPIS group report results from the summation of crash data between the begin and end mile points of the Group.
**ADT, SPIS Score, and Percent data shown in the SPIS group report are the highest values from all sites within the Group.

Oregon Department of Transportation

County

2016 - Off-State, 10% SPIS Sites - By Location

Coos

Rd Name	Rd No.	MP	Ref. Location Desc.	Dist. \ Dir. *	Direcction from Begin to End **	City	Intersection	ADT	Crash	Fatal	A	B	C	PDO	Percent	SPIS
	Segment Begin Location															
Ingersoll St			S 2ND ST	106 \ 92	270	Coos Bay		1,100	5	0	1	1	2	1	90	50.47
Ingersoll St			S 2ND ST	53 \ 94	270	Coos Bay		1,100	5	0	1	1	2	1	90	50.47
Ingersoll St			S 2ND ST	0\0	270	Coos Bay		1,100	5	0	1	1	2	1	90	50.47
Newmark St			NEWMARK ST	1532 \ 90	270	North Bend		13,800	11	0	1	3	4	3	90	47.79
Newmark St			NEWMARK ST	1479 \ 90	270	North Bend		13,800	11	0	1	3	4	3	90	47.79
Newmark St			NEWMARK ST	1426 \ 90	270	North Bend		13,800	11	0	1	3	4	3	90	47.79
Newmark St			NEWMARK ST	1373 \ 90	270	North Bend		13,800	11	0	1	3	4	3	90	47.79
Newmark St			NEWMARK ST	1320 \ 90	270	North Bend		13,800	11	0	1	3	4	3	90	47.79
S 10th St			COMMERCIAL AVE	476 \ 180	0	Coos Bay		5,000	11	0	1	2	4	4	90	52.96
S 10th St			COMMERCIAL AVE	423 \ 180	0	Coos Bay		5,000	11	0	1	2	4	4	90	52.96
S 10th St			COMMERCIAL AVE	370 \ 180	0	Coos Bay		5,000	11	0	1	2	4	4	90	52.96
Sherman Ave			EXCHANGE ST	106 \ 180	0	North Bend		9,688	10	0	1	1	5	3	90	47.10
Sherman Ave			EXCHANGE ST	53 \ 180	0	North Bend		8,777	10	0	1	1	5	3	90	47.69
Sherman Ave			EXCHANGE ST	0\0	0	North Bend		7,866	10	0	1	1	5	3	90	48.38
Sherman Ave			COMMERCIAL ST	528 \ 181	0	North Bend		6,955	10	0	1	1	5	3	90	49.20
Sherman Ave			COMMERCIAL ST	476 \ 181	1	North Bend		6,044	10	0	1	1	5	3	90	50.18
Sherman Ave			COMMERCIAL ST	423 \ 181	1	North Bend		5,133	10	0	1	1	5	3	90	51.40
Sherman Ave			COMMERCIAL ST	370 \ 181	1	North Bend		4,222	10	0	1	1	5	3	90	52.96
Sherman Ave			COMMERCIAL ST	317 \ 181	1	North Bend		3,311	10	0	1	1	5	3	90	55.03
Sherman Ave			COMMERCIAL ST	264 \ 181	1	North Bend		2,400	10	0	1	1	5	3	90	57.99

Notes:

* Distance in feet and Direction in degrees (0-359) from the referecence location to the segment begin point. Distance is measured along the road. Direction is measured straight line, aka 'as the crow flies'.

** Direction in degrees (0-359) from the segment begin point to the segment end point. Direction is measured straight line, aka 'as the crow flies'.

*** All segments are 0.10 mile in length.

Ref. ID	Study Location / Intersections and segments	Rear End (REAR)	Fixed Object (FIX)	Angle (ANGL)	Backing (BACK)	Turning (TURN)	Sideswipe-Overtaking (SS-O)	Head On (HEAD)	Non-Collision (NCOL)	Parked (PARK)	Pedestrian (PED)	Bicycle (BIKE)	Miscellaneous (OTH)	Sideswipe-Meeting (SS-M)	Total	Percent of Total	Fatal Crashes	Serious Injury Crashes	Minor Injury Crashes	Property Damage Only	Crash Rate
		Collision Type															Severity				
1	*Arthur Street at Colorado Loop*	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0%**	0	0	0	0	**0.00**
2	*Oak Street/W Airport Way at Colorado Avenue/Maple Leaf*	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0%**	0	0	0	0	**0.00**
3	*Maple Leaf at E Airport Way*	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0%**	0	0	0	0	**0.00**
4	*US 101 at Florida Avenue*	4	2	1	1	2	4	0	0	0	1	0	0	0	**15**	**2%**	0	0	4	11	**0.39**
5	*Virginia Avenue at Arthur Street*	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**0%**	0	0	0	1	**0.15**
6	*Virginia Avenue at Oak Street*	0	1	2	0	2	0	0	0	0	0	0	0	0	**5**	**1%**	0	0	1	4	**0.35**
7	*Virginia Avenue at Maple Street*	2	0	0	0	1	0	0	0	0	0	0	0	0	**3**	**0%**	0	0	2	1	**0.15**
8	*Virginia Avenue at Broadway Street*	9	2	1	1	10	1	0	0	0	0	0	0	0	**24**	**4%**	0	0	12	12	**0.60**
9	*Virginia Avenue at Pony Village Main Driveway*	0	0	0	0	10	0	0	0	0	0	0	0	0	**10**	**2%**	0	0	10	0	**0.25**
10	*Virginia Avenue at Harrison Avenue*	8	0	0	0	6	1	0	0	0	0	0	0	0	**15**	**2%**	0	0	7	8	**0.38**
11	*Virginia Avenue at Meade Avenue*	5	0	1	0	6	1	0	0	0	0	0	0	0	**13**	**2%**	1	1	5	7	**0.362**
12	*Virginia Avenue at US 101 South*	10	3	22	1	10	13	0	0	0	1	0	0	0	**60**	**10%**	0	0	25	35	**1.51**
13	*Virginia Avenue at US 101 North*	3	0	1	0	1	1	0	0	0	2	0	0	0	**8**	**1%**	0	1	3	5	**0.32**
14	*Marion Avenue at Safeway Driveway*	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0%**	0	0	0	0	**0.00**
15	*Washington Avenue at US 101 South/Sherman Avenue*	4	1	3	0	3	5	0	0	0	0	0	0	0	**16**	**3%**	0	0	7	9	**0.69**
16	*Pony Creek Road at Crowell Lane*	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**	**0%**	0	0	1	2	**0.33**
17	*Oak Street at 16th/17th Street*	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**	**0%**	0	0	1	0	**0.16**
18	*Broadway Street at 16th Street*	5	0	1	0	5	0	0	0	0	2	0	0	0	**13**	**2%**	0	0	7	6	**0.38**
19	*Broadway Avenue at 17th Street*	4	2	0	0	3	0	0	0	0	0	0	0	0	**9**	**1%**	0	0	3	6	**0.27**
20	*US 101 at Mill Casino Entrance*	0	0	1	1	3	0	1	0	0	0	0	0	0	**6**	**1%**	0	0	4	2	**0.15**
21	*Newmark Avenue at Oak Street*	3	2	0	0	3	1	0	0	0	1	0	0	1	**11**	**2%**	1	0	5	5	**0.23**
22	*Broadway Street at Newmark Avenue*	37	2	6	1	15	2	0	0	0	1	0	0	0	**64**	**11%**	0	4	31	33	**1.12**
23	*Newmark Street at Edgewood Drive*	4	0	0	0	2	0	0	0	0	0	0	0	0	**6**	**1%**	0	0	6	0	**0.20**
24	*Newmark Avenue at Brusells Street*	4	0	4	0	12	0	0	0	0	0	0	0	0	**20**	**3%**	0	1	10	10	**0.62**
25	*Newmark Street at Sherman Avenue*	10	3	5	1	3	0	0	0	0	0	0	0	0	**22**	**4%**	0	1	13	9	**0.65**
26	*US 101 at Newmark Street*	18	3	1	2	31	2	0	0	0	0	0	0	0	**57**	**9%**	0	1	26	31	**1.11**
27	*Morrison Street at Lakeshore Drive*	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**	**0%**	0	0	0	1	**0.18**
28	*Newmark Avenue at Cape Arago Highway/Empire Boulevard*	0	0	0	0	3	0	0	0	0	0	0	1	0	**4**	**1%**	0	1	1	3	**0.21**
29	*Newmark Avenue at Morrison Street*	1	0	1	0	4	1	0	0	0	2	0	0	0	**9**	**1%**	0	0	5	4	**0.26**
30	*Newmark Avenue at Ocean Boulevard*	11	0	0	0	6	0	0	0	0	0	0	0	0	**17**	**3%**	0	0	9	8	**0.44**
31	*Newmark Avenue at Laclair Street*	12	0	0	0	1	1	0	1	0	0	0	1	1	**17**	**3%**	0	0	11	6	**0.50**
32	*Empire Boulevard at Pacific Avenue*	2	0	0	0	0	0	0	0	0	0	0	0	1	**3**	**0%**	0	0	3	0	**0.15**
33	*Thompson Road at Woodland Drive*	0	0	0	0	11	0	0	0	0	0	0	0	0	**11**	**2%**	0	0	3	8	**0.49**
34	*Koosbay Boulevard at Thompson Road*	1	0	0	0	2	0	0	0	0	0	0	0	0	**3**	**0%**	0	0	2	1	**0.16**
35	*Ocean Boulevard at Woodland Drive*	6	2	0	0	7	1	0	0	0	0	0	0	1	**17**	**3%**	0	0	5	12	**0.51**
36	*Ocean Boulevard at Butler Road*	3	0	0	0	2	0	0	0	0	0	0	1	0	**6**	**1%**	0	0	2	4	**0.21**
37	*Koosbay Boulevard at 10th Street*	6	0	0	0	2	0	0	0	0	0	0	0	0	**8**	**1%**	0	0	5	3	**0.48**
38	*Us 101 at Koosbay Blvd*	4	0	0	0	2	0	0	0	0	0	0	0	0	**6**	**1%**	0	0	3	3	**0.11**
39	*7th Street at Commercial Avenue*	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**	**0%**	0	0	0	1	**0.07**
40	*Commercial Avenue at US 101 South*	3	0	6	0	0	2	0	0	0	0	0	0	0	**11**	**2%**	0	0	1	10	**0.31**
41	*Commercial Avenue at US 101 North*	2	0	0	0	1	1	0	0	0	0	0	0	0	**4**	**1%**	0	0	0	4	**0.12**
42	*10th Street at Central Avenue*	3	0	3	0	8	2	0	0	0	1	0	0	0	**17**	**3%**	0	0	7	10	**0.49**
43	*Central Avenue at 7th Street*	1	0	2	0	3	1	0	0	0	0	0	0	0	**7**	**1%**	0	0	2	5	**0.28**
44	*7th Street at Anderson Avenue*	0	1	1	0	1	1	0	0	0	1	0	0	0	**5**	**1%**	0	0	3	2	**0.25**
45	*Elrod Avenue at 10th Street*	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**0%**	0	0	0	1	**0.12**
46	*11th Street at Ingersoll Avenue*	0	0	0	0	0	1	0	0	0	0	0	0	0	**1**	**0%**	0	0	0	1	**0.27**
47	*7th Street at Ingersoll Avenue*	0	0	1	0	1	0	0	0	0	0	0	0	0	**2**	**0%**	0	0	0	2	**0.47**
48	*Hall Avenue at US 101 South*	3	0	6	0	3	1	0	0	0	0	0	0	0	**13**	**2%**	0	0	7	6	**0.34**
49	*Hall Avenue at US 101 North*	2	1	1	0	2	2	0	0	0	0	0	0	0	**8**	**1%**	0	0	4	4	**0.25**
50	*Johnson Avenue at US 101 South*	5	0	4	1	7	0	0	0	0	0	0	0	0	**17**	**3%**	0	0	4	13	**0.38**
51	*Johnson Avenue at US 101 North*	12	1	11	0	5	3	0	0	0	0	0	0	0	**32**	**5%**	0	0	13	19	**0.67**
52	*7th Street at Lockhart Avenue/Southwest Boulevard*	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0%**	0	0	0	0	**0.00**
53	*6th Avenue at D street / Coos River Highway*	3	0	0	0	3	0	0	0	0	0	0	0	0	**6**	**1%**	0	0	3	3	**0.45**
54	*Coos River Road at Ross Inlet Road*	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0%**	0	0	0	0	**0.00**
		212	**29**	**86**	**9**	**204**	**48**	**1**	**1**	**0**	**12**	**0**	**3**	**4**	609		**2**	**10**	**276**	**331**	

For Calculations Only

HSM Part B - Critical Crash Rate

Ref. ID	Study Location	Alcohol	Speed	TEV	ADT	MEV	Intersection Type (Urban/Rural 3ST, 3SG, 4ST, 4SG)	Crash Rate	Reference Population Critical Crash Rate (95% CI)	Statewide 90th Percentile Crash Rate	Intersection Control	Crash Rate: Unsignalized Intersections	Crash Rate: Signalized Intersections	Summary
	Intersections and segments	>	>											
1	*Arthur Street at Colorado Loop*	0	0	32	402	0.7	Urban 3ST	0.00	1.813	0.293	STOP	0.00	FALSE	0.00
2	*Oak Street/W Airport Way at Colorado Avenue/Maple Leaf*	0	0	197	2473	4.5	Urban 4ST	0.00	0.854	0.408	STOP	0.00	FALSE	0.00
3	*Maple Leaf at E Airport Way*	0	0	206	2586	4.7	Urban 3ST	0.00	0.687	0.293	STOP	0.00	FALSE	0.00
4	*US 101 at Florida Avenue*	0	1	1711	20849	38.0	Urban 4SG	0.39	0.856	0.860	SIGNAL	FALSE	0.39	0.39
5	*Virginia Avenue at Arthur Street*	0	0	282	3541	6.5	Urban 3ST	0.15	0.606	0.293	STOP	0.15	FALSE	0.15
6	*Virginia Avenue at Oak Street*	0	1	620	7785	14.2	Urban 4ST	0.35	0.590	0.408	STOP	0.35	FALSE	0.35
7	*Virginia Avenue at Maple Street*	1	1	846	10622	19.4	Urban 3ST	0.15	0.426	0.293	STOP	0.15	FALSE	0.15
8	*Virginia Avenue at Broadway Street*	0	3	1795	21789	39.8	Urban 4SG	0.60	0.851	0.860	SIGNAL	FALSE	0.60	0.60
9	*Virginia Avenue at Pony Village Main Driveway*	0	0	1773	21522	39.3	Urban 3ST	0.25	0.360	0.293	STOP	0.25	FALSE	0.25
10	*Virginia Avenue at Harrison Avenue*	0	0	1797	21813	39.8	Urban 4SG	0.38	0.851	0.860	SIGNAL	FALSE	0.38	0.38
11	*Virginia Avenue at Meade Avenue*	0	1	1620	19665	35.9	Urban 4ST	0.362	0.479	0.408	STOP	0.362	FALSE	0.36
12	*Virginia Avenue at US 101 South*	2	3	1744	21779	39.7	Urban 3SG	1.51	0.650	0.509	SIGNAL	FALSE	1.51	1.51
13	*Virginia Avenue at US 101 North*	0	0	1169	13907	25.4	Urban 3SG	0.32	0.702	0.509	SIGNAL	FALSE	0.32	0.32
14	*Marion Avenue at Safeway Driveway*	0	0	327	4106	7.5	Urban 3ST	0.00	0.574	0.293	STOP	0.00	FALSE	0.00
15	*Washington Avenue at US 101 South/Sherman Avenue*	0	0	1013	12650	23.1	Urban 4ST	0.69	0.715	0.408	STOP	0.69	FALSE	0.69
16	*Pony Creek Road at Crowell Lane*	0	1	402	5047	9.2	Urban 3ST	0.33	0.534	0.293	STOP	0.33	FALSE	0.33
17	*Oak Street at 16th/17th Street*	0	0	271	3403	6.2	Urban 4ST	0.16	0.760	0.408	STOP	0.16	FALSE	0.16
18	*Broadway Street at 16th Street*	0	0	1550	18815	34.3	Urban 4SG	0.38	0.869	0.860	SIGNAL	FALSE	0.38	0.38
19	*Broadway Avenue at 17th Street*	0	2	1526	18524	33.8	Urban 4ST	0.27	0.484	0.408	STOP	0.27	FALSE	0.27
20	*US 101 at Mill Casino Entrance*	0	0	1610	21469	39.2	Urban 4SG	0.15	0.853	0.860	SIGNAL	FALSE	0.15	0.15
21	*Newmark Avenue at Oak Street*	1	1	2038	26045	47.5	Urban 3SG	0.23	0.633	0.509	SIGNAL	FALSE	0.23	0.23
22	*Broadway Street at Newmark Avenue*	2	1	2441	31195	56.9	Urban 4SG	1.12	0.813	0.860	SIGNAL	FALSE	1.12	1.12
23	*Newmark Street at Edgewood Drive*	0	0	1255	16066	29.3	Urban 3ST	0.20	0.384	0.293	STOP	0.20	FALSE	0.20
24	*Newmark Avenue at Brusells Street*	0	1	1386	17743	32.4	Urban 4SG	0.62	0.877	0.860	SIGNAL	FALSE	0.62	0.62
25	*Newmark Street at Sherman Avenue*	1	0	1459	18678	34.1	Urban 4SG	0.65	0.870	0.860	SIGNAL	FALSE	0.65	0.65
26	*US 101 at Newmark Street*	1	5	2194	28087	51.3	Urban 4SG	1.11	0.824	0.860	SIGNAL	FALSE	1.11	1.11
27	*Morrison Street at Lakeshore Drive*	0	0	237	3006	5.5	Urban 3ST	0.18	0.646	0.293	STOP	0.18	FALSE	0.18
28	*Newmark Avenue at Cape Arago Highway/Empire Boulevard*	0	0	817	10361	18.9	Urban 4ST	0.21	0.549	0.408	STOP	0.21	FALSE	0.21
29	*Newmark Avenue at Morrison Street*	0	0	1479	18757	34.2	Urban 4ST	0.26	0.483	0.408	STOP	0.26	FALSE	0.26
30	*Newmark Avenue at Ocean Boulevard*	0	2	1705	21292	38.9	Urban 3SG	0.44	0.653	0.509	SIGNAL	FALSE	0.44	0.44
31	*Newmark Avenue at Laclair Street*	0	0	1493	18644	34.0	Urban 3SG	0.50	0.667	0.509	SIGNAL	FALSE	0.50	0.50
32	*Empire Boulevard at Pacific Avenue*	0	0	866	10983	20.0	Urban 3ST	0.15	0.422	0.293	STOP	0.15	FALSE	0.15
33	*Thompson Road at Woodland Drive*	0	0	1012	12419	22.7	Urban 3ST	0.49	0.409	0.293	STOP	0.49	FALSE	0.49
34	*Koosbay Boulevard at Thompson Road*	0	0	844	10357	18.9	Urban 3ST	0.16	0.429	0.293	STOP	0.16	FALSE	0.16
35	*Ocean Boulevard at Woodland Drive*	0	2	1492	18309	33.4	Urban 3SG	0.51	0.669	0.509	SIGNAL	FALSE	0.51	0.51
36	*Ocean Boulevard at Butler Road*	0	1	1267	15548	28.4	Urban 3SG	0.21	0.688	0.509	SIGNAL	FALSE	0.21	0.21
37	*Koosbay Boulevard at 10th Street*	0	1	745	9142	16.7	Urban 3ST	0.48	0.444	0.293	STOP	0.48	FALSE	0.48
38	*Us 101 at Koosbay Blvd*	0	0	2366	29439	53.7	Urban 3SG	0.11	0.622	0.509	SIGNAL	FALSE	0.11	0.11
39	*7th Street at Commercial Avenue*	0	0	669	8114	14.8	Urban 3ST	0.07	0.459	0.293	STOP	0.07	FALSE	0.07
40	*Commercial Avenue at US 101 South*	0	0	1623	19252	35.1	Urban 3SG	0.31	0.663	0.509	SIGNAL	FALSE	0.31	0.31
41	*Commercial Avenue at US 101 North*	0	0	1385	18380	33.5		0.12		0.293		FALSE	FALSE	0.12
42	*10th Street at Central Avenue*	0	2	1576	19115	34.9	Urban 4SG	0.49	0.867	0.860	SIGNAL	FALSE	0.49	0.49
43	*Central Avenue at 7th Street*	0	1	1125	13645	24.9	Urban 4ST	0.28	0.516	0.408	STOP	0.28	FALSE	0.28
44	*7th Street at Anderson Avenue*	0	1	901	10928	19.9	Urban 4ST	0.25	0.542	0.408	STOP	0.25	FALSE	0.25
45	*Elrod Avenue at 10th Street*	0	0	365	4427	8.1	Urban 3ST	0.12	0.559	0.293	STOP	0.12	FALSE	0.12
46	*11th Street at Ingersoll Avenue*	0	0	166	2037	3.7	Urban 4ST	0.27	0.922	0.408	STOP	0.27	FALSE	0.27
47	*7th Street at Ingersoll Avenue*	0	0	191	2344	4.3	Urban 4ST	0.47	0.872	0.408	STOP	0.47	FALSE	0.47
48	*Hall Avenue at US 101 South*	0	0	1840	20668	37.7	Urban 3SG	0.34	0.656	0.509	SIGNAL	FALSE	0.34	0.34
49	*Hall Avenue at US 101 North*	0	0	1324	17570	32.1	Urban 3ST	0.25	0.376	0.293	STOP	0.25	FALSE	0.25
50	*Johnson Avenue at US 101 South*	0	0	2188	24577	44.9	Urban 3SG	0.38	0.638	0.509	SIGNAL	FALSE	0.38	0.38
51	*Johnson Avenue at US 101 North*	0	0	1981	26289	48.0	Urban 3SG	0.67	0.632	0.509	SIGNAL	FALSE	0.67	0.67
52	*7th Street at Lockhart Avenue/Southwest Boulevard*	0	0	599	7351	13.4	Urban 4ST	0.00	0.599	0.408	STOP	0.00	FALSE	0.00
53	*6th Avenue at D street / Coos River Highway*	0	1	593	7277	13.3	Urban 4ST	0.45	0.601	0.408	STOP	0.45	FALSE	0.45
54	*Coos River Road at Ross Inlet Road*	0	0	396	4859	8.9	Urban 3ST	0.00	0.541	0.293	STOP	0.00	FALSE	0.00

General & Site Informaiton					
Analyst:		Highway Number and Name:		Notes	
Agency/Company:	DEA	Mile Points:	2012-2016		
Date:		Crash Years Pulled:			
Project Name:	Coos Bay-North Bend	Limiting Probability:	0.9		

Angle Crashes

MP	RefPop	Street 1	Street 2	Probability	Excess Proportion
0	3SG	Commercial Avenue	US 101 South	1.00	0.48
0	3SG	Hall Avenue	US 101 South	1.00	0.39
0	4ST	Virginia Avenue	Oak Street	0.98	0.33
0	4SG	Newmark Street	Sherman Avenue	0.99	0.19
0	3SG	Virginia Avenue	US 101 South	1.00	0.15
0	3SG	Johnson Avenue	US 101 North	0.98	0.13
0	4SG	Newmark Avenue	Brusells Street	0.95	0.11
0	4ST	Central Avenue	7th Street	0.91	0.08
0	3SG	Johnson Avenue	US 101 South	0.91	0.01

Rear Crashes

MP	RefPop	Street 1	Street 2	Probability	Excess Proportion
0	3SG	Newmark Avenue	Laclair Street	1.00	0.46
0	3ST	Koosbay Boulevard	10th Street	0.99	0.39
0	4SG	Broadway Street	Newmark Avenue	1.00	0.32
0	3ST	Newmark Street	Edgewood Drive	0.96	0.31
0	3SG	Newmark Avenue	Ocean Boulevard	0.99	0.30
0	4ST	Virginia Avenue	Meade Avenue	1.00	0.18
0	4ST	6th Avenue	D street / Coos River	1.00	0.17
0	4ST	Broadway Avenue	17th Street	1.00	0.17

MP	RefPop	Street 1	Street 2	Probability	Excess Proportion

Fix Crashes

MP	RefPop	Street1	Street2	Probability	Excess Proportion
0	3SG	Ocean Boulevard	Woodland Drive	0.99	0.09
0	4SG	Newmark Street	Sherman Avenue	0.95	0.07
0	4SG	Virginia Avenue	Broadway Street	0.94	0.05
0	3SG	Virginia Avenue	US 101 South	0.96	0.02

SS-O Crashes

MP	RefPop	Street1	Street2	Probability	Excess Proportion
0	3SG	Washington Avenue	US 101 South/Sherm	1.00	0.24
0	4SG	US 101	Florida Avenue	1.00	0.19
0	4SG	Broadway Street	Newmark Avenue	0.96	0.02

Turn Crashes

MP	RefPop	Street1	Street2	Probability	Excess Proportion
0	4ST	Newmark Avenue	Cape Arago Highway	0.95	0.55
0	3ST	Thompson Road	Woodland Drive	1.00	0.52
0	4SG	US 101	Newmark Street	1.00	0.25
0	3SG	Ocean Boulevard	Woodland Drive	0.97	0.24
0	4SG	Newmark Avenue	Brusells Street	0.97	0.22

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Technical Memorandum #7:
Future Deficiencies and Needs

TECHNICAL MEMORANDUM #7

Future Deficiencies and Needs (Task 6.5)

Date: January 18, 2019

To: City of Coos Bay
City of North Bend
Oregon Department of Transportation, Region 3

From: Angela Rogge, PE, Sepehr Dastgheibi, EIT, and Dana Shuff, EIT, David Evans and Associates, Inc.
Brooke Jordan and Drew DeVitis, Jacobs
Shayna Rehberg, Angelo Planning Group

Subject: Cities of Coos Bay and North Bend Transportation System Plan Updates

This memorandum presents an evaluation of how the Cities of Coos Bay and North Bend's transportation system operates in 2040. The analysis combines information from previous technical memoranda with information about planned transportation improvements and anticipated growth in population and employment. The deficiencies and needs identified for each mode consider the goals and objectives established for the TSP. The intent is a connected, multimodal transportation network that provides a safe, equitable, efficient and resilient system for residents and visitors.

Why 2040?

Oregon Administration Rule (OAR) 660-012-0030(3)(a) indicates that future transportation needs shall be based on population and employment forecasts and distributions shall be consistent with the acknowledged comprehensive plan and must be at least 20 years from the date the TSP is adopted.

For the North Bend and Coos Bay area, the analysis assumes a forecast year of 2040 to account for the time needed to conduct the analysis and adopt the updated TSPs. This will ensure that the plan horizon (forecast year) for the TSP is at least 20 years from the point of adoption.

Coos Bay/North Bend Travel Demand Model

The Coos Bay/North Bend Travel Demand Model is used to predict future vehicular traffic volumes and understand where change in population and employment is expected. As the population grows or development occurs, new or updated infrastructure may be needed.

Travel demand models are tools used to help predict the patterns of future commuters, school traffic, and recreational traffic. The model relies on socioeconomic data (e.g., households and employment) to determine the travel demand, and system attributes (e.g., roadway capacity, speeds, and distances) to represent the transportation supply. The long-range regional growth forecasts are consistent with current land use zoning and State-approved population forecasts for the Bay Area. The detailed model assumptions are described in detail in a memorandum developed by TPAU (see appendix).

Future Population

The amount of people living and working in the Bay Area impact the future of the transportation system. The assumptions made about land use also have an impact on transportation. For example, retail land uses generate more trips than residential. Balancing the locations of different land use types can reduce the need for residents to travel long distances, thus reducing stress on the transportation network.

Projected population is one of the primary tools for developing planning policies as well as determining the need for future urban growth boundary expansions. The Portland State University Population Research Center (PRC) provides population projections for up to 50 years into the future.[1] PRC bases its population forecasts on historic and current trends, as well as assumptions about the likelihood of future events. Historically, Oregon law required counties to prepare coordinated population forecasts. In recent years, responsibility for coordinated population forecasting has been assigned to the PRC.

According to projections, North Bend's total population is expected to grow at a slightly faster pace than Coos Bay's total population during the TSP's 20-year planning horizon (Table 1). However, Coos Bay's total population is greater overall. Both cities' growth rates through 2040 are significantly higher than Coos County's growth rate and their combined projected growth (1,676 people) is projected to be more than the County's growth during that period.

Table 1. Projected Population in Coos Bay, North Bend, and Coos County

Location	2017	2040	Share of County 2017	Share of County 2040	Growth	Annual Growth Rate
North Bend	9,800	10,450	15%	16%	650	0.29%
Coos Bay	16,615	17,641	26%	28%	1,026	0.27%
Coos County	63,310	64,148	100%	100%	838	0.06%

Source: Portland State University Population Research Center *Coordinated Population Forecast: 2015 through 2065 for Coos County Urban Growth Boundaries (UGB) and Area Outside UGBs (June 2015)* and *Certified 2017 Population Estimates (June 2017)*

[1] https://www.pdx.edu/prc/home

Future Pedestrian, Bicycle and Transit Needs

The following sections will evaluate the future deficiencies and needs of the pedestrian, bicycle and transit systems.

Pedestrian

The existing pedestrian network in North Bend and Coos Bay includes sidewalks, shared-use paths, boardwalks and trails. The 2004 Coos Bay and North Bend TSP updates identified a need to expand the City's system of pedestrian facilities, with the objective of sidewalks or pathways for pedestrians on all collector and arterial streets (Pedestrian Action Plan).

The identification of future pedestrian needs considers connectivity to key community destinations and activity centers, along with current Pedestrian Level of Traffic Stress analysis and historical crash patterns. Table 2 and Table 3 identify deficiencies and needs for pedestrian facilities in North Bend and Coos Bay, respectively (also shown in Figure 1). Priority categorization refers to facilities that provide access to key community destinations, such as safe routes to schools, libraries, and commercial activity centers and those that complete the existing bicycle network. These facilities may be reasonably funded within a 20-year implementation period for the TSP Update.

Secondary categorization refers to facilities that provide less direct access to key community destinations and/or provide routes where there is a gap in coverage. These facilities are important to include in any screening and analysis of alternative, but may not be reasonably funded within the TSP 20-year implementation period.

One way to prioritize pedestrian needs is to focus on multimodal connectivity. The sections below review areas where improved or new crossings could have greater benefit to pedestrians due to proximity to key community features and access to transit service.

North Bend

Since 2004 TSP, the following projects have been completed:

- Sidewalk on Virginia Avenue, from Cedar Court to Maple Street and from Arthur Street to Hayes Street
- Sidewalk on Newmark Avenue, from Broadway Avenue to the west City Limits

There are currently no funded pedestrian projects planned City facilities in North Bend for the planning horizon, however ODOT facilities are planned to have ADA improvements (US 101 and OR 241). The table below summarizes areas to focus future pedestrian improvements.

Table 2. North Bend Pedestrian (Sidewalk) Deficiencies and Needs

Facility Name	Approximate Location
Priority[1]	
Colorado Ave (one side)	Arthur St to Oak St
Oak St	Newmark St to 17th St
17th St	W. City Limits to Broadway St
Arthur St	Connecticut Ave to Colorado Ave
Connecticut Ave	Meade Ave to McPherson

Facility Name	Approximate Location
Pony Creek Rd/Brussels St (one side)	Virginia Ave to Newmark St
Crowell Ln (one side)	Pony Creek Rd to Pacific Ave
Pacific Ave (one side)	Crowell Ln to 16th St
Newmark St (one side)	Broadway St to Sherman Ave
Newmark St	Sherman Ave to US 101
Secondary[2]	
Maple Leaf (one side)	Oak St to Maple St
Oak St	17th St to Colorado Ave
17th St	Broadway St to Myrtle St
Arthur St (one side)	Connecticut Ave to Virginia Ave
Virginia Ave (one side)	Crocker St to Arthur St
US 101 (one side)	North City Limits
US 101 (North, one side)	Downtown to South City Limits

Notes: [1] Provide access to key community destinations; [2] Fills gap in access

Pedestrian Crossings

In North Bend, the locations near community features and transit stops and how enhanced or new pedestrian crossings and sidewalks could improve them are listed below.

- North Bend Senior Activity Center: Marked crossing of Colorado Avenue and sidewalks from transit stop to Activity Center.
- Boynton Park: Marked crossing of Sherman Avenue at Exchange Street transit stop.
- Airport Heights Market: Marked crossings of all four legs of the intersection of Virginia Avenue at Lincoln Street.

Coos Bay

Since 2004 TSP, the following projects have been completed:

- Sidewalk on Central Avenue and Ocean Boulevard, from 7th Street to Woodland Drive
- Sidewalk on Bayshore Street, from Elrod Avenue to Market Avenue
- Sidewalk on N. Empire Boulevard, from Newmark Street to Wisconsin Avenue
- Sidewalk on Broadway Street, from downtown to north City Limits
- Sidewalk on Golden Avenue, from 4th Street to 7th Street

The City of Coos Bay recently received Safe Routes to School funding to provide sidewalk, ramps, crosswalk, rapid flashing beacon and bikes lanes for Millicoma and Eastside Elementary Schools. All ODOT facilities are planned to have ADA improvements (US 101 and OR 241). The table below summarizes areas to focus future pedestrian improvements.

Table 3. Coos Bay Pedestrian (Sidewalk) Deficiencies and Needs

Facility Name	Approximate Location
Priority[1]	
Southwest Blvd	Libby Dr to Montana Ave

Facility Name	Approximate Location
Shoneman-Morrison St	Harris Ave to Lakeshore Dr
Morrison St	Pacific Ave to Newmark Ave
Pacific Ave (one side)	Wasson St to Fillmore St
Pacific Ave	Fillmore St to Morrison St
17th St	East City Limits to Grant St
Koosbay Blvd	10th St to 8th St
10th St (one side)	Teakwood Ave to Hemlock Ave
Koosbay Blvd (one side)	North City Limits to Vine St
Coos River Hwy	"H" St to Applewood
7th St	Hall Ave to Ingersoll Ave
7th St	Johnson Ave to Lockhart Ave
11th St	S. of Ferguson Ave to Ingersoll Ave
Lockhart Ave	10th St to 4th St
Ingersoll Ave (one side)	10th St to 7th St
5th St	Johnson Ave to Lockhart Ave
Coos River Hwy/Newport Lane	US 101 to Chamberlain Rd
Coos River Hwy	Isthmus Slough to "I" St
Secondary[2]	
Woodland Ave	North City Limits to Thompson Road
Woodland Ave	Thompson Rd to Ocean Blvd
4th St	Commercial Ave to Curtis Ave
2nd St	Anderson Ave to Golden Ave
Lockhart Ave	4th St to Front St
Front St	Lockhart Ave to US 101
4th St	Kruse Ave to Lockhart
Ingersoll Ave	2nd St to Broadway Dr/US 101 S
Wallace St	Ocean Blvd to Newmark Ave
US 101 (one side)	North City Limits to downtown
US 101 (North, one side)	Commercial Ave to Golden Ave

Notes: [1] Provide access to key community destinations; [2] Fills gap in access

Pedestrian Crossings

In Coos Bay, the locations near community features and transit stops and how enhanced or new pedestrian crossings and sidewalks could improve them are listed below.

- Devereaux Center: Marked crossing of Ocean Boulevard and/or realign existing crossing of Newmark Avenue to shorten walking distance.
- Three Rivers Casino: Marked crossing of Ocean Boulevard at Wallace Street.
- Bay Area Hospital: Marked crossing of Thompson Road to access hospital transit stop.
- Medical Center (Immediate Care Clinic): Marked crossing of Woodland Drive near Hospital Way. Add sidewalks on Woodland and Hospital Way.

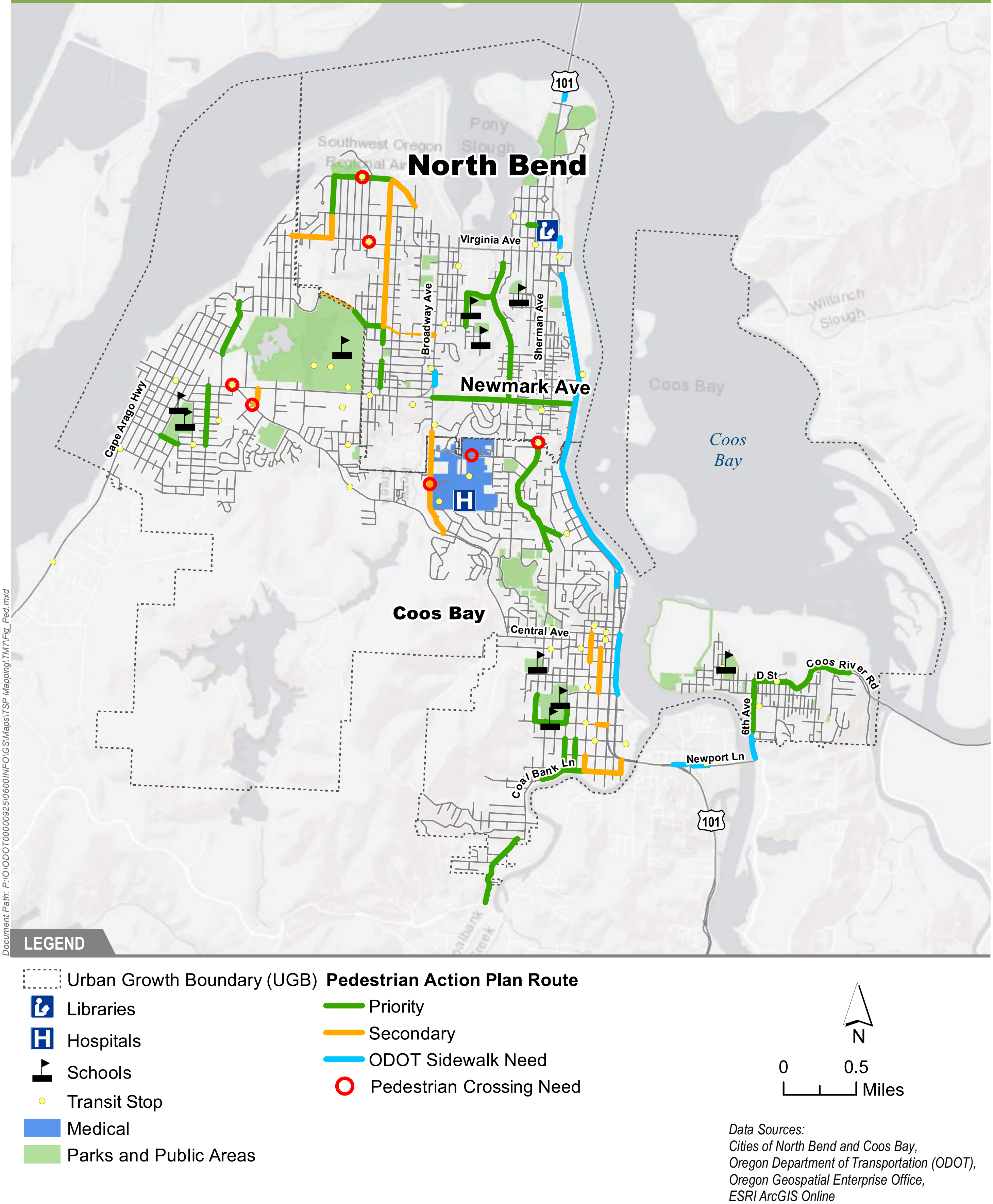


Figure 1. Pedestrian Deficiencies and Needs

Bicycle

The existing bicycle transportation network in North Bend and Coos Bay includes few dedicated bicycle facilities. Bicycle signage and markings are minimal throughout most parts of the City, and part of the existing Oregon Coast Bike Route requires bicyclists and vehicular traffic to mix on arterial and collector roadways.

The 2004 Coos Bay and North Bend TSP updates identified a designated bicycle network for arterial and collector roadways and distinguished between a Bicycle Action Plan (short to medium term with some financially constrained funding priorities) and a Bicycle Master Plan (long-term unfunded priorities). The bicycle deficiencies and needs described in this section draw from the 2004 TSP, as well as other sources. Table 4 and Table 5 summarize on-street bicycle deficiencies and needs for North Bend and Coos Bay, respectively. Bicycle deficiencies and needs are also displayed in Figure 2.

North Bend

Since the 2004 TSP, the City of North Bend has implemented a bicycle lane on the Broadway/Newmark Curve as of this writing.

Identified deficiencies and needs analysis for on-street bicycle facilities in North Bend draws on the Bicycle Action Plan and Bicycle Master Plan from the 2004 TSP. The identification of future bicycle facility deficiencies and needs also accounts for connectivity to key community destinations and activity centers, along with current Bicycle Level of Traffic Stress analysis and historical bicycle crash patterns to account for safety priorities. In addition, consideration was given to the feasibility of implementing facilities within existing public right-of-way based on existing roadway standards.

Table 4 identifies deficiencies and needs for bicycle facilities in North Bend. Priority categorization refers to facilities that provide access to key community destinations, such as safe routes to schools, libraries, and commercial activity centers and those that complete the existing bicycle network. These facilities may be reasonably funded within a 20-year implementation period for the TSP Update.

Secondary categorization refers to facilities that provide less direct access to key community destinations and/or provide north-south and east-west routes where there is a gap in coverage. These facilities are important to include in any screening and analysis of alternatives, but it is possible that they may not be reasonably funded within the TSP 20-year implementation period.

Table 4. North Bend Bicycle Deficiencies and Needs

Facility Name	Approximate Location
Priority[1]	
US 101	Northern City Limits to Southern City Limits
Virginia Ave	Ocean Blvd to Empire Ave
Broadway Ave	US 101 to 7th St
Newmark Ave	US 101 to 5th St; 7th St to Ocean Blvd
Sherman Ave	US 101 to 7th St
7th St	Commercial Ave to Lockhart Ave
16th St	Broadway Ave to E St
Secondary[2]	

Facility Name	Approximate Location
Pony Creek Rd	Newmark Ave to Virginia Ave
Virginia Ave	Broadway Ave to City Limits
Broadway Ave	Newmark Ave to City Limits
Lakeshore Dr	Fir St to City Limits
17th St	Fir St to Broadway Ave
Coos River Rd	10th Ave to eastern City Limits

Notes: [1] Provide access to key community destinations; [2] Fills gap in access

Coos Bay

Since the 2004 TSP, the City of Coos Bay has implemented the following facilities:

- Bicycle lanes on N. Empire Boulevard from Newmark Avenue to Wisconsin Avenue
- Bicycle lanes on Central Avenue/Ocean Blvd from N 12th Street to N 19th Street
- Bicycle lanes on Ocean Boulevard from Merrill Street to Newmark Avenue
- Bicycle lanes on Newmark Avenue from 660 feet east of LaClair Street west to Ocean Boulevard

Future deficiencies and needs analysis for on-street bicycle facilities in Coos Bay draws on the Bicycle Action Plan and Bicycle Master Plan from the 2004 TSP. In addition, the identification of future bicycle facility deficiencies and needs accounts for connectivity to key community destinations and activity centers, along with current Bicycle Level of Traffic Stress analysis and historical bicycle crash patterns to account for safety priorities. In addition, consideration was given to the feasibility of implementing facilities within existing public right-of-way based on existing roadway standards.

Table 5 identifies deficiencies and needs for bicycle facilities in Coos Bay. Priority categorization refers to facilities that provide access to key community destinations, such as safe routes to schools, libraries, and commercial activity centers and those that complete the existing bicycle network. These facilities may be reasonably funded within a 20-year implementation period and represent deficiencies that should be addressed in the short- to medium-term.

Secondary categorization refers to facilities that provide less direct access to key community destinations and/or provide north-south and east-west routes where there is a gap in coverage. These facilities are important to include in any evaluation of alternatives, but it is likely that they may not be reasonably funded within the TSP 20-year implementation period. Accordingly, these represent deficiencies that should be addressed in the long term.

Table 5. Coos Bay Bicycle Deficiencies and Needs

Facility Name	Approximate Location
Priority[1]	
US 101	Northern City Limits to Southern City Limits
Newmark St	Ocean Blvd to Empire Ave
Commercial Ave	US 101 to 7th St
Central Ave	US 101 to 5th St; 7th St to Ocean Blvd
Anderson Ave	US 101 to 7th St

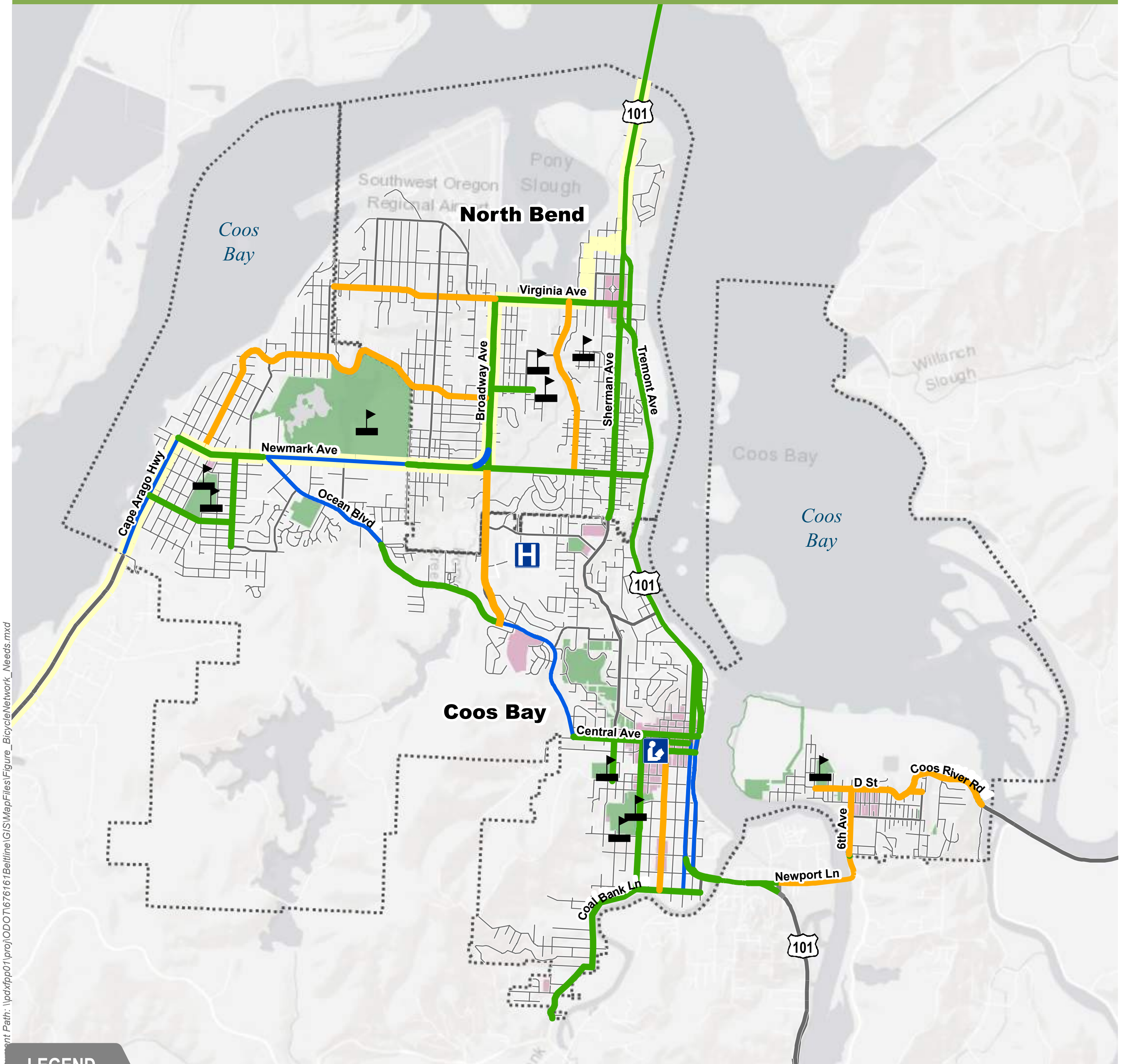
Facility Name	Approximate Location
7th St	Commercial Ave to Lockhart Ave
10th St	Commercial Ave to south of Ferguson Ave
Southwest Blvd	Lockhart Ave to City Limits
Ocean Blvd	Laclair St to Woodland Dr
Morrison St	Pacific Ave to Newmark Ave
Pacific Ave	Empire Blvd to Morrison St
Secondary[2]	
4th St	Commercial Ave to Lockhart Ave
Newport Ln	US 101 to 6th Ave
6th Ave	US 101/Newport Ln to D St
D St	2nd Ave to 6th Ave
Coos River Rd	10th Ave to eastern City Limits
Woodland Dr	Ocean Blvd to City Limits
Lakeshore Dr	Taylor Ave to City Limits
Wasson St	Taylor Ave to Newmark Ave

Notes: [1] Provide access to key community destinations; [2] Fills gap in access

Oregon Coast Bike Route

The deficiencies and needs analysis also highlights the Oregon Coast Bike Route (OCBR), which runs through North Bend and Coos Bay. ODOT is currently undertaking a 2 to 3 year planning effort to develop the OCBR Plan that will identify future investments that ODOT or local jurisdictions might make to improve the safety, accessibility, and enjoyment of the facility for tourists and community members alike. The OCBR serves community destinations along the Oregon Coast, while helping generate more than $56 million in annual spending from coastal bicycle tourism.

Coos Bay/North Bend TSP



LEGEND

- Hospitals
- Libraries
- Schools
- Mixed Use and Central Commercial
- Parks and Public Areas

Bicycle Network

Deficiencies and Needs

- Existing Facilities
- Priority Facilities
- Secondary Facilities
- Existing Oregon Coast Bike Route

N

0 0.5 1 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 2. Bicycle Deficiencies and Needs

Transit

Coos County Area Transit (CCAT) provides a fair level transit service within North Bend and Coos Bay, operating two Bay Area Loop routes and two connectors to communities north and south of the cities in Coos County. The connecting routes serve the Coquille Indian Tribe, along with the communities of Myrtle Point, Powers, Hauser, and Lakeside. Additional transportation providers, such as Curry Public Transit, Pacific Crest Bus Lines, and Greyhound operate intercity connections to destinations such as Eugene, Bandon, Port Orford, and Brookings. More complete information on intra- and intercity transit services available in North Bend and Coos Bay is documented in *Technical Memorandum #4*.

As a whole, the existing services provide a fair level of transit service to the cities, but there are specific opportunities for improvement. While projected growth in the Cities over the next 20 years is forecasted to be minimal, transit deficiencies and needs are focused on enhancing existing service coverage and frequency, ensuring transit accessibility, and continuing coordination between CCAT and intercity transportation providers as their services evolve. The table below highlights key deficiencies and needs for the CCAT system, which are referenced by a route, if applicable, and a specific category of need.

Table 6. Coos County Area Transit Deficiencies and Needs

Route	Category of Need	Description
Bay Area Loop	Service Frequency	Add weekend service on Saturday and Sunday as funding allows for East and West loop routes.
Bay Area Loop	Service Frequency	Provide earlier morning and/or later evening service for East and West Loop routes. Past community outreach from Coordinated Human Services Plan identified this as a need for service sector employees, in particular, such as people with jobs at the The Mill and Three Rivers Casinos, Pony Village Mall, etc.
Bay Area Loop	Service Coverage	Add an express Bay Area Loop to serve heavily-trafficked areas in North Bend and Coos Bay.
Bay Area Loop	Service Coverage	Expand service coverage to areas not adequately served by transit within the cities, such as the Southwest Oregon Regional Airport.
Coquille-Myrtle Point	Service Frequency	Consider restoring twice-weekly fixed route service from North Bend and Coos Bay to Coquille and Myrtle Point.
Lakeside-Hauser	Service Coverage	Consider re-establishing service to Winchester Bay and Reedsport in Douglass County via Lakeside/Hauser.
N/A	Service Coverage	Consider developing intercity service that connects to Eugene through Florence via US 101 and OR-126.
N/A	Service Frequency	Consider supplementing existing transit service between Curry County, Bandon, and North Bend/Coos Bay, which are currently served by the Coastal Express route operated by Curry Public Transit.

Route	Category of Need	Description
N/A	Service Frequency	Consider expanding dial-a-ride/demand response service to provide transportation options for seniors and mobility-limited residents to medical appointments and key community destinations.
N/A	Inter-Agency Coordination	Coordinate with Curry Public Transit, Pacific Crest, and other inter-city transportation providers to ensure ongoing alignment with CCAT schedules and stop locations in North Bend and Coos Bay. Prioritize development of a central transit hub to provide easy connections between intra- and intercity public transit service.
N/A	Inter-Agency Coordination	Partner with the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw to pursue funding opportunities for enhancing transit service and transit amenities in the greater Coos Bay area.
N/A	Accessibility	Consider providing additional transit shelters at stops with higher ridership and near key community destinations.
N/A	Accessibility	Work with the Cities of North Bend and Coos Bay to guide strategic investments for improving access to bus stops, with a focus on pedestrian crossings at higher ridership stops.
N/A	Accessibility	Partner with the Cities of North Bend and Coos Bay to enhance bus stops and bus pullouts within the public right-of-way.

Future Traffic (Street and Highway System)

This section will review the process for developing forecast peak hour motor vehicle volumes and how traffic conditions are expected to change in the future.

Volume Development

Future baseline traffic volume forecasts for year 2040 were developed using the 2013 and 2035 Coos Bay/North Bend travel demand forecasting models in combination with the 2017 existing traffic data. The planning horizon for the TSP extends to 2040; thus, year 2035 model volumes were extrapolated to 2040. The long-range regional travel forecasts are consistent with current land use zoning and funded transportation projects within the North Bend and Coos Bay UGBs.

Future Roadway Network

The network used in the forecasts for the Bay Area is a future network that includes roadway projects and safety improvements that are expected to occur by year 2040 on study area roadways. These projects have known funding sources or are programmed to be funded within the next 20 years:

- **US 101: Bunker Hill sidewalks & Flanagan signal (Coos Bay) – 2018-2021 STIP, Key #19243**
  Upgrade sidewalks on US 101 between Flanagan Road and M.P. 240.10. Replace the signal hardware at the intersection of US 101 at Flanagan Road. Replace the illumination between Flanagan Rd & Edwards Rd.
- **OR 540: Broadway at Newmark realign (North Bend) – 2018-2021 STIP, Key #20219**

Upgrade signal poles and hardware; convert the 4-Lane roadway to 3-lane roadway with center turn lane. At this time, the recommended improvements include dual eastbound left-turn lanes, bicycle lanes, pedestrian safety and restrict the driveway on the south side of Newmark to right-in/right-out.

- **US 101: Johnson Ave. Intersections (Coos Bay) – 2018-2021 STIP, Key #20246**
  Improve signal phasing and coordination on US 101/Johnson Avenue (NB and SB intersections)

The cities have identified additional pavement maintenance projects as part of their capital plans. These planned projects do not influence traffic operational analysis, but will be considered during the solutions development phase of the TSP update.

Operational Criteria

The mobility performance targets are discussed in Technical Memorandum #5. V/C and LOS thresholds are the key technical and policy benchmarks for measuring street/vehicle performance, used to help identify future improvements and to manage growth.

Volume-to-Capacity (V/C) Ratio: A comparison of traffic volume to intersection capacity. As the v/c ratio approaches 1.00, traffic becomes more congested and unstable, with longer delays.

Level of Service (LOS): Level of service is a function of control delay, which includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Six standards have been established, ranging from LOS A, where there is little or no delay, to LOS F, where there is delay of more than 50 seconds at unsignalized intersections, or more than 80 seconds at signalized intersections.

It should be noted that, although delays can sometimes be long for some movements at a STOP-controlled intersection, the v/c ratio might indicate that there is adequate capacity to process the demand for that movement. Similarly, at signalized intersections, some movements, particularly side street approaches or left turns onto side streets, may experience longer delays because they receive only a small portion of the green time during a signal cycle, but their v/c ratio may be relatively low. For these reasons, it is important to examine both v/c ratio and LOS when evaluating overall intersection operations. Both are reported in the following section.

Future Driving Conditions

The Bay Area is expected to see a steady, albeit minor, growth in population and employment within the 2040 planning horizon. This increase could result in an increase in traffic along the arterial street system, and minor increases on the local and neighborhood network. Due to its geographic location, visitors to North Bend and Coos Bay must do so by crossing bridges. These bridges, specifically the Conde McCullough Memorial Bridge and the Isthmus Slough Bridge, are existing bottlenecks in the traffic that travels to and from the Bay Area that are expected to increase by 2040.

Future Volumes

The Bay Area traffic trends fluctuate throughout the year due to coastal and recreational opportunities in the area. Volumes for the summer (peak) conditions were developed and analyzed to determine where future transportation investments may be needed to accommodate future growth. Figure 3 and Figure 4 report a summary of the anticipated future (year 2040) vehicular turning movement volumes and intersection configurations.

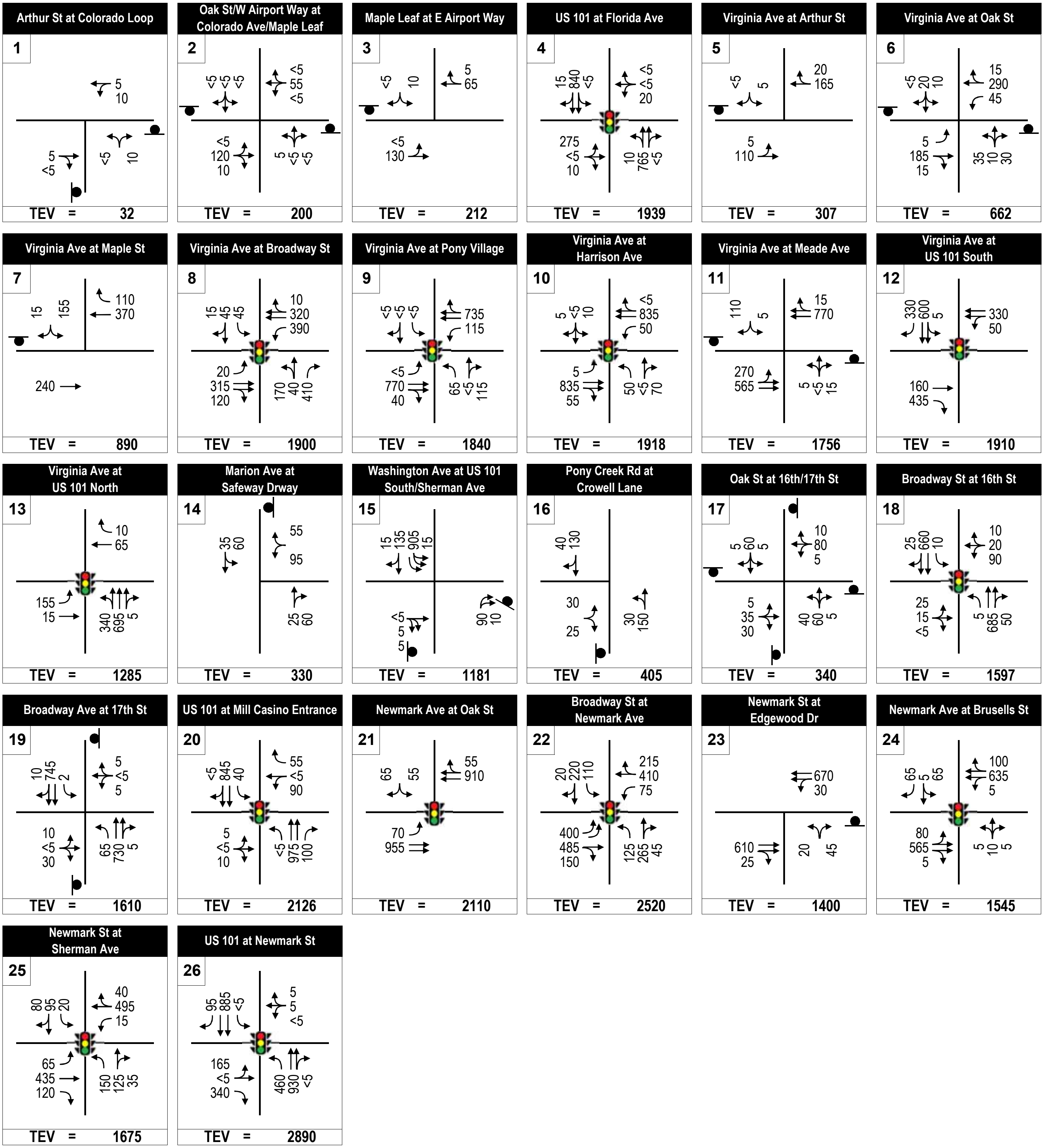
In North Bend, most of the volume growth are along the following routes: US 101, Virginia Avenue and Newmark Avenue (east of Broadway Avenue).

In Coos Bay, the volume growth is along the following routes: US 101, Ocean Boulevard, and Lockart Avenue/Southwest Boulevard.

Operational Results

Table 7 and Table 8 report a summary of the anticipated future (year 2040) vehicular traffic operational results for each analysis intersection. If a value is shaded in black, the intersection exceeds applicable mobility targets and is flagged as a future need to address during alternatives development.

Analysis for the PM peak period shows that only two of the study area intersections are expected to exceed applicable mobility thresholds, one in North Bend and one in Coos Bay.



Legend

Allowable Movement

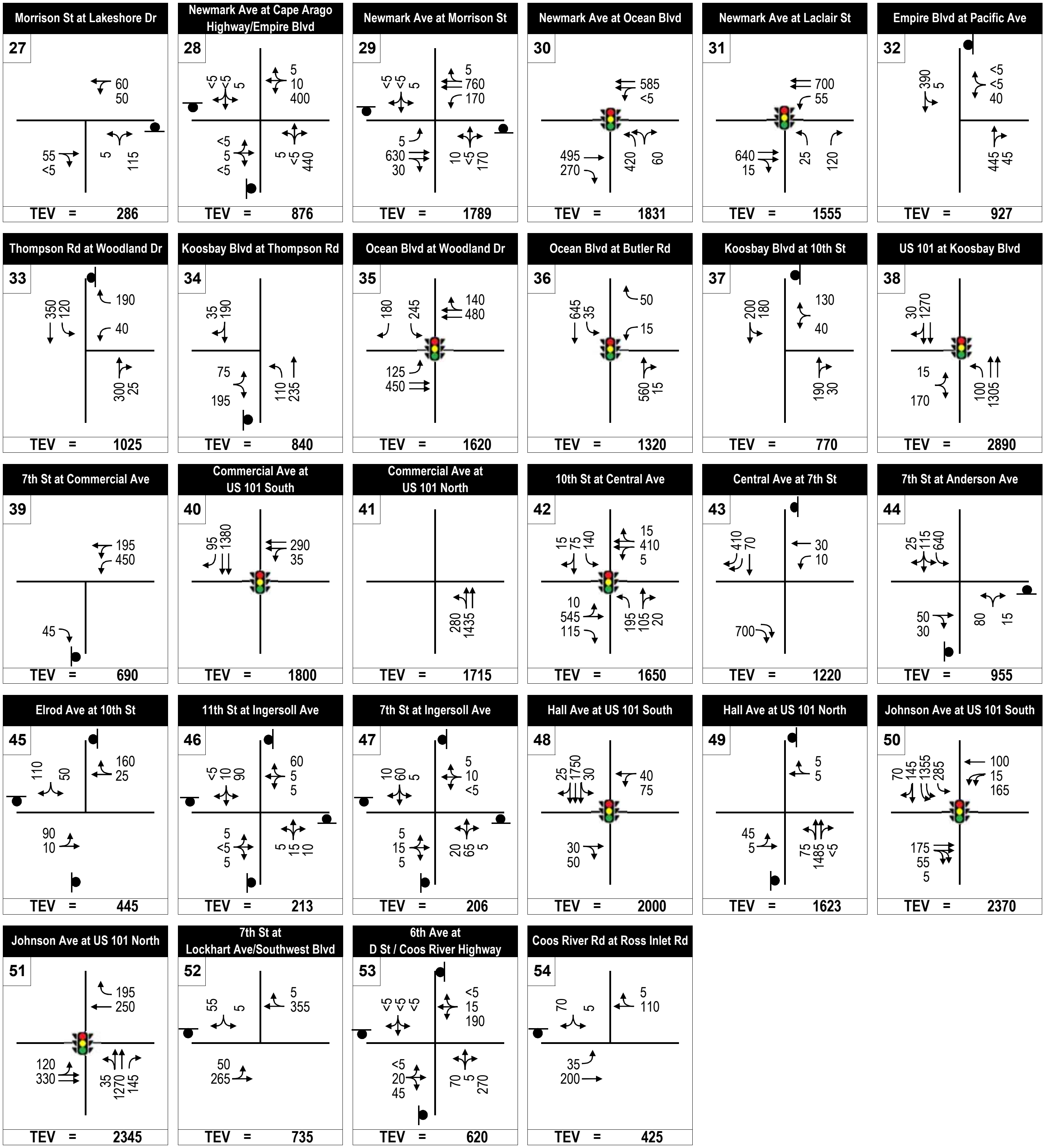
TEV Total Entering Volume

Signalized Intersection

STOP Controlled Approach

Figure 3

Future Baseline (2040)
PM Peak Hour (4:30 - 5:30 PM)
Turn Movement Volumes
North Bend



Legend

Allowable Movement

TEV Total Entering Volume

Signalized Intersection

STOP Controlled Approach

Figure 4
Future Baseline (2040)
PM Peak Hour (4:30 - 5:30 PM)
Turn Movement Volumes
Coos Bay

North Bend

Table 7 summarizes the traffic operations for North Bend. The intersection of US 101 at Newmark Street exceeds the mobility target with a V/C of 0.81 which is just over the ODOT threshold. In addition, the intersection of Broadway Street at Newmark Avenue approaches the ODOT mobility target. Coincidentally, these two intersections are the highest volume intersections in the city. Both of these intersections are signalized.

The intersection of Virginia Avenue at Meade Avenue experiences a high volume of cut-through traffic for those avoiding travelling through the Virginia Avenue at US 101 intersections. The operations are within the mobility targets; however, the high volume of eastbound left-turning vehicles could impact operations on Virginia Avenue in the future.

Table 7. Future (2040) PM Peak Hour Traffic Operations – North Bend

ID	Intersection Name	Critical Movement[1]	V/C[2]	LOS[2]	Mobility Target[3]
1	Arthur St at Colorado Lp	NBLR	0.01	A	LOS D
2	Oak St/W Airport Way at Colorado Ave/Maple Leaf	NBLTR	0.01	B	LOS D
3	Maple Leaf at E Airport Way	SBLR	0.02	B	LOS D
4	US 101 at Florida Ave	Overall	0.67	B	0.85
5	Virginia Ave at Arthur St	SBLR	0.01	B	LOS D
6	Virginia Ave at Oak St	SBLTR	0.09	C	LOS D
7	Virginia Ave at Maple St	SBLR	0.31	B	LOS D
8	Virginia Ave at Broadway St	Overall	0.72	C	0.95
9	Virginia Ave at Pony Village Main Driveway	Overall	0.51	B	0.95
10	Virginia Ave at Harrison Ave	Overall	0.48	B	0.95
11	Virginia Ave at Meade Ave	EBTL SBLTR	0.38 0.42	B D	0.95 0.95
12	Virginia Ave at US 101 South	Overall	0.55	B	0.85
13	Virginia Ave at US 101 North	Overall	0.46	A	0.85
14	Marion Ave at Safeway Driveway	WBLR	0.20	B	LOS D
15	Washington Ave at US 101 South/Sherman Ave	SBL EBTR	0.01 0.03	A B	0.85 0.95
16	Pony Creek Rd at Crowell Ln	EBLR	0.11	B	LOS D
17	Oak St at 16th/17th St	NBLTR	0.15	A	LOS D
18	Broadway St at 16th St	Overall	0.48	A	0.95
19	Broadway Ave at 17th St	NBL EBLTR	0.09 0.21	B D	0.95 0.95
20	US 101 at Mill Casino Entrance	Overall	0.54	A	0.80

ID	Intersection Name	Critical Movement[1]	V/C[2]	LOS[2]	Mobility Target[3]
21	Newmark Ave at Oak St	Overall	0.55	A	LOS D
22	Broadway St at Newmark Ave	Overall	0.89	E	0.95
23	Newmark St at Edgewood Dr	NBLR	0.19	C	LOS D
24	Newmark Ave at Brusells St	Overall	0.41	A	LOS D
25	Newmark St at Sherman Ave	Overall	0.70	C	LOS D
26	US 101 at Newmark St	Overall	0.81	C	0.80

Shaded cells exceed the mobility target.

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.
Notes:

1. At intersections, the results are reported for the worst operating movements on major and minor approaches that must stop or yield the right of travel to other traffic flows. For signalized intersections, the overall operations are reported.
2. The v/c ratios and LOS are based on the results of the macrosimulation analysis using Synchro, which does not account for the influence of adjacent intersection operations.
3. Mobility target is reported for the critical movement; Unsignalized intersections may have two different mobility targets for the major and minor approaches (Action 1F.1, Oregon Highway Plan, 1999)

Coos Bay

Table 8 summarizes the traffic operations for Coos Bay. The intersection of Newmark Avenue and Morrison Street exceeds the mobility target. This intersection is a two-way stop-controlled intersection. Although failing southbound direction does not receive a high demand volume, due to high volumes of traffic traveling on Newmark Street, southbound turning vehicles experience excessive delay.

There are a few other locations nearing the mobility target: 7th Street at Anderson Avenue, Johnson Avenue at US 101 South, and Johnson Ave at US 101 North. The intersection of 7th Street at Anderson Avenue is stop-controlled intersection with free flowing traffic on Anderson Avenue that side street traffic must wait for. Johnson Avenue at US 101 South is a five-legged intersection and Johnson Avenue at US 101 North is its northbound couplet. These two intersections are major busy intersections in Coos Bay. It should be noted that while the intersection of Hall Avenue at US 101 North has a V/C under the mobility target, the eastbound direction experiences excessive delay and has a level of service of F.

Table 8. Future (2040) PM Peak Hour Traffic Operations – Coos Bay

ID	Intersection Name	Critical Movement[1]	V/C[2]	LOS[2]	Mobility Target[3]
27	Morrison St at Lakeshore Dr	NBLR	0.14	A	LOS D
28	Newmark Ave at Cape Arago Hwy/Empire Blvd	EBLTR	0.04	C	LOS D
29	Newmark Ave at Morrison St	SBLTR	0.13	F	LOS D
30	Newmark Ave at Ocean Blvd	Overall	0.57	A	LOS D
31	Newmark Ave at Laclair St	Overall	0.30	A	LOS D
32	Empire Blvd at Pacific Ave	WBLR	0.15	C	LOS D
33	Thompson Rd at Woodland Dr	WBL	0.17	C	LOS D

ID	Intersection Name	Critical Movement[1]	V/C[2]	LOS[2]	Mobility Target[3]
34	Koosbay Blvd at Thompson Rd	EBLR	0.50	C	LOS D
35	Ocean Blvd at Woodland Dr	Overall	0.58	B	LOS D
36	Ocean Blvd at Butler Rd	Overall	0.56	A	LOS D
37	Koosbay Blvd at 10th St	WBLR	0.38	C	LOS D
38	Us 101 at Koosbay Blvd	Overall	0.67	B	0.80
39	7th St at Commercial Ave	EBR	0.06	A	LOS D
40	Commercial Ave at US 101 South	Overall	0.61	B	0.85
41	Commercial Ave at US 101 North	--	--	--	0.85
42	10th St at Central Ave	Overall	0.66	B	LOS D
43	Central Ave at 7th St	WBL	0.01	A	LOS D
44	7th St at Anderson Ave	NBLR	0.43	D	LOS D
45	Elrod Ave at 10th St	WBTR	0.24	A	LOS D
46	11th St at Ingersoll Ave	SBLTR	0.14	A	LOS D
47	7th St at Ingersoll Ave	NBLTR	0.12	A	LOS D
48	Hall Ave at US 101 South	Overall	0.56	B	0.85
49	Hall Ave at US 101 North	NBL	0.05	A	0.85
		EBLT	0.50	F	0.95
50	Johnson Ave at US 101 South	Overall	0.75	B	0.85
51	Johnson Ave at US 101 North	Overall	0.75	B	0.85
52	7th St at Lockhart Ave/Southwest Blvd	SBLR	0.12	B	LOS D
53	6th Ave at D St / Coos River Hwy	WBLTR	0.24	B	LOS D
54	Coos River Rd at Ross Inlet Rd	SBLR	0.10	A	LOS D

Shaded cells exceed the mobility target.

Acronyms: EB = eastbound; WB = westbound; NB = northbound; and SB = southbound. L = left; T = through; and R = right.
Notes:

1. At intersections, the results are reported for the worst operating movements on major and minor approaches that must stop or yield the right of travel to other traffic flows. For signalized intersections, the overall operations are reported.
2. The v/c ratios and LOS are based on the results of the macrosimulation analysis using Synchro, which does not account for the influence of adjacent intersection operations.
3. Mobility target is reported for the critical movement; Unsignalized intersections may have two different mobility targets for the major and minor approaches (Action 1F.1, Oregon Highway Plan, 1999)

Preliminary Signal Warrant Analysis

Preliminary signal warrant analysis was completed at the one unsignalized intersection in the study area expected to exceed operational targets by 2040. The intersection of Newmark Avenue at Morrison Street did not meet ODOT's preliminary signal warrants. A detailed worksheet is available in the appendix.

Freight Conditions

There are no planned and funded projects expected to influence freight travel through North Bend and Coos Bay. Freight travel through the Bay Area is not forecast to be significantly impacted by future growth, as the overall level of motor vehicle congestion is expected to remain within mobility targets for most intersections.

The Oregon Freight Plan (OFP) defines a statewide strategic freight network. The following facilities in the study area are considered part of the Western Corridor Strategic Corridor in the OFP: the Port of Coos Bay, US 101, Coos Bay Rail Line, and the Southwest Oregon Regional Airport. The roads connecting and serving these areas (intermodal connector roads) should maintain accessibility for future freight. The intermodal connector needs identified in the OFP are listed below:

- North Bend:
  - California Avenue between Sherman Avenue, US 101 and the Dock Facility: Poor pavement condition (2015 data), improved safety at rail crossing, improved turning movements for one-way portion, improved pedestrian facilities.
  - Sheridan Avenue between US 101 Port Facility: Poor pavement condition (2015 data), wider roadway, improved safety at rail crossing, improved turning movements for one-way portion, improved pedestrian facilities.
  - Maple Leaf/Maple Street between Airport Way and Virginia Avenue: Pavement condition, safety, striping, freight mixing with bike traffic.
  - US 101 mile point (M.P.) 236.28 - Lewis Street/Mill Casino signal head: Vertical clearance
- Coos Bay:
  - US 101 M.P. 238.4 - Curtis Avenue signal head: Vertical clearance

Future Air, Rail, Pipeline and Marine

Air

The Southwest Oregon Regional Airport (OTH) Master Plan projects that the growth of the airport expects to remain about the same, with the possibility of a 20% increase in based aircraft and about 30% increase in passenger enplanements by 2030 (from 2010).

There is no public mass transit available at the airport. Capacity of all the off-airport access roads is considered adequate throughout the 20-year planning period. The on-airport general public access roads (East Airport Way and West Airport Way off Maple Leaf Lane, two-lane interior streets) are currently adequate to serve demand. The plan anticipates that, as new development occurs in the non-aviation area, it may be necessary to modify these access roads to accommodate new tenants and their specific needs.

Rail

As of November 1, 2018, Coos Bay Rail Line, Inc. (CBRL) began train operations on the Port of Coos Bay (Port) owned rail line. Since the 2004 TSP, rail infrastructure investments have been made and there are several rehabilitation projects currently underway along the line. In 2011, service was restored to 111-miles of the line from the North Spit to Eugene, and in 2013, the Port restored service to the entire 134-

mile line.[2] The OFP identifies needs as improvements to bridges, spurs, tracks, transload sidings, at grade crossings and tunnels to create or improve multi-modal business opportunities.

As documented in *Technical Memorandum #6,* no crashes or other incidents have occurred at the at-grade rail crossings within the UGBs. Once the swing span bridge is upgraded, rail operations through the cities is expected to be one through train to the south and one through train north between Monday and Friday, with additional activity at the Coos Bay and North Bend switchyards for staging.[3] Should rail traffic increase within North Bend and Coos Bay, the Cities may choose to work with the Port to identify at-grade crossing improvements to enhance safety and reduce barriers to multimodal connectivity.

A couple locations should be given priority for improving multimodal connectivity and safety if an increase in rail traffic occurs. In North Bend, these locations are the at-grade crossings on Sheridan Avenue accessing the Simpson Heights neighborhood and on California Avenue and Virginia Avenue accessing the North Bend Boardwalk. In Coos Bay, the locations are the at-grade rail crossings accessing the Coos History Museum and Maritime Collection (Front Street) and the Coos Bay Boardwalk (near Anderson Avenue and Market Avenue).

No additional rail needs were identified for the future forecast year 2040.

Pipeline

There have not been any significant changes to the pipeline system since the 2004 TSP updates and there are no changes to the pipeline system planned within North Bend or Coos Bay at this time. North of the study area, a liquefied natural gas (LNG) terminal is proposed on the North Spit, across the bay from OTH. Should the LNG terminal be constructed, infrastructure impacts are expected to be mitigated by the developer.

Marine

The Port of Coos Bay has completed several projects since the completion of the 2004 TSP updates. The projects range from updating a master plan for the Charleston Marina (2007) to installing a new travel lift in the shipyard (2017). The projects are intended to spur economic development in both marine commerce and tourism.

There is currently a project in design and engineering that will expand the existing channel depth and width in order to facilitate future economic development and accommodate the growing global fleet.[4]

The OFP identifies the following needs related to the marine system:

- Charleston boatyard (dock, travel lift etc.) improvements that include the Marine Ways
- Oregon Gateway: North Spit improvements (ocean outfall, access roads etc.) to accommodate a multi-modal marine facility to handle bulk cargo, containers and an LNG export facility
- Federal channel widening and deepening to accommodate larger ships and ensure safer operations.
- Charleston dock replacements.

[2] Oregon International Port of Coos Bay Strategic Business Plan, 2015.
[3] Per phone conversation with the Port of Coos Bay, January 2019.
[4] https://www.portofcoosbay.com/channel-deepening

Community Feedback

In addition to the inventory and analysis of the modal systems, the TSP project team solicited feedback from our Public Advisory Committee (PAC). In the future, the following priorities were identified for the various modal systems:

Bicycle/Pedestrian:

- Refine the existing 2004 Pedestrian and Bicycle Action Plans to a targeted, prioritized list. (Woodland D, 6th St/D St/ Coos River Hwy, Morrison St, Schoneman Ave, Devereux Center, Newmark Ave/Ocean Blvd, Sherman Ave)
- Develop a Safe Routes to School project list within a schools 1-mile radius.
- Provide parallel facilities to Virginia Avenue (North Bend)

Transit:

- Recognizing that CCAT would take the lead on implementation and funding, note desire for a regional transit hub, accessible transit and transit pull outs

Vehicular:

- Fix and maintain the existing system (pavement condition)
- Strengthen our existing system (resiliency/emergency preparedness)
- Provide a traffic calming “toolbox” for the Cities to offer potential neighborhood treatments
- Capture all needs, even if they are unlikely to be funded (bridges/structures)
- Confirm roadway classification against traffic volumes and proposed land use

Summary of Future Deficiencies and Needs

During the planning horizon, the Bay area will see a gradual increase in population and pockets of development/redevelopment. Although an increase in traffic volumes is expected to be minor, for smaller communities such as North Bend and Coos Bay, minor increases can seem like a lot on roads that do not normally experience a lot of traffic.

The future conditions analysis identifies a need for targeted improvements that provide the most benefit for the cost.

Table 9 summarizes deficiencies expected to occur within the 2040 planning horizon. To provide a comprehensive picture of the anticipated deficiencies, the table also includes needs previously identified in *Technical Memorandum #4 (System Inventory)* and *Technical Memorandum #6 (Current System Conditions)*, including intersections with high crash rates that have been flagged as priorities for safety reasons.

Table 9. Summary of Coos Bay and North Bend Transportation System Deficiencies and Needs

	Deficiency/Need	
Mode	**North Bend**	**Coos Bay**
Pedestrian	Refine and prioritize Pedestrian Action Plan to address gaps in access to schools and community features (i.e. Sheridan Ave, 16th Oak St, Pacific St)	Refine and prioritize Pedestrian Action Plan to address gaps in access to schools and community features (i.e. Woodland Dr, 6th St/D St/ Coos River Hwy, Morrison St, Schoneman Ave, Devereux Center, Newmark Ave/Ocean Blvd, Sherman Ave, Mingus Park)
Pedestrian	Improve areas identified with Pedestrian Level of Traffic Stress 4: Virginia Avenue, Newmark Avenue	Improve areas identified with Pedestrian Level of Traffic Stress 4: Newmark Avenue, Ocean Boulevard
Pedestrian	Construct lacking connections of trails or shared-use paths system between neighborhoods and commercial areas.	Construct lacking connections of trails or shared-use paths system between neighborhoods and commercial areas.
Pedestrian	Improve/Add marked crossings to improve access to transit stops at key locations: North Bend Senior Center, Boynton Park, Airport Heights Market	Improve/Add marked crossings to improve access to transit stops at key locations: Devereaux Center, Medical Center, Bay Area Hospital, Three Rivers Casino
Pedestrian	Develop a Safe Routes to School project list	Develop a Safe Routes to School project list
Pedestrian	Develop a parallel facility to Virginia Ave	
Bicycle	Continue constructing bike facilities identified in Bicycle Action Plan (Refine and prioritize Pedestrian Action Plan to address gaps in access to schools and community features)	Continue constructing bike facilities identified in Bicycle Action Plan (Refine and prioritize Pedestrian Action Plan to address gaps in access to schools and community features)
Bicycle	Add to and improve existing bicycle wayfinding and formalized markings	Add to and improve existing bicycle wayfinding and formalized markings
Bicycle	Improve areas identified with Bicycle Level of Traffic Stress 4: Cape Arago Highway, Newmark Ave/St, US 101	Improve areas identified with Bicycle Level of Traffic Stress 4: Ocean Blvd, US 101
Bicycle	Coordinate with and connect to Oregon Coast Bike Route	Coordinate with and connect to Oregon Coast Bike Route
Transit	Increase service frequency: - Add weekend service on the Bay Area Loop - Extend service hours - Decrease headways and add additional route along US 101 and Sherman Ave	Increase service frequency: - Add weekend service on the Bay Area Loop - Extend service hours - Decrease headways and add additional route along US 101 and Ocean Blvd
Transit	Improve accessibility:	Improve accessibility:

	Deficiency/Need	
Mode	**North Bend**	**Coos Bay**
	- Add shelters and stops near community destinations - Improve bicycle and pedestrian connectivity to stops	- Add shelters and stops near community destinations - Improve bicycle and pedestrian connectivity to stops - Regional Transit Hub
Street/ Highway	US 101 at Newmark St: Mitigate operations expected to exceed mobility target (by v/c of 0.01)	Newmark Ave at Morrison St: Mitigate operations expected to exceed mobility target (southbound LOS F)
Street/ Highway	Address increased delays of isolated movements at Broadway St/Newmark Ave and Virginia Ave/Meade Ave	Address increased delays of isolated movements at 7th St/Anderson Ave, Hall Ave/US 101 North, Johnson Ave/US 101 South
Street/Highway	Improve east-west connectivity between Broadway Avenue and Sherman Avenue	Newport Lane/Isthmus Slough bridge provides important connectivity between two parts of the community
Street/Highway	Maintain/fix/strength existing system	Maintain/fix/strength existing system
Street/Highway	Update functional classifications: - Suggest changing the "collector" term into "major collector" and the neighborhood routes into "minor collectors." - Review Meade Ave and Arthur St	Update functional classifications: - Suggest changing the "collector" term into "major collector" and the neighborhood routes into "minor collectors." - Coos Bay's classification of Koosbay Boulevard between 10th Street and US 101 (arterial) differs from the State's classification as an urban collector.
Freight	Address Highway Over-Dimension Load Pinch Point: Raise signal head on US 101 at Lewis Street/Mill Casino	Address Highway Over-Dimension Load Pinch Point: Raise signal head on US 101 at Curtis Avenue
Freight	California Ave between Sherman Ave, US 101 and the Dock Facility: Address poor pavement condition (2015 data), improve safety at rail crossing, improve turning movements for one-way portion	
Freight	Sheridan Ave between US 101 and Port Facility: Address poor pavement condition (2015 data), widen roadway, improve safety at rail crossing, improve turning movements for one-way portion	
Freight	Maple Leaf/Maple Street between Airport Way and Virginia Avenue: Address pavement condition,	

	Deficiency/Need	
Mode	**North Bend**	**Coos Bay**
	improve safety, add striping, separate freight and bike traffic	
Freight	Make modifications at US 101/Florida Ave to accommodate high heavy vehicle volumes	Make modifications at US 101/Koosbay Blvd, US 101 South/Commercial Ave and US 101 North/Johnson Ave to accommodate high heavy vehicle volumes
Air	Add direct commercial passenger service between OTH and northwest hubs (Portland)	Add direct commercial passenger service between OTH and northwest hubs (Portland)
Air	Provide transit service to airport if air passenger service increases	Provide transit service to airport if air passenger service increases
Air	Make improvements to Airport Way and Maple Leaf Lane if warranted by future development	
Rail	Make improvements to bridges, spurs, tracks, transload sidings, at grade crossings and tunnels as identified in the OFP to create or improve multimodal business opportunities	Make improvements to bridges, spurs, tracks, transload sidings, at grade crossings and tunnels as identified in the OFP to create or improve multimodal business opportunities
Rail		Install warning device: Market Ave at Front St and US 101 at US Plywood-Central Dock Rd
Rail	Construct at-grade multimodal improvements: - Sheridan Ave accessing the Simpson Heights neighborhood - California Ave and Virginia Ave accessing the North Bend Boardwalk	Construct at-grade multimodal improvements: - Access to Coos History Museum and Maritime Collection (Front St) - Coos Bay Boardwalk (near Anderson Ave and Market Ave)
Marine	The OFP identifies the following needs related to the marine system: - Charleston boatyard (dock, travel lift etc.) improvements that include the Marine Ways - Oregon Gateway: North Spit improvements (ocean outfall, access roads etc.) to accommodate a multi-modal marine facility to handle bulk cargo, containers and an LNG export facility - Federal channel widening and deepening to accommodate larger ships and ensure safer operations. - Charleston dock replacements.	
Safety	Crash history (2012-2016) documented fatalities occurring at: - Virginia Ave at Meade Ave - Newmark Ave at Oak St - US 101 at Florida Ave	Crash history (2012-2016) documented fatalities occurring at: - US 101 South, south of Johnson Ave - Ocean Blvd at 19th St

	Deficiency/Need	
Mode	**North Bend**	**Coos Bay**
Safety	Intersections flagged for exceeding critical and/or 90th percentile crash rates: - Virginia Ave at US 101 South - Washington Ave at US 101 South/Sherman Ave - Pony Creek Rd at Crowell Ln - Broadway St at Newmark Ave - US 101 at Newmark St	Intersections flagged for exceeding critical and/or 90th percentile crash rates: - Thompson Ave at Woodland Dr - Koosbay Blvd at 10th St - 7th St at Ingersoll Ave - Johnson Ave at US 101 North - 6th Ave at D St/Coos River Hwy
Safety	Top 10% Safety Priority Index System sites: - US 101 near California Ave - US 101 near Newmark St - OR 540 near McPherson Ave - OR 540 near State St - Sherman Ave near Commercial St/Exchange St - Newmark St near Brussels St	Top 10% Safety Priority Index System sites: - US 101 near Kruse Ave - S 10th St near Commercial Ave - Ingersoll St near S 2nd St
Safety	Newmark St at Sherman Ave and Newmark Ave at Broadway St suffer from two specific crash types with a probability of more than 90 percent	

Notes: TM #4 = Technical Memorandum #4 (System Inventory); TM #6 = Technical Memorandum #6 (Current System Conditions); TM #7 = Technical Memorandum #7 (Future Deficiencies and Needs)

Next Steps

The next steps to drafting North Bend and Coos Bay's TSP Updates will work to develop concepts that consider the TSP goals and objectives, address identified deficiencies and align with each City's funding forecast.

TECHNICAL MEMORANDUM #7 APPENDIX

Future Deficiencies and Needs (Task 6.5)

Appendix A Updated Coos Bay/North Bend Travel Demand Forecasting Model Memorandum (ODOT TPAU)

Appendix B STIP Projects

Appendix C Volume Development

Appendix D Synchro Worksheets

Appendix E Preliminary Signal Warrant Analysis

Appendix A

Updated Coos Bay/North Bend Travel Demand Forecasting Model Memorandum (ODOT TPAU)

Oregon
Kate Brown, Governor

Department of Transportation
Transportation Development Division
Transportation Planning Analysis Unit (TPAU)
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Date: July 8, 2015

To: Jim Hossley, Public Works Director, City of Coos Bay
Jill Rolfe, Planning Director, Coos County Planning Department
David K. Voss, AICP, City Planner, City of North Bend
Derek Windham, PLS, EIT, Engineering Coordinator, City of North Bend
Alexandra Coates, ODOT Region 3 Planner

From: Jin Ren, P.E., Senior Transportation Modeler/Analyst
Peter Schuytema, P.E., Senior Transportation Analyst
ODOT Transportation Planning Analysis Unit (TPAU)

RE: Updated Coos Bay/North Bend Travel Demand Forecasting Model

The purpose of this memorandum is to summarize the process used to create the updated Coos Bay/North Bend 2013 travel demand model and the 2035 future year scenario. The model is now ready for application for the current City of North Bend Transportation and Growth Management (TGM) grant and for any other transportation or land use planning application.

Brief Project Description

The City of North Bend was awarded a Transportation and Growth Management (TGM) grant for the North Point Industrial Lands: Multimodal Master Plan. This master plan would determine the most efficient way to integrate land use, multimodal transportation, and utility improvements at the 50-acre North Point Workforce Housing Project industrial site, a large-scale temporary workforce housing development for the Jordan Cove Energy Project after the lands are vacated. The master plan will prepare the City of North Bend for designing, engineering, and constructing any additional needed improvements to promote the site when the land reverts to primarily industrial use.

The purpose of the model development project was to forecast traffic growth from existing conditions to the new future 20-year (2035) horizon. The original Coos Bay/North Bend OSUM (Oregon Small Urban Model) had a Year 2000 base year and Year 2020 future year scenario. The Coos Bay/North Bend OSUM were used for the local Transportation System Plans (TSP) in the early 2000s. However, the model was outdated for this TGM planning study as it is only appropriate to extrapolate future volumes no more than five years beyond the horizon year. The resulting 10-year gap required an updated base year (2013) and a future scenario (2035).

Model Outreach for Local Land Use & Network Assumptions

TPAU and ODOT Region 3 staff conducted two outreach workshops at the City of Coos Bay City Hall. The attendances included staff from the local jurisdictions: Coos Bay Public Works Director, Coos County Planning Director, North Bend City Planner and the Engineering Coordinator. There were several objectives for the model outreach effort:

(1) Introduce travel demand forecasting model concepts, processes and applications;
(2) Review and update the current transportation network and land use in the existing model;
(3) Assist the local partners to make informed decisions on future land use and network assumptions;
(4) Have the model better reflect the existing on-the-ground conditions; and
(5) Obtain the consistencies and reasonableness on the future short and long range land use and transportation plans.

The first outreach workshop was held on November 5, 2014. The first half of the four-hour workshop TPAU staff presented and answered questions on travel demand model concepts, processes and applications based on the previous base year 2000 Coos Bay/North Bend OSUM.

During the second half of the workshop, the local jurisdictions reviewed and updated the provided functional class, through lanes, posted speeds, traffic signal locations, and turn prohibition locations plots, which were based on the previous base year 2000 model network. After the workshop, TPAU staff modified the existing base year 2000 OSUM model network to create an interim year 2013 OSUM model network.

The base and future land use data (see Table 1) were presented to the local jurisdictions. By comparing the land use summaries for the previous base year 2000 to interim years 2010 through 2013, the local staff felt that there was enough change in terms of households, population and employment to first update the base year 2000 data to the 2013 interim year before building the future year 2035 scenario.

Table 1: 2000-2020 Actual and Forecasted Households, Population, and Employment[1]

Year	Household	Population	Employment	Agricultural	Education	Government	Industrial	Other	Retail	Service
2000	13,493	33,055	13,798	401	1,160	707	563	2,008	3,365	5,594
2010	14,287	34,187	14,273	339	1,051	879	576	1,516	2,285	7,627
2011[2]	14,366	34,300	14,511	403	1,053	833	625	1,630	2,275	7,692
2012[2]	14,525	34,526	14,359	424	1,039	801	576	1,501	2,257	7,761
2013[2]	14,763	34,866	14,529	405	1,026	777	650	1,532	2,320	7,819
2020	15,359	37,508	17,513	423	1,257	761	771	2,170	4,923	7,208

[1]Source: 2000/2020 Coos Bay OSUM (Oregon Small Urban Model) from ODOT TPAU (Transportation Planning Analysis Unit; 2010 Census; and 2010-2013 Oregon Quarterly Census Employment and Wages from the Oregon Employment Department.
[2]2011-2013 households and population are based on the 2000-2010 historical growth.

The second outreach workshop was held on March 16, 2015. TPAU staff brought into the workshop the updated 2013 existing condition model network posted speed and number of through lanes plots. The 2013 households and employment data by traffic analysis zones (TAZs) were also presented. Because the population changes from 2010 to 2013 are very insignificant or negligible, the 2010 US Census Household Summary Files for Coos County and 2013 Coos County Parcel GIS Database were both used to extract the household numbers and distributions by income categories (Low, Mid-low, Mid-High and High income groups) and household sizes (1, 2, 3, and 4+ persons). Oregon Employment Department, “2013 Geocoded Annual Quarterly Census Employment and Wages (QCEW)” data was aggregated into four employment sectors (Industrial, Retail, Service and Other) by TAZ. Local staff commented that the industrial employment is much lower than expected but the service employment is much larger due to the hospital and the casino.

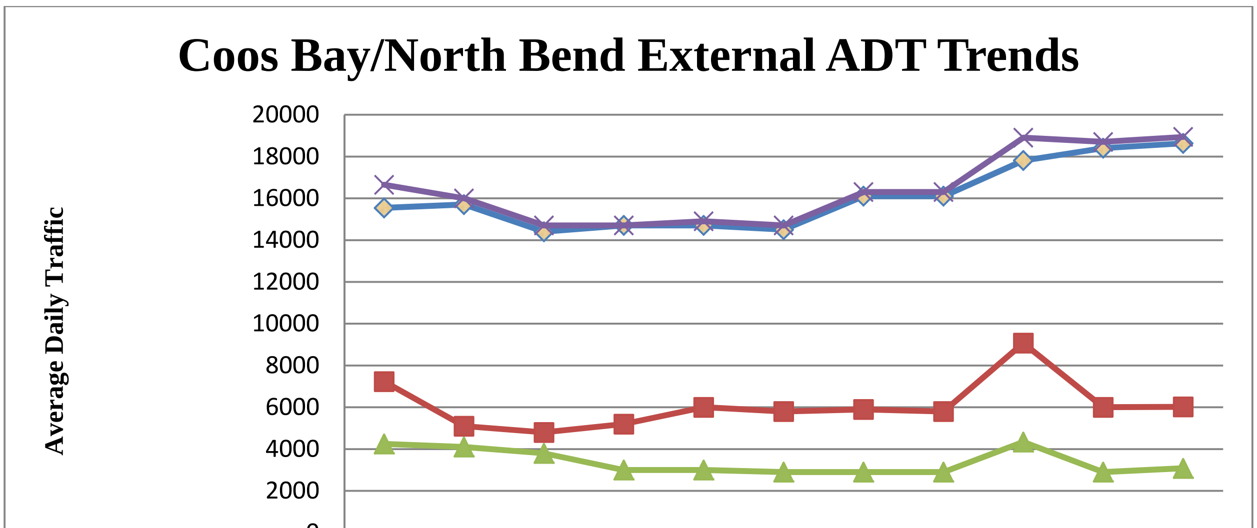
TPAU staff agreed to redistribute the employment numbers by 10 sectors, as shown in Table 2. No changes to the original four sector 2013 employment data were recommended. Local staff also provided current school (public, private, and vocational) and college enrollments and their respective locations as requested.

Table 2: 2013 Base Year Employment Categories from QCEW by 10 Sectors

Description
Agriculture & Forestry
Mining
Construction
Manufacturing
Transportation, Communication & Public Utilities
Wholesale
Retail
Financial, Insurance & Real Estate
Service
Government

TPAU staff shared with the local staff the external traffic data that will feed into the interim base year 2013 and future year 2035 scenario shown in Figure 1.

Figure 1: Coos Bay/North Bend Model External Station AADT Trends and Forecasts



	2000 ADT	2007 ADT	2008 ADT	2009 ADT	2010 ADT	2011 ADT	2012 ADT	2013 ADT	2020 ADT	2033 ADT	2035 ADT
Ext. 1: HWY9-234.65	15538	15700	14400	14700	14700	14500	16100	16100	17807	18400	18630
Ext. 2: HWY240-7.82	7233	5100	4800	5200	6000	5800	5900	5800	9073	6000	6020
Ext. 3: HWY241-2.07	4245	4100	3800	3000	3000	2900	2900	2900	4343	2900	3080
Ext. 4: HWY9-240.37	16647	16000	14700	14700	14900	14700	16300	16300	18899	18700	18940

Note: 2000 and 2020 are forecasted from the original model while the other years are based on actual data and/or historical trends.
Note: Hwy 9 is US101(Oregon Coast Hwy), Hwy240 is OR540 (Cape Arago Hwy), and Hwy241 is OR241 (Coos River Hwy).

Future Household Allocation Methodology for Cities of Coos Bay/North Bend Future Scenario

This methodology uses a land suitability analysis to determine if there is enough land to accommodate growth and where the growth would occur. The methodology assumes that the proportion of new households in each TAZ is related to the relative development potential of the TAZ. This assumption reflects the belief that the new residential development tends to grow outward from existing residential land. If an area has high-density development currently, it will likely remain high-density in the future.

This process substantially reduced the time to create the future scenario values. Actual TAZ numbers do not matter in this process for the local staff, but just the potential of growth with available land which is closer to “planner language” rather than “modeler language.”

In summary, the steps to develop the 2035 forecast are generally described below:

1. Use the base year land use total and Oregon State Financial and Economic Analysis and Portland State University Population Forecasts by County/Cities to figure out the total 2035 land use in the model area;
2. Based on the 2014 Coos County Parcel GIS Shape Files, extract the parcel acres of the existing and vacant parcels by residential, commercial, industrial and other property classes;
3. Identify the growth potential by ranking the TAZs with 0, 1, 2, and 3 for no growth (0%), low (50%) , medium (80%) and high (100%) with respective land uses;
4. Calculate the current population density of residential land with each TAZ and residential land available for development based on the buildable land inventory and potential growth ranking;
5. Allocate the future year 2035 population total in terms of household total into each TAZ according to the relative potential capacity for residential development;
6. Use the existing Coos Bay 2013 model to figure out the accessibilities to each TAZ as one of the variable to determine the employment capacity;
7. Calculate the employment capacity by retail, service, industrial and other sectors by TAZ according to the available vacant land (by commercial, industrial and other category) and growth potential rankings; and
8. Apply the future 2035 total employment forecasts by sector to allocate the potential employment growth to TAZs based on the buildable land capacity and potential growth rankings

The percentage growth potentials are assumed as ranking scenarios. Both Coos Bay and North Bend provided rankings by land use sectors by TAZ which were applied while county areas were based on the assumed medium ranking of 2. The ranking is an important indicator or variable in the future land use forecasts. The local staff reviewed the overall land use forecast plots and provided comments if they saw too much or too little growth by land use sector. The land use allocation forecasts were adjusted based on the comments.

In addition, TPAU asked the local jurisdictions to confirm if there were any funded projects (bond measures, capital improvement plan if available) that would affect the future model network (new roadways, signals, lane changes, speeds) beyond what was already shared with at the outreach meetings (i.e. US101 speed changes, road diets, new signals). No new projects were indicated except for some speed changes in the future network.

The existing population/employment ratio from the base year was applied to the future year so an initial total employment value was generated. Future population projections were already in-hand. The difference between the future projections and the base year will be the amount needed to be applied via the local development potential rankings. These will generate the future scenario(s) based on these rankings using different percentage splits.

Local Jurisdictional Review and Comments

The draft base 2013 and future 2035 land use forecasts by TAZ were sent to the local jurisdictions for review and comments. The data for review included households and retail, service, industrial and other employees. Comments were received from both cities and incorporated into the final 2035 future scenario land use forecasts and input to the updated Coos Bay/North Bend travel demand forecasting model.

Draft Final Model Input

Table 3 below lists the 2035 future year scenario land use summary by sectors compared with the interim base year 2013 scenario. The aggregated household growth from interim year 2013 to future year 2035 is 1,071 households while the aggregate total employment growth is 3,445 employees which consist of 550 in retail, 1,865 in service, 145 in industrial and 885 in other sectors.

Table 3: Future Year 2035 Scenario Land Use Forecasts vs Interim Year 2013

Land Use Type	Interim Year 2013	Future Year 2035	Growth 2013 to 2035
Households	14,287	15,358	1,071
Retail	2,298	2,847	550
Service	7,808	9,673	1,865
Industry	617	764	145
Other	3712	4597	885
Total Employment	14,435	17,880	3,445

Draft Final Model Output

The draft final future year 2035 scenario land use forecasts were applied in the OSUM travel demand modeling steps to create the future year 2035 scenario Coos Bay/North Bend model. The model generates daily vehicle trips and assigns 24-hour vehicle trips to the roadway network. Table 4 lists the daily generated totals by comparing the interim base year 2013 with future year 2035 scenario.

Table 4: Future Year 2035 Scenario Daily Trip Generation vs Interim Year 2013

Scenario	Total Generated Trips
Base 2013	132,502
Future 2035	142,724
2013 – 2035 Difference	10,222

Figures 2 and 3 show the interim base year 2013 PM peak hour (5-6 PM) roadway link volume and the link volume-to-capacity forecasts respectively. Figures 4 and 5 show the future 2035 scenario PM peak hour (5-6 PM) roadway link volume and the link volume-to-capacity forecasts respectively.

The Coos Bay/North Bend travel demand model is now ready for application for the current City of North Bend Transportation and Growth Management (TGM) grant and for any other transportation or land use planning application.

Attachments

cc: Brian Dunn, ODOT Transportation Planning Analysis Unit Manager

Coos Bay/North Bend Transportation Model v2.133_EC

2013 PM Peak Volumes

(Draft Review)

Legend

Network Links

Local Roads

Transportation Analysis Zone (TAZ)

VISUM 14.00 PTV AG		CoosBay_OSUM_v2.133_EC_VISUM14.ver
06.07.2015/10:08:11		beth.a.pickman@odot.state.or.us

Coos Bay/North Bend Transportation Model v2.133_EC

2013 Demand to Capacity Ratio (DCR)

(Draft Review)

Legend

Network Links

Local Roads

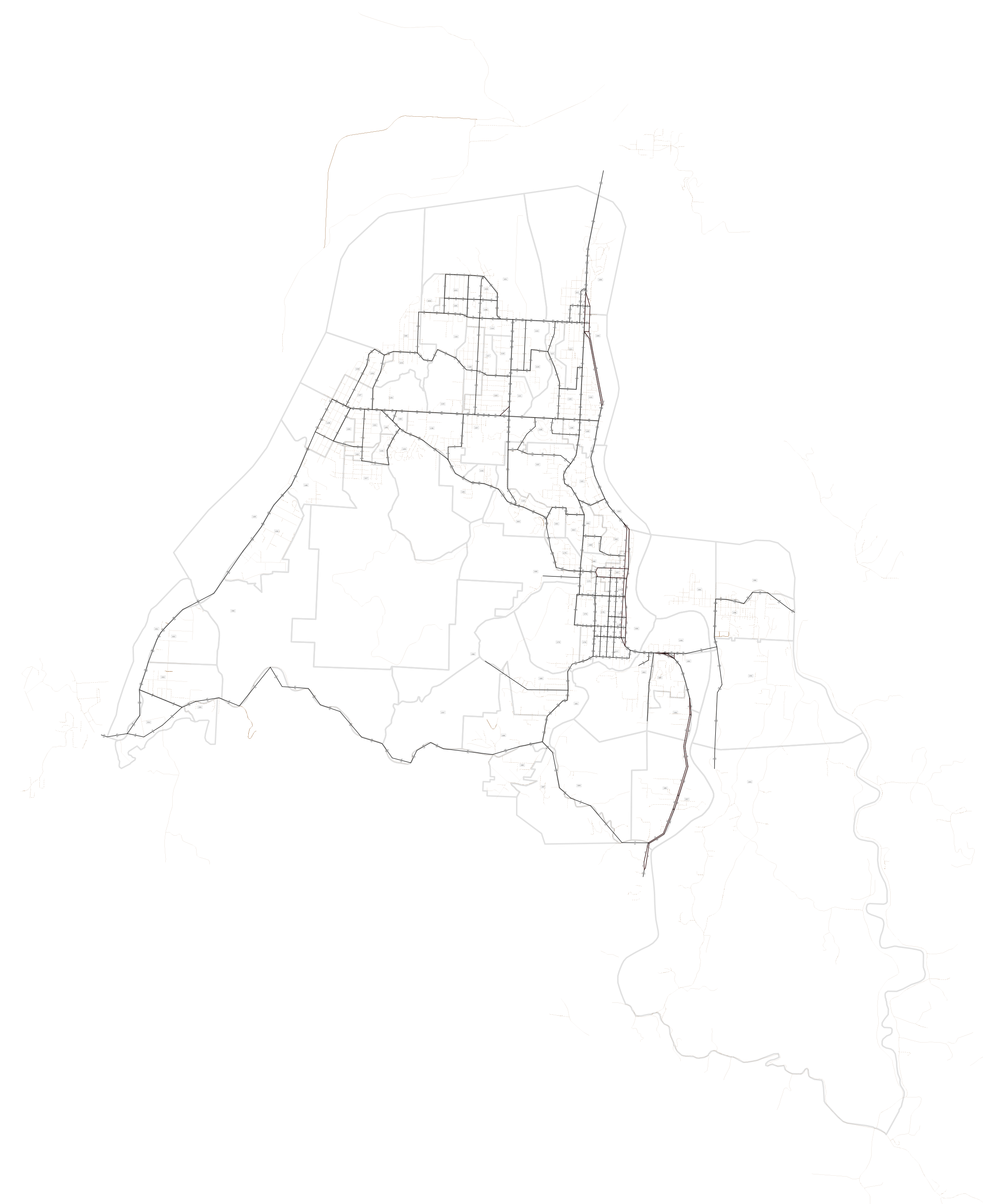
Transportation Analysis Zone (TAZ)

VISUM 14.00 PTV AG		CoosBay_OSUM_v2.133_EC_VISUM14.ver
06.07.2015/10:20:32		beth.a.pickman@odot.state.or.us

Coos Bay/North Bend Transportation Model v2.351_TGM

2035 PM Peak Volumes

(Draft Review)



Legend

Network Links

Local Roads

Transportation Analysis Zone (TAZ)

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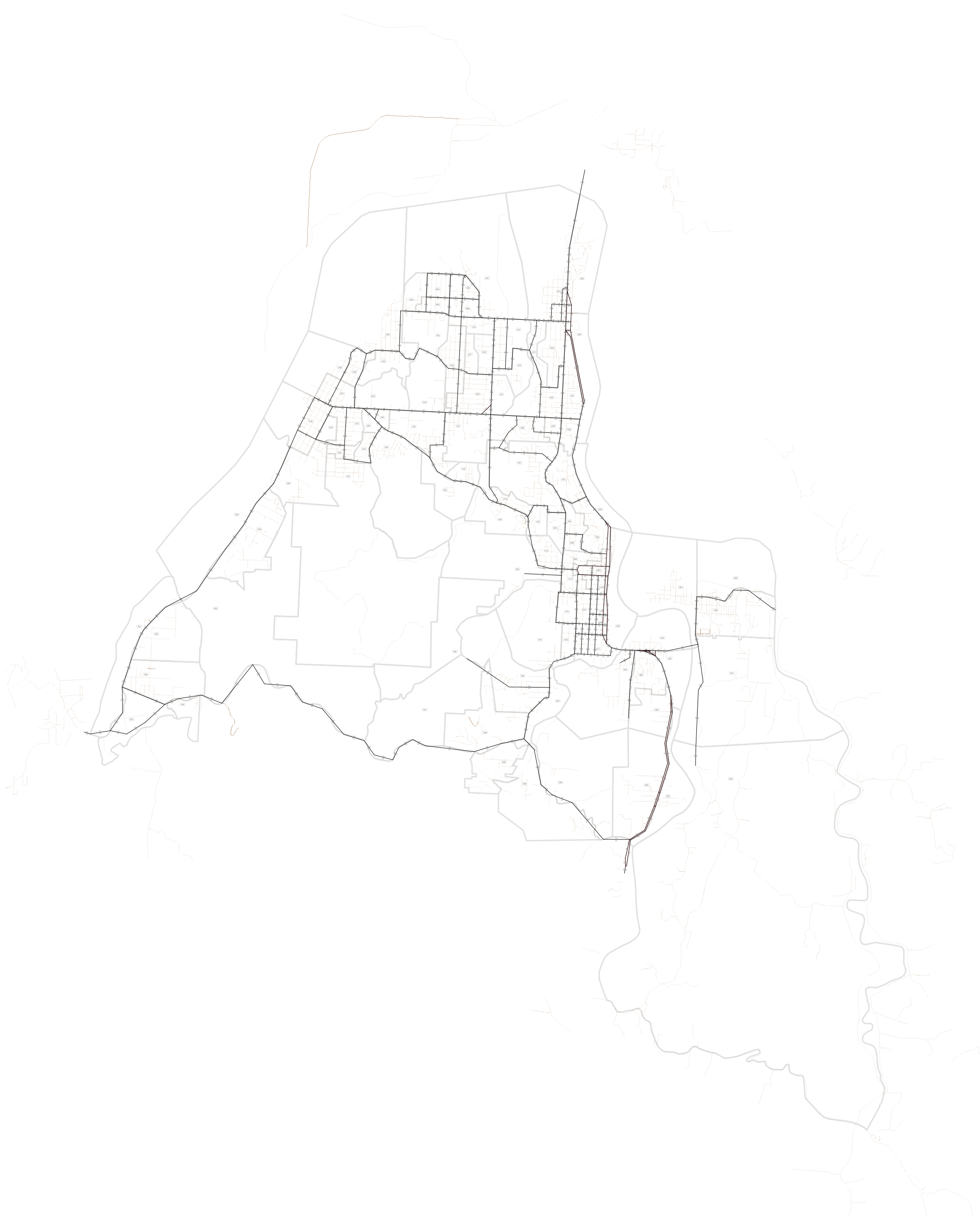
06.07.2015/10:59:29		beth.a.pickman@odot.state.or.us

Coos Bay/North Bend Transportation Model v2.351_TGM
2035 Demand to Capacity Ratio (DCR)
(Draft Review)



Legend
Network Links
Local Roads
Transportation Analysis Zone (TAZ)

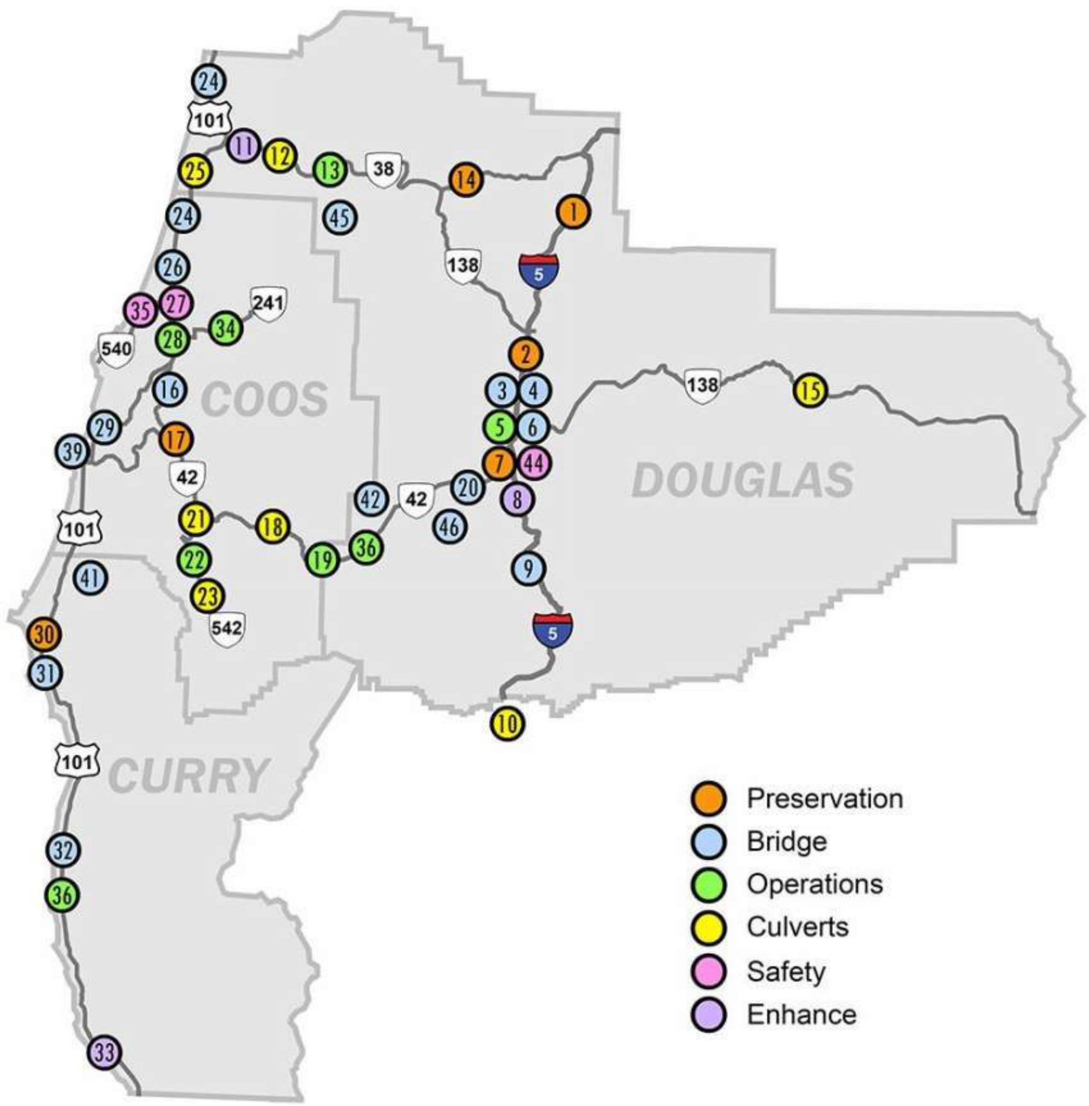
VISUM 14.00 PTV AG		CoosBay_OSUM_v2.351_TGM_VISUM14.ver
06.07.2015/10:56:01		beth.a.pickman@odot.state.or.us

Appendix B
STIP Projects

ODOT Region 3 | Coos, Curry and Douglas Counties

Draft STIP for 2018-2021 (Southwest Oregon)

All 46 projects include name, location (milepoint and county), description, work type, total cost, applicant and key number. All cost figures are preliminary estimates.Some projects that span multiple highways or locations may not appear on the map below.



Interstate 5 (Pacific Highway)

1. I-5: Elkhead to Rice Hill (NB Lanes) – *Location:* MP 147.78 to 154.88 (Douglas County). *Description:* Design shelf ready project to grind and pave northbound lanes with asphalt. *Work Type:* Preservation. *Total Cost:* $300,000. *Applicant:* ODOT. *Key #* 20105.

2. I-5: Sutherlin to Garden Valley Blvd. – *Location:* MP 125.00 to 136.50 (Douglas County). *Description:* Grind and pave travel lanes, remove concrete at abandoned Weigh-in-Motion site in the southbound lanes at MP 130.62, upgrade culverts in poor or critical condition. *Work type:* Operations, Preservation. *Total cost:* $21,228,000. *Applicant:* ODOT. *Key #* 20588.

3. I-5: North Umpqua River & CORP (Winchester) Bridge – *Location:* MP 128.76 (Douglas County). *Description:* Remove rust, repair cracks and replace rivets and bolts as needed; paint the steel trusses. *Work type:* Bridge. *Total cost:* $9,359,000. *Applicant:* ODOT. *Key #* 20464.

Draft STIP for 2018-2021 (Southwest Oregon)

4. I-5: North Umpqua River & CORP (Winchester SB) Bridge Repair – *Location:* MP 128.76 (Douglas County). *Description:* Replace clip angles due to cracking. *Work type:* Bridge. *Total cost:* $2,400,000. *Applicant:* ODOT. *Key #* 19657.

5. I-5: Exit 124 Signal Upgrades & Bellows Street Realignment – *Location:* MP 124.00 (Douglas County). *Description:* Replace signal poles and hardware at the northbound and southbound ramp terminals, add turn lanes and realign Bellows Street and the southbound off-ramp. *Work Type:* Operations. *Total cost:* $1,810,000. *Applicant:* ODOT. *Key #* 20148.

6. I-5: South Umpqua River (Vets) Bridge Repairs – *Location:* MP 124.47 (Douglas County). *Description:* Provides seismic retrofit, resurfaces deck, paints steel truss, repairs joints, bearings and other areas to Bridge #07404. *Work Type:* Bridge. *Total cost:* $13,442,000. *Applicant:* ODOT. *Key #* 18585.

7. I-5: Garden Valley Blvd. to Roberts Creek – *Location:* MP 117.70 to 125.40 (Douglas County). *Description:* Design shelf ready plans to remove existing pavement and replace with new asphalt. *Work type:* Preservation. *Total cost:* $700,000. *Applicant:* ODOT. *Key #* 20106.

8. I-5: Roberts Mountain to South Umpqua River Paving & Climbing Lanes – *Location:* MP 112.57 to 117.74 (Douglas County). Description: Grind/inlay paving and construction of southbound climbing lane. *Work type:* Modernization, preservation, interstate maintenance. *Total cost:* $20,227,016. *Applicant:* ODOT. *Key #* 18967.

9. I-5: South Umpqua River (Fords) & Yokum Road Bridges – *Location:* MP 101.32 (Douglas County). *Description:* Repair the deck expansion joints, repair and overlay the deck. *Work type:* Bridge. *Total cost:* $2,802,000. *Applicant:* ODOT. *Key #* 20101.

10. I-5: Small Culvert Upgrades – *Location:* MP 40.00 to 168.00 (Douglas County). *Description:* Repair or replace culverts in poor or critical condition based on current condition assessment. *Work type:* Culverts. *Total cost:* $1,386,000. *Applicant:* ODOT. *Key #* 20159.

Oregon 38 (Umpqua Highway)

11. OR 38: U.S. 101 to Dean Creek Paving & Pedestrian Improvements – *Location:* MP 0.00 to 5.90 (Douglas County). *Description:* grind/inlay, pedestrian improvements, signal upgrades, road diet and other safety improvements. *Work type:* Bike-Ped, Enhance, Modernization. Operations, Preservation, Safety. *Total cost:* $7,162,000. *Applicant:* ODOT. *Key #* 18869.

12. OR 38: Hoagland Creek and Unnamed Creek Culverts – *Location:* MP 7.52 to 8.79 (Douglas County). *Description:* Two large culvert replacements. *Work type:* Culverts, Fish passage. *Total cost:* $2,630,000. *Applicant:* ODOT. *Key #* 19810.

13. OR 38: Scottsburg Bridge East Approach Realignment -- *Location:* MP 16.70 (Douglas County). *Description:* horizontal curve adjustment, realignment of bridge rail, construction of retaining wall on Bridge #01318. *Work type:* Operations. *Total cost:* $2,500,000. *Applicant:* ODOT*. Key #* 18901.

14. OR 38: Sawyer Rapids to I-5 Chip Seal – *Location:* MP 26.60 to 56.87 (Douglas County). *Description:* Chip seal project. *Work type:* Preservation. *Total cost:* $1,435,278. *Applicant:* ODOT. *Key #* 19795.

Oregon 138E (North Umpqua Highway)

15. OR 138E: Dog Creek Culvert – *Location:* MP 45.25 (Douglas County). *Description:* Install spiral liner in existing culvert. *Work type:* Culverts. *Total cost:* $283,000. *Applicant:* ODOT. *Key #* 20154.

Oregon 42 (Coos Bay to Roseburg Highway)

16. OR 42: Bridge over U.S.101 – *Location:* MP 0.05 (Coos County). *Description:* Replace bridge on same general alignment. *Work type:* Bridge. *Total cost:* $3,166,000. *Applicant:* ODOT. *Key #* 20467.

17. OR 42: Cedar Point Road to Finley Loop (Coquille) – *Location:* MP 9.68 to 15.20 (Coos County). *Description:* Grind out the existing pavement and replace with new asphalt. Replace ADA ramps, reconstruct the roadway at mile point 10.10 to improve drainage, level the pavement at the bridge approaches between mile point 10.40 and 10.70, and upgrade culverts. *Work type:* Operations, Preservation. *Total cost:* $9,757,567. *Applicant:* ODOT. *Key #* 20147.

Draft STIP for 2018-2021 (Southwest Oregon)

18. OR 42: Frenchie Creek Culvert – *Location:* MP 35.57 (Coos County). *Description:* Design work to prepare for replacement of a culvert on Hwy 42. *Work Type:* Culverts. *Total cost:* $269,000. *Applicant:* ODOT. *Key #* 20132.

19. OR 42: County Line Slide Retaining Wall – *Location:* MP 44.50 to 44.90 (Douglas County). *Description:* Construct a retaining wall to stabilize the slide area above the highway, and complete 2.5" grind/inlay paving between mile point 44.50 and 45.90. *Work type:* Operations, emergency relief. *Total cost:* $5,155,001. *Applicant:* ODOT. *Key #* 19938.

20. OR 42: Lower Lookingglass Creek Bridge Repair – *Location:* MP 72.50 (Douglas County). *Description:* Bridge rail retrofit and deck overlay. *Work type:* Bridge. *Total cost:* $439,000. *Applicant:* ODOT. *Key #* 18586.

Oregon 542 (Powers Highway)

21. OR 542: Rhoda Creek Culvert Replacement – *Location:* MP 1.87 (Coos County). *Description:* Replace existing culvert with 17-foot pipe. *Work type:* Culverts, Fish passage. *Total Cost:* $1,696,418. *Applicant:* ODOT. *Key #* 18260.

22. OR 542: Powers to Agness Highway: Burma Slide Section – *Location:* MP 4.40 to 8.40 (Coos County). *Description:* Slide stabilization. *Work type:* Modernization, Operations. *Total cost:* $19,139,750. *Applicant:* Other. *Key #* 13933.

23. OR 542: Long Tom Creek Culvert – *Location:* MP 12.04 (Coos County). *Description:* Design and property acquisition in preparation to replace the culvert with a bridge; the project will also address the large head cut at the culvert. *Work type:* Culverts. *Total cost:* $281,000. *Applicant:* ODOT. *Key #* 20134.

U.S. 101 (Oregon Coast Highway)

24. U.S. 101: Tahkenitch Creek & Tenmile Creek Bridges – *Location:* MP 202.70 (Douglas County) and 223.20 (Coos County). *Description:* Design shelf ready plans for bridge rail on Tahkenitch Creek and Tenmile Creek Bridges, patch concrete girders on Tahkenitch Creek Bridge. *Work type:* Bridge. *Total cost:* $303,000. *Applicant:* ODOT. *Key #* 20097.

25. U.S. 101: Culvert & Fish Passage Upgrades, Phase 2 – *Location:* MP 210.00 to 243.90 (Coos County). *Description:* Replace approximately 12 culverts and repair approximately 30 small culverts. *Work type:* Culverts, Fish passage. *Total cost:* $1,510,000. *Applicant:* ODOT. *Key #* 19739.

26. U.S. 101: McCullough Bridge (Coos Bay) Painting – *Location:* MP 233.48 to 234.50 (Coos County). *Description:* Paints bridge. *Work type:* Bridge. *Total cost:* $30,811,000. *Applicant:* ODOT. *Key #* 18914.

27. U.S. 101: Johnson Ave. Intersections (Coos Bay) – *Location:* MP 238.92 (Coos County). *Description:* Improve signal phasing and coordination at the two U.S. 101/Johnson Avenue intersections. *Work type:* Safety. *Total cost:* $1,195,000. *Applicant:* ODOT. *Key #* 20246.

28. U.S. 101: Bay Area Sidewalks/Flanagan Road Signal – *Location:* MP 239.35 to 240.10 (Coos County). *Description:* Upgrade existing sidewalk, replace signal poles and hardware at Flanagan Road, upgrade illumination. *Work type:* Bike-Ped, Operations. *Total cost:* $2,024,600. *Applicant:* ODOT. *Key #* 19243.

29. U.S. 101: Coquille River (Bullards) Bridge – *Location:* MP 259.58 (Coos County). *Description:* Bridge rail replacement. *Work type.* Bridge. *Total cost:* $1,609,000. *Applicant:* ODOT. *Key #* 19975.

30. U.S.101: Sixes to Port Orford Paving – *Location:* MP 295.00 to 301.45 (Curry County). *Description:* Resurface travel lanes, replace rail on two bridges, upgrade ADA Ramps. *Work type:* Bridge, Preservation. *Total cost:* $3,381,000. *Applicant:* ODOT. *Key #* 18870.

31. U.S. 101: Garrison Slough Bridge – *Location:* MP 299.96 to 300.05 (Curry County). Description: Apply cathodic protection treatment for corrosion control. Work type: Bridge. Total cost: $2,238,000. Applicant: ODOT. Key # 20468.

32. U.S. 101: Rogue River Bridge (Gold Beach) – *Location:* MP 327.51 to 327.88 (Curry County). *Description:* Repair, strengthen and overlay the deck. *Work type:* Bridge. *Total cost:* $3,590,000. *Applicant:* ODOT. *Key #* 20466.

33. U.S. 101: Parkview Drive to Easy Street Sidewalks (Brookings) – *Location:* MP 355.86 to 356.30 (Curry County). *Description:* Construct a 6' bike lane and 6' sidewalk along the east side of U.S. 101. *Work type:* Modernization, Safety. *Total cost:* $1,796,000. *Applicant:* City of Brookings. *Key #* 20261.

Draft STIP for 2018-2021 (Southwest Oregon)

Oregon 241 (Coos River Highway)

34. OR 241: Coos River Highway Culverts – *Location:* MP 3.20 to 6.31 (Coos County). *Description:* Replace culverts and tidegates. *Work type:* Operations. *Total cost:* $2,521,000. *Applicant:* ODOT. *Key #* 20150.

Oregon 540 (Cape Arago Highway)

35. OR 540: Broadway at Newmark Realignment (North Bend) – *Location:* MP 1.70 (Coos County). *Description:* Upgrade signal poles and hardware, convert the 4-Lane roadway to 3-lane roadway with center turn lane, install bike lanes. *Work type:* Safety. *Total cost:* $2,357,000. *Applicant:* ODOT. *Key #* 20219.

Multiple highways

36. OR 42 at MP 50/U.S. 101 at Anderson Rock – *Locations:* OR 42 at MP 50.00 (Douglas County) and U.S. 101 at MP 334.30 (Curry County). *Description:* Design and property acquisition in preparation for the installation of rock fall screening and safety barrier. *Work type:* Operations. *Total cost:* $137,001. *Applicant:* ODOT. *Key #* 20131.

37. U.S. 101/OR 38: Hazard Warning Sign Upgrades – *Location:* Various highways in Coos, Curry and Douglas County. *Description:* Replace existing hazard warning system with LED-based variable message (VMS) system (VMS). *Work type:* Operations. *Total cost:* $2,622,227. *Applicant:* ODOT. *Key #* 20153. (Not shown on map.)

38. Region 3 FLAP Match Bucket – *Location:* Various highways. *Description:* Funding bucket for match requirements on Federal Lands Access Program (FLAP) project K13933. *Work type:* Operations, modernization. *Total cost:* $981,847. *Applicant:* ODOT. *Key #* 19593. (Not shown on map.)

Local projects

39. Riverside Drive: Ferry Creek Bridge (Bandon) – *Location:* MP 0.01 (Coos County). *Description:* Replace current bridge with a new single span pre-stressed concrete structure that meets the current standards on abutments behind existing abutments. *Work type:* Bridge. *Total cost:* $3,024,276. *Applicant:* City of Bandon. *Key #* 20369.

40. Curry County Transit Vehicle Replacement – *Location:* Curry County. *Description:* Purchase replacement vehicles (two buses and one van). *Work type:* Transit. *Total cost:* $312,047. *Applicant:* Curry County. *Key #* 20172. (Not shown on map.)

41. Floras Creek Road Bridge – *Location:* MP 8.90 (Curry County). *Description:* Replace current bridge east of Langlois with new single-span bridge on new alignment. *Work type:* Bridge. *Total cost:* $2,389,728. *Applicant:* Curry County. *Key #* 20370.

42. Dancer Road: Dancer Creek Bridge – *Location:* MP 0.07 (Douglas County). *Description:* Replace current four-span timber bridge north of Camas Valley with a new concrete bridge with fewer spans on the same alignment. *Work type:* Bridge. *Total cost:* $2,846,340. *Applicant:* Douglas County. *Key #* 20368.

43. Douglas County Warning Sign Upgrades – *Location:* Various Douglas County roads. *Description:* Install curve signs, chevrons and flashing beacon on North Bank Road; install curve signs and chevrons on Glenbrook Loop, Riddle Bypass Road, Sixth Avenue, Tiller-Trail Highway and Garden Valley Road. *Work type:* Safety. *Total cost:* $398,000. *Applicant:* Douglas County. *Key #* 20248. (Not shown on map.)

44. Roseburg Pedestrian Upgrades – *Location:* Various locations in Roseburg (Douglas County). *Description:* Install rapid flasher on Stephens Street at Roseland; countdown pedestrian signals on Stephens Street at Edenbower, Newton Creek and Stewart Parkway; and on Harvard Avenue at Stewart Parkway, Keady Court, Centennial Drive and Umpqua Street. *Work type:* Safety. *Total cost:* $502,000. *Applicant:* City of Roseburg. *Key #* 20250.

45. Soup Creek Road: Soup Creek Bridge – *Location:* MP 1.15 (Douglas County). *Description:* Replace existing timber bridge near Loon Lake with a pre-cast concrete bridge. *Work type:* Bridge. *Total cost:* $827,237. *Applicant:* Douglas County. *Key #* 20365.

46. Upper Olalla Road: Berry Creek Bridge – *Location:* MP 7.39 (Douglas County). *Description:* Replace current bridge, located about 10 miles southwest of Winston, with a new single-span bridge on the same alignment. *Work type:* Bridge. *Total* *cost:* $3,094,043. *Applicant:* Douglas County. *Key #* 20358.

Appendix C
Volume Development

Existing Year	**2017**
Project Forecast Year	**2040**
Model Base Year	**2013**
Model Forecast Year	**2035**

Sidestreets not included in the regional model
Greater than 10% difference between difference and growth methods — USE DIFFERENCE
Numbers adjusted from model to work with spreadsheet (0 growth = 1)

ID	Intersection	Direction	Existing 30HV 2017	Model Assignment: Baseline Model 2013	Model Assignment: Future Ref Model 2035	Model Assignment: Interpolated Model 2017	Model Assignment: Forecasted Model 2040	2013-2035 Model Comparison: Total Growth	2013-2035 Model Comparison: Annual Growth	2017-2040 Model Comparison: Total Growth	2017-2040 Model Comparison: Volume Difference	Post Processed Volumes Future 2040 No Build Year: Volume Difference	Post Processed Volumes Future 2040 No Build Year: Volume Growth	Post Processed Volumes Future 2040 No Build Year: Percent Difference	Post Processed Volumes Future 2040 No Build Year: Average	Forecast Used	Method Used	Comments	Additional Comments
10	Arthur Street at Colorado Loop	*East Leg*																	
		IN	15	1	1	1	1	0.0%	0.0%	0.0%	0	15	15	0%	15	**15**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	15	1	1	1	1	0.0%	0.0%	0.0%	0	15	15	0%	15	**15**	Average of Difference and Growth	Assumed no growth in link volumes	
		West Leg																	
		IN	6	1	1	1	1	0.0%	0.0%	0.0%	0	6	6	0%	6	**6**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	6	1	1	1	1	0.0%	0.0%	0.0%	0	6	6	0%	6	**6**	Average of Difference and Growth	Assumed no growth in link volumes	
		North Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	*South Leg*																	
Delta13	0	IN	11	1	1	1	1	0.0%	0.0%	0.0%	0	11	11	0%	11	**11**	Average of Difference and Growth	Assumed no growth in link volumes	
Delta35	0	Out	11	1	1	1	1	0.0%	0.0%	0.0%	0	11	11	0%	11	**11**	Average of Difference and Growth	Assumed no growth in link volumes	
20	Oak Street/W Airport Way at Colorado Avenue/Maple Leaf	*East Leg*																	
		IN	58	35	35	35	35	0.0%	0.0%	0.0%	0	58	58	0%	58	**58**	Average of Difference and Growth		2035 model showed a decrease: 33 in and 23 out
		Out	122	24	24	24	24	0.0%	0.0%	0.0%	0	122	122	0%	122	**122**	Average of Difference and Growth		2035 model showed a decrease: 33 in and 23 out
		West Leg																	
		IN	131	1	1	1	1	0.0%	0.0%	0.0%	0	131	131	0%	131	**131**	Average of Difference and Growth		
		Out	61	2	2	2	2	0.0%	0.0%	0.0%	0	61	61	0%	61	**61**	Average of Difference and Growth		
		North Leg																	
		IN	4	1	1	1	1	0.0%	0.0%	0.0%	0	4	4	0%	4	**4**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	3	1	1	1	1	0.0%	0.0%	0.0%	0	3	3	0%	3	**3**	Average of Difference and Growth	Assumed no growth in link volumes	
DeltaE	0	*South Leg*																	
Delta13	0	IN	7	23	23	23	23	0.0%	0.0%	0.0%	0	7	7	0%	7	**7**	Average of Difference and Growth	Absolute difference >10% --> Used difference only	2035 model showed a decrease: 22 in and 31 out
Delta35	0	Out	14	33	33	33	33	0.0%	0.0%	0.0%	0	14	14	0%	14	**14**	Average of Difference and Growth	Absolute difference >10% --> Used difference only	2035 model showed a decrease: 22 in and 31 out
30	Maple Leaf at E Airport Way	*East Leg*																	
		IN	70	47	47	47	47	0.0%	0.0%	0.0%	0	70	70	0%	70	**70**	Average of Difference and Growth		
		Out	140	58	58	58	58	0.0%	0.0%	0.0%	0	140	140	0%	140	**140**	Average of Difference and Growth	Assumed no growth in link volumes	2035 model showed a decrease: 53 out
		West Leg																	
		IN	131	58	58	58	58	0.0%	0.0%	0.0%	0	131	131	0%	131	**131**	Average of Difference and Growth	Assumed no growth in link volumes	2035 model showed a decrease: 53 out
		Out	66	47	47	47	47	0.0%	0.0%	0.0%	0	66	66	0%	66	**66**	Average of Difference and Growth		
		North Leg																	
		IN	11	1	1	1	1	0.0%	0.0%	0.0%	0	11	11	0%	11	**11**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	6	1	1	1	1	0.0%	0.0%	0.0%	0	6	6	0%	6	**6**	Average of Difference and Growth	Assumed no growth in link volumes	
DeltaE	0	*South Leg*																	
Delta13	0	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	0	Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
40	US 101 at Florida Avenue	*East Leg*																	
		IN	21	1	1	1	1	0.0%	0.0%	0.0%	0	21	21	0%	21	**21**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	3	1	1	1	1	0.0%	0.0%	0.0%	0	3	3	0%	3	**3**	Average of Difference and Growth	Assumed no growth in link volumes	
		West Leg																	
		IN	256	336	361	341	367	7.4%	0.3%	7.7%	26	282	276	2%	279	**279**	Average of Difference and Growth		
		Out	26	17	17	17	17	0.0%	0.0%	0.0%	0	26	26	0%	26	**26**	Average of Difference and Growth		
		North Leg																	
		IN	761	632	720	648	740	13.9%	0.6%	14.2%	92	853	869	2%	861	**861**	Average of Difference and Growth		
		Out	925	649	740	666	761	14.0%	0.6%	14.3%	95	1020	1057	4%	1039	**1039**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	691	313	379	325	394	21.1%	1.0%	21.2%	69	760	838	10%	799	**760**	Difference Method	Absolute difference >10% --> Used difference only	
Delta35	0	Out	775	615	703	631	723	14.3%	0.7%	14.6%	92	867	888	2%	877	**867**	Difference Method	To be consistent with method used for opposing direction	
50	Virginia Avenue at Arthur Street	*East Leg*																	
		IN	170	70	83	72	86	18.6%	0.8%	18.8%	14	184	202	10%	193	**184**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	105	39	46	40	48	17.9%	0.8%	18.2%	7	112	124	10%	118	**112**	Difference Method	Absolute difference >10% --> Used difference only	
		West Leg																	
		IN	105	61	68	62	70	11.5%	0.5%	11.8%	7	112	117	4%	115	**115**	Average of Difference and Growth		
		Out	152	101	112	103	115	10.9%	0.5%	11.2%	12	164	169	3%	166	**166**	Average of Difference and Growth		
		North Leg																	
		IN	7	31	31	31	31	0.0%	0.0%	0.0%	0	7	7	0%	7	**7**	Average of Difference and Growth		2035 model showed a decrease: 29 in
		Out	25	22	22	22	22	0.0%	0.0%	0.0%	0	25	25	0%	25	**25**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	2	Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
60	Virginia Avenue at Oak Street	*East Leg*																	
		IN	325	144	166	148	171	15.3%	0.7%	15.5%	23	348	376	8%	362	**348**	Difference Method	To be consistent with method used for opposing direction	
		Out	210	76	89	78	92	17.1%	0.8%	17.3%	14	224	246	10%	235	**224**	Difference Method	Absolute difference >10% --> Used difference only	
		West Leg																	
		IN	190	59	71	61	74	20.3%	0.9%	20.5%	13	203	229	12%	216	**203**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	302	144	168	148	173	16.7%	0.8%	16.9%	25	327	353	8%	340	**327**	Difference Method	To be consistent with method used for opposing direction	
		North Leg																	
		IN	32	24	22	24	22	-8.3%	-0.4%	-8.8%	-2	30	29	3%	30	**30**	Average of Difference and Growth		
		Out	30	27	27	27	27	0.0%	0.0%	0.0%	0	30	30	0%	30	**30**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	75	75	76	75	76	1.3%	0.1%	1.4%	1	76	76	0%	76	**76**	Average of Difference and Growth		
Delta35	-3	Out	80	55	54	55	54	-1.8%	-0.1%	-1.9%	-1	79	78	1%	79	**79**	Average of Difference and Growth		
70	Virginia Avenue at Maple Street	*East Leg*																	
		IN	455	296	322	301	328	8.8%	0.4%	9.0%	27	482	496	3%	489	**489**	Average of Difference and Growth		
		Out	385	183	189	184	190	3.3%	0.1%	3.4%	6	391	398	2%	395	**395**	Average of Difference and Growth		
		West Leg																	
		IN	230	69	80	71	83	15.9%	0.7%	16.2%	12	242	267	10%	254	**242**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	360	162	186	166	191	14.8%	0.7%	15.1%	25	385	414	7%	400	**385**	Difference Method	To be consistent with method used for opposing direction	

Existing Year	**2017**
Project Forecast Year	**2040**
Model Base Year	**2013**
Model Forecast Year	**2035**

Sidestreets not included in the regional model	
Greater than 10% difference between difference and growth methods	USE DIFFERENCE
Numbers adjusted from model to work with spreadsheet (0 growth = 1)	

				Model Assignment				2013-2035 Model Comparison		2017-2040 Model Comparison		Post Processed Volumes Future 2040 No Build Year							
			Existing 30HV	Baseline Model	Future Ref Model	Interpolated Model	Forecasted Model												
ID	**Intersection**	**Direction**	**2017**	**2013**	**2035**	**2017**	**2040**	**Total Growth**	**Annual Growth**	**Total Growth**	**Volume Difference**	**Volume Difference**	**Volume Growth**	**Percent Difference**	**Average**	**Forecast Used**	**Method Used**	**Comments**	**Additional Comments**
		North Leg																	
		IN	170	114	114	114	114	0.0%	0.0%	0.0%	0	170	170	0%	170	**170**	Average of Difference and Growth		2035 model showed a decrease: 109 in
		Out	110	134	136	134	136	1.5%	0.1%	1.6%	2	112	112	0%	112	**112**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	5	Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
80	Virginia Avenue at Broadway Street	*East Leg*																	
		IN	705	793	796	794	797	0.4%	0.0%	0.4%	3	708	708	0%	708	**708**	Average of Difference and Growth		
		Out	740	513	537	517	542	4.7%	0.2%	4.8%	25	765	776	1%	770	**770**	Average of Difference and Growth		
		West Leg																	
		IN	435	183	189	184	190	3.3%	0.1%	3.4%	6	441	450	2%	446	**446**	Average of Difference and Growth		
		Out	470	296	322	301	328	8.8%	0.4%	9.0%	27	497	512	3%	505	**505**	Average of Difference and Growth		
		North Leg																	
		IN	105	1	1	1	1	0.0%	0.0%	0.0%	0	105	105	0%	105	**105**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	70	1	1	1	1	0.0%	0.0%	0.0%	0	70	70	0%	70	**70**	Average of Difference and Growth	Assumed no growth in link volumes	
DeltaE	0	*South Leg*																	
Delta13	-1	IN	590	474	492	477	496	3.8%	0.2%	3.9%	19	609	613	1%	611	**611**	Average of Difference and Growth		
Delta35	-24	Out	555	642	642	642	642	0.0%	0.0%	0.0%	0	555	555	0%	555	**555**	Average of Difference and Growth		2035 model showed a decrease: 618 out
90	Virginia Avenue at Pony Village Main Driveway	*East Leg*																	
		IN	820	788	824	795	832	4.6%	0.2%	4.7%	38	858	859	0%	858	**858**	Average of Difference and Growth		
		Out	820	742	801	753	814	8.0%	0.4%	8.2%	62	882	887	1%	884	**884**	Average of Difference and Growth		
		West Leg																	
		IN	775	516	541	521	547	4.8%	0.2%	5.0%	26	801	814	2%	808	**808**	Average of Difference and Growth		
		Out	795	795	798	796	799	0.4%	0.0%	0.4%	3	798	798	0%	798	**798**	Average of Difference and Growth		
		North Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	*South Leg*																	
Delta13	0	IN	175	712	716	713	717	0.6%	0.0%	0.6%	4	179	176	2%	178	**178**	Average of Difference and Growth		
Delta35	0	Out	155	479	482	480	483	0.6%	0.0%	0.7%	3	158	156	1%	157	**157**	Average of Difference and Growth		
100	Virginia Avenue at Harrison Avenue	*East Leg*																	
		IN	845	791	827	798	835	4.6%	0.2%	4.7%	38	883	885	0%	884	**884**	Average of Difference and Growth		
		Out	850	745	804	756	817	7.9%	0.4%	8.2%	62	912	919	1%	916	**916**	Average of Difference and Growth		
		West Leg																	
		IN	830	742	801	753	814	8.0%	0.4%	8.2%	62	892	898	1%	895	**895**	Average of Difference and Growth		
		Out	851	788	824	795	832	4.6%	0.2%	4.7%	38	889	891	0%	890	**890**	Average of Difference and Growth		
		North Leg																	
		IN	16	1	1	1	1	0.0%	0.0%	0.0%	0	16	16	0%	16	**16**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	7	1	1	1	1	0.0%	0.0%	0.0%	0	7	7	0%	7	**7**	Average of Difference and Growth	Assumed no growth in link volumes	
DeltaE	0	*South Leg*																	
Delta13	0	IN	121	16	16	16	16	0.0%	0.0%	0.0%	0	121	121	0%	121	**121**	Average of Difference and Growth		
Delta35	0	Out	104	16	16	16	16	0.0%	0.0%	0.0%	0	104	104	0%	104	**104**	Average of Difference and Growth		
110	Virginia Avenue at Meade Avenue	*East Leg*																	
		IN	745	694	734	701	743	5.8%	0.3%	6.0%	42	787	789	0%	788	**788**	Average of Difference and Growth	Absolute difference >10% --> Used difference only	Hand Reassign per model routing test
		Out	535	350	387	357	395	10.6%	0.5%	10.8%	39	574	593	3%	583	**583**	Average of Difference and Growth	To be consistent with method used for opposing direction	
		West Leg																	
		IN	770	744	802	755	815	7.8%	0.4%	8.0%	61	831	832	0%	831	**831**	Average of Difference and Growth		
		Out	845	797	833	804	841	4.5%	0.2%	4.7%	38	883	885	0%	884	**884**	Average of Difference and Growth		
		North Leg																	
		IN	115	103	103	103	103	0.0%	0.0%	0.0%	0	115	115	0%	115	**115**	Average of Difference and Growth	Absolute difference >10% --> Used difference only	Hand Reassign per model routing test
		Out	271	393	415	397	420	5.6%	0.3%	5.8%	23	294	287	3%	290	**290**	Average of Difference and Growth	To be consistent with method used for opposing direction	
DeltaE	0	*South Leg*																	
Delta13	1	IN	21	1	1	1	1	0.0%	0.0%	0.0%	0	21	21	0%	21	**21**	Average of Difference and Growth	Assumed no growth in link volumes	
Delta35	4	Out	0	1	1	1	1	0.0%	0.0%	0.0%	0	0	0	#DIV/0!	0	**0**	Average of Difference and Growth	Assumed no growth in link volumes	
120	Virginia Avenue at US 101 South	*East Leg*																	
		IN	395	487	494	488	496	1.4%	0.1%	1.5%	7	402	401	0%	402	**402**	Average of Difference and Growth		
		Out	165	82	82	82	82	0.0%	0.0%	0.0%	0	165	165	0%	165	**165**	Average of Difference and Growth		2035 model showed a decrease: 77 out
		West Leg																	
		IN	470	328	462	352	492	40.9%	1.9%	39.8%	140	610	657	7%	633	**633**	Average of Difference and Growth		
		Out	620	686	725	693	734	5.7%	0.3%	5.9%	41	661	656	1%	659	**659**	Average of Difference and Growth		Hand Reassign per model routing test
		North Leg																	
		IN	895	717	801	732	820	11.7%	0.5%	12.0%	88	983	1002	2%	993	**993**	Average of Difference and Growth		Hand Reassign per model routing test
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	*South Leg*																	
Delta13	-1	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	93	Out	975	765	857	782	878	12.0%	0.5%	12.3%	96	1071	1095	2%	1083	**1083**	Average of Difference and Growth		
130	Virginia Avenue at US 101 North	*East Leg*																	
		IN	75	277	277	277	277	0.0%	0.0%	0.0%	0	75	75	0%	75	**75**	Average of Difference and Growth		2035 model showed a decrease: 256 in
		Out	20	137	137	137	137	0.0%	0.0%	0.0%	0	20	20	0%	20	**20**	Average of Difference and Growth		2035 model showed a decrease: 131 out
		West Leg																	
		IN	170	82	82	82	82	0.0%	0.0%	0.0%	0	170	170	0%	170	**170**	Average of Difference and Growth		2035 model showed a decrease: 77 in
		Out	395	487	494	488	496	1.4%	0.1%	1.5%	7	402	401	0%	402	**402**	Average of Difference and Growth		
		North Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	760	403	471	415	486	16.9%	0.8%	17.1%	71	831	890	7%	861	**861**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	1	IN	930	669	764	686	786	14.2%	0.6%	14.5%	99	1029	1065	3%	1047	**1047**	Average of Difference and Growth		
Delta35	21	Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				

Existing Year	**2017**
Project Forecast Year	**2040**
Model Base Year	**2013**
Model Forecast Year	**2035**

Sidestreets not included in the regional model
Greater than 10% difference between difference and growth methods — USE DIFFERENCE
Numbers adjusted from model to work with spreadsheet (0 growth = 1)

ID	Intersection	Direction	Existing 30HV 2017	Model Assignment: Baseline Model 2013	Future Ref Model 2035	Interpolated Model 2017	Forecasted Model 2040	2013-2035 Model Comparison: Total Growth	Annual Growth	2017-2040 Model Comparison: Total Growth	Volume Difference	Post Processed Volumes Future 2040 No Build Year: Volume Difference	Volume Growth	Percent Difference	Average	Forecast Used	Method Used	Comments	Additional Comments
140	Marion Avenue at Safeway Driveway	*East Leg*																	
		IN	150	1	1	1	1	0.0%	0.0%	0.0%	0	150	150	0%	150	**150**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	120	1	1	1	1	0.0%	0.0%	0.0%	0	120	120	0%	120	**120**	Average of Difference and Growth	Assumed no growth in link volumes	
		West Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		North Leg																	
		IN	95	2	2	2	2	0.0%	0.0%	0.0%	0	95	95	0%	95	**95**	Average of Difference and Growth		
		Out	80	4	4	4	4	0.0%	0.0%	0.0%	0	80	80	0%	80	**80**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	85	4	4	4	4	0.0%	0.0%	0.0%	0	85	85	0%	85	**85**	Average of Difference and Growth		
Delta35	0	Out	130	2	2	2	2	0.0%	0.0%	0.0%	0	130	130	0%	130	**130**	Average of Difference and Growth		
150	Washington Avenue at US 101 South/Sherman Avenue	*East Leg*																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	16	1	1	1	1	0.0%	0.0%	0.0%	0	16	16	0%	16	**16**	Average of Difference and Growth	Assumed no growth in link volumes	
		West Leg																	
		IN	6	1	1	1	1	0.0%	0.0%	0.0%	0	6	6	0%	6	**6**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	15	1	1	1	1	0.0%	0.0%	0.0%	0	15	15	0%	15	**15**	Average of Difference and Growth	Assumed no growth in link volumes	
		North Leg																	
		IN	840	765	857	782	878	12.0%	0.5%	12.3%	96	936	943	1%	940	**940**	Average of Difference and Growth		
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	*South Leg*																	
Delta13	-1	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	-1	Out	815	765	857	782	878	12.0%	0.5%	12.3%	96	911	915	0%	913	**911**	Difference Method		
160	Pony Creek Road at Crowell Lane	*East Leg*																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		West Leg																	
		IN	55	22	22	22	22	0.0%	0.0%	0.0%	0	55	55	0%	55	**55**	Average of Difference and Growth		
		Out	70	9	9	9	9	0.0%	0.0%	0.0%	0	70	70	0%	70	**70**	Average of Difference and Growth		
		North Leg																	
		IN	170	16	16	16	16	0.0%	0.0%	0.0%	0	170	170	0%	170	**170**	Average of Difference and Growth		
		Out	180	16	16	16	16	0.0%	0.0%	0.0%	0	180	180	0%	180	**180**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	180	6	6	6	6	0.0%	0.0%	0.0%	0	180	180	0%	180	**180**	Average of Difference and Growth		
Delta35	0	Out	155	19	19	19	19	0.0%	0.0%	0.0%	0	155	155	0%	155	**155**	Average of Difference and Growth		
170	Oak Street at 16th/17th Street	*East Leg*																	
		IN	65	105	132	110	138	25.7%	1.2%	25.7%	28	93	82	13%	87	**93**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	30	54	69	57	72	27.8%	1.3%	27.6%	16	46	38	18%	42	**46**	Difference Method	Absolute difference >10% --> Used difference only	
		West Leg																	
		IN	45	60	80	64	85	33.3%	1.5%	32.9%	21	66	60	10%	63	**66**	Difference Method	To be consistent with method used for opposing direction	
		Out	85	155	194	162	203	25.2%	1.1%	25.2%	41	126	106	17%	116	**126**	Difference Method	Absolute difference >10% --> Used difference only	
		North Leg																	
		IN	70	29	28	29	28	-3.4%	-0.2%	-3.6%	-1	69	67	2%	68	**68**	Average of Difference and Growth		
		Out	75	64	65	64	65	1.6%	0.1%	1.6%	1	76	76	0%	76	**76**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	1	IN	95	131	144	133	147	9.9%	0.5%	10.2%	14	109	105	4%	107	**107**	Average of Difference and Growth		
Delta35	0	Out	85	51	56	52	57	9.8%	0.4%	10.1%	5	90	94	4%	92	**92**	Average of Difference and Growth		
180	Broadway Street at 16th Street	*East Leg*																	
		IN	115	153	160	154	162	4.6%	0.2%	4.7%	7	122	120	2%	121	**121**	Average of Difference and Growth		
		Out	70	31	35	32	36	12.9%	0.6%	13.2%	4	74	79	7%	77	**77**	Average of Difference and Growth		
		West Leg																	
		IN	42	1	1	1	1	0.0%	0.0%	0.0%	0	42	42	0%	42	**42**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	50	1	1	1	1	0.0%	0.0%	0.0%	0	50	50	0%	50	**50**	Average of Difference and Growth	Assumed no growth in link volumes	
		North Leg																	
		IN	700	675	675	675	675	0.0%	0.0%	0.0%	0	700	700	0%	700	**700**	Average of Difference and Growth		2035 model showed a decrease: 641 in
		Out	710	524	533	526	535	1.7%	0.1%	1.8%	9	719	723	0%	721	**721**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	725	541	553	543	556	2.2%	0.1%	2.3%	13	738	742	1%	740	**740**	Average of Difference and Growth		
Delta35	6	Out	752	814	814	814	814	0.0%	0.0%	0.0%	0	752	752	0%	752	**752**	Average of Difference and Growth		2035 model showed a decrease: 786 out
190	Broadway Avenue at 17th Street	*East Leg*																	
		IN	11	1	1	1	1	0.0%	0.0%	0.0%	0	11	11	0%	11	**11**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	8	1	1	1	1	0.0%	0.0%	0.0%	0	8	8	0%	8	**8**	Average of Difference and Growth	Assumed no growth in link volumes	
		West Leg																	
		IN	26	52	66	55	69	26.9%	1.2%	26.8%	15	41	33	21%	37	**41**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	46	119	148	124	155	24.4%	1.1%	24.4%	30	76	57	29%	67	**76**	Difference Method	Absolute difference >10% --> Used difference only	
		North Leg																	
		IN	762	814	814	814	814	0.0%	0.0%	0.0%	0	762	762	0%	762	**762**	Average of Difference and Growth		2035 model showed a decrease: 786 in
		Out	730	541	553	543	556	2.2%	0.1%	2.3%	13	743	747	1%	745	**745**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	765	631	669	638	678	6.0%	0.3%	6.2%	40	805	813	1%	809	**809**	Average of Difference and Growth		
Delta35	11	Out	780	837	837	837	837	0.0%	0.0%	0.0%	0	780	780	0%	780	**780**	Average of Difference and Growth		2035 model showed a decrease: 821 out
200	US 101 at Mill Casino Entrance	*East Leg*																	
		IN	146	1	1	1	1	0.0%	0.0%	0.0%	0	146	146	0%	146	**146**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	142	1	1	1	1	0.0%	0.0%	0.0%	0	142	142	0%	142	**142**	Average of Difference and Growth	Assumed no growth in link volumes	
		West Leg																	
		IN	17	1	1	1	1	0.0%	0.0%	0.0%	0	17	17	0%	17	**17**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	4	1	1	1	1	0.0%	0.0%	0.0%	0	4	4	0%	4	**4**	Average of Difference and Growth	Assumed no growth in link volumes	

Existing Year	**2017**
Project Forecast Year	**2040**
Model Base Year	**2013**
Model Forecast Year	**2035**

Legend	
Sidestreets not included in the regional model	
Greater than 10% difference between difference and growth methods	USE DIFFERENCE
Numbers adjusted from model to work with spreadsheet (0 growth = 1)	

ID	Intersection	Direction	Existing 30HV 2017	Model Assignment: Baseline Model 2013	Model Assignment: Future Ref Model 2035	Model Assignment: Interpolated Model 2017	Model Assignment: Forecasted Model 2040	2013-2035 Model Comparison: Total Growth	2013-2035 Model Comparison: Annual Growth	2017-2040 Model Comparison: Total Growth	2017-2040 Model Comparison: Volume Difference	Post Processed Volumes Future 2040 No Build Year: Volume Difference	Volume Growth	Percent Difference	Average	Forecast Used	Method Used	Comments	Additional Comments
		North Leg																	
		IN	786	753	845	770	866	12.2%	0.6%	12.5%	96	882	884	0%	883	**883**	Average of Difference and Growth		
		Out	920	669	764	686	786	14.2%	0.6%	14.5%	99	1019	1053	3%	1036	**1036**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	962	669	764	686	786	14.2%	0.6%	14.5%	99	1061	1101	4%	1081	**1081**	Average of Difference and Growth		
Delta35	0	Out	845	753	845	770	866	12.2%	0.6%	12.5%	96	941	951	1%	946	**946**	Average of Difference and Growth		
210	Newmark Avenue at Oak Street	*East Leg*																	
		IN	965	833	836	834	837	0.4%	0.0%	0.4%	3	968	969	0%	968	**968**	Average of Difference and Growth		
		Out	990	847	863	850	867	1.9%	0.1%	2.0%	17	1007	1009	0%	1008	**1008**	Average of Difference and Growth		
		West Leg																	
		IN	1000	982	1007	987	1013	2.5%	0.1%	2.6%	26	1026	1026	0%	1026	**1026**	Average of Difference and Growth		
		Out	970	868	872	869	873	0.5%	0.0%	0.5%	4	974	975	0%	974	**974**	Average of Difference and Growth		
		North Leg																	
		IN	115	81	84	82	85	3.7%	0.2%	3.8%	3	118	119	1%	119	**119**	Average of Difference and Growth		
		Out	120	181	191	183	193	5.5%	0.3%	5.7%	10	130	127	3%	129	**129**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	1	Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
220	Broadway Street at Newmark Avenue	*East Leg*																	
		IN	580	193	306	214	332	58.5%	2.7%	55.3%	118	698	901	25%	800	**698**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	630	236	244	237	246	3.4%	0.2%	3.5%	8	638	652	2%	645	**638**	Difference Method	To be consistent with method used for opposing direction	
		West Leg																	
		IN	1015	821	834	823	837	1.6%	0.1%	1.7%	14	1029	1032	0%	1030	**1030**	Average of Difference and Growth		
		Out	560	296	295	296	295	-0.3%	0.0%	-0.4%	-1	559	558	0%	558	**558**	Average of Difference and Growth		
		North Leg																	
		IN	370	390	367	386	362	-5.9%	-0.3%	-6.2%	-24	346	347	0%	346	**346**	Average of Difference and Growth		2035 model showed a decrease: 367 in
		Out	830	680	723	688	733	6.3%	0.3%	6.5%	45	875	884	1%	880	**880**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	-1	IN	525	455	376	441	358	-17.4%	-0.8%	-18.7%	-83	442	427	4%	435	**435**	Average of Difference and Growth		2035 model showed a decrease: 376 in
Delta35	0	Out	470	648	621	643	615	-4.2%	-0.2%	-4.4%	-28	442	449	2%	446	**446**	Average of Difference and Growth		2035 model showed a decrease: 621 out
230	Newmark Street at Edgewood Drive	*East Leg*																	
		IN	580	135	249	156	275	84.4%	3.8%	76.5%	119	699	1024	38%	862	**699**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	646	169	178	171	180	5.3%	0.2%	5.5%	9	655	682	4%	669	**655**	Difference Method	To be consistent with method used for opposing direction	
		West Leg																	
		IN	630	236	244	237	246	3.4%	0.2%	3.5%	8	638	652	2%	645	**638**	Difference Method	To be consistent with method used for opposing direction	
		Out	574	193	306	214	332	58.5%	2.7%	55.3%	118	692	892	25%	792	**692**	Difference Method	Absolute difference >10% --> Used difference only	
		North Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	*South Leg*																	
Delta13	0	IN	65	64	63	64	63	-1.6%	-0.1%	-1.6%	-1	64	64	0%	64	**64**	Average of Difference and Growth		
Delta35	0	Out	55	73	72	73	72	-1.4%	-0.1%	-1.4%	-1	54	54	0%	54	**54**	Average of Difference and Growth		
240	Newmark Avenue at Brusells Street	*East Leg*																	
		IN	610	137	260	159	288	89.8%	4.1%	80.7%	129	739	1102	40%	920	**739**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	630	122	128	123	129	4.9%	0.2%	5.1%	6	636	662	4%	649	**636**	Difference Method	To be consistent with method used for opposing direction	
		West Leg																	
		IN	640	211	220	213	222	4.3%	0.2%	4.4%	9	649	668	3%	659	**649**	Difference Method	To be consistent with method used for opposing direction	
		Out	580	181	302	203	330	66.9%	3.0%	62.3%	127	707	941	29%	824	**707**	Difference Method	Absolute difference >10% --> Used difference only	
		North Leg																	
		IN	135	74	75	74	75	1.4%	0.1%	1.4%	1	136	137	1%	136	**136**	Average of Difference and Growth		
		Out	180	119	125	120	126	5.0%	0.2%	5.2%	6	186	189	2%	188	**188**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	20	1	1	1	1	0.0%	0.0%	0.0%	0	20	20	0%	20	**20**	Average of Difference and Growth	Assumed no growth in link volumes	
Delta35	0	Out	15	1	1	1	1	0.0%	0.0%	0.0%	0	15	15	0%	15	**15**	Average of Difference and Growth	Assumed no growth in link volumes	
250	Newmark Street at Sherman Avenue	*East Leg*																	
		IN	395	240	388	267	422	61.7%	2.8%	58.0%	155	550	624	13%	587	**550**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	471	209	221	211	224	5.7%	0.3%	5.9%	13	484	499	3%	491	**484**	Difference Method	To be consistent with method used for opposing direction	
		West Leg																	
		IN	608	115	122	116	124	6.1%	0.3%	6.3%	7	615	646	5%	631	**615**	Difference Method	To be consistent with method used for opposing direction	
		Out	600	138	263	161	291	90.6%	4.1%	81.3%	131	731	1088	39%	909	**731**	Difference Method	Absolute difference >10% --> Used difference only	
		North Leg																	
		IN	186	69	73	70	74	5.8%	0.3%	6.0%	4	190	197	4%	194	**194**	Average of Difference and Growth		
		Out	205	90	104	93	107	15.6%	0.7%	15.8%	15	220	237	8%	229	**229**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	312	158	158	158	158	0.0%	0.0%	0.0%	0	312	312	0%	312	**312**	Average of Difference and Growth		2035 model showed a decrease: 151 in
Delta35	6	Out	225	145	147	145	147	1.4%	0.1%	1.4%	2	227	228	1%	228	**228**	Average of Difference and Growth		
260	US 101 at Newmark Street	*East Leg*																	
		IN	12	1	1	1	1	0.0%	0.0%	0.0%	0	12	12	0%	12	**12**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	3	1	1	1	1	0.0%	0.0%	0.0%	0	3	3	0%	3	**3**	Average of Difference and Growth	Assumed no growth in link volumes	
		West Leg																	
		IN	491	209	221	211	224	5.7%	0.3%	5.9%	13	504	520	3%	512	**504**	Difference Method	To be consistent with method used for opposing direction	
		Out	405	240	388	267	422	61.7%	2.8%	58.0%	155	560	640	13%	600	**560**	Difference Method	Absolute difference >10% --> Used difference only	
		North Leg																	
		IN	876	798	891	815	912	11.7%	0.5%	11.9%	97	973	981	1%	977	**977**	Average of Difference and Growth		
		Out	980	727	825	745	847	13.5%	0.6%	13.8%	102	1082	1115	3%	1099	**1099**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	-1	IN	1121	722	973	768	1030	34.8%	1.6%	34.2%	262	1383	1504	8%	1444	**1383**	Difference Method	Absolute difference >10% --> Used difference only	
Delta35	1	Out	1112	763	871	783	896	14.2%	0.6%	14.4%	113	1225	1272	4%	1249	**1225**	Difference Method	To be consistent with method used for opposing direction	

Existing Year	2017	Sidestreets not included in the regional model
Project Forecast Year	2040	Greater than 10% difference between difference and growth methods — USE DIFFERENCE
Model Base Year	2013	Numbers adjusted from model to work with spreadsheet (0 growth = 1)
Model Forecast Year	2035	

				Model Assignment				2013-2035 Model Comparison		2017-2040 Model Comparison		Post Processed Volumes Future 2040 No Build Year							
			Existing 30HV	Baseline Model	Future Ref Model	Interpolated Model	Forecasted Model												
ID	Intersection	Direction	2017	2013	2035	2017	2040	Total Growth	Annual Growth	Total Growth	Volume Difference	Volume Difference	Volume Growth	Percent Difference	Average	Forecast Used	Method Used	Comments	Additional Comments
1010	Morrison Street at Lakeshore Drive	*East Leg*																	
		IN	95	97	111	100	114	14.4%	0.7%	14.7%	15	110	109	1%	109	**109**	Average of Difference and Growth		
		Out	145	156	181	161	187	16.0%	0.7%	16.3%	26	171	169	1%	170	**170**	Average of Difference and Growth		
		West Leg																	
		IN	51	41	47	42	48	14.6%	0.7%	14.9%	6	57	59	2%	58	**58**	Average of Difference and Growth		
		Out	60	48	53	49	54	10.4%	0.5%	10.7%	5	65	66	2%	66	**66**	Average of Difference and Growth		
		North Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	*South Leg*																	
Delta13	0	IN	100	115	134	118	138	16.5%	0.8%	16.8%	20	120	117	3%	118	**118**	Average of Difference and Growth		
Delta35	0	Out	41	49	58	51	60	18.4%	0.8%	18.6%	9	50	49	4%	50	**50**	Average of Difference and Growth		
1020	Newmark Avenue at Cape Arago Highway/Empire Boulevard	*East Leg*																	
		IN	400	645	662	648	666	2.6%	0.1%	2.7%	18	418	411	2%	414	**414**	Average of Difference and Growth		
		Out	430	351	367	354	371	4.6%	0.2%	4.7%	17	447	450	1%	449	**449**	Average of Difference and Growth		
		West Leg																	
		IN	7	1	1	1	1	0.0%	0.0%	0.0%	0	7	7	0%	7	**7**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	16	1	1	1	1	0.0%	0.0%	0.0%	0	16	16	0%	16	**16**	Average of Difference and Growth	Assumed no growth in link volumes	
		North Leg																	
		IN	8	1	1	1	1	0.0%	0.0%	0.0%	0	8	8	0%	8	**8**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	7	1	1	1	1	0.0%	0.0%	0.0%	0	7	7	0%	7	**7**	Average of Difference and Growth	Assumed no growth in link volumes	
DeltaE	0	*South Leg*																	
Delta13	0	IN	426	351	367	354	371	4.6%	0.2%	4.7%	17	443	446	1%	444	**444**	Average of Difference and Growth		
Delta35	0	Out	388	645	662	648	666	2.6%	0.1%	2.7%	18	406	399	2%	402	**402**	Average of Difference and Growth		
1030	Newmark Avenue at Morrison Street	*East Leg*																	
		IN	895	929	964	935	972	3.8%	0.2%	3.9%	37	932	930	0%	931	**931**	Average of Difference and Growth		
		Out	760	557	593	564	601	6.5%	0.3%	6.7%	38	798	811	2%	804	**804**	Average of Difference and Growth		
		West Leg																	
		IN	640	526	545	529	549	3.6%	0.2%	3.8%	20	660	664	1%	662	**662**	Average of Difference and Growth		
		Out	742	867	897	872	904	3.5%	0.2%	3.6%	31	773	769	1%	771	**771**	Average of Difference and Growth		
		North Leg																	
		IN	8	1	1	1	1	0.0%	0.0%	0.0%	0	8	8	0%	8	**8**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	11	1	1	1	1	0.0%	0.0%	0.0%	0	11	11	0%	11	**11**	Average of Difference and Growth	Assumed no growth in link volumes	
DeltaE	0	*South Leg*																	
Delta13	1	IN	161	35	54	38	58	54.3%	2.5%	51.7%	20	181	244	30%	213	**181**	Difference Method	Absolute difference >10% --> Used difference only	
Delta35	1	Out	191	65	72	66	74	10.8%	0.5%	11.0%	7	198	212	7%	205	**198**	Difference Method	To be consistent with method used for opposing direction	
1040	Newmark Avenue at Ocean Boulevard	*East Leg*																	
		IN	591	728	728	728	728	0.0%	0.0%	0.0%	0	591	591	0%	591	**591**	Average of Difference and Growth		2035 model showed a decrease: 721 in
		Out	530	510	536	515	542	5.1%	0.2%	5.3%	27	557	558	0%	558	**558**	Average of Difference and Growth		
		West Leg																	
		IN	725	662	699	669	707	5.6%	0.3%	5.8%	39	764	767	0%	765	**765**	Average of Difference and Growth		
		Out	960	1189	1238	1198	1249	4.1%	0.2%	4.3%	51	1011	1001	1%	1006	**1006**	Average of Difference and Growth		
		North Leg				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!								
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	*South Leg*																	
Delta13	0	IN	420	522	589	534	604	12.8%	0.6%	13.1%	70	490	475	3%	483	**483**	Average of Difference and Growth		
Delta35	6	Out	246	213	236	217	241	10.8%	0.5%	11.1%	24	270	273	1%	272	**272**	Average of Difference and Growth		
1050	Newmark Avenue at Laclair Street	*East Leg*																	
		IN	745	909	913	910	914	0.4%	0.0%	0.5%	4	749	748	0%	749	**749**	Average of Difference and Growth		
		Out	735	674	695	678	700	3.1%	0.1%	3.2%	22	757	759	0%	758	**758**	Average of Difference and Growth		
		West Leg																	
		IN	630	580	599	583	603	3.3%	0.1%	3.4%	20	650	651	0%	651	**651**	Average of Difference and Growth		
		Out	715	793	801	794	803	1.0%	0.0%	1.1%	8	723	723	0%	723	**723**	Average of Difference and Growth		
		North Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	*South Leg*																	
Delta13	0	IN	145	175	175	175	175	0.0%	0.0%	0.0%	0	145	145	0%	145	**145**	Average of Difference and Growth		
Delta35	-6	Out	70	197	197	197	197	0.0%	0.0%	0.0%	0	70	70	0%	70	**70**	Average of Difference and Growth		2035 model showed a decrease: 191 out
1060	Empire Boulevard at Pacific Avenue	*East Leg*																	
		IN	37	18	25	19	27	38.9%	1.8%	38.0%	7	44	51	14%	48	**44**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	45	7	10	8	11	42.9%	1.9%	41.6%	3	48	64	28%	56	**48**	Difference Method	Absolute difference >10% --> Used difference only	
		West Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		North Leg																	
		IN	380	661	678	664	682	2.6%	0.1%	2.7%	18	398	390	2%	394	**394**	Average of Difference and Growth		
		Out	427	362	380	365	384	5.0%	0.2%	5.2%	19	446	449	1%	447	**447**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	2	IN	465	370	390	374	395	5.4%	0.2%	5.6%	21	486	491	1%	488	**488**	Average of Difference and Growth		
Delta35	1	Out	410	678	702	682	707	3.5%	0.2%	3.7%	25	435	425	2%	430	**430**	Average of Difference and Growth		
1070	Thompson Road at Woodland Drive	*East Leg*																	
		IN	230	248	248	248	248	0.0%	0.0%	0.0%	0	230	230	0%	230	**230**	Average of Difference and Growth		2035 model showed a decrease: 247 in
		Out	146	272	272	272	272	0.0%	0.0%	0.0%	0	146	146	0%	146	**146**	Average of Difference and Growth		2035 model showed a decrease: 265 out
		West Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				

Existing Year	2017
Project Forecast Year	2040
Model Base Year	2013
Model Forecast Year	2035

Sidestreets not included in the regional model	
Greater than 10% difference between difference and growth methods	USE DIFFERENCE
Numbers adjusted from model to work with spreadsheet (0 growth = 1)	

				Model Assignment															
			Existing 30HV	Baseline Model	Future Ref Model	Interpolated Model	Forecasted Model	2013-2035 Model Comparison		2017-2040 Model Comparison		Post Processed Volumes Future 2040 No Build Year							
ID	Intersection	Direction	2017	2013	2035	2017	2040	Total Growth	Annual Growth	Total Growth	Volume Difference	Volume Difference	Volume Growth	Percent Difference	Average	Forecast Used	Method Used	Comments	Additional Comments
		North Leg																	
		IN	470	726	726	726	726	0.0%	0.0%	0.0%	0	470	470	0%	470	**470**	Average of Difference and Growth		2035 model showed a decrease: 399 in
		Out	490	525	525	525	525	0.0%	0.0%	0.0%	0	490	490	0%	490	**490**	Average of Difference and Growth		2035 model showed a decrease: 453 out
DeltaE	0	*South Leg*																	
Delta13	0	IN	325	350	350	350	350	0.0%	0.0%	0.0%	0	325	325	0%	325	**325**	Average of Difference and Growth		2035 model showed a decrease: 277 in
Delta35	0	Out	389	527	527	527	527	0.0%	0.0%	0.0%	0	389	389	0%	389	**389**	Average of Difference and Growth		2035 model showed a decrease: 505 out
1080	Koosbay Boulevard at Thompson Road	*East Leg*																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		West Leg																	
		IN	270	247	245	247	245	-0.8%	0.0%	-0.8%	-2	268	268	0%	268	**268**	Average of Difference and Growth		
		Out	138	255	264	257	266	3.5%	0.2%	3.7%	9	147	143	3%	145	**145**	Average of Difference and Growth		
		North Leg																	
		IN	225	102	102	102	102	0.0%	0.0%	0.0%	0	225	225	0%	225	**225**	Average of Difference and Growth		2035 model showed a decrease: 98 in
		Out	310	106	106	106	106	0.0%	0.0%	0.0%	0	310	310	0%	310	**310**	Average of Difference and Growth		2035 model showed a decrease: 99 out
DeltaE	0	*South Leg*																	
Delta13	0	IN	340	214	217	215	218	1.4%	0.1%	1.5%	3	343	345	1%	344	**344**	Average of Difference and Growth		
Delta35	-8	Out	387	202	202	202	202	0.0%	0.0%	0.0%	0	387	387	0%	387	**387**	difference method		2035 model showed a decrease: 197 out
1090	Ocean Boulevard at Woodland Drive	*East Leg*																	
		IN	585	879	899	883	904	2.3%	0.1%	2.4%	21	606	599	1%	602	**602**	Average of Difference and Growth		
		Out	670	915	939	919	944	2.6%	0.1%	2.7%	25	695	688	1%	692	**692**	Average of Difference and Growth		
		West Leg																	
		IN	510	498	541	506	551	8.6%	0.4%	8.9%	45	555	555	0%	555	**555**	Average of Difference and Growth		
		Out	570	596	684	612	704	14.8%	0.7%	15.0%	92	662	656	1%	659	**659**	Average of Difference and Growth		
		North Leg																	
		IN	410	512	512	512	512	0.0%	0.0%	0.0%	0	410	410	0%	410	**410**	Average of Difference and Growth		2035 model showed a decrease: 491 in
		Out	265	378	378	378	378	0.0%	0.0%	0.0%	0	265	265	0%	265	**265**	Average of Difference and Growth		2035 model showed a decrease: 308 out
DeltaE	0	*South Leg*																	
Delta13	0	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	-49	Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
1100	Ocean Boulevard at Butler Road	*East Leg*																	
		IN	65	56	55	56	55	-1.8%	-0.1%	-1.9%	-1	64	64	0%	64	**64**	Average of Difference and Growth		
		Out	50	47	48	47	48	2.1%	0.1%	2.2%	1	51	51	0%	51	**51**	Average of Difference and Growth		
		West Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		North Leg																	
		IN	660	862	883	866	888	2.4%	0.1%	2.5%	22	682	677	1%	679	**679**	Average of Difference and Growth		
		Out	590	840	860	844	865	2.4%	0.1%	2.5%	21	611	605	1%	608	**608**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	11	IN	555	786	808	790	813	2.8%	0.1%	2.9%	23	578	571	1%	575	**575**	Average of Difference and Growth		
Delta35	12	Out	640	806	826	810	831	2.5%	0.1%	2.6%	21	661	657	1%	659	**659**	Average of Difference and Growth		
1110	Koosbay Boulevard at 10th Street	*East Leg*																	
		IN	165	133	133	133	133	0.0%	0.0%	0.0%	0	165	165	0%	165	**165**	Average of Difference and Growth		2035 model showed a decrease: 124 in
		Out	205	135	140	136	141	3.7%	0.2%	3.8%	5	210	213	1%	212	**212**	Average of Difference and Growth		
		West Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		North Leg																	
		IN	375	175	172	174	171	-1.7%	-0.1%	-1.8%	-3	372	368	1%	370	**370**	Average of Difference and Growth		
		Out	310	187	192	188	193	2.7%	0.1%	2.8%	5	315	319	1%	317	**317**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	-1	IN	215	128	128	128	128	0.0%	0.0%	0.0%	0	215	215	0%	215	**215**	Average of Difference and Growth		
Delta35	-14	Out	240	115	115	115	115	0.0%	0.0%	0.0%	0	240	240	0%	240	**240**	Average of Difference and Growth		2035 model showed a decrease: 92 out
1120	Us 101 at Koosbay Blvd	*East Leg*																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		West Leg																	
		IN	170	121	135	124	138	11.6%	0.5%	11.8%	15	185	190	3%	187	**187**	Average of Difference and Growth		
		Out	125	136	141	137	142	3.7%	0.2%	3.8%	5	130	130	0%	130	**130**	Average of Difference and Growth		
		North Leg																	
		IN	1155	761	873	781	898	14.7%	0.7%	15.0%	117	1272	1328	4%	1300	**1300**	Average of Difference and Growth		
		Out	1015	725	978	771	1036	34.9%	1.6%	34.3%	265	1280	1363	6%	1321	**1321**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	1	IN	1090	790	1049	837	1108	32.8%	1.5%	32.3%	271	1361	1443	6%	1402	**1402**	Average of Difference and Growth		
Delta35	1	Out	1275	810	937	833	966	15.7%	0.7%	15.9%	133	1408	1478	5%	1443	**1443**	Average of Difference and Growth		
1130	7th Street at Commercial Avenue	*East Leg*																	
		IN	645	590	590	590	590	0.0%	0.0%	0.0%	0	645	645	0%	645	**645**	Average of Difference and Growth		2035 model showed a decrease: 585 in
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		West Leg																	
		IN	45	1	1	1	1	0.0%	0.0%	0.0%	0	45	45	0%	45	**45**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	195	1	1	1	1	0.0%	0.0%	0.0%	0	195	195	0%	195	**195**	Average of Difference and Growth	Assumed no growth in link volumes	
		North Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	*South Leg*																	
Delta13	0	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	0	Out	495	590	590	590	590	0.0%	0.0%	0.0%	0	495	495	0%	495	**495**	Average of Difference and Growth		2035 model showed a decrease: 585 out

Existing Year 2017
Project Forecast Year 2040
Model Base Year 2013
Model Forecast Year 2035

Sidestreets not included in the regional model
Greater than 10% difference between difference and growth methods — USE DIFFERENCE
Numbers adjusted from model to work with spreadsheet (0 growth = 1)

ID	Intersection	Direction	Existing 30HV 2017	Model Assignment: Baseline Model 2013	Model Assignment: Future Ref Model 2035	Model Assignment: Interpolated Model 2017	Model Assignment: Forecasted Model 2040	2013-2035 Model Comparison: Total Growth	2013-2035 Model Comparison: Annual Growth	2017-2040 Model Comparison: Total Growth	2017-2040 Model Comparison: Volume Difference	Post Processed Volumes Future 2040 No Build Year: Volume Difference	Post Processed Volumes Future 2040 No Build Year: Volume Growth	Post Processed Volumes Future 2040 No Build Year: Percent Difference	Post Processed Volumes Future 2040 No Build Year: Average	Forecast Used	Method Used	Comments	Additional Comments
1140	Commercial Avenue at US 101 South	East Leg																	
		IN	330	488	488	488	488	0.0%	0.0%	0.0%	0	330	330	0%	330	330	Average of Difference and Growth		2035 model showed a decrease: 477 in
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		West Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	385	567	569	567	569	0.4%	0.0%	0.4%	2	387	386	0%	387	387	Average of Difference and Growth		
		North Leg																	
		IN	1315	815	939	838	967	15.2%	0.7%	15.5%	130	1445	1519	5%	1482	1482	Average of Difference and Growth		
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	South Leg																	
Delta13	0	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	11	Out	1260	736	847	756	872	15.1%	0.7%	15.3%	116	1376	1453	5%	1415	1415	Average of Difference and Growth		
1150	Commercial Avenue at US 101 North	East Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		West Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	280	488	488	488	488	0.0%	0.0%	0.0%	0	280	280	0%	280	280	Average of Difference and Growth		2035 model showed a decrease: 477 out
		North Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	1120	810	1072	858	1132	32.3%	1.5%	31.9%	274	1394	1478	6%	1436	1436	Average of Difference and Growth		
DeltaE	0	South Leg																	
Delta13	1	IN	1400	1299	1549	1344	1606	19.2%	0.9%	19.4%	261	1661	1672	1%	1667	1667	Average of Difference and Growth		
Delta35	-11	Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
1160	10th Street at Central Avenue	East Leg																	
		IN	435	636	636	636	636	0.0%	0.0%	0.0%	0	435	435	0%	435	435	Average of Difference and Growth		2035 model showed a decrease: 630 in
		Out	670	601	634	607	642	5.5%	0.2%	5.7%	35	705	708	1%	706	706	Average of Difference and Growth		
		West Leg																	
		IN	650	797	817	801	822	2.5%	0.1%	2.6%	21	671	667	1%	669	669	Average of Difference and Growth		
		Out	600	803	830	808	836	3.4%	0.2%	3.5%	28	628	621	1%	625	625	Average of Difference and Growth		
		North Leg																	
		IN	230	114	114	114	114	0.0%	0.0%	0.0%	0	230	230	0%	230	230	Difference Method	Absolute difference >10% --> Used difference only	2035 model showed a decrease: 95 in
		Out	125	148	153	149	154	3.4%	0.2%	3.5%	5	130	129	1%	130	130	Difference Method	To be consistent with method used for opposing direction	
DeltaE	0	South Leg																	
Delta13	0	IN	275	336	390	346	402	16.1%	0.7%	16.3%	56	331	320	4%	326	326	Average of Difference and Growth		
Delta35	9	Out	195	331	331	331	331	0.0%	0.0%	0.0%	0	195	195	0%	195	195	Average of Difference and Growth		2035 model showed a decrease: 315 out
1170	Central Avenue at 7th Street	East Leg																	
		IN	40	1	1	1	1	0.0%	0.0%	0.0%	0	40	40	0%	40	40	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	0	1	1	1	1	0.0%	0.0%	0.0%	0	0	0	#DIV/0!	0	0	Average of Difference and Growth	Assumed no growth in link volumes	
		West Leg																	
		IN	660	542	576	548	584	6.3%	0.3%	6.5%	36	696	703	1%	699	699	Average of Difference and Growth		
		Out	440	590	590	590	590	0.0%	0.0%	0.0%	0	440	440	0%	440	440	Average of Difference and Growth		2035 model showed a decrease: 585 out
		North Leg																	
		IN	480	590	590	590	590	0.0%	0.0%	0.0%	0	480	480	0%	480	480	Average of Difference and Growth		2035 model showed a decrease: 585 in
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	South Leg																	
Delta13	0	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	0	Out	740	542	576	548	584	6.3%	0.3%	6.5%	36	776	788	2%	782	782	Average of Difference and Growth		
1180	7th Street at Anderson Avenue	East Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	665	569	603	575	611	6.0%	0.3%	6.2%	36	701	706	1%	703	703	Average of Difference and Growth		
		West Leg																	
		IN	80	16	15	16	15	-6.3%	-0.3%	-6.6%	-1	79	75	6%	77	77	Average of Difference and Growth		
		Out	105	1	1	1	1	0.0%	0.0%	0.0%	0	105	105	0%	105	105	Average of Difference and Growth		
		North Leg																	
		IN	740	542	576	548	584	6.3%	0.3%	6.5%	36	776	788	2%	782	782	Average of Difference and Growth		
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	South Leg																	
Delta13	-1	IN	95	14	15	14	15	7.1%	0.3%	7.4%	1	96	102	6%	99	99	Average of Difference and Growth		
Delta35	-1	Out	145	3	3	3	3	0.0%	0.0%	0.0%	0	145	145	0%	145	145	Average of Difference and Growth		
1190	Elrod Avenue at 10th Street	East Leg																	
		IN	140	265	302	272	310	14.0%	0.6%	14.2%	39	179	160	11%	169	179	Difference Method	Absolute difference >10% --> Used difference only	
		Out	60	209	209	209	209	0.0%	0.0%	0.0%	0	60	60	0%	60	60	Difference Method	Absolute difference >10% --> Used difference only	2035 model showed a decrease: 191 out
		West Leg																	
		IN	75	76	100	80	105	31.6%	1.4%	31.2%	25	100	98	2%	99	99	Average of Difference and Growth		
		Out	125	88	97	90	99	10.2%	0.5%	10.5%	9	134	138	3%	136	136	Average of Difference and Growth		
		North Leg																	
		IN	155	291	291	291	291	0.0%	0.0%	0.0%	0	155	155	0%	155	155	Difference Method	To be consistent with method used for opposing direction	2035 model showed a decrease: 280 in
		Out	185	334	394	345	408	18.0%	0.8%	18.2%	63	248	219	12%	233	248	Difference Method	Absolute difference >10% --> Used difference only	
DeltaE	0	South Leg																	
Delta13	1	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	-7	Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
1200	11th Street at Ingersoll Avenue	East Leg																	
		IN	65	28	29	28	29	3.6%	0.2%	3.7%	1	66	67	2%	67	67	Average of Difference and Growth		
		Out	96	31	33	31	33	6.5%	0.3%	6.7%	2	98	102	4%	100	100	Average of Difference and Growth		
		West Leg																	
		IN	3	20	27	21	29	35.0%	1.6%	34.4%	7	10	4	88%	7	10	Difference Method	Absolute difference >10% --> Used difference only	
		Out	7	32	35	33	36	9.4%	0.4%	9.6%	3	10	8	28%	9	10	Difference Method	Absolute difference >10% --> Used difference only	

Existing Year	**2017**
Project Forecast Year	**2040**
Model Base Year	**2013**
Model Forecast Year	**2035**

Sidestreets not included in the regional model
Greater than 10% difference between difference and growth methods — USE DIFFERENCE
Numbers adjusted from model to work with spreadsheet (0 growth = 1)

ID	Intersection	Direction	Existing 30HV	Model Assignment: Baseline Model	Future Ref Model	Interpolated Model	Forecasted Model	2013-2035 Model Comparison		2017-2040 Model Comparison		Post Processed Volumes Future 2040 No Build Year				Forecast Used	Method Used	Comments	Additional Comments
			2017	2013	2035	2017	2040	Total Growth	Annual Growth	Total Growth	Volume Difference	Volume Difference	Volume Growth	Percent Difference	Average				
		North Leg																	
		IN	96	88	97	90	99	10.2%	0.5%	10.5%	9	105	106	1%	106	**106**	Average of Difference and Growth		
		Out	58	76	100	80	105	31.6%	1.4%	31.2%	25	83	76	9%	80	**80**	Average of Difference and Growth		
DeltaE	0	South Leg																	
Delta13	0	IN	8	52	72	56	77	38.5%	1.7%	37.6%	21	29	11	90%	20	**29**	Difference Method	Absolute difference >10% --> Used difference only	
Delta35	1	Out	11	49	56	50	58	14.3%	0.6%	14.6%	7	18	13	37%	15	**18**	Difference Method	Absolute difference >10% --> Used difference only	
1210	7th Street at Ingersoll Avenue	East Leg																	
		IN	16	99	100	99	100	1.0%	0.0%	1.1%	1	17	16	5%	17	**17**	Difference Method	To be consistent with method used for opposing direction	
		Out	20	46	50	47	51	8.7%	0.4%	8.9%	4	24	22	10%	23	**24**	Difference Method	Absolute difference >10% --> Used difference only	
		West Leg																	
		IN	20	61	66	62	67	8.2%	0.4%	8.4%	5	25	22	15%	23	**25**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	35	54	57	55	58	5.6%	0.3%	5.7%	3	38	37	3%	38	**38**	Difference Method	To be consistent with method used for opposing direction	
		North Leg																	
		IN	95	163	145	160	141	-11.0%	-0.5%	-11.8%	-19	76	84	10%	80	**76**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	55	107	130	111	135	21.5%	1.0%	21.6%	24	79	67	17%	73	**79**	Difference Method	Absolute difference >10% --> Used difference only	
DeltaE	0	South Leg																	
Delta13	0	IN	65	87	111	91	116	27.6%	1.3%	27.5%	25	90	83	8%	86	**90**	Difference Method	To be consistent with method used for opposing direction	
Delta35	1	Out	86	203	184	200	180	-9.4%	-0.4%	-10.0%	-20	66	77	16%	72	**66**	Difference Method	Absolute difference >10% --> Used difference only	
1220	Hall Avenue at US 101 South	East Leg																	
		IN	115	21	21	21	21	0.0%	0.0%	0.0%	0	115	115	0%	115	**115**	Difference Method	To be consistent with method used for opposing direction	
		Out	70	24	17	23	15	-29.2%	-1.3%	-32.2%	-7	63	47	28%	55	**63**	Difference Method	Absolute difference >10% --> Used difference only	
		West Leg																	
		IN	80	8	8	8	8	0.0%	0.0%	0.0%	0	80	80	0%	80	**80**	Difference Method	To be consistent with method used for opposing direction	
		Out	65	3	2	3	2	-33.3%	-1.5%	-37.1%	-1	64	41	44%	52	**64**	Difference Method	Absolute difference >10% --> Used difference only	
		North Leg																	
		IN	1660	1280	1414	1304	1444	10.5%	0.5%	10.7%	140	1800	1838	2%	1819	**1819**	Average of Difference and Growth		
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	South Leg																	
Delta13	-47	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	-35	Out	1720	1329	1459	1353	1489	9.8%	0.4%	10.0%	136	1856	1893	2%	1874	**1874**	Average of Difference and Growth		
1230	Hall Avenue at US 101 North	East Leg																	
		IN	10	1	1	1	1	0.0%	0.0%	0.0%	0	10	10	0%	10	**10**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	7	1	1	1	1	0.0%	0.0%	0.0%	0	7	7	0%	7	**7**	Average of Difference and Growth	Assumed no growth in link volumes	
		West Leg																	
		IN	55	24	17	23	15	-29.2%	-1.3%	-32.2%	-7	48	37	24%	42	**48**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	80	21	21	21	21	0.0%	0.0%	0.0%	0	80	80	0%	80	**80**	Difference Method	To be consistent with method used for opposing direction	
		North Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	1250	1169	1439	1218	1500	23.1%	1.0%	23.2%	282	1532	1540	0%	1536	**1536**	Average of Difference and Growth		
DeltaE	0	South Leg																	
Delta13	1	IN	1272	1167	1443	1217	1506	23.7%	1.1%	23.7%	289	1561	1574	1%	1567	**1567**	Average of Difference and Growth		
Delta35	0	Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
1240	Johnson Avenue at US 101 South	East Leg																	
		IN	265	1	1	1	1	0.0%	0.0%	0.0%	0	265	265	0%	265	**265**	Difference Method	To be consistent with method used for opposing direction	
		Out	445	36	50	39	53	38.9%	1.8%	38.0%	15	460	614	29%	537	**460**	Difference Method	Absolute difference >10% --> Used difference only	
		West Leg																	
		IN	215	36	50	39	53	38.9%	1.8%	38.0%	15	230	297	25%	263	**230**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	145	102	126	106	131	23.5%	1.1%	23.6%	25	170	179	5%	175	**170**	Difference Method	To be consistent with method used for opposing direction	
		North Leg																	
		IN	1565	1387	1528	1413	1560	10.2%	0.5%	10.4%	147	1712	1728	1%	1720	**1720**	Average of Difference and Growth		
		Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
DeltaE	0	South Leg																	
Delta13	1	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	1	Out	1455	1285	1402	1306	1429	9.1%	0.4%	9.4%	122	1577	1591	1%	1584	**1577**	Difference Method		
1250	Johnson Avenue at US 101 North	East Leg																	
		IN	440	1	1	1	1	0.0%	0.0%	0.0%	0	440	440	0%	440	**440**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	475	1	1	1	1	0.0%	0.0%	0.0%	0	475	475	0%	475	**475**	Average of Difference and Growth	Assumed no growth in link volumes	
		West Leg																	
		IN	430	36	50	39	53	38.9%	1.8%	38.0%	15	445	593	29%	519	**445**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	285	1	1	1	1	0.0%	0.0%	0.0%	0	285	285	0%	285	**285**	Difference Method		
		North Leg																	
		IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
		Out	1240	1048	1354	1104	1424	29.2%	1.3%	29.0%	320	1560	1599	3%	1580	**1580**	Average of Difference and Growth		
DeltaE	0	South Leg																	
Delta13	-1	IN	1130	1012	1304	1065	1370	28.9%	1.3%	28.7%	305	1435	1454	1%	1445	**1445**	Average of Difference and Growth		
Delta35	-1	Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
1260	7th Street at Lockhart Avenue/Southwest Boulevard	East Leg																	
		IN	310	78	130	87	142	66.7%	3.0%	62.2%	54	364	503	32%	434	**364**	Difference Method	Absolute difference >10% --> Used difference only	
		Out	220	101	147	109	157	45.5%	2.1%	44.0%	48	268	317	17%	292	**268**	Difference Method	Absolute difference >10% --> Used difference only	
		West Leg																	
		IN	240	161	232	174	248	44.1%	2.0%	42.7%	74	314	342	9%	328	**328**	Average of Difference and Growth		
		Out	355	384	439	394	452	14.3%	0.7%	14.6%	58	413	407	1%	410	**410**	Average of Difference and Growth		
		North Leg																	
		IN	55	306	310	307	311	1.3%	0.1%	1.4%	4	59	56	6%	57	**59**	Difference Method	To be consistent with method used for opposing direction	
		Out	30	60	86	65	92	43.3%	2.0%	42.0%	27	57	43	29%	50	**57**	Difference Method	Absolute difference >10% --> Used difference only	
DeltaE	0	South Leg																	
Delta13	0	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	0	Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				

Existing Year	**2017**
Project Forecast Year	**2040**
Model Base Year	**2013**
Model Forecast Year	**2035**

Sidestreets not included in the regional model

Greater than 10% difference between difference and growth methods — USE DIFFERENCE

Numbers adjusted from model to work with spreadsheet (0 growth = 1)

				Model Assignment															
			Existing 30HV	Baseline Model	Future Ref Model	Interpolated Model	Forecasted Model	2013-2035 Model Comparison		2017-2040 Model Comparison		Post Processed Volumes Future 2040 No Build Year							
ID	**Intersection**	**Direction**	**2017**	**2013**	**2035**	**2017**	**2040**	**Total Growth**	**Annual Growth**	**Total Growth**	**Volume Difference**	**Volume Difference**	**Volume Growth**	**Percent Difference**	**Average**	**Forecast Used**	**Method Used**	**Comments**	**Additional Comments**
1270	6th Avenue at D street / Coos River Highway	*East Leg*																	
		IN	201	159	163	160	164	2.5%	0.1%	2.6%	4	205	206	1%	206	**206**	Average of Difference and Growth		
		Out	281	139	147	140	149	5.8%	0.3%	6.0%	8	289	298	3%	294	**294**	Average of Difference and Growth		
		West Leg																	
		IN	66	96	99	97	100	3.1%	0.1%	3.2%	3	69	68	1%	69	**69**	Average of Difference and Growth		
		Out	86	78	80	78	80	2.6%	0.1%	2.7%	2	88	88	0%	88	**88**	Average of Difference and Growth		
		North Leg																	
		IN	3	4	5	4	5	25.0%	1.1%	25.0%	1	4	4	8%	4	**4**	Average of Difference and Growth		
		Out	7	6	6	6	6	0.0%	0.0%	0.0%	0	7	7	0%	7	**7**	Average of Difference and Growth		
DeltaE	0	*South Leg*																	
Delta13	0	IN	335	221	230	223	232	4.1%	0.2%	4.2%	9	344	349	1%	347	**347**	Average of Difference and Growth		
Delta35	0	Out	231	257	264	258	266	2.7%	0.1%	2.8%	7	238	238	0%	238	**238**	Average of Difference and Growth		
1280	Coos River Road at Ross Inlet Road	*East Leg*																	
		IN	105	116	123	117	125	6.0%	0.3%	6.2%	7	112	112	1%	112	**112**	Average of Difference and Growth		
		Out	195	116	123	117	125	6.0%	0.3%	6.2%	7	202	207	2%	205	**205**	Average of Difference and Growth		
		West Leg																	
		IN	225	116	123	117	125	6.0%	0.3%	6.2%	7	232	239	3%	236	**236**	Average of Difference and Growth		
		Out	170	116	123	117	125	6.0%	0.3%	6.2%	7	177	181	2%	179	**179**	Average of Difference and Growth		
		North Leg																	
		IN	75	1	1	1	1	0.0%	0.0%	0.0%	0	75	75	0%	75	**75**	Average of Difference and Growth	Assumed no growth in link volumes	
		Out	40	1	1	1	1	0.0%	0.0%	0.0%	0	40	40	0%	40	**40**	Average of Difference and Growth	Assumed no growth in link volumes	
DeltaE	0	*South Leg*																	
Delta13	0	IN	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
Delta35	0	Out	0			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				

Appendix D
Synchro Worksheets

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	120	10	2	55	1	5	1	1	1	2	1
Future Vol, veh/h	1	120	10	2	55	1	5	1	1	1	2	1
Conflicting Peds, #/hr	3	0	3	3	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	160	13	3	73	1	7	1	1	1	3	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	176	0	0	254	255	170	253	261	77
Stage 1	-	-	-	-	-	-	172	172	-	83	83	-
Stage 2	-	-	-	-	-	-	82	83	-	170	178	-
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	1535	-	-	1412	-	-	703	652	879	704	647	990
Stage 1	-	-	-	-	-	-	835	760	-	930	830	-
Stage 2	-	-	-	-	-	-	931	830	-	837	756	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1531	-	-	1408	-	-	696	646	876	698	641	987
Mov Cap-2 Maneuver	-	-	-	-	-	-	696	646	-	698	641	-
Stage 1	-	-	-	-	-	-	832	757	-	926	826	-
Stage 2	-	-	-	-	-	-	925	826	-	833	753	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	10.1	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	709	1531	-	-	1408	-	-	719
HCM Lane V/C Ratio	0.013	0.001	-	-	0.002	-	-	0.007
HCM Control Delay (s)	10.1	7.4	0	-	7.6	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection						
Int Delay, s/veh	0.6					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	130	65	5	10	1
Future Vol, veh/h	1	130	65	5	10	1
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	176	88	7	14	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	97	0	-	0	272	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	178	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1509	-	-	-	722	968
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	858	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1506	-	-	-	718	966
Mov Cap-2 Maneuver	-	-	-	-	718	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	856	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1506	-	-	-	735
HCM Lane V/C Ratio	0.001	-	-	-	0.02
HCM Control Delay (s)	7.4	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	1	10	20	1	5	10	765	1	1	840	15
Future Volume (vph)	275	1	10	20	1	5	10	765	1	1	840	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	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		1.00			0.98			1.00			1.00	
Flt Protected		0.95			0.96			1.00			1.00	
Satd. Flow (prot)		1638			1638			3227			3190	
Flt Permitted		0.71			0.76			0.94			0.95	
Satd. Flow (perm)		1225			1295			3040			3044	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	299	1	11	22	1	5	11	832	1	1	913	16
RTOR Reduction (vph)	0	2	0	0	3	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	309	0	0	25	0	0	844	0	0	928	0
Confl. Peds. (#/hr)	8					8	2		2	2		2
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	3%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		16.8			16.8			21.7			21.7	
Effective Green, g (s)		17.3			17.3			22.2			22.2	
Actuated g/C Ratio		0.36			0.36			0.47			0.47	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.5			2.5			6.1			6.1	
Lane Grp Cap (vph)		446			471			1420			1422	
v/s Ratio Prot												
v/s Ratio Perm		c0.25			0.02			0.28			c0.30	
v/c Ratio		0.69			0.05			0.59			0.65	
Uniform Delay, d1		12.8			9.8			9.3			9.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		4.3			0.0			1.3			1.8	
Delay (s)		17.1			9.8			10.6			11.5	
Level of Service		B			A			B			B	
Approach Delay (s)		17.1			9.8			10.6			11.5	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	110	165	20	5	2
Future Vol, veh/h	5	110	165	20	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	126	190	23	6	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	213	0	-	0	340	202
Stage 1	-	-	-	-	202	-
Stage 2	-	-	-	-	138	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1369	-	-	-	660	844
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	894	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1369	-	-	-	657	844
Mov Cap-2 Maneuver	-	-	-	-	657	-
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	894	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1369	-	-	-	701
HCM Lane V/C Ratio	0.004	-	-	-	0.011
HCM Control Delay (s)	7.6	0	-	-	10.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	185	15	45	290	15	35	10	30	10	20	2
Future Vol, veh/h	5	185	15	45	290	15	35	10	30	10	20	2
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	40	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	201	16	49	315	16	38	11	33	11	22	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	333	0	0	217	0	0	652	650	211	666	650	325
Stage 1	-	-	-	-	-	-	219	219	-	423	423	-
Stage 2	-	-	-	-	-	-	433	431	-	243	227	-
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	1238	-	-	1365	-	-	384	391	834	376	391	721
Stage 1	-	-	-	-	-	-	788	726	-	613	591	-
Stage 2	-	-	-	-	-	-	605	586	-	765	720	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1236	-	-	1365	-	-	355	375	832	341	375	720
Mov Cap-2 Maneuver	-	-	-	-	-	-	355	375	-	341	375	-
Stage 1	-	-	-	-	-	-	785	723	-	609	569	-
Stage 2	-	-	-	-	-	-	559	564	-	720	717	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1	14.4	15.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	465	1236	-	-	1365	-	-	375
HCM Lane V/C Ratio	0.175	0.004	-	-	0.036	-	-	0.093
HCM Control Delay (s)	14.4	7.9	-	-	7.7	-	-	15.6
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	240	370	110	155	15
Future Vol, veh/h	0	240	370	110	155	15
Conflicting Peds, #/hr	6	0	0	6	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	255	394	117	165	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	655	401
Stage 1	-	-	-	-	400	-
Stage 2	-	-	-	-	255	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	-	434	653
Stage 1	0	-	-	-	681	-
Stage 2	0	-	-	-	792	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	429	649
Mov Cap-2 Maneuver	-	-	-	-	525	-
Stage 1	-	-	-	-	677	-
Stage 2	-	-	-	-	787	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	576
HCM Lane V/C Ratio	-	-	-	0.314
HCM Control Delay (s)	-	-	-	14.1
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	315	120	395	320	10	170	40	410	45	45	15
Future Volume (vph)	20	315	120	395	320	10	170	40	410	45	45	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	5.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			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	0.96		1.00	1.00			1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1662	3163		1646	3306			1676	1473	1662	1677	
Flt Permitted	0.95	1.00		0.95	1.00			0.72	1.00	0.49	1.00	
Satd. Flow (perm)	1662	3163		1646	3306			1261	1473	855	1677	
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)	22	339	129	425	344	11	183	43	441	48	48	16
RTOR Reduction (vph)	0	36	0	0	2	0	0	0	72	0	10	0
Lane Group Flow (vph)	22	432	0	425	353	0	0	226	369	48	54	0
Confl. Peds. (#/hr)	7		8	8		7	5					5
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Split	NA		Split	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	2	2		6	6			8	8 6		4	
Permitted Phases							8			4		
Actuated Green, G (s)	15.3	15.3		24.9	24.9			17.1	47.5	17.1	17.1	
Effective Green, g (s)	15.8	15.8		26.4	26.4			18.1	42.0	18.1	18.1	
Actuated g/C Ratio	0.22	0.22		0.37	0.37			0.25	0.58	0.25	0.25	
Clearance Time (s)	4.5	4.5		5.5	5.5			5.0		5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5		2.5	2.5	
Lane Grp Cap (vph)	363	691		601	1207			315	855	214	419	
v/s Ratio Prot	0.01	c0.14		c0.26	0.11				0.25		0.03	
v/s Ratio Perm								c0.18		0.06		
v/c Ratio	0.06	0.63		0.71	0.29			0.72	0.43	0.22	0.13	
Uniform Delay, d1	22.4	25.6		19.6	16.3			24.8	8.5	21.5	21.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.5		3.5	0.1			7.1	0.3	0.4	0.1	
Delay (s)	22.4	27.1		23.2	16.4			31.9	8.7	21.9	21.1	
Level of Service	C	C		C	B			C	A	C	C	
Approach Delay (s)		26.9			20.1			16.6			21.4	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	72.3	Sum of lost time (s)	14.5
Intersection Capacity Utilization	68.8%	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 (vph)	1	770	50	115	735	1	80	1	115	1	1	1
Future Volume (vph)	1	770	50	115	735	1	80	1	115	1	1	1
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	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3264		1646	3228		1602	1462		1653	1603	
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00		0.68	1.00	
Satd. Flow (perm)	1662	3264		1646	3228		1276	1462		1177	1603	
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)	1	828	54	124	790	1	86	1	124	1	1	1
RTOR Reduction (vph)	0	4	0	0	0	0	0	105	0	0	1	0
Lane Group Flow (vph)	1	878	0	124	791	0	86	20	0	1	1	0
Confl. Peds. (#/hr)						7	9		8	8		9
Heavy Vehicles (%)	0%	1%	0%	1%	3%	0%	3%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.4	31.3		7.7	38.6		8.5	8.5		8.5	8.5	
Effective Green, g (s)	1.4	32.3		8.7	39.6		9.5	9.5		9.5	9.5	
Actuated g/C Ratio	0.02	0.52		0.14	0.63		0.15	0.15		0.15	0.15	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.5	6.1		2.5	6.1		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	37	1686		229	2045		193	222		178	243	
v/s Ratio Prot	0.00	c0.27		c0.08	0.25			0.01			0.00	
v/s Ratio Perm							c0.07			0.00		
v/c Ratio	0.03	0.52		0.54	0.39		0.45	0.09		0.01	0.00	
Uniform Delay, d1	29.9	10.0		25.0	5.6		24.1	22.8		22.5	22.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.7		2.1	0.4		1.2	0.1		0.0	0.0	
Delay (s)	30.1	10.7		27.1	5.9		25.3	22.9		22.5	22.5	
Level of Service	C	B		C	A		C	C		C	C	
Approach Delay (s)		10.8			8.8			23.9			22.5	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
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 (vph)	5	835	55	50	835	1	50	1	70	10	1	5
Future Volume (vph)	5	835	55	50	835	1	50	1	70	10	1	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	6.5		4.5	6.5		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1650	3286		1662	3324		1651	1470			1519	
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.86	
Satd. Flow (perm)	1650	3286		1662	3324		1297	1470			1344	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	908	60	54	908	1	54	1	76	11	1	5
RTOR Reduction (vph)	0	4	0	0	0	0	0	60	0	0	4	0
Lane Group Flow (vph)	5	964	0	54	909	0	54	17	0	0	13	0
Confl. Peds. (#/hr)	18		11	11		18	14		4	4		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.6	31.9		2.9	34.2		13.9	13.9			13.9	
Effective Green, g (s)	0.6	31.9		2.9	34.2		13.9	13.9			13.9	
Actuated g/C Ratio	0.01	0.50		0.05	0.53		0.22	0.22			0.22	
Clearance Time (s)	4.5	6.5		4.5	6.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.8		2.5	4.8		2.5	2.5			2.5	
Lane Grp Cap (vph)	15	1632		75	1770		280	318			290	
v/s Ratio Prot	0.00	c0.29		c0.03	0.27			0.01				
v/s Ratio Perm							c0.04				0.01	
v/c Ratio	0.33	0.59		0.72	0.51		0.19	0.05			0.05	
Uniform Delay, d1	31.6	11.5		30.2	9.6		20.6	19.9			19.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	4.7	0.8		26.3	0.5		0.2	0.1			0.0	
Delay (s)	36.3	12.3		56.6	10.1		20.8	20.0			19.9	
Level of Service	D	B		E	B		C	B			B	
Approach Delay (s)		12.5			12.7			20.3			19.9	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	64.2	Sum of lost time (s)	15.5
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	270	565	0	0	770	15	5	1	15	5	0	110
Future Vol, veh/h	270	565	0	0	770	15	5	1	15	5	0	110
Conflicting Peds, #/hr	10	0	11	11	0	10	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	297	621	0	0	846	16	5	1	16	5	0	121

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	872	0	-	-	-	0	1638	2087	314	1772	2079	441
Stage 1	-	-	-	-	-	-	1215	1215	-	864	864	-
Stage 2	-	-	-	-	-	-	423	872	-	908	1215	-
Critical Hdwy	4.1	-	-	-	-	-	7.5	6.5	6.9	7.5	6.5	6.9
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	2.2	-	-	-	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	782	-	0	0	-	-	68	53	688	54	54	570
Stage 1	-	-	0	0	-	-	195	256	-	319	374	-
Stage 2	-	-	0	0	-	-	585	371	-	301	256	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	775	-	-	-	-	-	29	22	686	27	22	565
Mov Cap-2 Maneuver	-	-	-	-	-	-	29	22	-	27	22	-
Stage 1	-	-	-	-	-	-	81	106	-	131	370	-
Stage 2	-	-	-	-	-	-	460	367	-	120	106	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.3	0	59.9	25.1
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	88	775	-	-	-	303
HCM Lane V/C Ratio	0.262	0.383	-	-	-	0.417
HCM Control Delay (s)	59.9	12.5	1.9	-	-	25.1
HCM Lane LOS	F	B	A	-	-	D
HCM 95th %tile Q(veh)	1	1.8	-	-	-	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	160	435	60	335	0	0	0	0	5	605	330
Future Volume (vph)	0	160	435	60	335	0	0	0	0	5	605	330
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
Lane Util. Factor		1.00	1.00		0.95						0.95	1.00
Frpb, ped/bikes		1.00	0.98		1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		0.99						1.00	1.00
Satd. Flow (prot)		1733	1460		3297						3197	1473
Flt Permitted		1.00	1.00		0.88						1.00	1.00
Satd. Flow (perm)		1733	1460		2931						3197	1473
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	174	473	65	364	0	0	0	0	5	658	359
RTOR Reduction (vph)	0	0	62	0	0	0	0	0	0	0	0	164
Lane Group Flow (vph)	0	174	411	0	429	0	0	0	0	0	663	195
Confl. Peds. (#/hr)	5		7	7		5	13		7	7		13
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	4%	1%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Prot
Protected Phases		8			4						2	2
Permitted Phases			8	4						2		
Actuated Green, G (s)		23.5	23.5		23.5						37.5	37.5
Effective Green, g (s)		24.0	24.0		24.0						38.0	38.0
Actuated g/C Ratio		0.34	0.34		0.34						0.54	0.54
Clearance Time (s)		4.5	4.5		4.5						4.5	4.5
Vehicle Extension (s)		2.5	2.5		2.5						6.1	6.1
Lane Grp Cap (vph)		594	500		1004						1735	799
v/s Ratio Prot		0.10										0.13
v/s Ratio Perm			c0.28		0.15						0.21	
v/c Ratio		0.29	0.82		0.43						0.38	0.24
Uniform Delay, d1		16.8	21.1		17.7						9.2	8.4
Progression Factor		1.00	1.00		1.07						1.00	1.00
Incremental Delay, d2		0.2	10.3		0.2						0.6	0.7
Delay (s)		17.0	31.3		19.2						9.9	9.2
Level of Service		B	C		B						A	A
Approach Delay (s)		27.5			19.2			0.0			9.6	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.2%	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 (vph)	155	15	0	0	65	10	340	695	5	0	0	0
Future Volume (vph)	155	15	0	0	65	10	340	695	5	0	0	0
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				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91				
Frpb, ped/bikes	1.00	1.00			1.00	0.99		1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		1.00				
Flt Protected	0.95	1.00			1.00	1.00		0.98				
Satd. Flow (prot)	1645	1750			1750	1468		4571				
Flt Permitted	0.71	1.00			1.00	1.00		0.98				
Satd. Flow (perm)	1226	1750			1750	1468		4571				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	178	17	0	0	75	11	391	799	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	9	0	0	0	0	0	0
Lane Group Flow (vph)	178	17	0	0	75	2	0	1196	0	0	0	0
Confl. Peds. (#/hr)	1		4	4		1	2		2	2		2
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA			NA	Perm	Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8					4	6					
Actuated Green, G (s)	13.8	13.8			13.8	13.8		47.2				
Effective Green, g (s)	14.3	14.3			14.3	14.3		47.7				
Actuated g/C Ratio	0.20	0.20			0.20	0.20		0.68				
Clearance Time (s)	4.5	4.5			4.5	4.5		4.5				
Vehicle Extension (s)	2.5	2.5			2.5	2.5		6.5				
Lane Grp Cap (vph)	250	357			357	299		3114				
v/s Ratio Prot		0.01			0.04							
v/s Ratio Perm	c0.15					0.00		0.26				
v/c Ratio	0.71	0.05			0.21	0.01		0.38				
Uniform Delay, d1	25.9	22.4			23.2	22.2		4.8				
Progression Factor	0.48	0.42			1.00	1.00		1.00				
Incremental Delay, d2	8.5	0.0			0.2	0.0		0.4				
Delay (s)	21.0	9.4			23.4	22.2		5.2				
Level of Service	C	A			C	C		A				
Approach Delay (s)		19.9			23.2			5.2			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	95	55	25	60	60	35
Future Vol, veh/h	95	55	25	60	60	35
Conflicting Peds, #/hr	2	4	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	101	59	27	64	64	37

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	228	65	0	0	93	0
Stage 1	61	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	-	-	2.2	-
Pot Cap-1 Maneuver	765	999	-	-	1514	-
Stage 1	967	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	729	993	-	-	1511	-
Mov Cap-2 Maneuver	729	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	865	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	4.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	808	1511	-
HCM Lane V/C Ratio	-	-	0.197	0.042	-
HCM Control Delay (s)	-	-	10.5	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	25	30	150	130	40
Future Vol, veh/h	30	25	30	150	130	40
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	38	32	38	192	167	51

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	465	197	222	0	-	0
Stage 1	197	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	559	849	1359	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	537	846	1354	-	-	-
Mov Cap-2 Maneuver	537	-	-	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	1.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1354	-	644	-	-
HCM Lane V/C Ratio	0.028	-	0.109	-	-
HCM Control Delay (s)	7.7	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	35	30	5	80	10	40	60	5	5	60	5
Future Vol, veh/h	5	35	30	5	80	10	40	60	5	5	60	5
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	41	35	6	93	12	47	70	6	6	70	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	8.1	8.3	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	7%	5%	7%
Vol Thru, %	57%	50%	84%	86%
Vol Right, %	5%	43%	11%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	70	95	70
LT Vol	40	5	5	5
Through Vol	60	35	80	60
RT Vol	5	30	10	5
Lane Flow Rate	122	81	110	81
Geometry Grp	1	1	1	1
Degree of Util (X)	0.152	0.096	0.135	0.1
Departure Headway (Hd)	4.47	4.249	4.404	4.44
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	805	845	815	808
Service Time	2.486	2.268	2.422	2.459
HCM Lane V/C Ratio	0.152	0.096	0.135	0.1
HCM Control Delay	8.3	7.7	8.1	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.3	0.5	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	15	2	90	20	10	5	685	50	10	665	25
Future Volume (vph)	25	15	2	90	20	10	5	685	50	10	665	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	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.99		1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1688			1666		1662	3284		1662	3275	
Flt Permitted		0.83			0.75		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1436			1294		1662	3284		1662	3275	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	28	17	2	101	22	11	6	770	56	11	747	28
RTOR Reduction (vph)	0	2	0	0	4	0	0	5	0	0	3	0
Lane Group Flow (vph)	0	45	0	0	130	0	6	821	0	11	772	0
Confl. Peds. (#/hr)	4					4			8	8		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		8.9			8.9		0.7	23.9		0.7	23.9	
Effective Green, g (s)		9.4			9.4		1.2	24.9		1.2	24.9	
Actuated g/C Ratio		0.20			0.20		0.03	0.52		0.03	0.52	
Clearance Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		2.5			2.5		2.5	4.6		2.5	4.6	
Lane Grp Cap (vph)		284			256		41	1721		41	1716	
v/s Ratio Prot							0.00	c0.25		c0.01	0.24	
v/s Ratio Perm		0.03			c0.10							
v/c Ratio		0.16			0.51		0.15	0.48		0.27	0.45	
Uniform Delay, d1		15.8			17.0		22.6	7.2		22.7	7.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			1.2		1.2	0.4		2.6	0.3	
Delay (s)		16.0			18.1		23.8	7.5		25.3	7.4	
Level of Service		B			B		C	A		C	A	
Approach Delay (s)		16.0			18.1			7.7			7.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	1	30	5	2	5	65	730	5	2	745	10
Future Vol, veh/h	10	1	30	5	2	5	65	730	5	2	745	10
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	8	8	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	11	1	34	6	2	6	74	830	6	2	847	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1423	1851	431	1417	1853	426	860	0	0	844	0	0
Stage 1	859	859	-	989	989	-	-	-	-	-	-	-
Stage 2	564	992	-	428	864	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	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	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	98	75	578	99	75	582	790	-	-	801	-	-
Stage 1	322	376	-	268	327	-	-	-	-	-	-	-
Stage 2	483	326	-	581	374	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	87	67	577	85	67	578	788	-	-	795	-	-
Mov Cap-2 Maneuver	87	67	-	85	67	-	-	-	-	-	-	-
Stage 1	291	374	-	241	294	-	-	-	-	-	-	-
Stage 2	430	293	-	544	372	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.1	37.9	0.8	0
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	788	-	-	225	123	795	-	-
HCM Lane V/C Ratio	0.094	-	-	0.207	0.111	0.003	-	-
HCM Control Delay (s)	10	-	-	25.1	37.9	9.5	-	-
HCM Lane LOS	B	-	-	D	E	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.8	0.4	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	2	10	90	1	55	2	975	100	40	845	1
Future Volume (vph)	5	2	10	90	1	55	2	975	100	40	845	1
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	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		0.99			1.00	1.00	1.00	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		0.92			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1568			1661	1488	1662	3292	1488	1662	3228	
Flt Permitted		0.92			0.72	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1459			1247	1488	1662	3292	1488	1662	3228	
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)	5	2	11	97	1	59	2	1048	108	43	909	1
RTOR Reduction (vph)	0	9	0	0	0	49	0	0	43	0	0	0
Lane Group Flow (vph)	0	9	0	0	98	10	2	1048	65	43	910	0
Confl. Peds. (#/hr)			8	8								
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4			6			
Actuated Green, G (s)		8.6			8.6	8.6	0.4	30.8	30.8	1.9	32.3	
Effective Green, g (s)		9.1			9.1	9.1	0.9	32.8	32.8	2.4	34.3	
Actuated g/C Ratio		0.16			0.16	0.16	0.02	0.58	0.58	0.04	0.61	
Clearance Time (s)		4.5			4.5	4.5	4.5	6.0	6.0	4.5	6.0	
Vehicle Extension (s)		2.5			2.5	2.5	2.5	4.8	4.8	2.5	4.8	
Lane Grp Cap (vph)		235			201	240	26	1917	866	70	1966	
v/s Ratio Prot							0.00	c0.32		c0.03	0.28	
v/s Ratio Perm		0.01			c0.08	0.01			0.04			
v/c Ratio		0.04			0.49	0.04	0.08	0.55	0.08	0.61	0.46	
Uniform Delay, d1		19.9			21.5	19.9	27.3	7.2	5.1	26.5	6.0	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0			1.4	0.0	0.9	0.5	0.1	12.9	0.3	
Delay (s)		20.0			22.8	20.0	28.2	7.7	5.2	39.4	6.3	
Level of Service		B			C	B	C	A	A	D	A	
Approach Delay (s)		20.0			21.8			7.5			7.8	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	955	910	55	55	65
Future Volume (vph)	70	955	910	55	55	65
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.93	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1662	3325	3261		1586	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1662	3325	3261		1586	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	79	1073	1022	62	62	73
RTOR Reduction (vph)	0	0	5	0	60	0
Lane Group Flow (vph)	79	1073	1079	0	75	0
Confl. Peds. (#/hr)	3			3	2	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		4	
Permitted Phases						
Actuated Green, G (s)	4.0	38.0	29.0		7.7	
Effective Green, g (s)	5.0	38.5	29.5		8.7	
Actuated g/C Ratio	0.09	0.70	0.53		0.16	
Clearance Time (s)	5.0	4.5	4.5		5.0	
Vehicle Extension (s)	2.5	4.0	4.0		2.5	
Lane Grp Cap (vph)	150	2319	1742		249	
v/s Ratio Prot	0.05	c0.32	c0.33		c0.05	
v/s Ratio Perm						
v/c Ratio	0.53	0.46	0.62		0.30	
Uniform Delay, d1	24.0	3.7	8.9		20.6	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	2.5	0.2	0.8		0.5	
Delay (s)	26.5	3.9	9.7		21.1	
Level of Service	C	A	A		C	
Approach Delay (s)		5.5	9.7		21.1	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
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 (vph)	400	485	150	75	410	215	130	265	45	110	220	20
Future Volume (vph)	400	485	150	75	410	215	130	265	45	110	220	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	0.97	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		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	0.96		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3225	1670		1662	1660		1662	1704		1646	1725	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3225	1670		1662	1660		1662	1704		1646	1725	
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)	421	511	158	79	432	226	137	279	47	116	232	21
RTOR Reduction (vph)	0	8	0	0	14	0	0	4	0	0	2	0
Lane Group Flow (vph)	421	661	0	79	644	0	137	322	0	116	251	0
Confl. Peds. (#/hr)			8	8			2		5	5		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	19.7	65.8		9.2	55.3		13.9	27.7		11.8	25.6	
Effective Green, g (s)	20.2	66.3		9.7	55.8		14.4	28.2		12.3	26.1	
Actuated g/C Ratio	0.15	0.50		0.07	0.42		0.11	0.21		0.09	0.20	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	491	835		121	699		180	362		152	339	
v/s Ratio Prot	c0.13	0.40		0.05	c0.39		c0.08	c0.19		0.07	0.15	
v/s Ratio Perm												
v/c Ratio	0.86	0.79		0.65	0.92		0.76	0.89		0.76	0.74	
Uniform Delay, d1	54.7	27.4		59.8	36.3		57.4	50.6		58.7	50.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.6	5.2		10.7	17.6		16.5	22.3		19.3	7.7	
Delay (s)	68.4	32.6		70.5	53.9		73.8	72.9		77.9	57.7	
Level of Service	E	C		E	D		E	E		E	E	
Approach Delay (s)		46.4			55.7			73.2			64.1	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	56.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	132.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	1.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	610	30	30	670	20	45
Future Vol, veh/h	610	30	30	670	20	45
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	663	33	33	728	22	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	698	0	1112	350
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	430	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	908	-	206	652
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	629	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	906	-	193	651
Mov Cap-2 Maneuver	-	-	-	-	193	-
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	629	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	16.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	376	-	-	906	-
HCM Lane V/C Ratio	0.188	-	-	0.036	-
HCM Control Delay (s)	16.8	-	-	9.1	0.3
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	565	5	5	635	100	5	10	5	65	5	65
Future Volume (vph)	80	565	5	5	635	100	5	10	5	65	5	65
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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00			1.00			1.00	0.99
Flpb, ped/bikes		1.00			1.00			1.00			1.00	1.00
Frt		1.00			0.98			0.97			1.00	0.85
Flt Protected		0.99			1.00			0.99			0.96	1.00
Satd. Flow (prot)		3301			3256			1673			1672	1468
Flt Permitted		0.81			0.95			0.92			0.72	1.00
Satd. Flow (perm)		2687			3100			1557			1269	1468
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)	86	608	5	5	683	108	5	11	5	70	5	70
RTOR Reduction (vph)	0	1	0	0	17	0	0	4	0	0	0	58
Lane Group Flow (vph)	0	698	0	0	779	0	0	17	0	0	75	12
Confl. Peds. (#/hr)			4	4			2					2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		4
Actuated Green, G (s)		23.2			23.2			6.2			6.2	6.2
Effective Green, g (s)		23.2			23.2			6.2			6.2	6.2
Actuated g/C Ratio		0.62			0.62			0.17			0.17	0.17
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1666			1922			258			210	243
v/s Ratio Prot												
v/s Ratio Perm		c0.26			0.25			0.01			c0.06	0.01
v/c Ratio		0.42			0.41			0.07			0.36	0.05
Uniform Delay, d1		3.6			3.6			13.2			13.8	13.1
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2			0.1			0.1			1.0	0.1
Delay (s)		3.8			3.7			13.3			14.9	13.2
Level of Service		A			A			B			B	B
Approach Delay (s)		3.8			3.7			13.3			14.1	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
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 (vph)	65	435	125	15	495	40	160	125	35	20	95	80
Future Volume (vph)	65	435	125	15	495	40	160	125	35	20	95	80
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	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1750	1454	1662	1715		1662	1684		1662	1617	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1750	1454	1662	1715		1662	1684		1662	1617	
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)	70	468	134	16	532	43	172	134	38	22	102	86
RTOR Reduction (vph)	0	0	72	0	3	0	0	10	0	0	29	0
Lane Group Flow (vph)	70	468	62	16	572	0	172	162	0	22	159	0
Confl. Peds. (#/hr)			1	1			4		1	1		4
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	5.4	41.0	41.0	1.1	36.7		13.1	28.2		1.8	16.9	
Effective Green, g (s)	5.9	41.5	41.5	1.6	37.2		13.6	28.7		2.3	17.4	
Actuated g/C Ratio	0.07	0.46	0.46	0.02	0.41		0.15	0.32		0.03	0.19	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	6.0	6.0	2.5	6.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	108	806	669	29	708		250	536		42	312	
v/s Ratio Prot	c0.04	0.27		0.01	c0.33		c0.10	0.10		0.01	c0.10	
v/s Ratio Perm			0.04									
v/c Ratio	0.65	0.58	0.09	0.55	0.81		0.69	0.30		0.52	0.51	
Uniform Delay, d1	41.1	17.9	13.7	43.9	23.3		36.2	23.2		43.4	32.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.2	2.0	0.2	16.9	8.0		7.0	0.2		8.7	1.0	
Delay (s)	52.3	19.9	13.9	60.8	31.3		43.3	23.4		52.1	33.5	
Level of Service	D	B	B	E	C		D	C		D	C	
Approach Delay (s)		22.1			32.1			33.3			35.4	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.4%	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 (vph)	165	1	340	2	5	5	460	930	1	1	885	95
Future Volume (vph)	165	1	340	2	5	5	460	930	1	1	885	95
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	4.0			3.5		4.0	4.0		4.0	4.0	5.5
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85			0.94		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1646	1488			1638		1662	3259		1662	3228	1434
Flt Permitted	0.95	1.00			0.86		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1646	1488			1427		1662	3259		1662	3228	1434
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	168	1	347	2	5	5	469	949	1	1	903	97
RTOR Reduction (vph)	0	284	0	0	5	0	0	0	0	0	0	61
Lane Group Flow (vph)	168	64	0	0	7	0	469	950	0	1	903	36
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	3%	1%
Turn Type	Prot	NA		custom	NA		Prot	NA		Prot	NA	Perm
Protected Phases	3						1	6		5	2	
Permitted Phases		8		4	4							2
Actuated Green, G (s)	12.0	18.2			1.7		33.1	71.3		0.5	38.7	38.7
Effective Green, g (s)	12.0	19.2			2.7		34.1	72.8		1.5	40.2	38.7
Actuated g/C Ratio	0.11	0.18			0.03		0.32	0.69		0.01	0.38	0.37
Clearance Time (s)	5.0	5.0			4.5		5.0	5.5		5.0	5.5	5.5
Vehicle Extension (s)	2.5	2.5			5.0		2.5	4.8		2.5	4.8	4.8
Lane Grp Cap (vph)	187	270			36		537	2248		23	1230	526
v/s Ratio Prot	c0.10						c0.28	0.29		0.00	c0.28	
v/s Ratio Perm		c0.04			0.00							0.02
v/c Ratio	0.90	0.24			0.20		0.87	0.42		0.04	0.73	0.07
Uniform Delay, d1	46.1	36.9			50.3		33.7	7.2		51.3	28.1	21.7
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	38.1	0.3			5.6		14.5	0.3		0.6	2.7	0.1
Delay (s)	84.3	37.2			55.9		48.2	7.4		51.9	30.8	21.8
Level of Service	F	D			E		D	A		D	C	C
Approach Delay (s)		52.5			55.9			20.9			29.9	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	105.5	Sum of lost time (s)	17.5
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1	1	2	1	5	5	440	1	5	400	10
Future Vol, veh/h	5	1	1	2	1	5	5	440	1	5	400	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	6	1	1	3	1	6	6	550	1	6	500	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1085	1082	507	1083	1088	551	513	0	0	551	0	0
Stage 1	519	519	-	563	563	-	-	-	-	-	-	-
Stage 2	566	563	-	520	525	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	196	219	570	197	218	538	1063	-	-	1029	-	-
Stage 1	544	536	-	514	512	-	-	-	-	-	-	-
Stage 2	513	512	-	543	533	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	191	215	570	193	215	538	1063	-	-	1029	-	-
Mov Cap-2 Maneuver	191	215	-	193	215	-	-	-	-	-	-	-
Stage 1	540	532	-	510	508	-	-	-	-	-	-	-
Stage 2	502	508	-	536	529	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.5	16.3	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1063	-	-	215	329	1029	-	-
HCM Lane V/C Ratio	0.006	-	-	0.041	0.03	0.006	-	-
HCM Control Delay (s)	8.4	0	-	22.5	16.3	8.5	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection						
Int Delay, s/veh	5.2					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	55	1	50	60	5	115
Future Vol, veh/h	55	1	50	60	5	115
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	61	1	56	67	6	128

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	64	0	243	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	179	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1551	-	750	1006
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	857	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1548	-	720	1004
Mov Cap-2 Maneuver	-	-	-	-	720	-
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	857	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	988	-	-	1548	-
HCM Lane V/C Ratio	0.135	-	-	0.036	-
HCM Control Delay (s)	9.2	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	630	30	170	760	5	10	1	170	5	1	2
Future Vol, veh/h	5	630	30	170	760	5	10	1	170	5	1	2
Conflicting Peds, #/hr	9	0	3	3	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	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	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	663	32	179	800	5	11	1	179	5	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	814	0	0	698	0	0	1451	1864	351	1512	1878	412
Stage 1	-	-	-	-	-	-	692	692	-	1170	1170	-
Stage 2	-	-	-	-	-	-	759	1172	-	342	708	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
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	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	822	-	-	908	-	-	93	74	651	84	72	595
Stage 1	-	-	-	-	-	-	405	448	-	208	269	-
Stage 2	-	-	-	-	-	-	369	269	-	652	441	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	815	-	-	905	-	-	77	58	649	50	57	590
Mov Cap-2 Maneuver	-	-	-	-	-	-	77	58	-	50	57	-
Stage 1	-	-	-	-	-	-	401	444	-	205	214	-
Stage 2	-	-	-	-	-	-	294	214	-	468	437	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.8	19.2	67.4
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	442	815	-	-	905	-	-	66
HCM Lane V/C Ratio	0.431	0.006	-	-	0.198	-	-	0.128
HCM Control Delay (s)	19.2	9.4	-	-	10	-	-	67.4
HCM Lane LOS	C	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	2.1	0	-	-	0.7	-	-	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	495	270	1	590	420	60
Future Volume (vph)	495	270	1	590	420	60
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		0.95	0.97	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.98	
Flt Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	1750	1457		3325	3182	
Flt Permitted	1.00	1.00		0.95	0.96	
Satd. Flow (perm)	1750	1457		3174	3182	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	532	290	1	634	452	65
RTOR Reduction (vph)	0	0	0	0	13	0
Lane Group Flow (vph)	532	290	0	635	504	0
Confl. Peds. (#/hr)		1	1			4
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	NA	Free	Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases		Free	6			
Actuated Green, G (s)	19.7	43.6		19.7	14.9	
Effective Green, g (s)	20.2	43.6		20.2	15.4	
Actuated g/C Ratio	0.46	1.00		0.46	0.35	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	4.0			4.0	3.5	
Lane Grp Cap (vph)	810	1457		1470	1123	
v/s Ratio Prot	c0.30				c0.16	
v/s Ratio Perm		0.20		0.20		
v/c Ratio	0.66	0.20		0.43	0.45	
Uniform Delay, d1	9.0	0.0		7.9	10.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.3		0.3	0.3	
Delay (s)	11.2	0.3		8.1	11.2	
Level of Service	B	A		A	B	
Approach Delay (s)	7.3			8.1	11.2	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	43.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	640	15	55	700	25	120
Future Volume (vph)	640	15	55	700	25	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0		-0.5	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3311		1630	3292	1662	1450
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3311		1630	3292	1662	1450
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	667	16	57	729	26	125
RTOR Reduction (vph)	1	0	0	0	0	34
Lane Group Flow (vph)	682	0	57	729	26	91
Confl. Peds. (#/hr)		6	6			9
Heavy Vehicles (%)	0%	0%	2%	1%	0%	1%
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						6
Actuated Green, G (s)	25.6		2.3	32.4	4.2	32.4
Effective Green, g (s)	26.6		7.3	33.4	4.7	33.4
Actuated g/C Ratio	0.58		0.16	0.72	0.10	0.72
Clearance Time (s)	5.0		4.5	5.0	4.5	5.0
Vehicle Extension (s)	4.2		2.5	4.2	2.5	4.2
Lane Grp Cap (vph)	1910		258	2385	169	1050
v/s Ratio Prot	c0.21		0.03	c0.22	c0.02	
v/s Ratio Perm						0.06
v/c Ratio	0.36		0.22	0.31	0.15	0.09
Uniform Delay, d1	5.2		16.9	2.2	18.9	1.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2		0.3	0.1	0.3	0.1
Delay (s)	5.4		17.2	2.4	19.2	1.9
Level of Service	A		B	A	B	A
Approach Delay (s)	5.4			3.4	4.9	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	46.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.9					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	2	445	45	5	390
Future Vol, veh/h	40	2	445	45	5	390
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	43	2	473	48	5	415

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	924	499	0	0	523	0
Stage 1	499	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	302	576	-	-	1054	-
Stage 1	614	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	300	575	-	-	1052	-
Mov Cap-2 Maneuver	300	-	-	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	664	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	307	1052	-
HCM Lane V/C Ratio	-	-	0.146	0.005	-
HCM Control Delay (s)	-	-	18.7	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection						
Int Delay, s/veh	4.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	190	300	25	120	350
Future Vol, veh/h	40	190	300	25	120	350
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	60	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	43	202	319	27	128	372

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	962	334	0	0	347	0
Stage 1	334	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	286	712	-	-	1223	-
Stage 1	730	-	-	-	-	-
Stage 2	536	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	256	711	-	-	1222	-
Mov Cap-2 Maneuver	256	-	-	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	536	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	256	711	1222	-
HCM Lane V/C Ratio	-	-	0.166	0.284	0.104	-
HCM Control Delay (s)	-	-	21.8	12.1	8.3	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	1.2	0.3	-

Intersection						
Int Delay, s/veh	6.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	75	195	110	235	190	35
Future Vol, veh/h	75	195	110	235	190	35
Conflicting Peds, #/hr	1	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	82	214	121	258	209	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	730	229	248	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.11	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.209	-	-	-
Pot Cap-1 Maneuver	392	815	1324	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	356	814	1323	-	-	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	612	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.7	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1323	-	600	-	-
HCM Lane V/C Ratio	0.091	-	0.495	-	-
HCM Control Delay (s)	8	-	16.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.7	-	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	125	450	480	140	245	180
Future Volume (vph)	125	450	480	140	245	180
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1662	3325	3196		1662	1468
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1662	3325	3196		1662	1468
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	137	495	527	154	269	198
RTOR Reduction (vph)	0	0	29	0	0	147
Lane Group Flow (vph)	137	495	652	0	269	51
Confl. Peds. (#/hr)	2			2		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	8.0	30.0	18.0		13.4	13.4
Effective Green, g (s)	8.0	31.0	19.0		13.4	13.4
Actuated g/C Ratio	0.15	0.59	0.36		0.26	0.26
Clearance Time (s)	4.0	5.0	5.0		4.0	4.0
Vehicle Extension (s)	2.5	5.2	5.2		2.5	2.5
Lane Grp Cap (vph)	253	1967	1158		425	375
v/s Ratio Prot	c0.08	0.15	c0.20		c0.16	
v/s Ratio Perm						0.03
v/c Ratio	0.54	0.25	0.56		0.63	0.14
Uniform Delay, d1	20.5	5.1	13.4		17.3	15.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.9	0.2	1.1		2.7	0.1
Delay (s)	22.4	5.3	14.5		20.0	15.2
Level of Service	C	A	B		C	B
Approach Delay (s)		9.0	14.5		17.9	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	50	560	15	35	645
Future Volume (vph)	15	50	560	15	35	645
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1662	1488	1727		1662	1733
Flt Permitted	0.95	1.00	1.00		0.37	1.00
Satd. Flow (perm)	1662	1488	1727		645	1733
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	18	59	659	18	41	759
RTOR Reduction (vph)	0	54	1	0	0	0
Lane Group Flow (vph)	18	5	676	0	41	759
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	4		2			2
Permitted Phases		4			2	
Actuated Green, G (s)	3.2	3.2	27.9		27.9	27.9
Effective Green, g (s)	3.2	3.2	28.9		28.9	28.9
Actuated g/C Ratio	0.08	0.08	0.72		0.72	0.72
Clearance Time (s)	4.0	4.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	5.2		5.2	5.2
Lane Grp Cap (vph)	132	118	1244		464	1248
v/s Ratio Prot	c0.01		0.39			c0.44
v/s Ratio Perm		0.00			0.06	
v/c Ratio	0.14	0.04	0.54		0.09	0.61
Uniform Delay, d1	17.2	17.0	2.6		1.7	2.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.1	0.9		0.2	1.3
Delay (s)	17.6	17.2	3.5		1.9	4.1
Level of Service	B	B	A		A	A
Approach Delay (s)	17.3		3.5			4.0
Approach LOS	B		A			A

Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	130	190	30	180	200
Future Vol, veh/h	40	130	190	30	180	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	153	224	35	212	235

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	901	242	0	0	259	0
Stage 1	242	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	311	802	-	-	1317	-
Stage 1	803	-	-	-	-	-
Stage 2	518	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	253	802	-	-	1317	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	518	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	3.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	531	1317	-
HCM Lane V/C Ratio	-	-	0.377	0.161	-
HCM Control Delay (s)	-	-	15.8	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.7	0.6	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	170	100	1305	1270	35
Future Volume (vph)	15	170	100	1305	1270	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0		4.0	4.5	4.5	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.88		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1512		1646	3260	3247	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1512		1646	3260	3247	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	16	187	110	1434	1396	38
RTOR Reduction (vph)	165	0	0	0	2	0
Lane Group Flow (vph)	38	0	110	1434	1432	0
Confl. Peds. (#/hr)			1			1
Heavy Vehicles (%)	0%	1%	1%	2%	2%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	8		1	6	2	
Permitted Phases						
Actuated Green, G (s)	7.4		7.9	51.6	39.2	
Effective Green, g (s)	7.9		8.4	52.1	39.7	
Actuated g/C Ratio	0.12		0.12	0.76	0.58	
Clearance Time (s)	4.5		4.5	5.0	5.0	
Vehicle Extension (s)	2.5		2.5	4.8	4.8	
Lane Grp Cap (vph)	174		201	2479	1881	
v/s Ratio Prot	c0.02		0.07	c0.44	c0.44	
v/s Ratio Perm						
v/c Ratio	0.22		0.55	0.58	0.76	
Uniform Delay, d1	27.5		28.3	3.5	10.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.5		2.4	0.5	2.2	
Delay (s)	27.9		30.7	4.0	13.0	
Level of Service	C		C	A	B	
Approach Delay (s)	27.9			5.9	13.0	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	45	450	195	0	0
Future Vol, veh/h	0	45	450	195	0	0
Conflicting Peds, #/hr	0	0	0	0	2	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	16974	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	0	51	511	222	0	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	-	222	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.22	4.1	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.318	2.2	-
Pot Cap-1 Maneuver	0	818	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	818	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s	9.7	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	818	-	-
HCM Lane V/C Ratio	0.063	-	-
HCM Control Delay (s)	9.7	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	35	290	0	0	0	0	0	1380	95
Future Volume (vph)	0	0	0	35	290	0	0	0	0	0	1380	95
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
Lane Util. Factor					0.95						0.95	1.00
Frpb, ped/bikes					1.00						1.00	0.98
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					3305						3292	1457
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					3305						3292	1457
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)	0	0	0	37	305	0	0	0	0	0	1453	100
RTOR Reduction (vph)	0	0	0	0	20	0	0	0	0	0	0	26
Lane Group Flow (vph)	0	0	0	0	322	0	0	0	0	0	1453	74
Confl. Peds. (#/hr)	8		4	4		8	14		11	11		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					9.7						51.3	51.3
Effective Green, g (s)					10.2						51.8	51.8
Actuated g/C Ratio					0.15						0.74	0.74
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					0.2						0.2	0.2
Lane Grp Cap (vph)					481						2436	1078
v/s Ratio Prot											c0.44	
v/s Ratio Perm					0.10							0.05
v/c Ratio					0.67						0.60	0.07
Uniform Delay, d1					28.3						4.2	2.5
Progression Factor					1.09						1.00	1.00
Incremental Delay, d2					2.6						1.1	0.1
Delay (s)					33.5						5.3	2.6
Level of Service					C						A	A
Approach Delay (s)		0.0			33.5			0.0			5.1	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
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 (vph)	15	545	115	5	410	15	195	105	20	140	75	20
Future Volume (vph)	15	545	115	5	410	15	195	105	20	140	75	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	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.98		1.00		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	
Frt		1.00	0.85		0.99		1.00	0.98		1.00	0.97	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1748	1450		3303		1662	1709		1662	1695	
Flt Permitted		0.98	1.00		0.95		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1723	1450		3140		1662	1709		1662	1695	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	16	580	122	5	436	16	207	112	21	149	80	21
RTOR Reduction (vph)	0	0	66	0	3	0	0	9	0	0	12	0
Lane Group Flow (vph)	0	596	56	0	454	0	207	124	0	149	89	0
Confl. Peds. (#/hr)	3		3	3		3						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2		2	6								
Actuated Green, G (s)		27.1	27.1		27.1		14.3	8.2		11.3	5.2	
Effective Green, g (s)		27.6	27.6		27.6		14.8	8.7		11.8	5.7	
Actuated g/C Ratio		0.46	0.46		0.46		0.25	0.14		0.20	0.09	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		6.5	6.5		6.5		5.0	2.5		2.5	2.5	
Lane Grp Cap (vph)		791	665		1441		409	247		326	160	
v/s Ratio Prot							c0.12	c0.07		0.09	0.05	
v/s Ratio Perm		c0.35	0.04		0.14							
v/c Ratio		0.75	0.08		0.32		0.51	0.50		0.46	0.56	
Uniform Delay, d1		13.4	9.1		10.3		19.5	23.7		21.3	26.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.6	0.2		0.4		2.1	1.2		0.7	3.3	
Delay (s)		19.1	9.3		10.7		21.6	24.9		22.1	29.3	
Level of Service		B	A		B		C	C		C	C	
Approach Delay (s)		17.4			10.7			22.9			25.0	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	60.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	90	10	25	160	50	110
Future Vol, veh/h	90	10	25	160	50	110
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	106	12	29	188	59	129
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.6	8.2	8.5
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	90%	0%	31%
Vol Thru, %	10%	14%	0%
Vol Right, %	0%	86%	69%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	100	185	160
LT Vol	90	0	50
Through Vol	10	25	0
RT Vol	0	160	110
Lane Flow Rate	118	218	188
Geometry Grp	1	1	1
Degree of Util (X)	0.154	0.238	0.223
Departure Headway (Hd)	4.718	3.941	4.267
Convergence, Y/N	Yes	Yes	Yes
Cap	761	912	843
Service Time	2.742	1.961	2.288
HCM Lane V/C Ratio	0.155	0.239	0.223
HCM Control Delay	8.6	8.2	8.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.9	0.9

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	5	1	5	5	5	60	5	15	10	90	10	2
Future Vol, veh/h	5	1	5	5	5	60	5	15	10	90	10	2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	1	6	6	6	71	6	18	12	106	12	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7.1	7.2	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	45%	7%	88%
Vol Thru, %	50%	9%	7%	10%
Vol Right, %	33%	45%	86%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	11	70	102
LT Vol	5	5	5	90
Through Vol	15	1	5	10
RT Vol	10	5	60	2
Lane Flow Rate	35	13	82	120
Geometry Grp	1	1	1	1
Degree of Util (X)	0.039	0.015	0.084	0.142
Departure Headway (Hd)	3.992	4.051	3.678	4.258
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	889	869	958	840
Service Time	2.051	2.145	1.763	2.292
HCM Lane V/C Ratio	0.039	0.015	0.086	0.143
HCM Control Delay	7.2	7.2	7.1	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0	0.3	0.5

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	5	15	5	1	10	5	20	65	5	5	80	10
Future Vol, veh/h	5	15	5	1	10	5	20	65	5	5	80	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	6	18	6	1	12	6	24	76	6	6	94	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.3	7.7	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	20%	6%	5%
Vol Thru, %	72%	60%	62%	84%
Vol Right, %	6%	20%	31%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	25	16	95
LT Vol	20	5	1	5
Through Vol	65	15	10	80
RT Vol	5	5	5	10
Lane Flow Rate	106	29	19	112
Geometry Grp	1	1	1	1
Degree of Util (X)	0.12	0.035	0.022	0.125
Departure Headway (Hd)	4.079	4.31	4.226	4.011
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	874	836	852	889
Service Time	2.13	2.31	2.227	2.061
HCM Lane V/C Ratio	0.121	0.035	0.022	0.126
HCM Control Delay	7.7	7.5	7.3	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.1	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	35	50	75	40	0	0	0	0	35	1750	25
Future Volume (vph)	0	35	50	75	40	0	0	0	0	35	1750	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	
Lane Util. Factor		1.00			1.00						0.91	
Frpb, ped/bikes		0.99			1.00						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		0.92			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1598			1693						4715	
Flt Permitted		1.00			0.75						1.00	
Satd. Flow (perm)		1598			1309						4715	
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)	0	37	53	79	42	0	0	0	0	37	1842	26
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	74	0	0	121	0	0	0	0	0	1904	0
Confl. Peds. (#/hr)	7		1	1		7	7		2	2		7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.4	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.5	
Vehicle Extension (s)		0.2			0.2						0.2	
Lane Grp Cap (vph)		207			170						3563	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.09						0.40	
v/c Ratio		0.36			0.71						0.53	
Uniform Delay, d1		27.8			29.2						3.5	
Progression Factor		1.00			1.14						1.94	
Incremental Delay, d2		0.4			10.4						0.5	
Delay (s)		28.2			43.6						7.3	
Level of Service		C			D						A	
Approach Delay (s)		28.2			43.6			0.0			7.3	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	5	0	0	5	5	75	1485	3	0	0	0
Future Vol, veh/h	50	5	0	0	5	5	75	1485	3	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	3	3	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	100	0	0	0
Mvmt Flow	53	5	0	0	5	5	80	1580	3	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	955	1748	-	-	1747	795	2	0	0
Stage 1	2	2	-	-	1745	-	-	-	-
Stage 2	953	1746	-	-	2	-	-	-	-
Critical Hdwy	7.5	6.5	-	-	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	-	-	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	216	87	0	0	87	335	1634	-	-
Stage 1	-	-	0	0	142	-	-	-	-
Stage 2	282	142	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	134	51	-	-	51	334	1631	-	-
Mov Cap-2 Maneuver	134	51	-	-	51	-	-	-	-
Stage 1	-	-	-	-	84	-	-	-	-
Stage 2	154	84	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	63.2	51.5	1.7
HCM LOS	F	F	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	1631	-	-	117	88
HCM Lane V/C Ratio	0.049	-	-	0.5	0.121
HCM Control Delay (s)	7.3	1.4	-	63.2	51.5
HCM Lane LOS	A	A	-	F	F
HCM 95th %tile Q(veh)	0.2	-	-	2.3	0.4

Movement	EBT	EBR	EBR2	WBL2	WBL	WBT	SBL2	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	175	55	5	175	15	100	285	1355	145	70
Future Volume (vph)	175	55	5	175	15	100	285	1355	145	70
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0				4.5	4.0	4.0	4.0	5.5	
Lane Util. Factor	0.95				1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	0.99				1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00				0.99	1.00	0.99	1.00	1.00	
Frt	0.96				1.00	1.00	1.00	1.00	0.95	
Flt Protected	1.00				0.95	1.00	0.95	0.95	1.00	
Satd. Flow (prot)	3141				1587	1750	1611	3225	1631	
Flt Permitted	1.00				0.60	1.00	0.95	0.95	1.00	
Satd. Flow (perm)	3141				997	1750	1611	3225	1631	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	186	59	5	186	16	106	303	1441	154	74
RTOR Reduction (vph)	2	0	0	0	0	0	0	0	18	0
Lane Group Flow (vph)	248	0	0	0	202	106	303	1441	210	0
Confl. Peds. (#/hr)		8	8	8	8		12	12		1
Heavy Vehicles (%)	1%	0%	2%	2%	19%	0%	2%	0%	2%	0%
Turn Type	NA			Perm	Perm	NA	Perm	Split	NA	
Protected Phases	8					4		2	2	
Permitted Phases				4	4		2			
Actuated Green, G (s)	19.1				19.1	19.1	40.9	40.9	40.9	
Effective Green, g (s)	19.6				19.1	19.6	42.4	42.4	40.9	
Actuated g/C Ratio	0.28				0.27	0.28	0.61	0.61	0.58	
Clearance Time (s)	4.5				4.5	4.5	5.5	5.5	5.5	
Vehicle Extension (s)	2.5				2.5	2.5	6.1	6.1	6.1	
Lane Grp Cap (vph)	879				272	490	975	1953	952	
v/s Ratio Prot	0.08					0.06		c0.45	0.13	
v/s Ratio Perm					c0.20		0.19			
v/c Ratio	0.28				0.74	0.22	0.31	0.74	0.22	
Uniform Delay, d1	19.7				23.2	19.3	6.7	9.8	6.9	
Progression Factor	1.00				0.30	0.24	1.14	1.31	1.05	
Incremental Delay, d2	0.1				8.9	0.1	0.7	2.2	0.5	
Delay (s)	19.8				16.0	4.7	8.4	15.1	7.8	
Level of Service	B				B	A	A	B	A	
Approach Delay (s)	19.8					12.1			13.2	
Approach LOS	B					B			B	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	75.3%	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 (vph)	120	330	0	0	255	195	35	1270	145	0	0	0
Future Volume (vph)	120	330	0	0	255	195	35	1270	145	0	0	0
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			
Lane Util. Factor		0.95			1.00	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	0.99			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.99			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		3261			1750	1446		3221	1468			
Flt Permitted		0.69			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		2295			1750	1446		3221	1468			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	122	337	0	0	260	199	36	1296	148	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	81	0	0	56	0	0	0
Lane Group Flow (vph)	0	459	0	0	260	118	0	1332	92	0	0	0
Confl. Peds. (#/hr)	6		10	10		6	5		1	1		5
Heavy Vehicles (%)	2%	0%	0%	0%	0%	1%	6%	3%	0%	0%	0%	0%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	3	8			4			6				
Permitted Phases	8					4	6		6			
Actuated Green, G (s)		17.8			17.8	17.8		42.2	42.2			
Effective Green, g (s)		18.3			18.3	18.3		43.7	43.7			
Actuated g/C Ratio		0.26			0.26	0.26		0.62	0.62			
Clearance Time (s)		4.5			4.5	4.5		5.5	5.5			
Vehicle Extension (s)		2.5			2.5	2.5		5.0	5.0			
Lane Grp Cap (vph)		599			457	378		2010	916			
v/s Ratio Prot					0.15							
v/s Ratio Perm		c0.20				0.08		0.41	0.06			
v/c Ratio		0.77			0.57	0.31		0.66	0.10			
Uniform Delay, d1		23.9			22.4	20.8		8.4	5.3			
Progression Factor		0.95			1.00	1.00		1.00	1.00			
Incremental Delay, d2		5.5			1.3	0.3		1.7	0.2			
Delay (s)		28.1			23.7	21.1		10.2	5.5			
Level of Service		C			C	C		B	A			
Approach Delay (s)		28.1			22.6			9.7			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	265	355	5	5	55
Future Vol, veh/h	50	265	355	5	5	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	57	305	408	6	6	63

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	414	0	-	0	830	411
Stage 1	-	-	-	-	411	-
Stage 2	-	-	-	-	419	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1156	-	-	-	343	645
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	668	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1156	-	-	-	323	645
Mov Cap-2 Maneuver	-	-	-	-	323	-
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	668	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1156	-	-	-	596
HCM Lane V/C Ratio	0.05	-	-	-	0.116
HCM Control Delay (s)	8.3	0	-	-	11.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	200	110	5	5	70
Future Vol, veh/h	35	200	110	5	5	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	3	4	0	0	1
Mvmt Flow	42	238	131	6	6	83

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	137	0	-	0	456	134
Stage 1	-	-	-	-	134	-
Stage 2	-	-	-	-	322	-
Critical Hdwy	4.1	-	-	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.309
Pot Cap-1 Maneuver	1459	-	-	-	566	918
Stage 1	-	-	-	-	897	-
Stage 2	-	-	-	-	739	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1459	-	-	-	550	918
Mov Cap-2 Maneuver	-	-	-	-	550	-
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	739	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1459	-	-	-	879
HCM Lane V/C Ratio	0.029	-	-	-	0.102
HCM Control Delay (s)	7.5	-	-	-	9.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	10	0	0	0	0	0	0	15	1040	15
Future Vol, veh/h	0	1	10	0	0	0	0	0	0	15	1040	15
Conflicting Peds, #/hr	5	0	2	2	0	5	12	0	2	2	0	12
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	-	-	16983	-	-	16983	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	11	0	0	0	0	0	0	16	1130	16

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	1184	587	2	0	0
Stage 1	-	1182	-	-	-	-
Stage 2	-	2	-	-	-	-
Critical Hdwy	-	6.54	7.14	5.34	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.02	3.92	3.12	-	-
Pot Cap-1 Maneuver	0	188	388	1151	-	-
Stage 1	0	262	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	384	1151	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	14.7	0.2
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	384	1151	-	-
HCM Lane V/C Ratio	0.031	0.014	-	-
HCM Control Delay (s)	14.7	8.2	0.1	-
HCM Lane LOS	B	A	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	10	0	115	0	1	10	5	1	0
Future Vol, veh/h	0	0	0	10	0	115	0	1	10	5	1	0
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	14	0	158	0	1	14	7	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	158	0	0	3	0	0	113	189	3	116	110	81
Stage 1	-	-	-	-	-	-	3	3	-	107	107	-
Stage 2	-	-	-	-	-	-	110	186	-	9	3	-
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	1434	-	-	1632	-	-	869	709	1087	865	784	985
Stage 1	-	-	-	-	-	-	1025	897	-	903	811	-
Stage 2	-	-	-	-	-	-	900	750	-	1017	897	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1434	-	-	1629	-	-	858	700	1085	846	775	983
Mov Cap-2 Maneuver	-	-	-	-	-	-	858	700	-	846	775	-
Stage 1	-	-	-	-	-	-	1023	895	-	903	803	-
Stage 2	-	-	-	-	-	-	888	743	-	1003	895	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	8.5	9.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1033	1434	-	-	1629	-	-	833
HCM Lane V/C Ratio	0.015	-	-	-	0.008	-	-	0.01
HCM Control Delay (s)	8.5	0	-	-	7.2	0	-	9.4
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	0											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	10	30	0	0	0	0	0	70	410
Future Vol, veh/h	0	0	0	10	30	0	0	0	0	0	70	410
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	91	91	91	92	92	92	91	91	91
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	0	1	1
Mvmt Flow	0	0	0	11	33	0	0	0	0	0	77	451

Major/Minor				Minor1						Major2		
Conflicting Flow All				81	77	-				-	-	0
Stage 1				0	0	-				-	-	-
Stage 2				81	77	-				-	-	-
Critical Hdwy				6.4	6.5	-				-	-	-
Critical Hdwy Stg 1				-	-	-				-	-	-
Critical Hdwy Stg 2				5.4	5.5	-				-	-	-
Follow-up Hdwy				3.5	4	-				-	-	-
Pot Cap-1 Maneuver				926	817	0				0	-	0
Stage 1				-	-	0				0	-	0
Stage 2				947	835	0				0	-	0
Platoon blocked, %											-	
Mov Cap-1 Maneuver				926	0	-				-	-	-
Mov Cap-2 Maneuver				926	0	-				-	-	-
Stage 1				-	0	-				-	-	-
Stage 2				947	0	-				-	-	-

Approach				WB						SB		
HCM Control Delay, s										0		
HCM LOS				-								

Minor Lane/Major Mvmt	WBLn1	WBLn2	SBT
Capacity (veh/h)	926	-	-
HCM Lane V/C Ratio	0.012	-	-
HCM Control Delay (s)	8.9	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	30	50	15	80	0	0	0	0	115	640	25
Future Vol, veh/h	0	30	50	15	80	0	0	0	0	115	640	25
Conflicting Peds, #/hr	0	0	16	16	0	0	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	0	0	0	0	0	0
Mvmt Flow	0	33	56	17	89	0	0	0	0	128	711	28

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	-	991	396	644	1005	-				0	0	0
Stage 1	-	991	-	0	0	-				-	-	-
Stage 2	-	0	-	644	1005	-				-	-	-
Critical Hdwy	-	6.5	6.9	7.5	6.5	-				4.1	-	-
Critical Hdwy Stg 1	-	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.5	5.5	-				-	-	-
Follow-up Hdwy	-	4	3.3	3.5	4	-				2.2	-	-
Pot Cap-1 Maneuver	0	248	609	362	243	0				-	-	-
Stage 1	0	327	-	-	-	0				-	-	-
Stage 2	0	-	-	433	322	0				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	-	246	603	295	241	-				-	-	-
Mov Cap-2 Maneuver	-	246	-	295	241	-				-	-	-
Stage 1	-	324	-	-	-	-				-	-	-
Stage 2	-	-	-	353	319	-				-	-	-

Approach	EB			WB						SB
HCM Control Delay, s	16.9			29.9						
HCM LOS	C			D						

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	390	248	-	-	-
HCM Lane V/C Ratio	0.228	0.426	-	-	-
HCM Control Delay (s)	16.9	29.9	-	-	-
HCM Lane LOS	C	D	-	-	-
HCM 95th %tile Q(veh)	0.9	2	-	-	-

Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	21	45	190	15	0	75	0	270	0	0	0
Future Vol, veh/h	0	21	45	190	15	0	75	0	270	0	0	0
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	93	93	93	92	93	92	93	92	92	92
Heavy Vehicles, %	2	0	0	0	3	2	1	2	1	2	2	2
Mvmt Flow	0	23	48	204	16	0	81	0	290	0	0	0

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	-	1	1	37	1	-				0	0	0
Stage 1	-	1	-	0	0	-				-	-	-
Stage 2	-	0	-	37	1	-				-	-	-
Critical Hdwy	-	6.5	6.2	7.1	6.53	-				4.12	-	-
Critical Hdwy Stg 1	-	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.53	-				-	-	-
Follow-up Hdwy	-	4	3.3	3.5	4.027	-				2.218	-	-
Pot Cap-1 Maneuver	0	899	1090	973	893	0				-	-	-
Stage 1	0	899	-	-	-	0				-	-	-
Stage 2	0	-	-	984	893	0				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	-	899	1090	912	893	-				-	-	-
Mov Cap-2 Maneuver	-	899	-	912	893	-				-	-	-
Stage 1	-	899	-	-	-	-				-	-	-
Stage 2	-	-	-	917	893	-				-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	8.8	10.2	0
HCM LOS	A	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1021	911	-	-	-
HCM Lane V/C Ratio	0.07	0.242	-	-	-
HCM Control Delay (s)	8.8	10.2	0	-	-
HCM Lane LOS	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	0.9	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	120	10	2	55	1	5	1	1	1	2	1
Future Vol, veh/h	1	120	10	2	55	1	5	1	1	1	2	1
Conflicting Peds, #/hr	3	0	3	3	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	160	13	3	73	1	7	1	1	1	3	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	176	0	0	254	255	170	253	261	77
Stage 1	-	-	-	-	-	-	172	172	-	83	83	-
Stage 2	-	-	-	-	-	-	82	83	-	170	178	-
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	1535	-	-	1412	-	-	703	652	879	704	647	990
Stage 1	-	-	-	-	-	-	835	760	-	930	830	-
Stage 2	-	-	-	-	-	-	931	830	-	837	756	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1531	-	-	1408	-	-	696	646	876	698	641	987
Mov Cap-2 Maneuver	-	-	-	-	-	-	696	646	-	698	641	-
Stage 1	-	-	-	-	-	-	832	757	-	926	826	-
Stage 2	-	-	-	-	-	-	925	826	-	833	753	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	10.1	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	709	1531	-	-	1408	-	-	719
HCM Lane V/C Ratio	0.013	0.001	-	-	0.002	-	-	0.007
HCM Control Delay (s)	10.1	7.4	0	-	7.6	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection						
Int Delay, s/veh	0.6					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	130	65	5	10	1
Future Vol, veh/h	1	130	65	5	10	1
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	176	88	7	14	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	97	0	-	0	272	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	178	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1509	-	-	-	722	968
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	858	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1506	-	-	-	718	966
Mov Cap-2 Maneuver	-	-	-	-	718	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	856	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1506	-	-	-	735
HCM Lane V/C Ratio	0.001	-	-	-	0.02
HCM Control Delay (s)	7.4	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	1	10	20	1	5	10	680	1	1	745	15
Future Volume (vph)	245	1	10	20	1	5	10	680	1	1	745	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	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.98			1.00			1.00	
Flt Protected		0.95			0.96			1.00			1.00	
Satd. Flow (prot)		1638			1638			3227			3189	
Flt Permitted		0.71			0.76			0.94			0.95	
Satd. Flow (perm)		1227			1295			3041			3044	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	266	1	11	22	1	5	11	739	1	1	810	16
RTOR Reduction (vph)	0	2	0	0	3	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	276	0	0	25	0	0	751	0	0	824	0
Confl. Peds. (#/hr)	8					8	2		2	2		2
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	3%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		14.4			14.4			19.8			19.8	
Effective Green, g (s)		14.9			14.9			20.3			20.3	
Actuated g/C Ratio		0.34			0.34			0.47			0.47	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.5			2.5			6.1			6.1	
Lane Grp Cap (vph)		423			446			1428			1430	
v/s Ratio Prot												
v/s Ratio Perm		c0.23			0.02			0.25			c0.27	
v/c Ratio		0.65			0.06			0.53			0.58	
Uniform Delay, d1		12.0			9.5			8.1			8.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.2			0.0			0.9			1.1	
Delay (s)		15.2			9.5			9.0			9.5	
Level of Service		B			A			A			A	
Approach Delay (s)		15.2			9.5			9.0			9.5	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	43.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	100	150	20	5	2
Future Vol, veh/h	5	100	150	20	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	115	172	23	6	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	195	0	-	0	311	184
Stage 1	-	-	-	-	184	-
Stage 2	-	-	-	-	127	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1390	-	-	-	686	864
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	904	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1390	-	-	-	683	864
Mov Cap-2 Maneuver	-	-	-	-	683	-
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	904	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1390	-	-	-	726
HCM Lane V/C Ratio	0.004	-	-	-	0.011
HCM Control Delay (s)	7.6	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	170	15	45	265	15	35	10	30	10	20	2
Future Vol, veh/h	5	170	15	45	265	15	35	10	30	10	20	2
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	40	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	185	16	49	288	16	38	11	33	11	22	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	306	0	0	201	0	0	609	607	195	623	607	298
Stage 1	-	-	-	-	-	-	203	203	-	396	396	-
Stage 2	-	-	-	-	-	-	406	404	-	227	211	-
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	1266	-	-	1383	-	-	410	414	851	401	414	746
Stage 1	-	-	-	-	-	-	804	737	-	633	607	-
Stage 2	-	-	-	-	-	-	626	603	-	780	731	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1264	-	-	1383	-	-	380	397	849	365	397	745
Mov Cap-2 Maneuver	-	-	-	-	-	-	380	397	-	365	397	-
Stage 1	-	-	-	-	-	-	801	734	-	629	585	-
Stage 2	-	-	-	-	-	-	580	581	-	735	728	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.1	13.8	14.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	491	1264	-	-	1383	-	-	398
HCM Lane V/C Ratio	0.166	0.004	-	-	0.035	-	-	0.087
HCM Control Delay (s)	13.8	7.9	-	-	7.7	-	-	14.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	230	345	110	155	15
Future Vol, veh/h	0	230	345	110	155	15
Conflicting Peds, #/hr	6	0	0	6	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	245	367	117	165	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	618	374
Stage 1	-	-	-	-	373	-
Stage 2	-	-	-	-	245	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	-	456	677
Stage 1	0	-	-	-	701	-
Stage 2	0	-	-	-	800	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	451	672
Mov Cap-2 Maneuver	-	-	-	-	543	-
Stage 1	-	-	-	-	697	-
Stage 2	-	-	-	-	795	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	596
HCM Lane V/C Ratio	-	-	-	0.303
HCM Control Delay (s)	-	-	-	13.7
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	300	115	395	300	10	155	40	395	45	45	15
Future Volume (vph)	20	300	115	395	300	10	155	40	395	45	45	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	5.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			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	0.96		1.00	1.00			1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1662	3162		1646	3305			1677	1473	1662	1677	
Flt Permitted	0.95	1.00		0.95	1.00			0.73	1.00	0.52	1.00	
Satd. Flow (perm)	1662	3162		1646	3305			1268	1473	904	1677	
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)	22	323	124	425	323	11	167	43	425	48	48	16
RTOR Reduction (vph)	0	37	0	0	2	0	0	0	90	0	11	0
Lane Group Flow (vph)	22	410	0	425	332	0	0	210	335	48	53	0
Confl. Peds. (#/hr)	7		8	8		7	5					5
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Split	NA		Split	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	2	2		6	6			8	8 6		4	
Permitted Phases							8			4		
Actuated Green, G (s)	14.9	14.9		24.0	24.0			16.0	45.5	16.0	16.0	
Effective Green, g (s)	15.4	15.4		25.5	25.5			17.0	40.0	17.0	17.0	
Actuated g/C Ratio	0.22	0.22		0.36	0.36			0.24	0.57	0.24	0.24	
Clearance Time (s)	4.5	4.5		5.5	5.5			5.0		5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5		2.5	2.5	
Lane Grp Cap (vph)	366	696		600	1205			308	842	219	407	
v/s Ratio Prot	0.01	c0.13		c0.26	0.10				0.23		0.03	
v/s Ratio Perm								c0.17		0.05		
v/c Ratio	0.06	0.59		0.71	0.28			0.68	0.40	0.22	0.13	
Uniform Delay, d1	21.5	24.4		19.0	15.7			24.0	8.3	21.1	20.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.1		3.5	0.1			5.6	0.2	0.4	0.1	
Delay (s)	21.6	25.5		22.6	15.8			29.6	8.5	21.5	20.8	
Level of Service	C	C		C	B			C	A	C	C	
Approach Delay (s)		25.3			19.6			15.5			21.1	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	14.5
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 (vph)	1	725	50	105	715	1	80	1	95	1	1	1
Future Volume (vph)	1	725	50	105	715	1	80	1	95	1	1	1
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	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3262		1646	3228		1602	1462		1653	1603	
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00		0.69	1.00	
Satd. Flow (perm)	1662	3262		1646	3228		1276	1462		1201	1603	
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)	1	780	54	113	769	1	86	1	102	1	1	1
RTOR Reduction (vph)	0	5	0	0	0	0	0	86	0	0	1	0
Lane Group Flow (vph)	1	829	0	113	770	0	86	17	0	1	1	0
Confl. Peds. (#/hr)						7	9		8	8		9
Heavy Vehicles (%)	0%	1%	0%	1%	3%	0%	3%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.4	29.3		7.3	36.2		8.3	8.3		8.3	8.3	
Effective Green, g (s)	1.4	30.3		8.3	37.2		9.3	9.3		9.3	9.3	
Actuated g/C Ratio	0.02	0.51		0.14	0.62		0.16	0.16		0.16	0.16	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.5	6.1		2.5	6.1		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	38	1650		228	2004		198	226		186	248	
v/s Ratio Prot	0.00	c0.25		c0.07	0.24			0.01			0.00	
v/s Ratio Perm							c0.07			0.00		
v/c Ratio	0.03	0.50		0.50	0.38		0.43	0.07		0.01	0.00	
Uniform Delay, d1	28.6	9.8		23.9	5.6		22.9	21.6		21.4	21.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.7		1.2	0.4		1.1	0.1		0.0	0.0	
Delay (s)	28.8	10.5		25.1	6.0		24.0	21.7		21.4	21.4	
Level of Service	C	B		C	A		C	C		C	C	
Approach Delay (s)		10.5			8.4			22.8			21.4	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
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 (vph)	5	770	55	48	796	1	50	1	70	10	1	5
Future Volume (vph)	5	770	55	48	796	1	50	1	70	10	1	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	6.5		4.5	6.5		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1649	3283		1662	3324		1651	1470			1519	
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.86	
Satd. Flow (perm)	1649	3283		1662	3324		1297	1470			1342	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	837	60	52	865	1	54	1	76	11	1	5
RTOR Reduction (vph)	0	5	0	0	0	0	0	60	0	0	4	0
Lane Group Flow (vph)	5	892	0	52	866	0	54	17	0	0	13	0
Confl. Peds. (#/hr)	18		11	11		18	14		4	4		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.7	32.0		4.4	35.7		13.8	13.8			13.8	
Effective Green, g (s)	0.7	32.0		4.4	35.7		13.8	13.8			13.8	
Actuated g/C Ratio	0.01	0.49		0.07	0.54		0.21	0.21			0.21	
Clearance Time (s)	4.5	6.5		4.5	6.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.8		2.5	4.8		2.5	2.5			2.5	
Lane Grp Cap (vph)	17	1599		111	1806		272	308			281	
v/s Ratio Prot	0.00	c0.27		c0.03	c0.26			0.01				
v/s Ratio Perm							c0.04				0.01	
v/c Ratio	0.29	0.56		0.47	0.48		0.20	0.06			0.05	
Uniform Delay, d1	32.3	11.9		29.5	9.3		21.4	20.7			20.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	3.5	0.7		2.3	0.4		0.3	0.1			0.0	
Delay (s)	35.7	12.6		31.8	9.7		21.7	20.8			20.8	
Level of Service	D	B		C	A		C	C			C	
Approach Delay (s)		12.7			10.9			21.1			20.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	15.5
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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	255	515	0	0	730	15	5	1	15	5	0	110
Future Vol, veh/h	255	515	0	0	730	15	5	1	15	5	0	110
Conflicting Peds, #/hr	10	0	11	11	0	10	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	280	566	0	0	802	16	5	1	16	5	0	121

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	828	0	-	-	-	0	1527	1954	286	1667	1946	419
Stage 1	-	-	-	-	-	-	1126	1126	-	820	820	-
Stage 2	-	-	-	-	-	-	401	828	-	847	1126	-
Critical Hdwy	4.1	-	-	-	-	-	7.5	6.5	6.9	7.5	6.5	6.9
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	2.2	-	-	-	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	812	-	0	0	-	-	82	65	717	64	66	589
Stage 1	-	-	0	0	-	-	222	282	-	340	392	-
Stage 2	-	-	0	0	-	-	602	389	-	327	282	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	804	-	-	-	-	-	39	32	715	36	32	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	39	32	-	36	32	-
Stage 1	-	-	-	-	-	-	109	139	-	166	388	-
Stage 2	-	-	-	-	-	-	477	385	-	155	139	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.9	0	43.6	20.9
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	116	804	-	-	-	351
HCM Lane V/C Ratio	0.199	0.349	-	-	-	0.36
HCM Control Delay (s)	43.6	11.9	1.5	-	-	20.9
HCM Lane LOS	E	B	A	-	-	C
HCM 95th %tile Q(veh)	0.7	1.6	-	-	-	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	160	310	60	335	0	0	0	0	5	605	285
Future Volume (vph)	0	160	310	60	335	0	0	0	0	5	605	285
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
Lane Util. Factor		1.00	1.00		0.95						0.95	1.00
Frpb, ped/bikes		1.00	0.98		1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		0.99						1.00	1.00
Satd. Flow (prot)		1733	1460		3297						3197	1473
Flt Permitted		1.00	1.00		0.85						1.00	1.00
Satd. Flow (perm)		1733	1460		2812						3197	1473
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	174	337	65	364	0	0	0	0	5	658	310
RTOR Reduction (vph)	0	0	128	0	0	0	0	0	0	0	0	100
Lane Group Flow (vph)	0	174	209	0	429	0	0	0	0	0	663	210
Confl. Peds. (#/hr)	5		7	7		5	13		7	7		13
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	4%	1%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Prot
Protected Phases		8			4						2	2
Permitted Phases			8	4						2		
Actuated Green, G (s)		14.1	14.1		14.1						46.9	46.9
Effective Green, g (s)		14.6	14.6		14.6						47.4	47.4
Actuated g/C Ratio		0.21	0.21		0.21						0.68	0.68
Clearance Time (s)		4.5	4.5		4.5						4.5	4.5
Vehicle Extension (s)		2.5	2.5		2.5						6.1	6.1
Lane Grp Cap (vph)		361	304		586						2164	997
v/s Ratio Prot		0.10										0.14
v/s Ratio Perm			0.14		c0.15						0.21	
v/c Ratio		0.48	0.69		0.73						0.31	0.21
Uniform Delay, d1		24.4	25.6		25.9						4.6	4.3
Progression Factor		1.00	1.00		0.99						1.00	1.00
Incremental Delay, d2		0.7	5.8		4.3						0.4	0.5
Delay (s)		25.1	31.4		30.0						5.0	4.7
Level of Service		C	C		C						A	A
Approach Delay (s)		29.2			30.0			0.0			4.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
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 (vph)	155	15	0	0	65	10	330	595	5	0	0	0
Future Volume (vph)	155	15	0	0	65	10	330	595	5	0	0	0
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				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91				
Frpb, ped/bikes	1.00	1.00			1.00	0.99		1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		1.00				
Flt Protected	0.95	1.00			1.00	1.00		0.98				
Satd. Flow (prot)	1645	1750			1750	1468		4570				
Flt Permitted	0.71	1.00			1.00	1.00		0.98				
Satd. Flow (perm)	1226	1750			1750	1468		4570				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	178	17	0	0	75	11	379	684	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	9	0	1	0	0	0	0
Lane Group Flow (vph)	178	17	0	0	75	2	0	1068	0	0	0	0
Confl. Peds. (#/hr)	1		4	4		1	2		2	2		2
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA			NA	Perm	Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8					4	6					
Actuated Green, G (s)	13.8	13.8			13.8	13.8		47.2				
Effective Green, g (s)	14.3	14.3			14.3	14.3		47.7				
Actuated g/C Ratio	0.20	0.20			0.20	0.20		0.68				
Clearance Time (s)	4.5	4.5			4.5	4.5		4.5				
Vehicle Extension (s)	2.5	2.5			2.5	2.5		6.5				
Lane Grp Cap (vph)	250	357			357	299		3114				
v/s Ratio Prot		0.01			0.04							
v/s Ratio Perm	c0.15					0.00		0.23				
v/c Ratio	0.71	0.05			0.21	0.01		0.34				
Uniform Delay, d1	25.9	22.4			23.2	22.2		4.6				
Progression Factor	0.40	0.25			1.00	1.00		1.00				
Incremental Delay, d2	8.5	0.0			0.2	0.0		0.3				
Delay (s)	18.9	5.6			23.4	22.2		4.9				
Level of Service	B	A			C	C		A				
Approach Delay (s)		17.7			23.2			4.9			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	95	55	25	60	60	35
Future Vol, veh/h	95	55	25	60	60	35
Conflicting Peds, #/hr	2	4	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	101	59	27	64	64	37

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	228	65	0	0	93	0
Stage 1	61	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	-	-	2.2	-
Pot Cap-1 Maneuver	765	999	-	-	1514	-
Stage 1	967	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	729	993	-	-	1511	-
Mov Cap-2 Maneuver	729	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	865	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	4.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	808	1511	-
HCM Lane V/C Ratio	-	-	0.197	0.042	-
HCM Control Delay (s)	-	-	10.5	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection						
Int Delay, s/veh	2.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	25	30	150	130	40
Future Vol, veh/h	30	25	30	150	130	40
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	38	32	38	192	167	51

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	465	197	222	0	-	0
Stage 1	197	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	559	849	1359	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	537	846	1354	-	-	-
Mov Cap-2 Maneuver	537	-	-	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	1.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1354	-	644	-	-
HCM Lane V/C Ratio	0.028	-	0.109	-	-
HCM Control Delay (s)	7.7	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	5	20	20	5	50	10	30	60	5	5	60	5
Future Vol, veh/h	5	20	20	5	50	10	30	60	5	5	60	5
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	23	23	6	58	12	35	70	6	6	70	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.7	7.9	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	32%	11%	8%	7%
Vol Thru, %	63%	44%	77%	86%
Vol Right, %	5%	44%	15%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	95	45	65	70
LT Vol	30	5	5	5
Through Vol	60	20	50	60
RT Vol	5	20	10	5
Lane Flow Rate	110	52	76	81
Geometry Grp	1	1	1	1
Degree of Util (X)	0.129	0.061	0.09	0.097
Departure Headway (Hd)	4.217	4.166	4.307	4.28
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	836	863	835	842
Service Time	2.311	2.174	2.315	2.28
HCM Lane V/C Ratio	0.132	0.06	0.091	0.096
HCM Control Delay	7.9	7.4	7.7	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.2	0.3	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	15	2	85	20	10	5	675	45	10	665	25
Future Volume (vph)	25	15	2	85	20	10	5	675	45	10	665	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	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.99		1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1688			1666		1662	3287		1662	3275	
Flt Permitted		0.82			0.75		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1419			1297		1662	3287		1662	3275	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	28	17	2	96	22	11	6	758	51	11	747	28
RTOR Reduction (vph)	0	2	0	0	4	0	0	4	0	0	2	0
Lane Group Flow (vph)	0	45	0	0	125	0	6	805	0	11	773	0
Confl. Peds. (#/hr)	4					4			8	8		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		9.0			9.0		0.7	24.0		0.8	24.1	
Effective Green, g (s)		9.5			9.5		1.2	25.0		1.3	25.1	
Actuated g/C Ratio		0.20			0.20		0.03	0.52		0.03	0.53	
Clearance Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		2.5			2.5		2.5	4.6		2.5	4.6	
Lane Grp Cap (vph)		282			257		41	1719		45	1719	
v/s Ratio Prot							0.00	c0.24		c0.01	0.24	
v/s Ratio Perm		0.03			c0.10							
v/c Ratio		0.16			0.49		0.15	0.47		0.24	0.45	
Uniform Delay, d1		15.9			17.0		22.8	7.2		22.8	7.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			1.1		1.2	0.4		2.1	0.3	
Delay (s)		16.0			18.0		24.0	7.6		24.8	7.4	
Level of Service		B			B		C	A		C	A	
Approach Delay (s)		16.0			18.0			7.7			7.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	47.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1	20	5	1	5	40	720	5	2	755	5
Future Vol, veh/h	5	1	20	5	1	5	40	720	5	2	755	5
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	8	8	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	6	1	23	6	1	6	45	818	6	2	858	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1367	1789	434	1353	1789	420	866	0	0	832	0	0
Stage 1	867	867	-	919	919	-	-	-	-	-	-	-
Stage 2	500	922	-	434	870	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	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	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	108	82	576	110	82	588	786	-	-	809	-	-
Stage 1	318	373	-	296	353	-	-	-	-	-	-	-
Stage 2	527	352	-	576	372	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	101	76	575	99	76	584	785	-	-	803	-	-
Mov Cap-2 Maneuver	101	76	-	99	76	-	-	-	-	-	-	-
Stage 1	299	372	-	277	330	-	-	-	-	-	-	-
Stage 2	490	329	-	550	371	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.2	30.8	0.5	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	785	-	-	267	152	803	-	-
HCM Lane V/C Ratio	0.058	-	-	0.111	0.082	0.003	-	-
HCM Control Delay (s)	9.9	-	-	20.2	30.8	9.5	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0.3	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	2	10	90	1	55	2	860	100	40	745	1
Future Volume (vph)	5	2	10	90	1	55	2	860	100	40	745	1
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	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		0.99			1.00	1.00	1.00	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		0.92			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1568			1661	1488	1662	3292	1488	1662	3228	
Flt Permitted		0.92			0.72	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1459			1247	1488	1662	3292	1488	1662	3228	
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)	5	2	11	97	1	59	2	925	108	43	801	1
RTOR Reduction (vph)	0	9	0	0	0	49	0	0	49	0	0	0
Lane Group Flow (vph)	0	9	0	0	98	10	2	925	59	43	802	0
Confl. Peds. (#/hr)			8	8								
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4			6			
Actuated Green, G (s)		8.6			8.6	8.6	0.6	28.3	28.3	4.0	31.7	
Effective Green, g (s)		9.1			9.1	9.1	1.1	30.3	30.3	4.5	33.7	
Actuated g/C Ratio		0.16			0.16	0.16	0.02	0.54	0.54	0.08	0.60	
Clearance Time (s)		4.5			4.5	4.5	4.5	6.0	6.0	4.5	6.0	
Vehicle Extension (s)		2.5			2.5	2.5	2.5	4.8	4.8	2.5	4.8	
Lane Grp Cap (vph)		237			203	242	32	1784	806	133	1946	
v/s Ratio Prot							0.00	c0.28		c0.03	c0.25	
v/s Ratio Perm		0.01			c0.08	0.01			0.04			
v/c Ratio		0.04			0.48	0.04	0.06	0.52	0.07	0.32	0.41	
Uniform Delay, d1		19.7			21.3	19.7	26.9	8.2	6.1	24.3	5.9	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0			1.3	0.0	0.6	0.5	0.1	1.0	0.3	
Delay (s)		19.8			22.6	19.8	27.5	8.6	6.2	25.3	6.1	
Level of Service		B			C	B	C	A	A	C	A	
Approach Delay (s)		19.8			21.5			8.4			7.1	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	55.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	935	910	55	55	60
Future Volume (vph)	65	935	910	55	55	60
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.93	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1662	3325	3261		1589	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1662	3325	3261		1589	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	73	1051	1022	62	62	67
RTOR Reduction (vph)	0	0	4	0	51	0
Lane Group Flow (vph)	73	1051	1080	0	78	0
Confl. Peds. (#/hr)	3			3	2	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		4	
Permitted Phases						
Actuated Green, G (s)	4.6	38.9	29.3		7.8	
Effective Green, g (s)	5.6	39.4	29.8		8.8	
Actuated g/C Ratio	0.10	0.70	0.53		0.16	
Clearance Time (s)	5.0	4.5	4.5		5.0	
Vehicle Extension (s)	2.5	4.0	4.0		2.5	
Lane Grp Cap (vph)	165	2331	1729		248	
v/s Ratio Prot	0.04	c0.32	c0.33		c0.05	
v/s Ratio Perm						
v/c Ratio	0.44	0.45	0.62		0.31	
Uniform Delay, d1	23.8	3.7	9.3		21.0	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	1.4	0.2	0.8		0.5	
Delay (s)	25.2	3.9	10.1		21.5	
Level of Service	C	A	B		C	
Approach Delay (s)		5.2	10.1		21.5	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	56.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
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 (vph)	375	475	165	65	360	155	175	300	50	105	240	25
Future Volume (vph)	375	475	165	65	360	155	175	300	50	105	240	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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		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	0.96		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3158		1662	3175		1662	1707		1646	1723	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	3158		1662	3175		1662	1707		1646	1723	
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)	403	511	177	70	387	167	188	323	54	113	258	27
RTOR Reduction (vph)	0	23	0	0	34	0	0	4	0	0	2	0
Lane Group Flow (vph)	403	665	0	70	520	0	188	373	0	113	283	0
Confl. Peds. (#/hr)			8	8			2		5	5		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	33.9	52.2		8.8	27.1		17.7	32.5		13.5	28.3	
Effective Green, g (s)	34.4	52.7		9.3	27.6		18.2	33.0		14.0	28.8	
Actuated g/C Ratio	0.28	0.42		0.07	0.22		0.15	0.26		0.11	0.23	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	457	1331		123	701		241	450		184	396	
v/s Ratio Prot	c0.24	0.21		0.04	c0.16		c0.11	c0.22		0.07	0.16	
v/s Ratio Perm												
v/c Ratio	0.88	0.50		0.57	0.74		0.78	0.83		0.61	0.71	
Uniform Delay, d1	43.4	26.5		55.9	45.4		51.5	43.4		52.9	44.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.7	0.3		4.8	4.2		14.5	11.8		5.1	5.6	
Delay (s)	61.1	26.8		60.7	49.6		66.0	55.1		58.0	49.9	
Level of Service	E	C		E	D		E	E		E	D	
Approach Delay (s)		39.5			50.9			58.7			52.2	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	48.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	1.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	601	29	26	554	20	45
Future Vol, veh/h	601	29	26	554	20	45
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	653	32	28	602	22	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	687	0	1028	345
Stage 1	-	-	-	-	671	-
Stage 2	-	-	-	-	357	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	916	-	233	657
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	685	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	914	-	222	656
Mov Cap-2 Maneuver	-	-	-	-	222	-
Stage 1	-	-	-	-	452	-
Stage 2	-	-	-	-	685	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	15.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	410	-	-	914	-
HCM Lane V/C Ratio	0.172	-	-	0.031	-
HCM Control Delay (s)	15.6	-	-	9.1	0.2
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	555	5	5	515	90	5	10	5	70	5	60
Future Volume (vph)	80	555	5	5	515	90	5	10	5	70	5	60
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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00			1.00			1.00	0.99
Flpb, ped/bikes		1.00			1.00			1.00			1.00	1.00
Frt		1.00			0.98			0.97			1.00	0.85
Flt Protected		0.99			1.00			0.99			0.96	1.00
Satd. Flow (prot)		3300			3250			1673			1672	1468
Flt Permitted		0.83			0.95			0.92			0.72	1.00
Satd. Flow (perm)		2753			3093			1555			1267	1468
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)	86	597	5	5	554	97	5	11	5	75	5	65
RTOR Reduction (vph)	0	1	0	0	19	0	0	4	0	0	0	54
Lane Group Flow (vph)	0	687	0	0	637	0	0	17	0	0	80	11
Confl. Peds. (#/hr)			4	4			2					2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		4
Actuated Green, G (s)		22.4			22.4			6.2			6.2	6.2
Effective Green, g (s)		22.4			22.4			6.2			6.2	6.2
Actuated g/C Ratio		0.61			0.61			0.17			0.17	0.17
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1684			1892			263			214	248
v/s Ratio Prot												
v/s Ratio Perm		c0.25			0.21			0.01			c0.06	0.01
v/c Ratio		0.41			0.34			0.06			0.37	0.04
Uniform Delay, d1		3.7			3.5			12.8			13.5	12.7
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2			0.1			0.1			1.1	0.1
Delay (s)		3.8			3.6			12.9			14.6	12.8
Level of Service		A			A			B			B	B
Approach Delay (s)		3.8			3.6			12.9			13.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	36.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
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 (vph)	60	423	125	10	360	25	160	120	32	16	90	80
Future Volume (vph)	60	423	125	10	360	25	160	120	32	16	90	80
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	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1750	1455	1662	1717		1662	1687		1662	1614	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1750	1455	1662	1717		1662	1687		1662	1614	
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)	65	455	134	11	387	27	172	129	34	17	97	86
RTOR Reduction (vph)	0	0	78	0	2	0	0	8	0	0	32	0
Lane Group Flow (vph)	65	455	56	11	412	0	172	155	0	17	151	0
Confl. Peds. (#/hr)			1	1			4		1	1		4
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	6.6	33.6	33.6	1.1	28.1		12.7	26.2		2.3	15.8	
Effective Green, g (s)	7.1	34.1	34.1	1.6	28.6		13.2	26.7		2.8	16.3	
Actuated g/C Ratio	0.09	0.42	0.42	0.02	0.35		0.16	0.33		0.03	0.20	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	6.0	6.0	2.5	6.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	145	734	611	32	604		270	554		57	323	
v/s Ratio Prot	c0.04	c0.26		0.01	c0.24		c0.10	0.09		0.01	c0.09	
v/s Ratio Perm			0.04									
v/c Ratio	0.45	0.62	0.09	0.34	0.68		0.64	0.28		0.30	0.47	
Uniform Delay, d1	35.2	18.5	14.2	39.3	22.4		31.8	20.1		38.2	28.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	2.7	0.2	4.6	4.8		4.3	0.2		2.1	0.8	
Delay (s)	36.8	21.2	14.4	43.9	27.2		36.0	20.3		40.4	29.4	
Level of Service	D	C	B	D	C		D	C		D	C	
Approach Delay (s)		21.3			27.7			28.4			30.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	81.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
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 (vph)	175	1	315	2	5	5	320	800	1	1	795	80
Future Volume (vph)	175	1	315	2	5	5	320	800	1	1	795	80
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	5.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.94		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1651	1488		1638		1662	3259		1662	3228	1435
Flt Permitted		1.00	1.00		0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1733	1488		1638		1662	3259		1662	3228	1435
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	179	1	321	2	5	5	327	816	1	1	811	82
RTOR Reduction (vph)	0	0	274	0	5	0	0	0	0	0	0	52
Lane Group Flow (vph)	0	180	47	0	7	0	327	817	0	1	811	30
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	3%	1%
Turn Type	custom	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	8	8		7!	7		1	6		5	2	
Permitted Phases	3	7!	8									2
Actuated Green, G (s)		13.4	12.0		1.4		23.0	54.3		0.8	32.1	32.1
Effective Green, g (s)		15.4	13.0		2.4		24.0	55.8		1.8	33.6	32.1
Actuated g/C Ratio		0.17	0.15		0.03		0.27	0.63		0.02	0.38	0.36
Clearance Time (s)		5.0	5.0		5.0		5.0	5.5		5.0	5.5	5.5
Vehicle Extension (s)		2.5	2.5		5.0		2.5	4.8		2.5	4.8	4.8
Lane Grp Cap (vph)		287	217		44		448	2043		33	1218	517
v/s Ratio Prot		c0.09			0.00		c0.20	0.25		0.00	c0.25	
v/s Ratio Perm		c0.02	0.03									0.02
v/c Ratio		0.63	0.22		0.16		0.73	0.40		0.03	0.67	0.06
Uniform Delay, d1		34.1	33.5		42.3		29.6	8.3		42.7	23.0	18.6
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		3.7	0.4		3.6		5.5	0.3		0.3	1.8	0.1
Delay (s)		37.8	33.9		45.9		35.1	8.5		43.0	24.8	18.7
Level of Service		D	C		D		D	A		D	C	B
Approach Delay (s)		35.3			45.9			16.1			24.3	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1	1	2	1	5	5	420	1	5	385	10
Future Vol, veh/h	5	1	1	2	1	5	5	420	1	5	385	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	6	1	1	3	1	6	6	525	1	6	481	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1041	1038	488	1039	1044	526	494	0	0	526	0	0
Stage 1	500	500	-	538	538	-	-	-	-	-	-	-
Stage 2	541	538	-	501	506	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	210	233	584	211	231	556	1080	-	-	1051	-	-
Stage 1	557	546	-	531	526	-	-	-	-	-	-	-
Stage 2	529	526	-	556	543	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	204	229	584	207	227	556	1080	-	-	1051	-	-
Mov Cap-2 Maneuver	204	229	-	207	227	-	-	-	-	-	-	-
Stage 1	553	542	-	527	522	-	-	-	-	-	-	-
Stage 2	518	522	-	549	539	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.3	15.7	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1080	-	-	229	347	1051	-	-
HCM Lane V/C Ratio	0.006	-	-	0.038	0.029	0.006	-	-
HCM Control Delay (s)	8.4	0	-	21.3	15.7	8.4	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection						
Int Delay, s/veh	4.9					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	1	40	55	5	95
Future Vol, veh/h	50	1	40	55	5	95
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	56	1	44	61	6	106

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	59	0	208	59
Stage 1	-	-	-	-	59	-
Stage 2	-	-	-	-	149	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1558	-	785	1012
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	884	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1555	-	761	1010
Mov Cap-2 Maneuver	-	-	-	-	761	-
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	884	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	994	-	-	1555	-
HCM Lane V/C Ratio	0.112	-	-	0.029	-
HCM Control Delay (s)	9.1	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	605	30	160	730	5	10	1	150	5	1	2
Future Vol, veh/h	5	605	30	160	730	5	10	1	150	5	1	2
Conflicting Peds, #/hr	9	0	3	3	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	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	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	637	32	168	768	5	11	1	158	5	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	782	0	0	672	0	0	1387	1784	338	1445	1798	396
Stage 1	-	-	-	-	-	-	666	666	-	1116	1116	-
Stage 2	-	-	-	-	-	-	721	1118	-	329	682	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
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	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	845	-	-	928	-	-	104	83	664	94	81	609
Stage 1	-	-	-	-	-	-	420	460	-	225	285	-
Stage 2	-	-	-	-	-	-	389	285	-	664	453	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	838	-	-	925	-	-	87	67	662	60	65	604
Mov Cap-2 Maneuver	-	-	-	-	-	-	87	67	-	60	65	-
Stage 1	-	-	-	-	-	-	416	456	-	222	231	-
Stage 2	-	-	-	-	-	-	316	231	-	501	449	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.7	17.7	56.7
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	452	838	-	-	925	-	-	78
HCM Lane V/C Ratio	0.375	0.006	-	-	0.182	-	-	0.108
HCM Control Delay (s)	17.7	9.3	-	-	9.8	-	-	56.7
HCM Lane LOS	C	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.7	0	-	-	0.7	-	-	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	480	245	1	590	370	50
Future Volume (vph)	480	245	1	590	370	50
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		0.95	0.97	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.98	
Flt Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	1750	1457		3325	3185	
Flt Permitted	1.00	1.00		0.95	0.96	
Satd. Flow (perm)	1750	1457		3174	3185	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	516	263	1	634	398	54
RTOR Reduction (vph)	0	0	0	0	14	0
Lane Group Flow (vph)	516	263	0	635	438	0
Confl. Peds. (#/hr)		1	1			4
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	NA	Free	Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases		Free	6			
Actuated Green, G (s)	18.1	41.3		18.1	14.2	
Effective Green, g (s)	18.6	41.3		18.6	14.7	
Actuated g/C Ratio	0.45	1.00		0.45	0.36	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	4.0			4.0	3.5	
Lane Grp Cap (vph)	788	1457		1429	1133	
v/s Ratio Prot	c0.29				c0.14	
v/s Ratio Perm		0.18		0.20		
v/c Ratio	0.65	0.18		0.44	0.39	
Uniform Delay, d1	8.8	0.0		7.8	9.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	0.3		0.3	0.3	
Delay (s)	11.0	0.3		8.1	10.2	
Level of Service	B	A		A	B	
Approach Delay (s)	7.4			8.1	10.2	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	41.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	615	15	55	690	25	120
Future Volume (vph)	615	15	55	690	25	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0		-0.5	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3311		1630	3292	1662	1450
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3311		1630	3292	1662	1450
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	641	16	57	719	26	125
RTOR Reduction (vph)	1	0	0	0	0	34
Lane Group Flow (vph)	656	0	57	719	26	91
Confl. Peds. (#/hr)		6	6			9
Heavy Vehicles (%)	0%	0%	2%	1%	0%	1%
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						6
Actuated Green, G (s)	24.6		4.1	33.2	4.4	33.2
Effective Green, g (s)	25.6		9.1	34.2	4.9	34.2
Actuated g/C Ratio	0.54		0.19	0.73	0.10	0.73
Clearance Time (s)	5.0		4.5	5.0	4.5	5.0
Vehicle Extension (s)	4.2		2.5	4.2	2.5	4.2
Lane Grp Cap (vph)	1799		314	2390	172	1052
v/s Ratio Prot	c0.20		0.03	c0.22	c0.02	
v/s Ratio Perm						0.06
v/c Ratio	0.36		0.18	0.30	0.15	0.09
Uniform Delay, d1	6.1		15.9	2.3	19.2	1.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2		0.2	0.1	0.3	0.1
Delay (s)	6.3		16.1	2.4	19.5	1.9
Level of Service	A		B	A	B	A
Approach Delay (s)	6.3			3.4	5.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	47.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	2	425	40	5	375
Future Vol, veh/h	35	2	425	40	5	375
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	37	2	452	43	5	399

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	885	476	0	0	497	0
Stage 1	476	-	-	-	-	-
Stage 2	409	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	318	593	-	-	1077	-
Stage 1	629	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	315	592	-	-	1075	-
Mov Cap-2 Maneuver	315	-	-	-	-	-
Stage 1	624	-	-	-	-	-
Stage 2	675	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	323	1075	-
HCM Lane V/C Ratio	-	-	0.122	0.005	-
HCM Control Delay (s)	-	-	17.7	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	190	300	25	121	349
Future Vol, veh/h	40	190	300	25	121	349
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	60	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	43	202	319	27	129	371

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	963	334	0	0	347	0
Stage 1	334	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	286	712	-	-	1223	-
Stage 1	730	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	255	711	-	-	1222	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	535	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	255	711	1222	-
HCM Lane V/C Ratio	-	-	0.167	0.284	0.105	-
HCM Control Delay (s)	-	-	21.9	12.1	8.3	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	1.2	0.4	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	75	195	105	235	192	33
Future Vol, veh/h	75	195	105	235	192	33
Conflicting Peds, #/hr	1	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	82	214	115	258	211	36

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	719	230	248	0	-	0
Stage 1	230	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.11	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.209	-	-	-
Pot Cap-1 Maneuver	398	814	1324	-	-	-
Stage 1	813	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	363	813	1323	-	-	-
Mov Cap-2 Maneuver	363	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.5	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1323	-	605	-	-
HCM Lane V/C Ratio	0.087	-	0.49	-	-
HCM Control Delay (s)	8	-	16.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.7	-	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	105	405	425	160	265	145
Future Volume (vph)	105	405	425	160	265	145
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.96		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1662	3325	3169		1662	1468
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1662	3325	3169		1662	1468
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	115	445	467	176	291	159
RTOR Reduction (vph)	0	0	46	0	0	118
Lane Group Flow (vph)	115	445	597	0	291	41
Confl. Peds. (#/hr)	2			2		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	7.2	28.1	16.9		13.1	13.1
Effective Green, g (s)	7.2	29.1	17.9		13.1	13.1
Actuated g/C Ratio	0.14	0.58	0.36		0.26	0.26
Clearance Time (s)	4.0	5.0	5.0		4.0	4.0
Vehicle Extension (s)	2.5	5.2	5.2		2.5	2.5
Lane Grp Cap (vph)	238	1927	1129		433	383
v/s Ratio Prot	c0.07	0.13	c0.19		c0.18	
v/s Ratio Perm						0.03
v/c Ratio	0.48	0.23	0.53		0.67	0.11
Uniform Delay, d1	19.8	5.1	12.8		16.6	14.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.1	0.9		3.7	0.1
Delay (s)	20.9	5.3	13.7		20.3	14.2
Level of Service	C	A	B		C	B
Approach Delay (s)		8.5	13.7		18.2	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	50.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	50	540	15	35	625
Future Volume (vph)	15	50	540	15	35	625
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1662	1488	1727		1662	1733
Flt Permitted	0.95	1.00	1.00		0.38	1.00
Satd. Flow (perm)	1662	1488	1727		669	1733
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	18	59	635	18	41	735
RTOR Reduction (vph)	0	54	1	0	0	0
Lane Group Flow (vph)	18	5	652	0	41	735
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	4		2			2
Permitted Phases		4			2	
Actuated Green, G (s)	3.2	3.2	27.9		27.9	27.9
Effective Green, g (s)	3.2	3.2	28.9		28.9	28.9
Actuated g/C Ratio	0.08	0.08	0.72		0.72	0.72
Clearance Time (s)	4.0	4.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	5.2		5.2	5.2
Lane Grp Cap (vph)	132	118	1244		482	1248
v/s Ratio Prot	c0.01		0.38			c0.42
v/s Ratio Perm		0.00			0.06	
v/c Ratio	0.14	0.04	0.52		0.09	0.59
Uniform Delay, d1	17.2	17.0	2.5		1.7	2.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.1	0.8		0.2	1.2
Delay (s)	17.6	17.2	3.3		1.8	3.9
Level of Service	B	B	A		A	A
Approach Delay (s)	17.3		3.3			3.8
Approach LOS	B		A			A

Intersection Summary			
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection						
Int Delay, s/veh	5.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	125	185	30	175	200
Future Vol, veh/h	40	125	185	30	175	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	147	218	35	206	235

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	883	236	0	0	253	0
Stage 1	236	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	319	808	-	-	1324	-
Stage 1	808	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	262	808	-	-	1324	-
Mov Cap-2 Maneuver	262	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.5	0	3.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	537	1324	-
HCM Lane V/C Ratio	-	-	0.361	0.156	-
HCM Control Delay (s)	-	-	15.5	8.2	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.6	0.6	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	155	90	1000	1120	35
Future Volume (vph)	15	155	90	1000	1120	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0		4.0	4.5	4.5	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.88		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1514		1646	3260	3245	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1514		1646	3260	3245	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	16	170	99	1099	1231	38
RTOR Reduction (vph)	150	0	0	0	2	0
Lane Group Flow (vph)	36	0	99	1099	1267	0
Confl. Peds. (#/hr)			1			1
Heavy Vehicles (%)	0%	1%	1%	2%	2%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	8		1	6	2	
Permitted Phases						
Actuated Green, G (s)	6.9		7.5	46.2	34.2	
Effective Green, g (s)	7.4		8.0	46.7	34.7	
Actuated g/C Ratio	0.12		0.13	0.75	0.55	
Clearance Time (s)	4.5		4.5	5.0	5.0	
Vehicle Extension (s)	2.5		2.5	4.8	4.8	
Lane Grp Cap (vph)	178		210	2431	1798	
v/s Ratio Prot	c0.02		0.06	c0.34	c0.39	
v/s Ratio Perm						
v/c Ratio	0.20		0.47	0.45	0.70	
Uniform Delay, d1	24.9		25.3	3.0	10.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.4		1.2	0.3	1.5	
Delay (s)	25.3		26.6	3.3	11.8	
Level of Service	C		C	A	B	
Approach Delay (s)	25.3			5.2	11.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	62.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.6					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	45	450	195	0	0
Future Vol, veh/h	0	45	450	195	0	0
Conflicting Peds, #/hr	0	0	0	0	2	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	16974	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	0	51	511	222	0	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	-	222	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.22	4.1	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.318	2.2	-
Pot Cap-1 Maneuver	0	818	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	818	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s	9.7	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	818	-	-
HCM Lane V/C Ratio	0.063	-	-
HCM Control Delay (s)	9.7	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	35	295	0	0	0	0	0	1225	90
Future Volume (vph)	0	0	0	35	295	0	0	0	0	0	1225	90
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
Lane Util. Factor					0.95						0.95	1.00
Frpb, ped/bikes					1.00						1.00	0.98
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					3305						3292	1457
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					3305						3292	1457
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)	0	0	0	37	311	0	0	0	0	0	1289	95
RTOR Reduction (vph)	0	0	0	0	20	0	0	0	0	0	0	25
Lane Group Flow (vph)	0	0	0	0	328	0	0	0	0	0	1289	70
Confl. Peds. (#/hr)	8		4	4		8	14		11	11		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					9.8						51.2	51.2
Effective Green, g (s)					10.3						51.7	51.7
Actuated g/C Ratio					0.15						0.74	0.74
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					0.2						0.2	0.2
Lane Grp Cap (vph)					486						2431	1076
v/s Ratio Prot											c0.39	
v/s Ratio Perm					0.10							0.05
v/c Ratio					0.68						0.53	0.07
Uniform Delay, d1					28.3						3.9	2.5
Progression Factor					1.20						1.00	1.00
Incremental Delay, d2					2.8						0.8	0.1
Delay (s)					36.8						4.8	2.6
Level of Service					D						A	A
Approach Delay (s)		0.0			36.8			0.0			4.6	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
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 (vph)	15	520	115	5	415	15	165	95	15	135	75	20
Future Volume (vph)	15	520	115	5	415	15	165	95	15	135	75	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	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.98		1.00		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	
Frt		1.00	0.85		0.99		1.00	0.98		1.00	0.97	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1747	1451		3303		1662	1714		1662	1695	
Flt Permitted		0.98	1.00		0.95		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1722	1451		3141		1662	1714		1662	1695	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	16	553	122	5	441	16	176	101	16	144	80	21
RTOR Reduction (vph)	0	0	60	0	2	0	0	7	0	0	13	0
Lane Group Flow (vph)	0	569	62	0	460	0	176	110	0	144	88	0
Confl. Peds. (#/hr)	3		3	3		3						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2		2	6								
Actuated Green, G (s)		29.0	29.0		29.0		10.7	7.5		8.2	5.0	
Effective Green, g (s)		29.5	29.5		29.5		11.2	8.0		8.7	5.5	
Actuated g/C Ratio		0.51	0.51		0.51		0.19	0.14		0.15	0.09	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		6.5	6.5		6.5		5.0	2.5		2.5	2.5	
Lane Grp Cap (vph)		872	735		1592		319	235		248	160	
v/s Ratio Prot							c0.11	c0.06		0.09	0.05	
v/s Ratio Perm		c0.33	0.04		0.15							
v/c Ratio		0.65	0.08		0.29		0.55	0.47		0.58	0.55	
Uniform Delay, d1		10.6	7.4		8.3		21.2	23.1		23.1	25.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.0	0.2		0.3		3.5	1.1		2.9	3.3	
Delay (s)		13.6	7.5		8.6		24.7	24.2		25.9	28.4	
Level of Service		B	A		A		C	C		C	C	
Approach Delay (s)		12.5			8.6			24.5			27.0	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	65	10	20	120	50	105
Future Vol, veh/h	65	10	20	120	50	105
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	76	12	24	141	59	124
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.2	7.7	8.2
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	87%	0%	32%
Vol Thru, %	13%	14%	0%
Vol Right, %	0%	86%	68%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	75	140	155
LT Vol	65	0	50
Through Vol	10	20	0
RT Vol	0	120	105
Lane Flow Rate	88	165	182
Geometry Grp	1	1	1
Degree of Util (X)	0.114	0.178	0.208
Departure Headway (Hd)	4.632	3.884	4.098
Convergence, Y/N	Yes	Yes	Yes
Cap	776	926	877
Service Time	2.649	1.898	2.113
HCM Lane V/C Ratio	0.113	0.178	0.208
HCM Control Delay	8.2	7.7	8.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.6	0.8

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	1	1	5	5	55	1	2	5	90	5	1
Future Vol, veh/h	1	1	1	5	5	55	1	2	5	90	5	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	1	1	6	6	65	1	2	6	106	6	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	7	6.9	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	33%	8%	94%
Vol Thru, %	25%	33%	8%	5%
Vol Right, %	62%	33%	85%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	3	65	96
LT Vol	1	1	5	90
Through Vol	2	1	5	5
RT Vol	5	1	55	1
Lane Flow Rate	9	4	76	113
Geometry Grp	1	1	1	1
Degree of Util (X)	0.01	0.004	0.077	0.133
Departure Headway (Hd)	3.775	4.037	3.621	4.227
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	942	875	977	849
Service Time	1.823	2.115	1.689	2.249
HCM Lane V/C Ratio	0.01	0.005	0.078	0.133
HCM Control Delay	6.9	7.1	7	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0	0.2	0.5

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	5	10	5	1	10	5	15	45	5	5	80	10
Future Vol, veh/h	5	10	5	1	10	5	15	45	5	5	80	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	6	12	6	1	12	6	18	53	6	6	94	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.2	7.5	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	25%	6%	5%
Vol Thru, %	69%	50%	62%	84%
Vol Right, %	8%	25%	31%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	20	16	95
LT Vol	15	5	1	5
Through Vol	45	10	10	80
RT Vol	5	5	5	10
Lane Flow Rate	76	24	19	112
Geometry Grp	1	1	1	1
Degree of Util (X)	0.086	0.027	0.021	0.124
Departure Headway (Hd)	4.058	4.138	4.066	3.979
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	879	853	867	899
Service Time	2.1	2.223	2.154	2.014
HCM Lane V/C Ratio	0.086	0.028	0.022	0.125
HCM Control Delay	7.5	7.3	7.2	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0.1	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	35	45	75	40	0	0	0	0	35	1600	25
Future Volume (vph)	0	35	45	75	40	0	0	0	0	35	1600	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	
Lane Util. Factor		1.00			1.00						0.91	
Frpb, ped/bikes		0.99			1.00						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		0.92			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1606			1693						4714	
Flt Permitted		1.00			0.75						1.00	
Satd. Flow (perm)		1606			1316						4714	
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)	0	37	47	79	42	0	0	0	0	37	1684	26
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	61	0	0	121	0	0	0	0	0	1746	0
Confl. Peds. (#/hr)	7		1	1		7	7		2	2		7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.4	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.5	
Vehicle Extension (s)		0.2			0.2						0.2	
Lane Grp Cap (vph)		208			171						3562	
v/s Ratio Prot		0.04										
v/s Ratio Perm					c0.09						0.37	
v/c Ratio		0.30			0.71						0.49	
Uniform Delay, d1		27.5			29.2						3.3	
Progression Factor		1.00			1.18						1.87	
Incremental Delay, d2		0.3			10.1						0.5	
Delay (s)		27.8			44.4						6.7	
Level of Service		C			D						A	
Approach Delay (s)		27.8			44.4			0.0			6.7	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	5	0	0	5	5	75	1195	2	0	0	0
Future Vol, veh/h	50	5	0	0	5	5	75	1195	2	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	3	3	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	100	0	0	0
Mvmt Flow	53	5	0	0	5	5	80	1271	2	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	800	1438	-	-	1437	640	2	0	0
Stage 1	2	2	-	-	1435	-	-	-	-
Stage 2	798	1436	-	-	2	-	-	-	-
Critical Hdwy	7.5	6.5	-	-	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	-	-	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	280	134	0	0	135	423	1634	-	-
Stage 1	-	-	0	0	201	-	-	-	-
Stage 2	350	201	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	232	111	-	-	112	422	1631	-	-
Mov Cap-2 Maneuver	232	111	-	-	112	-	-	-	-
Stage 1	-	-	-	-	167	-	-	-	-
Stage 2	278	167	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	28.5	26.6	0.9
HCM LOS	D	D	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	1631	-	-	211	177
HCM Lane V/C Ratio	0.049	-	-	0.277	0.06
HCM Control Delay (s)	7.3	0.5	-	28.5	26.6
HCM Lane LOS	A	A	-	D	D
HCM 95th %tile Q(veh)	0.2	-	-	1.1	0.2

Movement	EBT	EBR	EBR2	WBL2	WBL	WBT	SBL2	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	165	50	5	175	15	90	280	1230	145	55
Future Volume (vph)	165	50	5	175	15	90	280	1230	145	55
Ideal Flow (vphpl)	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	
Lane Util. Factor	0.95				1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	0.99				1.00	1.00	1.00	1.00	0.98	
Flpb, ped/bikes	1.00				0.99	1.00	0.99	1.00	1.00	
Frt	0.96				1.00	1.00	1.00	1.00	0.96	
Flt Protected	1.00				0.95	1.00	0.95	0.95	1.00	
Satd. Flow (prot)	3145				1586	1750	1611	3225	1629	
Flt Permitted	1.00				0.95	1.00	0.95	0.95	1.00	
Satd. Flow (perm)	3145				1586	1750	1611	3225	1629	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	176	53	5	186	16	96	298	1309	154	59
RTOR Reduction (vph)	3	0	0	0	0	0	0	0	20	0
Lane Group Flow (vph)	231	0	0	0	202	96	298	1309	193	0
Confl. Peds. (#/hr)		8	8	8	8		12	12		1
Heavy Vehicles (%)	1%	0%	2%	2%	19%	0%	2%	0%	2%	0%
Turn Type	NA			Perm	NA	NA	custom	Prot	NA	
Protected Phases	8					4		2		
Permitted Phases				4			2			
Actuated Green, G (s)	10.0				0.0	10.0	50.0	50.0	0.0	
Effective Green, g (s)	10.5				0.0	10.5	51.5	51.5	0.0	
Actuated g/C Ratio	0.15				0.00	0.15	0.74	0.74	0.00	
Clearance Time (s)	4.5					4.5	5.5	5.5		
Vehicle Extension (s)	2.5					2.5	6.1	6.1		
Lane Grp Cap (vph)	471				0	262	1185	2372	0	
v/s Ratio Prot	c0.07					0.05		c0.41		
v/s Ratio Perm							0.18			
v/c Ratio	0.49				no cap	0.37	0.25	0.55	no cap	
Uniform Delay, d1	27.3				Error	26.8	3.0	4.1	Error	
Progression Factor	1.00					0.39	1.26	1.53		
Incremental Delay, d2	0.6				Error	0.5	0.5	0.8	Error	
Delay (s)	27.9				Error	11.0	4.2	7.1	Error	
Level of Service	C				F	B	A	A	F	
Approach Delay (s)	27.9					Error			Error	
Approach LOS	C					F			F	

Intersection Summary			
HCM 2000 Control Delay	Error	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.6%	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 (vph)	95	335	0	0	255	185	30	960	140	0	0	0
Future Volume (vph)	95	335	0	0	255	185	30	960	140	0	0	0
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			
Lane Util. Factor		0.95			1.00	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	0.99			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.99			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		3272			1750	1446		3220	1468			
Flt Permitted		0.71			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		2361			1750	1446		3220	1468			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	97	342	0	0	260	189	31	980	143	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	120	0	0	53	0	0	0
Lane Group Flow (vph)	0	439	0	0	260	69	0	1011	90	0	0	0
Confl. Peds. (#/hr)	6		10	10		6	5		1	1		5
Heavy Vehicles (%)	2%	0%	0%	0%	0%	1%	6%	3%	0%	0%	0%	0%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	3	8			4			6				
Permitted Phases	8					4	6		6			
Actuated Green, G (s)		17.2			17.2	17.2		42.8	42.8			
Effective Green, g (s)		17.7			17.7	17.7		44.3	44.3			
Actuated g/C Ratio		0.25			0.25	0.25		0.63	0.63			
Clearance Time (s)		4.5			4.5	4.5		5.5	5.5			
Vehicle Extension (s)		2.5			2.5	2.5		5.0	5.0			
Lane Grp Cap (vph)		596			442	365		2037	929			
v/s Ratio Prot					0.15							
v/s Ratio Perm		c0.19				0.05		0.31	0.06			
v/c Ratio		0.74			0.59	0.19		0.50	0.10			
Uniform Delay, d1		24.0			23.0	20.5		6.9	5.0			
Progression Factor		1.29			1.00	1.00		1.00	1.00			
Incremental Delay, d2		4.4			1.7	0.2		0.9	0.2			
Delay (s)		35.4			24.6	20.7		7.7	5.2			
Level of Service		D			C	C		A	A			
Approach Delay (s)		35.4			23.0			7.4			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	215	305	5	5	50
Future Vol, veh/h	25	215	305	5	5	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	29	247	351	6	6	57

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	357	0	-	0	659	354
Stage 1	-	-	-	-	354	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1213	-	-	-	432	694
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	752	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1213	-	-	-	420	694
Mov Cap-2 Maneuver	-	-	-	-	420	-
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	752	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1213	-	-	-	655
HCM Lane V/C Ratio	0.024	-	-	-	0.097
HCM Control Delay (s)	8	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	190	100	5	5	70
Future Vol, veh/h	35	190	100	5	5	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	3	4	0	0	1
Mvmt Flow	42	226	119	6	6	83

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	125	0	-	0	432	122
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	310	-
Critical Hdwy	4.1	-	-	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.309
Pot Cap-1 Maneuver	1474	-	-	-	584	932
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1474	-	-	-	568	932
Mov Cap-2 Maneuver	-	-	-	-	568	-
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	748	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1474	-	-	-	894
HCM Lane V/C Ratio	0.028	-	-	-	0.1
HCM Control Delay (s)	7.5	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	10	0	0	0	0	0	0	15	945	15
Future Vol, veh/h	0	1	10	0	0	0	0	0	0	15	945	15
Conflicting Peds, #/hr	5	0	2	2	0	5	12	0	2	2	0	12
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	-	-	16983	-	-	16983	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	11	0	0	0	0	0	0	16	1027	16

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	1081	536	2	0	0
Stage 1	-	1079	-	-	-	-
Stage 2	-	2	-	-	-	-
Critical Hdwy	-	6.54	7.14	5.34	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.02	3.92	3.12	-	-
Pot Cap-1 Maneuver	0	216	419	1151	-	-
Stage 1	0	293	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	414	1151	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	14	0.2
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	414	1151	-	-
HCM Lane V/C Ratio	0.029	0.014	-	-
HCM Control Delay (s)	14	8.2	0.1	-
HCM Lane LOS	B	A	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	10	0	5	0	1	10	5	1	0
Future Vol, veh/h	0	0	0	10	0	5	0	1	10	5	1	0
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	14	0	7	0	1	14	7	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	7	0	0	3	0	0	37	38	3	41	35	6
Stage 1	-	-	-	-	-	-	3	3	-	32	32	-
Stage 2	-	-	-	-	-	-	34	35	-	9	3	-
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	1627	-	-	1632	-	-	973	858	1087	968	861	1083
Stage 1	-	-	-	-	-	-	1025	897	-	990	872	-
Stage 2	-	-	-	-	-	-	987	870	-	1017	897	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1627	-	-	1629	-	-	961	849	1085	948	852	1081
Mov Cap-2 Maneuver	-	-	-	-	-	-	961	849	-	948	852	-
Stage 1	-	-	-	-	-	-	1023	895	-	990	864	-
Stage 2	-	-	-	-	-	-	975	862	-	1003	895	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	4.8	8.5	8.9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1058	1627	-	-	1629	-	-	931
HCM Lane V/C Ratio	0.014	-	-	-	0.008	-	-	0.009
HCM Control Delay (s)	8.5	0	-	-	7.2	0	-	8.9
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	10	30	0	0	0	0	0	70	410
Future Vol, veh/h	0	0	0	10	30	0	0	0	0	0	70	410
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	91	91	91	92	92	92	91	91	91
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	0	1	1
Mvmt Flow	0	0	0	11	33	0	0	0	0	0	77	451

Major/Minor				Minor1						Major2		
Conflicting Flow All				81	77	-				-	-	0
Stage 1				0	0	-				-	-	-
Stage 2				81	77	-				-	-	-
Critical Hdwy				6.4	6.5	-				-	-	-
Critical Hdwy Stg 1				-	-	-				-	-	-
Critical Hdwy Stg 2				5.4	5.5	-				-	-	-
Follow-up Hdwy				3.5	4	-				-	-	-
Pot Cap-1 Maneuver				926	817	0				0	-	0
Stage 1				-	-	0				0	-	0
Stage 2				947	835	0				0	-	0
Platoon blocked, %											-	
Mov Cap-1 Maneuver				926	0	-				-	-	-
Mov Cap-2 Maneuver				926	0	-				-	-	-
Stage 1				-	0	-				-	-	-
Stage 2				947	0	-				-	-	-

Approach	WB	SB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	WBLn1	WBLn2	SBT
Capacity (veh/h)	926	-	-
HCM Lane V/C Ratio	0.012	-	-
HCM Control Delay (s)	8.9	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

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	30	50	15	80	0	0	0	0	115	600	25
Future Vol, veh/h	0	30	50	15	80	0	0	0	0	115	600	25
Conflicting Peds, #/hr	0	0	16	16	0	0	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	0	0	0	0	0	0
Mvmt Flow	0	33	56	17	89	0	0	0	0	128	667	28

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	-	947	374	622	961	-				0	0	0
Stage 1	-	947	-	0	0	-				-	-	-
Stage 2	-	0	-	622	961	-				-	-	-
Critical Hdwy	-	6.5	6.9	7.5	6.5	-				4.1	-	-
Critical Hdwy Stg 1	-	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.5	5.5	-				-	-	-
Follow-up Hdwy	-	4	3.3	3.5	4	-				2.2	-	-
Pot Cap-1 Maneuver	0	263	629	375	258	0				-	-	-
Stage 1	0	342	-	-	-	0				-	-	-
Stage 2	0	-	-	446	337	0				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	-	260	623	308	255	-				-	-	-
Mov Cap-2 Maneuver	-	260	-	308	255	-				-	-	-
Stage 1	-	339	-	-	-	-				-	-	-
Stage 2	-	-	-	366	334	-				-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	16.2	27.7	
HCM LOS	C	D	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	409	262	-	-	-
HCM Lane V/C Ratio	0.217	0.403	-	-	-
HCM Control Delay (s)	16.2	27.7	-	-	-
HCM Lane LOS	C	D	-	-	-
HCM 95th %tile Q(veh)	0.8	1.8	-	-	-

Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	20	45	185	15	0	70	0	260	0	0	0
Future Vol, veh/h	0	20	45	185	15	0	70	0	260	0	0	0
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	93	93	93	92	93	92	93	92	92	92
Heavy Vehicles, %	2	0	0	0	3	2	1	2	1	2	2	2
Mvmt Flow	0	22	48	199	16	0	75	0	280	0	0	0

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	-	1	1	36	1	-				0	0	0
Stage 1	-	1	-	0	0	-				-	-	-
Stage 2	-	0	-	36	1	-				-	-	-
Critical Hdwy	-	6.5	6.2	7.1	6.53	-				4.12	-	-
Critical Hdwy Stg 1	-	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.53	-				-	-	-
Follow-up Hdwy	-	4	3.3	3.5	4.027	-				2.218	-	-
Pot Cap-1 Maneuver	0	899	1090	975	893	0				-	-	-
Stage 1	0	899	-	-	-	0				-	-	-
Stage 2	0	-	-	985	893	0				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	-	899	1090	915	893	-				-	-	-
Mov Cap-2 Maneuver	-	899	-	915	893	-				-	-	-
Stage 1	-	899	-	-	-	-				-	-	-
Stage 2	-	-	-	919	893	-				-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	8.8	10.2	0
HCM LOS	A	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1023	913	-	-	-
HCM Lane V/C Ratio	0.068	0.236	-	-	-
HCM Control Delay (s)	8.8	10.2	0	-	-
HCM Lane LOS	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	0.9	-	-	-

Intersection												
Int Delay, s/veh	0.7											
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations												
Traffic Vol, veh/h	1	120	10	2	55	1	5	1	1	1	2	1
Future Vol, veh/h	1	120	10	2	55	1	5	1	1	1	2	1
Conflicting Peds, #/hr	3	0	3	3	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	160	13	3	73	1	7	1	1	1	3	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	176	0	0	254	255	170	253	261	77
Stage 1	-	-	-	-	-	-	172	172	-	83	83	-
Stage 2	-	-	-	-	-	-	82	83	-	170	178	-
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	1535	-	-	1412	-	-	703	652	879	704	647	990
Stage 1	-	-	-	-	-	-	835	760	-	930	830	-
Stage 2	-	-	-	-	-	-	931	830	-	837	756	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1531	-	-	1408	-	-	696	646	876	698	641	987
Mov Cap-2 Maneuver	-	-	-	-	-	-	696	646	-	698	641	-
Stage 1	-	-	-	-	-	-	832	757	-	926	826	-
Stage 2	-	-	-	-	-	-	925	826	-	833	753	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	10.1	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	709	1531	-	-	1408	-	-	719
HCM Lane V/C Ratio	0.013	0.001	-	-	0.002	-	-	0.007
HCM Control Delay (s)	10.1	7.4	0	-	7.6	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	130	65	5	10	1
Future Vol, veh/h	1	130	65	5	10	1
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	176	88	7	14	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	97	0	-	0	272	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	178	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1509	-	-	-	722	968
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	858	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1506	-	-	-	718	966
Mov Cap-2 Maneuver	-	-	-	-	718	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	856	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1506	-	-	-	735
HCM Lane V/C Ratio	0.001	-	-	-	0.02
HCM Control Delay (s)	7.4	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	1	10	20	1	5	10	680	1	1	745	15
Future Volume (vph)	245	1	10	20	1	5	10	680	1	1	745	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	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.98			1.00			1.00	
Flt Protected		0.95			0.96			1.00			1.00	
Satd. Flow (prot)		1638			1638			3227			3189	
Flt Permitted		0.71			0.76			0.94			0.95	
Satd. Flow (perm)		1227			1295			3041			3044	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	266	1	11	22	1	5	11	739	1	1	810	16
RTOR Reduction (vph)	0	2	0	0	3	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	276	0	0	25	0	0	751	0	0	824	0
Confl. Peds. (#/hr)	8					8	2		2	2		2
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	3%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		14.4			14.4			19.8			19.8	
Effective Green, g (s)		14.9			14.9			20.3			20.3	
Actuated g/C Ratio		0.34			0.34			0.47			0.47	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.5			2.5			6.1			6.1	
Lane Grp Cap (vph)		423			446			1428			1430	
v/s Ratio Prot												
v/s Ratio Perm		c0.23			0.02			0.25			c0.27	
v/c Ratio		0.65			0.06			0.53			0.58	
Uniform Delay, d1		12.0			9.5			8.1			8.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.2			0.0			0.9			1.1	
Delay (s)		15.2			9.5			9.0			9.5	
Level of Service		B			A			A			A	
Approach Delay (s)		15.2			9.5			9.0			9.5	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	43.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	100	150	20	5	2
Future Vol, veh/h	5	100	150	20	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	115	172	23	6	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	195	0	-	0	311	184
Stage 1	-	-	-	-	184	-
Stage 2	-	-	-	-	127	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1390	-	-	-	686	864
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	904	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1390	-	-	-	683	864
Mov Cap-2 Maneuver	-	-	-	-	683	-
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	904	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1390	-	-	-	726
HCM Lane V/C Ratio	0.004	-	-	-	0.011
HCM Control Delay (s)	7.6	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	170	15	45	265	15	35	10	30	10	20	2
Future Vol, veh/h	5	170	15	45	265	15	35	10	30	10	20	2
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	40	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	185	16	49	288	16	38	11	33	11	22	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	306	0	0	201	0	0	609	607	195	623	607	298
Stage 1	-	-	-	-	-	-	203	203	-	396	396	-
Stage 2	-	-	-	-	-	-	406	404	-	227	211	-
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	1266	-	-	1383	-	-	410	414	851	401	414	746
Stage 1	-	-	-	-	-	-	804	737	-	633	607	-
Stage 2	-	-	-	-	-	-	626	603	-	780	731	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1264	-	-	1383	-	-	380	397	849	365	397	745
Mov Cap-2 Maneuver	-	-	-	-	-	-	380	397	-	365	397	-
Stage 1	-	-	-	-	-	-	801	734	-	629	585	-
Stage 2	-	-	-	-	-	-	580	581	-	735	728	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.1	13.8	14.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	491	1264	-	-	1383	-	-	398
HCM Lane V/C Ratio	0.166	0.004	-	-	0.035	-	-	0.087
HCM Control Delay (s)	13.8	7.9	-	-	7.7	-	-	14.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	230	345	110	155	15
Future Vol, veh/h	0	230	345	110	155	15
Conflicting Peds, #/hr	6	0	0	6	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	245	367	117	165	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	618	374
Stage 1	-	-	-	-	373	-
Stage 2	-	-	-	-	245	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	-	456	677
Stage 1	0	-	-	-	701	-
Stage 2	0	-	-	-	800	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	451	672
Mov Cap-2 Maneuver	-	-	-	-	543	-
Stage 1	-	-	-	-	697	-
Stage 2	-	-	-	-	795	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	596
HCM Lane V/C Ratio	-	-	-	0.303
HCM Control Delay (s)	-	-	-	13.7
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	300	115	395	300	10	155	40	395	45	45	15
Future Volume (vph)	20	300	115	395	300	10	155	40	395	45	45	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	5.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			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	0.96		1.00	1.00			1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1662	3162		1646	3305			1677	1473	1662	1677	
Flt Permitted	0.95	1.00		0.95	1.00			0.73	1.00	0.52	1.00	
Satd. Flow (perm)	1662	3162		1646	3305			1268	1473	904	1677	
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)	22	323	124	425	323	11	167	43	425	48	48	16
RTOR Reduction (vph)	0	37	0	0	2	0	0	0	90	0	11	0
Lane Group Flow (vph)	22	410	0	425	332	0	0	210	335	48	53	0
Confl. Peds. (#/hr)	7		8	8		7	5					5
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Split	NA		Split	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	2	2		6	6			8	8 6		4	
Permitted Phases							8			4		
Actuated Green, G (s)	14.9	14.9		24.0	24.0			16.0	45.5	16.0	16.0	
Effective Green, g (s)	15.4	15.4		25.5	25.5			17.0	40.0	17.0	17.0	
Actuated g/C Ratio	0.22	0.22		0.36	0.36			0.24	0.57	0.24	0.24	
Clearance Time (s)	4.5	4.5		5.5	5.5			5.0		5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5		2.5	2.5	
Lane Grp Cap (vph)	366	696		600	1205			308	842	219	407	
v/s Ratio Prot	0.01	c0.13		c0.26	0.10				0.23		0.03	
v/s Ratio Perm								c0.17		0.05		
v/c Ratio	0.06	0.59		0.71	0.28			0.68	0.40	0.22	0.13	
Uniform Delay, d1	21.5	24.4		19.0	15.7			24.0	8.3	21.1	20.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.1		3.5	0.1			5.6	0.2	0.4	0.1	
Delay (s)	21.6	25.5		22.6	15.8			29.6	8.5	21.5	20.8	
Level of Service	C	C		C	B			C	A	C	C	
Approach Delay (s)		25.3			19.6			15.5			21.1	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	14.5
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 (vph)	1	725	50	105	715	1	80	1	95	1	1	1
Future Volume (vph)	1	725	50	105	715	1	80	1	95	1	1	1
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	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3262		1646	3228		1602	1462		1653	1603	
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00		0.69	1.00	
Satd. Flow (perm)	1662	3262		1646	3228		1276	1462		1201	1603	
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)	1	780	54	113	769	1	86	1	102	1	1	1
RTOR Reduction (vph)	0	5	0	0	0	0	0	86	0	0	1	0
Lane Group Flow (vph)	1	829	0	113	770	0	86	17	0	1	1	0
Confl. Peds. (#/hr)						7	9		8	8		9
Heavy Vehicles (%)	0%	1%	0%	1%	3%	0%	3%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.4	29.3		7.3	36.2		8.3	8.3		8.3	8.3	
Effective Green, g (s)	1.4	30.3		8.3	37.2		9.3	9.3		9.3	9.3	
Actuated g/C Ratio	0.02	0.51		0.14	0.62		0.16	0.16		0.16	0.16	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.5	6.1		2.5	6.1		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	38	1650		228	2004		198	226		186	248	
v/s Ratio Prot	0.00	c0.25		c0.07	0.24			0.01			0.00	
v/s Ratio Perm							c0.07			0.00		
v/c Ratio	0.03	0.50		0.50	0.38		0.43	0.07		0.01	0.00	
Uniform Delay, d1	28.6	9.8		23.9	5.6		22.9	21.6		21.4	21.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.7		1.2	0.4		1.1	0.1		0.0	0.0	
Delay (s)	28.8	10.5		25.1	6.0		24.0	21.7		21.4	21.4	
Level of Service	C	B		C	A		C	C		C	C	
Approach Delay (s)		10.5			8.4			22.8			21.4	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
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 (vph)	5	770	55	48	796	1	50	1	70	10	1	5
Future Volume (vph)	5	770	55	48	796	1	50	1	70	10	1	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	6.5		4.5	6.5		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1649	3283		1662	3324		1651	1470			1519	
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.86	
Satd. Flow (perm)	1649	3283		1662	3324		1297	1470			1342	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	837	60	52	865	1	54	1	76	11	1	5
RTOR Reduction (vph)	0	5	0	0	0	0	0	60	0	0	4	0
Lane Group Flow (vph)	5	892	0	52	866	0	54	17	0	0	13	0
Confl. Peds. (#/hr)	18		11	11		18	14		4	4		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.7	32.0		4.4	35.7		13.8	13.8			13.8	
Effective Green, g (s)	0.7	32.0		4.4	35.7		13.8	13.8			13.8	
Actuated g/C Ratio	0.01	0.49		0.07	0.54		0.21	0.21			0.21	
Clearance Time (s)	4.5	6.5		4.5	6.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.8		2.5	4.8		2.5	2.5			2.5	
Lane Grp Cap (vph)	17	1599		111	1806		272	308			281	
v/s Ratio Prot	0.00	c0.27		c0.03	c0.26			0.01				
v/s Ratio Perm							c0.04				0.01	
v/c Ratio	0.29	0.56		0.47	0.48		0.20	0.06			0.05	
Uniform Delay, d1	32.3	11.9		29.5	9.3		21.4	20.7			20.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	3.5	0.7		2.3	0.4		0.3	0.1			0.0	
Delay (s)	35.7	12.6		31.8	9.7		21.7	20.8			20.8	
Level of Service	D	B		C	A		C	C			C	
Approach Delay (s)		12.7			10.9			21.1			20.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	15.5
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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	255	515	0	0	730	15	5	1	15	5	0	110
Future Vol, veh/h	255	515	0	0	730	15	5	1	15	5	0	110
Conflicting Peds, #/hr	10	0	11	11	0	10	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	280	566	0	0	802	16	5	1	16	5	0	121

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	828	0	-	-	-	0	1527	1954	286	1667	1946	419
Stage 1	-	-	-	-	-	-	1126	1126	-	820	820	-
Stage 2	-	-	-	-	-	-	401	828	-	847	1126	-
Critical Hdwy	4.1	-	-	-	-	-	7.5	6.5	6.9	7.5	6.5	6.9
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	2.2	-	-	-	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	812	-	0	0	-	-	82	65	717	64	66	589
Stage 1	-	-	0	0	-	-	222	282	-	340	392	-
Stage 2	-	-	0	0	-	-	602	389	-	327	282	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	804	-	-	-	-	-	39	32	715	36	32	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	39	32	-	36	32	-
Stage 1	-	-	-	-	-	-	109	139	-	166	388	-
Stage 2	-	-	-	-	-	-	477	385	-	155	139	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.9	0	43.6	20.9
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	116	804	-	-	-	351
HCM Lane V/C Ratio	0.199	0.349	-	-	-	0.36
HCM Control Delay (s)	43.6	11.9	1.5	-	-	20.9
HCM Lane LOS	E	B	A	-	-	C
HCM 95th %tile Q(veh)	0.7	1.6	-	-	-	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	160	310	60	335	0	0	0	0	5	605	285
Future Volume (vph)	0	160	310	60	335	0	0	0	0	5	605	285
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
Lane Util. Factor		1.00	1.00		0.95						0.95	1.00
Frpb, ped/bikes		1.00	0.98		1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		0.99						1.00	1.00
Satd. Flow (prot)		1733	1460		3297						3197	1473
Flt Permitted		1.00	1.00		0.85						1.00	1.00
Satd. Flow (perm)		1733	1460		2812						3197	1473
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	174	337	65	364	0	0	0	0	5	658	310
RTOR Reduction (vph)	0	0	128	0	0	0	0	0	0	0	0	100
Lane Group Flow (vph)	0	174	209	0	429	0	0	0	0	0	663	210
Confl. Peds. (#/hr)	5		7	7		5	13		7	7		13
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	4%	1%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Prot
Protected Phases		8			4						2	2
Permitted Phases			8	4						2		
Actuated Green, G (s)		14.1	14.1		14.1						46.9	46.9
Effective Green, g (s)		14.6	14.6		14.6						47.4	47.4
Actuated g/C Ratio		0.21	0.21		0.21						0.68	0.68
Clearance Time (s)		4.5	4.5		4.5						4.5	4.5
Vehicle Extension (s)		2.5	2.5		2.5						6.1	6.1
Lane Grp Cap (vph)		361	304		586						2164	997
v/s Ratio Prot		0.10										0.14
v/s Ratio Perm			0.14		c0.15						0.21	
v/c Ratio		0.48	0.69		0.73						0.31	0.21
Uniform Delay, d1		24.4	25.6		25.9						4.6	4.3
Progression Factor		1.00	1.00		0.99						1.00	1.00
Incremental Delay, d2		0.7	5.8		4.3						0.4	0.5
Delay (s)		25.1	31.4		30.0						5.0	4.7
Level of Service		C	C		C						A	A
Approach Delay (s)		29.2			30.0			0.0			4.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
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 (vph)	155	15	0	0	65	10	330	595	5	0	0	0
Future Volume (vph)	155	15	0	0	65	10	330	595	5	0	0	0
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				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91				
Frpb, ped/bikes	1.00	1.00			1.00	0.99		1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		1.00				
Flt Protected	0.95	1.00			1.00	1.00		0.98				
Satd. Flow (prot)	1645	1750			1750	1468		4570				
Flt Permitted	0.71	1.00			1.00	1.00		0.98				
Satd. Flow (perm)	1226	1750			1750	1468		4570				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	178	17	0	0	75	11	379	684	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	9	0	1	0	0	0	0
Lane Group Flow (vph)	178	17	0	0	75	2	0	1068	0	0	0	0
Confl. Peds. (#/hr)	1		4	4		1	2		2	2		2
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA			NA	Perm	Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8					4	6					
Actuated Green, G (s)	13.8	13.8			13.8	13.8		47.2				
Effective Green, g (s)	14.3	14.3			14.3	14.3		47.7				
Actuated g/C Ratio	0.20	0.20			0.20	0.20		0.68				
Clearance Time (s)	4.5	4.5			4.5	4.5		4.5				
Vehicle Extension (s)	2.5	2.5			2.5	2.5		6.5				
Lane Grp Cap (vph)	250	357			357	299		3114				
v/s Ratio Prot		0.01			0.04							
v/s Ratio Perm	c0.15					0.00		0.23				
v/c Ratio	0.71	0.05			0.21	0.01		0.34				
Uniform Delay, d1	25.9	22.4			23.2	22.2		4.6				
Progression Factor	0.40	0.25			1.00	1.00		1.00				
Incremental Delay, d2	8.5	0.0			0.2	0.0		0.3				
Delay (s)	18.9	5.6			23.4	22.2		4.9				
Level of Service	B	A			C	C		A				
Approach Delay (s)		17.7			23.2			4.9			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	95	55	25	60	60	35
Future Vol, veh/h	95	55	25	60	60	35
Conflicting Peds, #/hr	2	4	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	101	59	27	64	64	37

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	228	65	0	0	93	0
Stage 1	61	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	-	-	2.2	-
Pot Cap-1 Maneuver	765	999	-	-	1514	-
Stage 1	967	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	729	993	-	-	1511	-
Mov Cap-2 Maneuver	729	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	865	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	4.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	808	1511	-
HCM Lane V/C Ratio	-	-	0.197	0.042	-
HCM Control Delay (s)	-	-	10.5	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection						
Int Delay, s/veh	2.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	25	30	150	130	40
Future Vol, veh/h	30	25	30	150	130	40
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	38	32	38	192	167	51

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	465	197	222	0	-	0
Stage 1	197	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	559	849	1359	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	537	846	1354	-	-	-
Mov Cap-2 Maneuver	537	-	-	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	1.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1354	-	644	-	-
HCM Lane V/C Ratio	0.028	-	0.109	-	-
HCM Control Delay (s)	7.7	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	20	20	5	50	10	30	60	5	5	60	5
Future Vol, veh/h	5	20	20	5	50	10	30	60	5	5	60	5
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	23	23	6	58	12	35	70	6	6	70	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.7	7.9	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	32%	11%	8%	7%
Vol Thru, %	63%	44%	77%	86%
Vol Right, %	5%	44%	15%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	95	45	65	70
LT Vol	30	5	5	5
Through Vol	60	20	50	60
RT Vol	5	20	10	5
Lane Flow Rate	110	52	76	81
Geometry Grp	1	1	1	1
Degree of Util (X)	0.129	0.061	0.09	0.097
Departure Headway (Hd)	4.217	4.166	4.307	4.28
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	836	863	835	842
Service Time	2.311	2.174	2.315	2.28
HCM Lane V/C Ratio	0.132	0.06	0.091	0.096
HCM Control Delay	7.9	7.4	7.7	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.2	0.3	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	15	2	85	20	10	5	675	45	10	665	25
Future Volume (vph)	25	15	2	85	20	10	5	675	45	10	665	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	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.99		1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1688			1666		1662	3287		1662	3275	
Flt Permitted		0.82			0.75		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1419			1297		1662	3287		1662	3275	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	28	17	2	96	22	11	6	758	51	11	747	28
RTOR Reduction (vph)	0	2	0	0	4	0	0	4	0	0	2	0
Lane Group Flow (vph)	0	45	0	0	125	0	6	805	0	11	773	0
Confl. Peds. (#/hr)	4					4			8	8		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		9.0			9.0		0.7	24.0		0.8	24.1	
Effective Green, g (s)		9.5			9.5		1.2	25.0		1.3	25.1	
Actuated g/C Ratio		0.20			0.20		0.03	0.52		0.03	0.53	
Clearance Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		2.5			2.5		2.5	4.6		2.5	4.6	
Lane Grp Cap (vph)		282			257		41	1719		45	1719	
v/s Ratio Prot							0.00	c0.24		c0.01	0.24	
v/s Ratio Perm		0.03			c0.10							
v/c Ratio		0.16			0.49		0.15	0.47		0.24	0.45	
Uniform Delay, d1		15.9			17.0		22.8	7.2		22.8	7.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			1.1		1.2	0.4		2.1	0.3	
Delay (s)		16.0			18.0		24.0	7.6		24.8	7.4	
Level of Service		B			B		C	A		C	A	
Approach Delay (s)		16.0			18.0			7.7			7.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	47.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1	20	5	1	5	40	720	5	2	755	5
Future Vol, veh/h	5	1	20	5	1	5	40	720	5	2	755	5
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	8	8	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	6	1	23	6	1	6	45	818	6	2	858	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1367	1789	434	1353	1789	420	866	0	0	832	0	0
Stage 1	867	867	-	919	919	-	-	-	-	-	-	-
Stage 2	500	922	-	434	870	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	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	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	108	82	576	110	82	588	786	-	-	809	-	-
Stage 1	318	373	-	296	353	-	-	-	-	-	-	-
Stage 2	527	352	-	576	372	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	101	76	575	99	76	584	785	-	-	803	-	-
Mov Cap-2 Maneuver	101	76	-	99	76	-	-	-	-	-	-	-
Stage 1	299	372	-	277	330	-	-	-	-	-	-	-
Stage 2	490	329	-	550	371	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.2	30.8	0.5	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	785	-	-	267	152	803	-	-
HCM Lane V/C Ratio	0.058	-	-	0.111	0.082	0.003	-	-
HCM Control Delay (s)	9.9	-	-	20.2	30.8	9.5	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0.3	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	2	10	90	1	55	2	860	100	40	745	1
Future Volume (vph)	5	2	10	90	1	55	2	860	100	40	745	1
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	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		0.99			1.00	1.00	1.00	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		0.92			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1568			1661	1488	1662	3292	1488	1662	3228	
Flt Permitted		0.92			0.72	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1459			1247	1488	1662	3292	1488	1662	3228	
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)	5	2	11	97	1	59	2	925	108	43	801	1
RTOR Reduction (vph)	0	9	0	0	0	49	0	0	49	0	0	0
Lane Group Flow (vph)	0	9	0	0	98	10	2	925	59	43	802	0
Confl. Peds. (#/hr)			8	8								
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4			6			
Actuated Green, G (s)		8.6			8.6	8.6	0.6	28.3	28.3	4.0	31.7	
Effective Green, g (s)		9.1			9.1	9.1	1.1	30.3	30.3	4.5	33.7	
Actuated g/C Ratio		0.16			0.16	0.16	0.02	0.54	0.54	0.08	0.60	
Clearance Time (s)		4.5			4.5	4.5	4.5	6.0	6.0	4.5	6.0	
Vehicle Extension (s)		2.5			2.5	2.5	2.5	4.8	4.8	2.5	4.8	
Lane Grp Cap (vph)		237			203	242	32	1784	806	133	1946	
v/s Ratio Prot							0.00	c0.28		c0.03	c0.25	
v/s Ratio Perm		0.01			c0.08	0.01			0.04			
v/c Ratio		0.04			0.48	0.04	0.06	0.52	0.07	0.32	0.41	
Uniform Delay, d1		19.7			21.3	19.7	26.9	8.2	6.1	24.3	5.9	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0			1.3	0.0	0.6	0.5	0.1	1.0	0.3	
Delay (s)		19.8			22.6	19.8	27.5	8.6	6.2	25.3	6.1	
Level of Service		B			C	B	C	A	A	C	A	
Approach Delay (s)		19.8			21.5			8.4			7.1	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	55.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	935	910	55	55	60
Future Volume (vph)	65	935	910	55	55	60
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.93	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1662	3325	3261		1589	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1662	3325	3261		1589	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	73	1051	1022	62	62	67
RTOR Reduction (vph)	0	0	4	0	51	0
Lane Group Flow (vph)	73	1051	1080	0	78	0
Confl. Peds. (#/hr)	3			3	2	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		4	
Permitted Phases						
Actuated Green, G (s)	4.6	38.9	29.3		7.8	
Effective Green, g (s)	5.6	39.4	29.8		8.8	
Actuated g/C Ratio	0.10	0.70	0.53		0.16	
Clearance Time (s)	5.0	4.5	4.5		5.0	
Vehicle Extension (s)	2.5	4.0	4.0		2.5	
Lane Grp Cap (vph)	165	2331	1729		248	
v/s Ratio Prot	0.04	c0.32	c0.33		c0.05	
v/s Ratio Perm						
v/c Ratio	0.44	0.45	0.62		0.31	
Uniform Delay, d1	23.8	3.7	9.3		21.0	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	1.4	0.2	0.8		0.5	
Delay (s)	25.2	3.9	10.1		21.5	
Level of Service	C	A	B		C	
Approach Delay (s)		5.2	10.1		21.5	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	56.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
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 (vph)	375	475	165	65	360	155	175	300	50	105	240	25
Future Volume (vph)	375	475	165	65	360	155	175	300	50	105	240	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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		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	0.96		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3158		1662	3175		1662	1707		1646	1723	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	3158		1662	3175		1662	1707		1646	1723	
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)	403	511	177	70	387	167	188	323	54	113	258	27
RTOR Reduction (vph)	0	23	0	0	34	0	0	4	0	0	2	0
Lane Group Flow (vph)	403	665	0	70	520	0	188	373	0	113	283	0
Confl. Peds. (#/hr)			8	8			2		5	5		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	33.9	52.2		8.8	27.1		17.7	32.5		13.5	28.3	
Effective Green, g (s)	34.4	52.7		9.3	27.6		18.2	33.0		14.0	28.8	
Actuated g/C Ratio	0.28	0.42		0.07	0.22		0.15	0.26		0.11	0.23	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	457	1331		123	701		241	450		184	396	
v/s Ratio Prot	c0.24	0.21		0.04	c0.16		c0.11	c0.22		0.07	0.16	
v/s Ratio Perm												
v/c Ratio	0.88	0.50		0.57	0.74		0.78	0.83		0.61	0.71	
Uniform Delay, d1	43.4	26.5		55.9	45.4		51.5	43.4		52.9	44.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.7	0.3		4.8	4.2		14.5	11.8		5.1	5.6	
Delay (s)	61.1	26.8		60.7	49.6		66.0	55.1		58.0	49.9	
Level of Service	E	C		E	D		E	E		E	D	
Approach Delay (s)		39.5			50.9			58.7			52.2	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	48.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	1.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	601	29	26	554	20	45
Future Vol, veh/h	601	29	26	554	20	45
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	653	32	28	602	22	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	687	0	1028	345
Stage 1	-	-	-	-	671	-
Stage 2	-	-	-	-	357	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	916	-	233	657
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	685	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	914	-	222	656
Mov Cap-2 Maneuver	-	-	-	-	222	-
Stage 1	-	-	-	-	452	-
Stage 2	-	-	-	-	685	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	15.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	410	-	-	914	-
HCM Lane V/C Ratio	0.172	-	-	0.031	-
HCM Control Delay (s)	15.6	-	-	9.1	0.2
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	555	5	5	515	90	5	10	5	70	5	60
Future Volume (vph)	80	555	5	5	515	90	5	10	5	70	5	60
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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00			1.00			1.00	0.99
Flpb, ped/bikes		1.00			1.00			1.00			1.00	1.00
Frt		1.00			0.98			0.97			1.00	0.85
Flt Protected		0.99			1.00			0.99			0.96	1.00
Satd. Flow (prot)		3300			3250			1673			1672	1468
Flt Permitted		0.83			0.95			0.92			0.72	1.00
Satd. Flow (perm)		2753			3093			1555			1267	1468
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)	86	597	5	5	554	97	5	11	5	75	5	65
RTOR Reduction (vph)	0	1	0	0	19	0	0	4	0	0	0	54
Lane Group Flow (vph)	0	687	0	0	637	0	0	17	0	0	80	11
Confl. Peds. (#/hr)			4	4			2					2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		4
Actuated Green, G (s)		22.4			22.4			6.2			6.2	6.2
Effective Green, g (s)		22.4			22.4			6.2			6.2	6.2
Actuated g/C Ratio		0.61			0.61			0.17			0.17	0.17
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1684			1892			263			214	248
v/s Ratio Prot												
v/s Ratio Perm		c0.25			0.21			0.01			c0.06	0.01
v/c Ratio		0.41			0.34			0.06			0.37	0.04
Uniform Delay, d1		3.7			3.5			12.8			13.5	12.7
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2			0.1			0.1			1.1	0.1
Delay (s)		3.8			3.6			12.9			14.6	12.8
Level of Service		A			A			B			B	B
Approach Delay (s)		3.8			3.6			12.9			13.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	36.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
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 (vph)	60	423	125	10	360	25	160	120	32	16	90	80
Future Volume (vph)	60	423	125	10	360	25	160	120	32	16	90	80
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	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1750	1455	1662	1717		1662	1687		1662	1614	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1750	1455	1662	1717		1662	1687		1662	1614	
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)	65	455	134	11	387	27	172	129	34	17	97	86
RTOR Reduction (vph)	0	0	78	0	2	0	0	8	0	0	32	0
Lane Group Flow (vph)	65	455	56	11	412	0	172	155	0	17	151	0
Confl. Peds. (#/hr)			1	1			4		1	1		4
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	6.6	33.6	33.6	1.1	28.1		12.7	26.2		2.3	15.8	
Effective Green, g (s)	7.1	34.1	34.1	1.6	28.6		13.2	26.7		2.8	16.3	
Actuated g/C Ratio	0.09	0.42	0.42	0.02	0.35		0.16	0.33		0.03	0.20	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	6.0	6.0	2.5	6.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	145	734	611	32	604		270	554		57	323	
v/s Ratio Prot	c0.04	c0.26		0.01	c0.24		c0.10	0.09		0.01	c0.09	
v/s Ratio Perm			0.04									
v/c Ratio	0.45	0.62	0.09	0.34	0.68		0.64	0.28		0.30	0.47	
Uniform Delay, d1	35.2	18.5	14.2	39.3	22.4		31.8	20.1		38.2	28.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	2.7	0.2	4.6	4.8		4.3	0.2		2.1	0.8	
Delay (s)	36.8	21.2	14.4	43.9	27.2		36.0	20.3		40.4	29.4	
Level of Service	D	C	B	D	C		D	C		D	C	
Approach Delay (s)		21.3			27.7			28.4			30.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	81.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
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 (vph)	175	1	315	2	5	5	320	800	1	1	795	80
Future Volume (vph)	175	1	315	2	5	5	320	800	1	1	795	80
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	5.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.94		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1651	1488		1638		1662	3259		1662	3228	1435
Flt Permitted		1.00	1.00		0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1733	1488		1638		1662	3259		1662	3228	1435
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	179	1	321	2	5	5	327	816	1	1	811	82
RTOR Reduction (vph)	0	0	274	0	5	0	0	0	0	0	0	52
Lane Group Flow (vph)	0	180	47	0	7	0	327	817	0	1	811	30
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	3%	1%
Turn Type	custom	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	8	8		7!	7		1	6		5	2	
Permitted Phases	3	7!	8									2
Actuated Green, G (s)		13.4	12.0		1.4		23.0	54.3		0.8	32.1	32.1
Effective Green, g (s)		15.4	13.0		2.4		24.0	55.8		1.8	33.6	32.1
Actuated g/C Ratio		0.17	0.15		0.03		0.27	0.63		0.02	0.38	0.36
Clearance Time (s)		5.0	5.0		5.0		5.0	5.5		5.0	5.5	5.5
Vehicle Extension (s)		2.5	2.5		5.0		2.5	4.8		2.5	4.8	4.8
Lane Grp Cap (vph)		287	217		44		448	2043		33	1218	517
v/s Ratio Prot		c0.09			0.00		c0.20	0.25		0.00	c0.25	
v/s Ratio Perm		c0.02	0.03									0.02
v/c Ratio		0.63	0.22		0.16		0.73	0.40		0.03	0.67	0.06
Uniform Delay, d1		34.1	33.5		42.3		29.6	8.3		42.7	23.0	18.6
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		3.7	0.4		3.6		5.5	0.3		0.3	1.8	0.1
Delay (s)		37.8	33.9		45.9		35.1	8.5		43.0	24.8	18.7
Level of Service		D	C		D		D	A		D	C	B
Approach Delay (s)		35.3			45.9			16.1			24.3	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Intersection												
Int Delay, s/veh	0.4											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	5	1	1	2	1	5	5	420	1	5	385	10
Future Vol, veh/h	5	1	1	2	1	5	5	420	1	5	385	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	6	1	1	3	1	6	6	525	1	6	481	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1041	1038	488	1039	1044	526	494	0	0	526	0	0
Stage 1	500	500	-	538	538	-	-	-	-	-	-	-
Stage 2	541	538	-	501	506	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	210	233	584	211	231	556	1080	-	-	1051	-	-
Stage 1	557	546	-	531	526	-	-	-	-	-	-	-
Stage 2	529	526	-	556	543	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	204	229	584	207	227	556	1080	-	-	1051	-	-
Mov Cap-2 Maneuver	204	229	-	207	227	-	-	-	-	-	-	-
Stage 1	553	542	-	527	522	-	-	-	-	-	-	-
Stage 2	518	522	-	549	539	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.3	15.7	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1080	-	-	229	347	1051	-	-
HCM Lane V/C Ratio	0.006	-	-	0.038	0.029	0.006	-	-
HCM Control Delay (s)	8.4	0	-	21.3	15.7	8.4	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	1	40	55	5	95
Future Vol, veh/h	50	1	40	55	5	95
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	56	1	44	61	6	106

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	59	0	208	59
Stage 1	-	-	-	-	59	-
Stage 2	-	-	-	-	149	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1558	-	785	1012
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	884	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1555	-	761	1010
Mov Cap-2 Maneuver	-	-	-	-	761	-
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	884	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	994	-	-	1555	-
HCM Lane V/C Ratio	0.112	-	-	0.029	-
HCM Control Delay (s)	9.1	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	605	30	160	730	5	10	1	150	5	1	2
Future Vol, veh/h	5	605	30	160	730	5	10	1	150	5	1	2
Conflicting Peds, #/hr	9	0	3	3	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	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	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	637	32	168	768	5	11	1	158	5	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	782	0	0	672	0	0	1387	1784	338	1445	1798	396
Stage 1	-	-	-	-	-	-	666	666	-	1116	1116	-
Stage 2	-	-	-	-	-	-	721	1118	-	329	682	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
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	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	845	-	-	928	-	-	104	83	664	94	81	609
Stage 1	-	-	-	-	-	-	420	460	-	225	285	-
Stage 2	-	-	-	-	-	-	389	285	-	664	453	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	838	-	-	925	-	-	87	67	662	60	65	604
Mov Cap-2 Maneuver	-	-	-	-	-	-	87	67	-	60	65	-
Stage 1	-	-	-	-	-	-	416	456	-	222	231	-
Stage 2	-	-	-	-	-	-	316	231	-	501	449	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.7	17.7	56.7
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	452	838	-	-	925	-	-	78
HCM Lane V/C Ratio	0.375	0.006	-	-	0.182	-	-	0.108
HCM Control Delay (s)	17.7	9.3	-	-	9.8	-	-	56.7
HCM Lane LOS	C	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.7	0	-	-	0.7	-	-	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	480	245	1	590	370	50
Future Volume (vph)	480	245	1	590	370	50
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		0.95	0.97	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.98	
Flt Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	1750	1457		3325	3185	
Flt Permitted	1.00	1.00		0.95	0.96	
Satd. Flow (perm)	1750	1457		3174	3185	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	516	263	1	634	398	54
RTOR Reduction (vph)	0	0	0	0	14	0
Lane Group Flow (vph)	516	263	0	635	438	0
Confl. Peds. (#/hr)		1	1			4
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	NA	Free	Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases		Free	6			
Actuated Green, G (s)	18.1	41.3		18.1	14.2	
Effective Green, g (s)	18.6	41.3		18.6	14.7	
Actuated g/C Ratio	0.45	1.00		0.45	0.36	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	4.0			4.0	3.5	
Lane Grp Cap (vph)	788	1457		1429	1133	
v/s Ratio Prot	c0.29				c0.14	
v/s Ratio Perm		0.18		0.20		
v/c Ratio	0.65	0.18		0.44	0.39	
Uniform Delay, d1	8.8	0.0		7.8	9.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	0.3		0.3	0.3	
Delay (s)	11.0	0.3		8.1	10.2	
Level of Service	B	A		A	B	
Approach Delay (s)	7.4			8.1	10.2	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	41.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	615	15	55	690	25	120
Future Volume (vph)	615	15	55	690	25	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0		-0.5	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3311		1630	3292	1662	1450
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3311		1630	3292	1662	1450
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	641	16	57	719	26	125
RTOR Reduction (vph)	1	0	0	0	0	34
Lane Group Flow (vph)	656	0	57	719	26	91
Confl. Peds. (#/hr)		6	6			9
Heavy Vehicles (%)	0%	0%	2%	1%	0%	1%
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						6
Actuated Green, G (s)	24.6		4.1	33.2	4.4	33.2
Effective Green, g (s)	25.6		9.1	34.2	4.9	34.2
Actuated g/C Ratio	0.54		0.19	0.73	0.10	0.73
Clearance Time (s)	5.0		4.5	5.0	4.5	5.0
Vehicle Extension (s)	4.2		2.5	4.2	2.5	4.2
Lane Grp Cap (vph)	1799		314	2390	172	1052
v/s Ratio Prot	c0.20		0.03	c0.22	c0.02	
v/s Ratio Perm						0.06
v/c Ratio	0.36		0.18	0.30	0.15	0.09
Uniform Delay, d1	6.1		15.9	2.3	19.2	1.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2		0.2	0.1	0.3	0.1
Delay (s)	6.3		16.1	2.4	19.5	1.9
Level of Service	A		B	A	B	A
Approach Delay (s)	6.3			3.4	5.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	47.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	2	425	40	5	375
Future Vol, veh/h	35	2	425	40	5	375
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	37	2	452	43	5	399

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	885	476	0	0	497	0
Stage 1	476	-	-	-	-	-
Stage 2	409	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	318	593	-	-	1077	-
Stage 1	629	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	315	592	-	-	1075	-
Mov Cap-2 Maneuver	315	-	-	-	-	-
Stage 1	624	-	-	-	-	-
Stage 2	675	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	323	1075	-
HCM Lane V/C Ratio	-	-	0.122	0.005	-
HCM Control Delay (s)	-	-	17.7	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	190	300	25	121	349
Future Vol, veh/h	40	190	300	25	121	349
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	60	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	43	202	319	27	129	371

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	963	334	0	0	347	0
Stage 1	334	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	286	712	-	-	1223	-
Stage 1	730	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	255	711	-	-	1222	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	535	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	255	711	1222	-
HCM Lane V/C Ratio	-	-	0.167	0.284	0.105	-
HCM Control Delay (s)	-	-	21.9	12.1	8.3	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	1.2	0.4	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	75	195	105	235	192	33
Future Vol, veh/h	75	195	105	235	192	33
Conflicting Peds, #/hr	1	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	82	214	115	258	211	36

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	719	230	248	0	-	0
Stage 1	230	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.11	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.209	-	-	-
Pot Cap-1 Maneuver	398	814	1324	-	-	-
Stage 1	813	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	363	813	1323	-	-	-
Mov Cap-2 Maneuver	363	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.5	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1323	-	605	-	-
HCM Lane V/C Ratio	0.087	-	0.49	-	-
HCM Control Delay (s)	8	-	16.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.7	-	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	105	405	425	160	265	145
Future Volume (vph)	105	405	425	160	265	145
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.96		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1662	3325	3169		1662	1468
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1662	3325	3169		1662	1468
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	115	445	467	176	291	159
RTOR Reduction (vph)	0	0	46	0	0	118
Lane Group Flow (vph)	115	445	597	0	291	41
Confl. Peds. (#/hr)	2			2		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	7.2	28.1	16.9		13.1	13.1
Effective Green, g (s)	7.2	29.1	17.9		13.1	13.1
Actuated g/C Ratio	0.14	0.58	0.36		0.26	0.26
Clearance Time (s)	4.0	5.0	5.0		4.0	4.0
Vehicle Extension (s)	2.5	5.2	5.2		2.5	2.5
Lane Grp Cap (vph)	238	1927	1129		433	383
v/s Ratio Prot	c0.07	0.13	c0.19		c0.18	
v/s Ratio Perm						0.03
v/c Ratio	0.48	0.23	0.53		0.67	0.11
Uniform Delay, d1	19.8	5.1	12.8		16.6	14.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.1	0.9		3.7	0.1
Delay (s)	20.9	5.3	13.7		20.3	14.2
Level of Service	C	A	B		C	B
Approach Delay (s)		8.5	13.7		18.2	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	50.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	50	540	15	35	625
Future Volume (vph)	15	50	540	15	35	625
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1662	1488	1727		1662	1733
Flt Permitted	0.95	1.00	1.00		0.38	1.00
Satd. Flow (perm)	1662	1488	1727		669	1733
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	18	59	635	18	41	735
RTOR Reduction (vph)	0	54	1	0	0	0
Lane Group Flow (vph)	18	5	652	0	41	735
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	4		2			2
Permitted Phases		4			2	
Actuated Green, G (s)	3.2	3.2	27.9		27.9	27.9
Effective Green, g (s)	3.2	3.2	28.9		28.9	28.9
Actuated g/C Ratio	0.08	0.08	0.72		0.72	0.72
Clearance Time (s)	4.0	4.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	5.2		5.2	5.2
Lane Grp Cap (vph)	132	118	1244		482	1248
v/s Ratio Prot	c0.01		0.38			c0.42
v/s Ratio Perm		0.00			0.06	
v/c Ratio	0.14	0.04	0.52		0.09	0.59
Uniform Delay, d1	17.2	17.0	2.5		1.7	2.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.1	0.8		0.2	1.2
Delay (s)	17.6	17.2	3.3		1.8	3.9
Level of Service	B	B	A		A	A
Approach Delay (s)	17.3		3.3			3.8
Approach LOS	B		A			A

Intersection Summary			
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	125	185	30	175	200
Future Vol, veh/h	40	125	185	30	175	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	147	218	35	206	235

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	883	236	0	0	253	0
Stage 1	236	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	319	808	-	-	1324	-
Stage 1	808	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	262	808	-	-	1324	-
Mov Cap-2 Maneuver	262	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.5	0	3.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	537	1324	-
HCM Lane V/C Ratio	-	-	0.361	0.156	-
HCM Control Delay (s)	-	-	15.5	8.2	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.6	0.6	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	155	90	1000	1120	35
Future Volume (vph)	15	155	90	1000	1120	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0		4.0	4.5	4.5	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.88		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1514		1646	3260	3245	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1514		1646	3260	3245	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	16	170	99	1099	1231	38
RTOR Reduction (vph)	150	0	0	0	2	0
Lane Group Flow (vph)	36	0	99	1099	1267	0
Confl. Peds. (#/hr)			1			1
Heavy Vehicles (%)	0%	1%	1%	2%	2%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	8		1	6	2	
Permitted Phases						
Actuated Green, G (s)	6.9		7.5	46.2	34.2	
Effective Green, g (s)	7.4		8.0	46.7	34.7	
Actuated g/C Ratio	0.12		0.13	0.75	0.55	
Clearance Time (s)	4.5		4.5	5.0	5.0	
Vehicle Extension (s)	2.5		2.5	4.8	4.8	
Lane Grp Cap (vph)	178		210	2431	1798	
v/s Ratio Prot	c0.02		0.06	c0.34	c0.39	
v/s Ratio Perm						
v/c Ratio	0.20		0.47	0.45	0.70	
Uniform Delay, d1	24.9		25.3	3.0	10.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.4		1.2	0.3	1.5	
Delay (s)	25.3		26.6	3.3	11.8	
Level of Service	C		C	A	B	
Approach Delay (s)	25.3			5.2	11.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	62.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	0.6					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	45	450	195	0	0
Future Vol, veh/h	0	45	450	195	0	0
Conflicting Peds, #/hr	0	0	0	0	2	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	16974	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	0	51	511	222	0	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	-	222	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.22	4.1	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.318	2.2	-
Pot Cap-1 Maneuver	0	818	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	818	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s	9.7	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	818	-	-
HCM Lane V/C Ratio	0.063	-	-
HCM Control Delay (s)	9.7	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	35	295	0	0	0	0	0	1225	90
Future Volume (vph)	0	0	0	35	295	0	0	0	0	0	1225	90
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
Lane Util. Factor					0.95						0.95	1.00
Frpb, ped/bikes					1.00						1.00	0.98
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					3305						3292	1457
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					3305						3292	1457
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)	0	0	0	37	311	0	0	0	0	0	1289	95
RTOR Reduction (vph)	0	0	0	0	20	0	0	0	0	0	0	25
Lane Group Flow (vph)	0	0	0	0	328	0	0	0	0	0	1289	70
Confl. Peds. (#/hr)	8		4	4		8	14		11	11		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					9.8						51.2	51.2
Effective Green, g (s)					10.3						51.7	51.7
Actuated g/C Ratio					0.15						0.74	0.74
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					0.2						0.2	0.2
Lane Grp Cap (vph)					486						2431	1076
v/s Ratio Prot											c0.39	
v/s Ratio Perm					0.10							0.05
v/c Ratio					0.68						0.53	0.07
Uniform Delay, d1					28.3						3.9	2.5
Progression Factor					1.20						1.00	1.00
Incremental Delay, d2					2.8						0.8	0.1
Delay (s)					36.8						4.8	2.6
Level of Service					D						A	A
Approach Delay (s)		0.0			36.8			0.0			4.6	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
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 (vph)	15	520	115	5	415	15	165	95	15	135	75	20
Future Volume (vph)	15	520	115	5	415	15	165	95	15	135	75	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	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.98		1.00		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	
Frt		1.00	0.85		0.99		1.00	0.98		1.00	0.97	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1747	1451		3303		1662	1714		1662	1695	
Flt Permitted		0.98	1.00		0.95		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1722	1451		3141		1662	1714		1662	1695	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	16	553	122	5	441	16	176	101	16	144	80	21
RTOR Reduction (vph)	0	0	60	0	2	0	0	7	0	0	13	0
Lane Group Flow (vph)	0	569	62	0	460	0	176	110	0	144	88	0
Confl. Peds. (#/hr)	3		3	3		3						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2		2	6								
Actuated Green, G (s)		29.0	29.0		29.0		10.7	7.5		8.2	5.0	
Effective Green, g (s)		29.5	29.5		29.5		11.2	8.0		8.7	5.5	
Actuated g/C Ratio		0.51	0.51		0.51		0.19	0.14		0.15	0.09	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		6.5	6.5		6.5		5.0	2.5		2.5	2.5	
Lane Grp Cap (vph)		872	735		1592		319	235		248	160	
v/s Ratio Prot							c0.11	c0.06		0.09	0.05	
v/s Ratio Perm		c0.33	0.04		0.15							
v/c Ratio		0.65	0.08		0.29		0.55	0.47		0.58	0.55	
Uniform Delay, d1		10.6	7.4		8.3		21.2	23.1		23.1	25.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.0	0.2		0.3		3.5	1.1		2.9	3.3	
Delay (s)		13.6	7.5		8.6		24.7	24.2		25.9	28.4	
Level of Service		B	A		A		C	C		C	C	
Approach Delay (s)		12.5			8.6			24.5			27.0	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	65	10	20	120	50	105
Future Vol, veh/h	65	10	20	120	50	105
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	76	12	24	141	59	124
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.2	7.7	8.2
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	87%	0%	32%
Vol Thru, %	13%	14%	0%
Vol Right, %	0%	86%	68%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	75	140	155
LT Vol	65	0	50
Through Vol	10	20	0
RT Vol	0	120	105
Lane Flow Rate	88	165	182
Geometry Grp	1	1	1
Degree of Util (X)	0.114	0.178	0.208
Departure Headway (Hd)	4.632	3.884	4.098
Convergence, Y/N	Yes	Yes	Yes
Cap	776	926	877
Service Time	2.649	1.898	2.113
HCM Lane V/C Ratio	0.113	0.178	0.208
HCM Control Delay	8.2	7.7	8.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.6	0.8

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	1	1	5	5	55	1	2	5	90	5	1
Future Vol, veh/h	1	1	1	5	5	55	1	2	5	90	5	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	1	1	6	6	65	1	2	6	106	6	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	7	6.9	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	33%	8%	94%
Vol Thru, %	25%	33%	8%	5%
Vol Right, %	62%	33%	85%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	3	65	96
LT Vol	1	1	5	90
Through Vol	2	1	5	5
RT Vol	5	1	55	1
Lane Flow Rate	9	4	76	113
Geometry Grp	1	1	1	1
Degree of Util (X)	0.01	0.004	0.077	0.133
Departure Headway (Hd)	3.775	4.037	3.621	4.227
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	942	875	977	849
Service Time	1.823	2.115	1.689	2.249
HCM Lane V/C Ratio	0.01	0.005	0.078	0.133
HCM Control Delay	6.9	7.1	7	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0	0.2	0.5

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	10	5	1	10	5	15	45	5	5	80	10
Future Vol, veh/h	5	10	5	1	10	5	15	45	5	5	80	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	6	12	6	1	12	6	18	53	6	6	94	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.2	7.5	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	25%	6%	5%
Vol Thru, %	69%	50%	62%	84%
Vol Right, %	8%	25%	31%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	20	16	95
LT Vol	15	5	1	5
Through Vol	45	10	10	80
RT Vol	5	5	5	10
Lane Flow Rate	76	24	19	112
Geometry Grp	1	1	1	1
Degree of Util (X)	0.086	0.027	0.021	0.124
Departure Headway (Hd)	4.058	4.138	4.066	3.979
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	879	853	867	899
Service Time	2.1	2.223	2.154	2.014
HCM Lane V/C Ratio	0.086	0.028	0.022	0.125
HCM Control Delay	7.5	7.3	7.2	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0.1	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	35	45	75	40	0	0	0	0	35	1600	25
Future Volume (vph)	0	35	45	75	40	0	0	0	0	35	1600	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	
Lane Util. Factor		1.00			1.00						0.91	
Frpb, ped/bikes		0.99			1.00						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		0.92			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1606			1693						4714	
Flt Permitted		1.00			0.75						1.00	
Satd. Flow (perm)		1606			1316						4714	
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)	0	37	47	79	42	0	0	0	0	37	1684	26
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	61	0	0	121	0	0	0	0	0	1746	0
Confl. Peds. (#/hr)	7		1	1		7	7		2	2		7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.4	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.5	
Vehicle Extension (s)		0.2			0.2						0.2	
Lane Grp Cap (vph)		208			171						3562	
v/s Ratio Prot		0.04										
v/s Ratio Perm					c0.09						0.37	
v/c Ratio		0.30			0.71						0.49	
Uniform Delay, d1		27.5			29.2						3.3	
Progression Factor		1.00			1.18						1.87	
Incremental Delay, d2		0.3			10.1						0.5	
Delay (s)		27.8			44.4						6.7	
Level of Service		C			D						A	
Approach Delay (s)		27.8			44.4			0.0			6.7	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	5	0	0	5	5	75	1195	2	0	0	0
Future Vol, veh/h	50	5	0	0	5	5	75	1195	2	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	3	3	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	100	0	0	0
Mvmt Flow	53	5	0	0	5	5	80	1271	2	0	0	0

Major/Minor	Minor2		Minor1				Major1		
Conflicting Flow All	800	1438	-	-	1437	640	2	0	0
Stage 1	2	2	-	-	1435	-	-	-	-
Stage 2	798	1436	-	-	2	-	-	-	-
Critical Hdwy	7.5	6.5	-	-	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	-	-	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	280	134	0	0	135	423	1634	-	-
Stage 1	-	-	0	0	201	-	-	-	-
Stage 2	350	201	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	232	111	-	-	112	422	1631	-	-
Mov Cap-2 Maneuver	232	111	-	-	112	-	-	-	-
Stage 1	-	-	-	-	167	-	-	-	-
Stage 2	278	167	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	28.5	26.6	0.9
HCM LOS	D	D	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	1631	-	-	211	177
HCM Lane V/C Ratio	0.049	-	-	0.277	0.06
HCM Control Delay (s)	7.3	0.5	-	28.5	26.6
HCM Lane LOS	A	A	-	D	D
HCM 95th %tile Q(veh)	0.2	-	-	1.1	0.2

Movement	EBT	EBR	EBR2	WBL2	WBL	WBT	SBL2	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	165	50	5	175	15	90	280	1230	145	55
Future Volume (vph)	165	50	5	175	15	90	280	1230	145	55
Ideal Flow (vphpl)	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	
Lane Util. Factor	0.95				1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	0.99				1.00	1.00	1.00	1.00	0.98	
Flpb, ped/bikes	1.00				0.99	1.00	0.99	1.00	1.00	
Frt	0.96				1.00	1.00	1.00	1.00	0.96	
Flt Protected	1.00				0.95	1.00	0.95	0.95	1.00	
Satd. Flow (prot)	3145				1586	1750	1611	3225	1629	
Flt Permitted	1.00				0.95	1.00	0.95	0.95	1.00	
Satd. Flow (perm)	3145				1586	1750	1611	3225	1629	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	176	53	5	186	16	96	298	1309	154	59
RTOR Reduction (vph)	3	0	0	0	0	0	0	0	20	0
Lane Group Flow (vph)	231	0	0	0	202	96	298	1309	193	0
Confl. Peds. (#/hr)		8	8	8	8		12	12		1
Heavy Vehicles (%)	1%	0%	2%	2%	19%	0%	2%	0%	2%	0%
Turn Type	NA			Perm	NA	NA	custom	Prot	NA	
Protected Phases	8					4		2		
Permitted Phases				4			2			
Actuated Green, G (s)	10.0				0.0	10.0	50.0	50.0	0.0	
Effective Green, g (s)	10.5				0.0	10.5	51.5	51.5	0.0	
Actuated g/C Ratio	0.15				0.00	0.15	0.74	0.74	0.00	
Clearance Time (s)	4.5					4.5	5.5	5.5		
Vehicle Extension (s)	2.5					2.5	6.1	6.1		
Lane Grp Cap (vph)	471				0	262	1185	2372	0	
v/s Ratio Prot	c0.07					0.05		c0.41		
v/s Ratio Perm							0.18			
v/c Ratio	0.49				no cap	0.37	0.25	0.55	no cap	
Uniform Delay, d1	27.3				Error	26.8	3.0	4.1	Error	
Progression Factor	1.00					0.39	1.26	1.53		
Incremental Delay, d2	0.6				Error	0.5	0.5	0.8	Error	
Delay (s)	27.9				Error	11.0	4.2	7.1	Error	
Level of Service	C				F	B	A	A	F	
Approach Delay (s)	27.9					Error			Error	
Approach LOS	C					F			F	

Intersection Summary			
HCM 2000 Control Delay	Error	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.6%	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 (vph)	95	335	0	0	255	185	30	960	140	0	0	0
Future Volume (vph)	95	335	0	0	255	185	30	960	140	0	0	0
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			
Lane Util. Factor		0.95			1.00	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	0.99			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.99			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		3272			1750	1446		3220	1468			
Flt Permitted		0.71			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		2361			1750	1446		3220	1468			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	97	342	0	0	260	189	31	980	143	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	120	0	0	53	0	0	0
Lane Group Flow (vph)	0	439	0	0	260	69	0	1011	90	0	0	0
Confl. Peds. (#/hr)	6		10	10		6	5		1	1		5
Heavy Vehicles (%)	2%	0%	0%	0%	0%	1%	6%	3%	0%	0%	0%	0%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	3	8			4			6				
Permitted Phases	8					4	6		6			
Actuated Green, G (s)		17.2			17.2	17.2		42.8	42.8			
Effective Green, g (s)		17.7			17.7	17.7		44.3	44.3			
Actuated g/C Ratio		0.25			0.25	0.25		0.63	0.63			
Clearance Time (s)		4.5			4.5	4.5		5.5	5.5			
Vehicle Extension (s)		2.5			2.5	2.5		5.0	5.0			
Lane Grp Cap (vph)		596			442	365		2037	929			
v/s Ratio Prot					0.15							
v/s Ratio Perm		c0.19				0.05		0.31	0.06			
v/c Ratio		0.74			0.59	0.19		0.50	0.10			
Uniform Delay, d1		24.0			23.0	20.5		6.9	5.0			
Progression Factor		1.29			1.00	1.00		1.00	1.00			
Incremental Delay, d2		4.4			1.7	0.2		0.9	0.2			
Delay (s)		35.4			24.6	20.7		7.7	5.2			
Level of Service		D			C	C		A	A			
Approach Delay (s)		35.4			23.0			7.4			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	215	305	5	5	50
Future Vol, veh/h	25	215	305	5	5	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	29	247	351	6	6	57

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	357	0	-	0	659	354
Stage 1	-	-	-	-	354	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1213	-	-	-	432	694
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	752	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1213	-	-	-	420	694
Mov Cap-2 Maneuver	-	-	-	-	420	-
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	752	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1213	-	-	-	655
HCM Lane V/C Ratio	0.024	-	-	-	0.097
HCM Control Delay (s)	8	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	190	100	5	5	70
Future Vol, veh/h	35	190	100	5	5	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	3	4	0	0	1
Mvmt Flow	42	226	119	6	6	83

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	125	0	-	0	432	122
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	310	-
Critical Hdwy	4.1	-	-	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.309
Pot Cap-1 Maneuver	1474	-	-	-	584	932
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1474	-	-	-	568	932
Mov Cap-2 Maneuver	-	-	-	-	568	-
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	748	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1474	-	-	-	894
HCM Lane V/C Ratio	0.028	-	-	-	0.1
HCM Control Delay (s)	7.5	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	10	0	0	0	0	0	0	15	945	15
Future Vol, veh/h	0	1	10	0	0	0	0	0	0	15	945	15
Conflicting Peds, #/hr	5	0	2	2	0	5	12	0	2	2	0	12
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	-	-	16983	-	-	16983	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	11	0	0	0	0	0	0	16	1027	16

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	1081	536	2	0	0
Stage 1	-	1079	-	-	-	-
Stage 2	-	2	-	-	-	-
Critical Hdwy	-	6.54	7.14	5.34	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.02	3.92	3.12	-	-
Pot Cap-1 Maneuver	0	216	419	1151	-	-
Stage 1	0	293	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	414	1151	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	14	0.2
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	414	1151	-	-
HCM Lane V/C Ratio	0.029	0.014	-	-
HCM Control Delay (s)	14	8.2	0.1	-
HCM Lane LOS	B	A	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	10	0	5	0	1	10	5	1	0
Future Vol, veh/h	0	0	0	10	0	5	0	1	10	5	1	0
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	14	0	7	0	1	14	7	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	7	0	0	3	0	0	37	38	3	41	35	6
Stage 1	-	-	-	-	-	-	3	3	-	32	32	-
Stage 2	-	-	-	-	-	-	34	35	-	9	3	-
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	1627	-	-	1632	-	-	973	858	1087	968	861	1083
Stage 1	-	-	-	-	-	-	1025	897	-	990	872	-
Stage 2	-	-	-	-	-	-	987	870	-	1017	897	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1627	-	-	1629	-	-	961	849	1085	948	852	1081
Mov Cap-2 Maneuver	-	-	-	-	-	-	961	849	-	948	852	-
Stage 1	-	-	-	-	-	-	1023	895	-	990	864	-
Stage 2	-	-	-	-	-	-	975	862	-	1003	895	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	4.8	8.5	8.9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1058	1627	-	-	1629	-	-	931
HCM Lane V/C Ratio	0.014	-	-	-	0.008	-	-	0.009
HCM Control Delay (s)	8.5	0	-	-	7.2	0	-	8.9
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	10	30	0	0	0	0	0	70	410
Future Vol, veh/h	0	0	0	10	30	0	0	0	0	0	70	410
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	91	91	91	92	92	92	91	91	91
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	0	1	1
Mvmt Flow	0	0	0	11	33	0	0	0	0	0	77	451

Major/Minor	Minor1			Major2		
Conflicting Flow All	81	77	-	-	-	0
Stage 1	0	0	-	-	-	-
Stage 2	81	77	-	-	-	-
Critical Hdwy	6.4	6.5	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	-	-	-	-
Pot Cap-1 Maneuver	926	817	0	0	-	0
Stage 1	-	-	0	0	-	0
Stage 2	947	835	0	0	-	0
Platoon blocked, %					-	
Mov Cap-1 Maneuver	926	0	-	-	-	-
Mov Cap-2 Maneuver	926	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	947	0	-	-	-	-

Approach	WB	SB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	WBLn1	WBLn2	SBT
Capacity (veh/h)	926	-	-
HCM Lane V/C Ratio	0.012	-	-
HCM Control Delay (s)	8.9	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

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	30	50	15	80	0	0	0	0	115	600	25
Future Vol, veh/h	0	30	50	15	80	0	0	0	0	115	600	25
Conflicting Peds, #/hr	0	0	16	16	0	0	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	0	0	0	0	0	0
Mvmt Flow	0	33	56	17	89	0	0	0	0	128	667	28

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	-	947	374	622	961	-				0	0	0
Stage 1	-	947	-	0	0	-				-	-	-
Stage 2	-	0	-	622	961	-				-	-	-
Critical Hdwy	-	6.5	6.9	7.5	6.5	-				4.1	-	-
Critical Hdwy Stg 1	-	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.5	5.5	-				-	-	-
Follow-up Hdwy	-	4	3.3	3.5	4	-				2.2	-	-
Pot Cap-1 Maneuver	0	263	629	375	258	0				-	-	-
Stage 1	0	342	-	-	-	0				-	-	-
Stage 2	0	-	-	446	337	0				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	-	260	623	308	255	-				-	-	-
Mov Cap-2 Maneuver	-	260	-	308	255	-				-	-	-
Stage 1	-	339	-	-	-	-				-	-	-
Stage 2	-	-	-	366	334	-				-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	16.2	27.7	
HCM LOS	C	D	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	409	262	-	-	-
HCM Lane V/C Ratio	0.217	0.403	-	-	-
HCM Control Delay (s)	16.2	27.7	-	-	-
HCM Lane LOS	C	D	-	-	-
HCM 95th %tile Q(veh)	0.8	1.8	-	-	-

Intersection												
Int Delay, s/veh	9.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	20	45	185	15	0	70	0	260	0	0	0
Future Vol, veh/h	0	20	45	185	15	0	70	0	260	0	0	0
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	93	93	93	92	93	92	93	92	92	92
Heavy Vehicles, %	2	0	0	0	3	2	1	2	1	2	2	2
Mvmt Flow	0	22	48	199	16	0	75	0	280	0	0	0

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	-	1	1	36	1	-				0	0	0
Stage 1	-	1	-	0	0	-				-	-	-
Stage 2	-	0	-	36	1	-				-	-	-
Critical Hdwy	-	6.5	6.2	7.1	6.53	-				4.12	-	-
Critical Hdwy Stg 1	-	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.53	-				-	-	-
Follow-up Hdwy	-	4	3.3	3.5	4.027	-				2.218	-	-
Pot Cap-1 Maneuver	0	899	1090	975	893	0				-	-	-
Stage 1	0	899	-	-	-	0				-	-	-
Stage 2	0	-	-	985	893	0				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	-	899	1090	915	893	-				-	-	-
Mov Cap-2 Maneuver	-	899	-	915	893	-				-	-	-
Stage 1	-	899	-	-	-	-				-	-	-
Stage 2	-	-	-	919	893	-				-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	8.8	10.2	0
HCM LOS	A	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1023	913	-	-	-
HCM Lane V/C Ratio	0.068	0.236	-	-	-
HCM Control Delay (s)	8.8	10.2	0	-	-
HCM Lane LOS	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	0.9	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	120	10	2	55	1	5	1	1	1	2	1
Future Vol, veh/h	1	120	10	2	55	1	5	1	1	1	2	1
Conflicting Peds, #/hr	3	0	3	3	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	160	13	3	73	1	7	1	1	1	3	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	176	0	0	254	255	170	253	261	77
Stage 1	-	-	-	-	-	-	172	172	-	83	83	-
Stage 2	-	-	-	-	-	-	82	83	-	170	178	-
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	1535	-	-	1412	-	-	703	652	879	704	647	990
Stage 1	-	-	-	-	-	-	835	760	-	930	830	-
Stage 2	-	-	-	-	-	-	931	830	-	837	756	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1531	-	-	1408	-	-	696	646	876	698	641	987
Mov Cap-2 Maneuver	-	-	-	-	-	-	696	646	-	698	641	-
Stage 1	-	-	-	-	-	-	832	757	-	926	826	-
Stage 2	-	-	-	-	-	-	925	826	-	833	753	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	10.1	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	709	1531	-	-	1408	-	-	719
HCM Lane V/C Ratio	0.013	0.001	-	-	0.002	-	-	0.007
HCM Control Delay (s)	10.1	7.4	0	-	7.6	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection						
Int Delay, s/veh	0.6					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	130	65	5	10	1
Future Vol, veh/h	1	130	65	5	10	1
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	176	88	7	14	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	97	0	-	0	272	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	178	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1509	-	-	-	722	968
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	858	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1506	-	-	-	718	966
Mov Cap-2 Maneuver	-	-	-	-	718	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	856	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1506	-	-	-	735
HCM Lane V/C Ratio	0.001	-	-	-	0.02
HCM Control Delay (s)	7.4	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	1	10	20	1	5	10	765	1	1	840	15
Future Volume (vph)	275	1	10	20	1	5	10	765	1	1	840	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	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		1.00			0.98			1.00			1.00	
Flt Protected		0.95			0.96			1.00			1.00	
Satd. Flow (prot)		1638			1638			3227			3190	
Flt Permitted		0.71			0.76			0.94			0.95	
Satd. Flow (perm)		1225			1295			3040			3044	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	299	1	11	22	1	5	11	832	1	1	913	16
RTOR Reduction (vph)	0	2	0	0	3	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	309	0	0	25	0	0	844	0	0	928	0
Confl. Peds. (#/hr)	8					8	2		2	2		2
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	3%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		16.8			16.8			21.7			21.7	
Effective Green, g (s)		17.3			17.3			22.2			22.2	
Actuated g/C Ratio		0.36			0.36			0.47			0.47	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		2.5			2.5			6.1			6.1	
Lane Grp Cap (vph)		446			471			1420			1422	
v/s Ratio Prot												
v/s Ratio Perm		c0.25			0.02			0.28			c0.30	
v/c Ratio		0.69			0.05			0.59			0.65	
Uniform Delay, d1		12.8			9.8			9.3			9.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		4.3			0.0			1.3			1.8	
Delay (s)		17.1			9.8			10.6			11.5	
Level of Service		B			A			B			B	
Approach Delay (s)		17.1			9.8			10.6			11.5	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	110	165	20	5	2
Future Vol, veh/h	5	110	165	20	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	126	190	23	6	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	213	0	-	0	340	202
Stage 1	-	-	-	-	202	-
Stage 2	-	-	-	-	138	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1369	-	-	-	660	844
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	894	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1369	-	-	-	657	844
Mov Cap-2 Maneuver	-	-	-	-	657	-
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	894	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1369	-	-	-	701
HCM Lane V/C Ratio	0.004	-	-	-	0.011
HCM Control Delay (s)	7.6	0	-	-	10.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	185	15	45	290	15	35	10	30	10	20	2
Future Vol, veh/h	5	185	15	45	290	15	35	10	30	10	20	2
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	40	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	201	16	49	315	16	38	11	33	11	22	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	333	0	0	217	0	0	652	650	211	666	650	325
Stage 1	-	-	-	-	-	-	219	219	-	423	423	-
Stage 2	-	-	-	-	-	-	433	431	-	243	227	-
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	1238	-	-	1365	-	-	384	391	834	376	391	721
Stage 1	-	-	-	-	-	-	788	726	-	613	591	-
Stage 2	-	-	-	-	-	-	605	586	-	765	720	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1236	-	-	1365	-	-	355	375	832	341	375	720
Mov Cap-2 Maneuver	-	-	-	-	-	-	355	375	-	341	375	-
Stage 1	-	-	-	-	-	-	785	723	-	609	569	-
Stage 2	-	-	-	-	-	-	559	564	-	720	717	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1	14.4	15.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	465	1236	-	-	1365	-	-	375
HCM Lane V/C Ratio	0.175	0.004	-	-	0.036	-	-	0.093
HCM Control Delay (s)	14.4	7.9	-	-	7.7	-	-	15.6
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0.3

Intersection						
Int Delay, s/veh	2.7					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱	Y	
Traffic Vol, veh/h	0	240	370	110	155	15
Future Vol, veh/h	0	240	370	110	155	15
Conflicting Peds, #/hr	6	0	0	6	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	255	394	117	165	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	655	401
Stage 1	-	-	-	-	400	-
Stage 2	-	-	-	-	255	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	-	434	653
Stage 1	0	-	-	-	681	-
Stage 2	0	-	-	-	792	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	429	649
Mov Cap-2 Maneuver	-	-	-	-	525	-
Stage 1	-	-	-	-	677	-
Stage 2	-	-	-	-	787	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	576
HCM Lane V/C Ratio	-	-	-	0.314
HCM Control Delay (s)	-	-	-	14.1
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	315	120	395	320	10	170	40	410	45	45	15
Future Volume (vph)	20	315	120	395	320	10	170	40	410	45	45	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	5.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			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	0.96		1.00	1.00			1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1662	3163		1646	3306			1676	1473	1662	1677	
Flt Permitted	0.95	1.00		0.95	1.00			0.72	1.00	0.49	1.00	
Satd. Flow (perm)	1662	3163		1646	3306			1261	1473	855	1677	
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)	22	339	129	425	344	11	183	43	441	48	48	16
RTOR Reduction (vph)	0	36	0	0	2	0	0	0	72	0	10	0
Lane Group Flow (vph)	22	432	0	425	353	0	0	226	369	48	54	0
Confl. Peds. (#/hr)	7		8	8		7	5					5
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Split	NA		Split	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	2	2		6	6			8	8 6		4	
Permitted Phases							8			4		
Actuated Green, G (s)	15.3	15.3		24.9	24.9			17.1	47.5	17.1	17.1	
Effective Green, g (s)	15.8	15.8		26.4	26.4			18.1	42.0	18.1	18.1	
Actuated g/C Ratio	0.22	0.22		0.37	0.37			0.25	0.58	0.25	0.25	
Clearance Time (s)	4.5	4.5		5.5	5.5			5.0		5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5		2.5	2.5	
Lane Grp Cap (vph)	363	691		601	1207			315	855	214	419	
v/s Ratio Prot	0.01	c0.14		c0.26	0.11				0.25		0.03	
v/s Ratio Perm								c0.18		0.06		
v/c Ratio	0.06	0.63		0.71	0.29			0.72	0.43	0.22	0.13	
Uniform Delay, d1	22.4	25.6		19.6	16.3			24.8	8.5	21.5	21.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.5		3.5	0.1			7.1	0.3	0.4	0.1	
Delay (s)	22.4	27.1		23.2	16.4			31.9	8.7	21.9	21.1	
Level of Service	C	C		C	B			C	A	C	C	
Approach Delay (s)		26.9			20.1			16.6			21.4	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	72.3	Sum of lost time (s)	14.5
Intersection Capacity Utilization	68.8%	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 (vph)	0	770	50	115	735	0	80	0	115	0	0	0
Future Volume (vph)	0	770	50	115	735	0	80	0	115	0	0	0
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				
Lane Util. Factor		0.95		1.00	0.95		1.00	1.00				
Frpb, ped/bikes		1.00		1.00	1.00		1.00	0.98				
Flpb, ped/bikes		1.00		1.00	1.00		0.99	1.00				
Frt		0.99		1.00	1.00		1.00	0.85				
Flt Protected		1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)		3264		1646	3228		1602	1460				
Flt Permitted		1.00		0.95	1.00		0.76	1.00				
Satd. Flow (perm)		3264		1646	3228		1277	1460				
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)	0	828	54	124	790	0	86	0	124	0	0	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	104	0	0	0	0
Lane Group Flow (vph)	0	877	0	124	790	0	86	20	0	0	0	0
Confl. Peds. (#/hr)						7	9		8	8		9
Heavy Vehicles (%)	0%	1%	0%	1%	3%	0%	3%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)		28.1		7.7	40.8		8.5	8.5				
Effective Green, g (s)		29.1		8.7	41.8		9.5	9.5				
Actuated g/C Ratio		0.49		0.15	0.70		0.16	0.16				
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0				
Vehicle Extension (s)		6.1		2.5	6.1		2.5	2.5				
Lane Grp Cap (vph)		1601		241	2275		204	233				
v/s Ratio Prot		c0.27		c0.08	0.24			0.01				
v/s Ratio Perm							c0.07					
v/c Ratio		0.55		0.51	0.35		0.42	0.09				
Uniform Delay, d1		10.5		23.4	3.4		22.4	21.2				
Progression Factor		1.00		1.00	1.00		1.00	1.00				
Incremental Delay, d2		0.9		1.4	0.3		1.0	0.1				
Delay (s)		11.4		24.7	3.7		23.5	21.3				
Level of Service		B		C	A		C	C				
Approach Delay (s)		11.4			6.5			22.2			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
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 (vph)	5	835	55	50	835	1	50	1	70	10	1	5
Future Volume (vph)	5	835	55	50	835	1	50	1	70	10	1	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	6.5		4.5	6.5		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.99	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1650	3286		1662	3324		1651	1470			1519	
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.86	
Satd. Flow (perm)	1650	3286		1662	3324		1297	1470			1344	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	908	60	54	908	1	54	1	76	11	1	5
RTOR Reduction (vph)	0	4	0	0	0	0	0	60	0	0	4	0
Lane Group Flow (vph)	5	964	0	54	909	0	54	17	0	0	13	0
Confl. Peds. (#/hr)	18		11	11		18	14		4	4		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	0.6	31.9		2.9	34.2		13.9	13.9			13.9	
Effective Green, g (s)	0.6	31.9		2.9	34.2		13.9	13.9			13.9	
Actuated g/C Ratio	0.01	0.50		0.05	0.53		0.22	0.22			0.22	
Clearance Time (s)	4.5	6.5		4.5	6.5		4.5	4.5			4.5	
Vehicle Extension (s)	2.0	4.8		2.5	4.8		2.5	2.5			2.5	
Lane Grp Cap (vph)	15	1632		75	1770		280	318			290	
v/s Ratio Prot	0.00	c0.29		c0.03	0.27			0.01				
v/s Ratio Perm							c0.04				0.01	
v/c Ratio	0.33	0.59		0.72	0.51		0.19	0.05			0.05	
Uniform Delay, d1	31.6	11.5		30.2	9.6		20.6	19.9			19.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	4.7	0.8		26.3	0.5		0.2	0.1			0.0	
Delay (s)	36.3	12.3		56.6	10.1		20.8	20.0			19.9	
Level of Service	D	B		E	B		C	B			B	
Approach Delay (s)		12.5			12.7			20.3			19.9	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	64.2	Sum of lost time (s)	15.5
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	270	565	0	0	770	15	5	1	15	5	0	110
Future Vol, veh/h	270	565	0	0	770	15	5	1	15	5	0	110
Conflicting Peds, #/hr	10	0	11	11	0	10	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	297	621	0	0	846	16	5	1	16	5	0	121

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	872	0	-	-	-	0	1638	2087	314	1772	2079	441
Stage 1	-	-	-	-	-	-	1215	1215	-	864	864	-
Stage 2	-	-	-	-	-	-	423	872	-	908	1215	-
Critical Hdwy	4.1	-	-	-	-	-	7.5	6.5	6.9	7.5	6.5	6.9
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	2.2	-	-	-	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	782	-	0	0	-	-	68	53	688	54	54	570
Stage 1	-	-	0	0	-	-	195	256	-	319	374	-
Stage 2	-	-	0	0	-	-	585	371	-	301	256	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	775	-	-	-	-	-	29	22	686	27	22	565
Mov Cap-2 Maneuver	-	-	-	-	-	-	29	22	-	27	22	-
Stage 1	-	-	-	-	-	-	81	106	-	131	370	-
Stage 2	-	-	-	-	-	-	460	367	-	120	106	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.3	0	59.9	25.1
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	88	775	-	-	-	303
HCM Lane V/C Ratio	0.262	0.383	-	-	-	0.417
HCM Control Delay (s)	59.9	12.5	1.9	-	-	25.1
HCM Lane LOS	F	B	A	-	-	D
HCM 95th %tile Q(veh)	1	1.8	-	-	-	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	160	435	60	335	0	0	0	0	5	605	330
Future Volume (vph)	0	160	435	60	335	0	0	0	0	5	605	330
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
Lane Util. Factor		1.00	1.00		0.95						0.95	1.00
Frpb, ped/bikes		1.00	0.98		1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		0.99						1.00	1.00
Satd. Flow (prot)		1733	1460		3297						3197	1473
Flt Permitted		1.00	1.00		0.88						1.00	1.00
Satd. Flow (perm)		1733	1460		2931						3197	1473
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	174	473	65	364	0	0	0	0	5	658	359
RTOR Reduction (vph)	0	0	62	0	0	0	0	0	0	0	0	164
Lane Group Flow (vph)	0	174	411	0	429	0	0	0	0	0	663	195
Confl. Peds. (#/hr)	5		7	7		5	13		7	7		13
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	4%	1%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Prot
Protected Phases		8			4						2	2
Permitted Phases			8	4						2		
Actuated Green, G (s)		23.5	23.5		23.5						37.5	37.5
Effective Green, g (s)		24.0	24.0		24.0						38.0	38.0
Actuated g/C Ratio		0.34	0.34		0.34						0.54	0.54
Clearance Time (s)		4.5	4.5		4.5						4.5	4.5
Vehicle Extension (s)		2.5	2.5		2.5						6.1	6.1
Lane Grp Cap (vph)		594	500		1004						1735	799
v/s Ratio Prot		0.10										0.13
v/s Ratio Perm			c0.28		0.15						0.21	
v/c Ratio		0.29	0.82		0.43						0.38	0.24
Uniform Delay, d1		16.8	21.1		17.7						9.2	8.4
Progression Factor		1.00	1.00		1.07						1.00	1.00
Incremental Delay, d2		0.2	10.3		0.2						0.6	0.7
Delay (s)		17.0	31.3		19.2						9.9	9.2
Level of Service		B	C		B						A	A
Approach Delay (s)		27.5			19.2			0.0			9.6	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.2%	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 (vph)	155	15	0	0	65	10	340	695	5	0	0	0
Future Volume (vph)	155	15	0	0	65	10	340	695	5	0	0	0
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				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91				
Frpb, ped/bikes	1.00	1.00			1.00	0.99		1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		1.00				
Flt Protected	0.95	1.00			1.00	1.00		0.98				
Satd. Flow (prot)	1645	1750			1750	1468		4571				
Flt Permitted	0.71	1.00			1.00	1.00		0.98				
Satd. Flow (perm)	1226	1750			1750	1468		4571				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	178	17	0	0	75	11	391	799	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	9	0	0	0	0	0	0
Lane Group Flow (vph)	178	17	0	0	75	2	0	1196	0	0	0	0
Confl. Peds. (#/hr)	1		4	4		1	2		2	2		2
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA			NA	Perm	Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8					4	6					
Actuated Green, G (s)	13.8	13.8			13.8	13.8		47.2				
Effective Green, g (s)	14.3	14.3			14.3	14.3		47.7				
Actuated g/C Ratio	0.20	0.20			0.20	0.20		0.68				
Clearance Time (s)	4.5	4.5			4.5	4.5		4.5				
Vehicle Extension (s)	2.5	2.5			2.5	2.5		6.5				
Lane Grp Cap (vph)	250	357			357	299		3114				
v/s Ratio Prot		0.01			0.04							
v/s Ratio Perm	c0.15					0.00		0.26				
v/c Ratio	0.71	0.05			0.21	0.01		0.38				
Uniform Delay, d1	25.9	22.4			23.2	22.2		4.8				
Progression Factor	0.48	0.42			1.00	1.00		1.00				
Incremental Delay, d2	8.5	0.0			0.2	0.0		0.4				
Delay (s)	21.0	9.4			23.4	22.2		5.2				
Level of Service	C	A			C	C		A				
Approach Delay (s)		19.9			23.2			5.2			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	95	55	25	60	60	35
Future Vol, veh/h	95	55	25	60	60	35
Conflicting Peds, #/hr	2	4	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	101	59	27	64	64	37

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	228	65	0	0	93	0
Stage 1	61	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	-	-	2.2	-
Pot Cap-1 Maneuver	765	999	-	-	1514	-
Stage 1	967	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	729	993	-	-	1511	-
Mov Cap-2 Maneuver	729	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	865	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	4.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	808	1511	-
HCM Lane V/C Ratio	-	-	0.197	0.042	-
HCM Control Delay (s)	-	-	10.5	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	25	30	150	130	40
Future Vol, veh/h	30	25	30	150	130	40
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	38	32	38	192	167	51

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	465	197	222	0	-	0
Stage 1	197	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	559	849	1359	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	537	846	1354	-	-	-
Mov Cap-2 Maneuver	537	-	-	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	1.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1354	-	644	-	-
HCM Lane V/C Ratio	0.028	-	0.109	-	-
HCM Control Delay (s)	7.7	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	35	30	5	80	10	40	60	5	5	60	5
Future Vol, veh/h	5	35	30	5	80	10	40	60	5	5	60	5
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	41	35	6	93	12	47	70	6	6	70	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	8.1	8.3	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	7%	5%	7%
Vol Thru, %	57%	50%	84%	86%
Vol Right, %	5%	43%	11%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	70	95	70
LT Vol	40	5	5	5
Through Vol	60	35	80	60
RT Vol	5	30	10	5
Lane Flow Rate	122	81	110	81
Geometry Grp	1	1	1	1
Degree of Util (X)	0.152	0.096	0.135	0.1
Departure Headway (Hd)	4.47	4.249	4.404	4.44
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	805	845	815	808
Service Time	2.486	2.268	2.422	2.459
HCM Lane V/C Ratio	0.152	0.096	0.135	0.1
HCM Control Delay	8.3	7.7	8.1	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.3	0.5	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	15	2	90	20	10	5	685	50	10	665	25
Future Volume (vph)	25	15	2	90	20	10	5	685	50	10	665	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	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.99		1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1688			1666		1662	3284		1662	3275	
Flt Permitted		0.83			0.75		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1436			1294		1662	3284		1662	3275	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	28	17	2	101	22	11	6	770	56	11	747	28
RTOR Reduction (vph)	0	2	0	0	4	0	0	5	0	0	3	0
Lane Group Flow (vph)	0	45	0	0	130	0	6	821	0	11	772	0
Confl. Peds. (#/hr)	4					4			8	8		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		8.9			8.9		0.7	23.9		0.7	23.9	
Effective Green, g (s)		9.4			9.4		1.2	24.9		1.2	24.9	
Actuated g/C Ratio		0.20			0.20		0.03	0.52		0.03	0.52	
Clearance Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		2.5			2.5		2.5	4.6		2.5	4.6	
Lane Grp Cap (vph)		284			256		41	1721		41	1716	
v/s Ratio Prot							0.00	c0.25		c0.01	0.24	
v/s Ratio Perm		0.03			c0.10							
v/c Ratio		0.16			0.51		0.15	0.48		0.27	0.45	
Uniform Delay, d1		15.8			17.0		22.6	7.2		22.7	7.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			1.2		1.2	0.4		2.6	0.3	
Delay (s)		16.0			18.1		23.8	7.5		25.3	7.4	
Level of Service		B			B		C	A		C	A	
Approach Delay (s)		16.0			18.1			7.7			7.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	1	30	5	2	5	65	730	5	2	745	10
Future Vol, veh/h	10	1	30	5	2	5	65	730	5	2	745	10
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	8	8	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	11	1	34	6	2	6	74	830	6	2	847	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1423	1851	431	1417	1853	426	860	0	0	844	0	0
Stage 1	859	859	-	989	989	-	-	-	-	-	-	-
Stage 2	564	992	-	428	864	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	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	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	98	75	578	99	75	582	790	-	-	801	-	-
Stage 1	322	376	-	268	327	-	-	-	-	-	-	-
Stage 2	483	326	-	581	374	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	87	67	577	85	67	578	788	-	-	795	-	-
Mov Cap-2 Maneuver	87	67	-	85	67	-	-	-	-	-	-	-
Stage 1	291	374	-	241	294	-	-	-	-	-	-	-
Stage 2	430	293	-	544	372	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.1	37.9	0.8	0
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	788	-	-	225	123	795	-	-
HCM Lane V/C Ratio	0.094	-	-	0.207	0.111	0.003	-	-
HCM Control Delay (s)	10	-	-	25.1	37.9	9.5	-	-
HCM Lane LOS	B	-	-	D	E	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.8	0.4	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	2	10	90	1	55	2	975	100	40	845	1
Future Volume (vph)	5	2	10	90	1	55	2	975	100	40	845	1
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	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		0.99			1.00	1.00	1.00	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		0.92			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1568			1661	1488	1662	3292	1488	1662	3228	
Flt Permitted		0.92			0.72	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1459			1247	1488	1662	3292	1488	1662	3228	
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)	5	2	11	97	1	59	2	1048	108	43	909	1
RTOR Reduction (vph)	0	9	0	0	0	49	0	0	43	0	0	0
Lane Group Flow (vph)	0	9	0	0	98	10	2	1048	65	43	910	0
Confl. Peds. (#/hr)			8	8								
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4			6			
Actuated Green, G (s)		8.6			8.6	8.6	0.4	30.8	30.8	1.9	32.3	
Effective Green, g (s)		9.1			9.1	9.1	0.9	32.8	32.8	2.4	34.3	
Actuated g/C Ratio		0.16			0.16	0.16	0.02	0.58	0.58	0.04	0.61	
Clearance Time (s)		4.5			4.5	4.5	4.5	6.0	6.0	4.5	6.0	
Vehicle Extension (s)		2.5			2.5	2.5	2.5	4.8	4.8	2.5	4.8	
Lane Grp Cap (vph)		235			201	240	26	1917	866	70	1966	
v/s Ratio Prot							0.00	c0.32		c0.03	0.28	
v/s Ratio Perm		0.01			c0.08	0.01			0.04			
v/c Ratio		0.04			0.49	0.04	0.08	0.55	0.08	0.61	0.46	
Uniform Delay, d1		19.9			21.5	19.9	27.3	7.2	5.1	26.5	6.0	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0			1.4	0.0	0.9	0.5	0.1	12.9	0.3	
Delay (s)		20.0			22.8	20.0	28.2	7.7	5.2	39.4	6.3	
Level of Service		B			C	B	C	A	A	D	A	
Approach Delay (s)		20.0			21.8			7.5			7.8	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	955	910	55	55	65
Future Volume (vph)	70	955	910	55	55	65
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.93	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1662	3325	3261		1586	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1662	3325	3261		1586	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	79	1073	1022	62	62	73
RTOR Reduction (vph)	0	0	5	0	60	0
Lane Group Flow (vph)	79	1073	1079	0	75	0
Confl. Peds. (#/hr)	3			3	2	
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		4	
Permitted Phases						
Actuated Green, G (s)	4.0	38.0	29.0		7.7	
Effective Green, g (s)	5.0	38.5	29.5		8.7	
Actuated g/C Ratio	0.09	0.70	0.53		0.16	
Clearance Time (s)	5.0	4.5	4.5		5.0	
Vehicle Extension (s)	2.5	4.0	4.0		2.5	
Lane Grp Cap (vph)	150	2319	1742		249	
v/s Ratio Prot	0.05	c0.32	c0.33		c0.05	
v/s Ratio Perm						
v/c Ratio	0.53	0.46	0.62		0.30	
Uniform Delay, d1	24.0	3.7	8.9		20.6	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	2.5	0.2	0.8		0.5	
Delay (s)	26.5	3.9	9.7		21.1	
Level of Service	C	A	A		C	
Approach Delay (s)		5.5	9.7		21.1	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
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 (vph)	400	485	150	75	410	215	130	265	45	110	220	20
Future Volume (vph)	400	485	150	75	410	215	130	265	45	110	220	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	0.97	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		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	0.96		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3225	1670		1662	1660		1662	1704		1646	1725	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3225	1670		1662	1660		1662	1704		1646	1725	
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)	421	511	158	79	432	226	137	279	47	116	232	21
RTOR Reduction (vph)	0	8	0	0	14	0	0	4	0	0	2	0
Lane Group Flow (vph)	421	661	0	79	644	0	137	322	0	116	251	0
Confl. Peds. (#/hr)			8	8			2		5	5		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	19.7	65.8		9.2	55.3		13.9	27.7		11.8	25.6	
Effective Green, g (s)	20.2	66.3		9.7	55.8		14.4	28.2		12.3	26.1	
Actuated g/C Ratio	0.15	0.50		0.07	0.42		0.11	0.21		0.09	0.20	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	491	835		121	699		180	362		152	339	
v/s Ratio Prot	c0.13	0.40		0.05	c0.39		c0.08	c0.19		0.07	0.15	
v/s Ratio Perm												
v/c Ratio	0.86	0.79		0.65	0.92		0.76	0.89		0.76	0.74	
Uniform Delay, d1	54.7	27.4		59.8	36.3		57.4	50.6		58.7	50.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.6	5.2		10.7	17.6		16.5	22.3		19.3	7.7	
Delay (s)	68.4	32.6		70.5	53.9		73.8	72.9		77.9	57.7	
Level of Service	E	C		E	D		E	E		E	E	
Approach Delay (s)		46.4			55.7			73.2			64.1	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	56.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	132.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	610	30	30	670	20	45
Future Vol, veh/h	610	30	30	670	20	45
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	663	33	33	728	22	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	698	0	1112	350
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	430	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	908	-	206	652
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	629	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	906	-	193	651
Mov Cap-2 Maneuver	-	-	-	-	193	-
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	629	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	16.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	376	-	-	906	-
HCM Lane V/C Ratio	0.188	-	-	0.036	-
HCM Control Delay (s)	16.8	-	-	9.1	0.3
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	565	5	5	635	100	5	10	5	65	5	65
Future Volume (vph)	80	565	5	5	635	100	5	10	5	65	5	65
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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00			1.00			1.00	0.99
Flpb, ped/bikes		1.00			1.00			1.00			1.00	1.00
Frt		1.00			0.98			0.97			1.00	0.85
Flt Protected		0.99			1.00			0.99			0.96	1.00
Satd. Flow (prot)		3301			3256			1673			1672	1468
Flt Permitted		0.81			0.95			0.92			0.72	1.00
Satd. Flow (perm)		2687			3100			1557			1269	1468
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)	86	608	5	5	683	108	5	11	5	70	5	70
RTOR Reduction (vph)	0	1	0	0	17	0	0	4	0	0	0	58
Lane Group Flow (vph)	0	698	0	0	779	0	0	17	0	0	75	12
Confl. Peds. (#/hr)			4	4			2					2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		4
Actuated Green, G (s)		23.2			23.2			6.2			6.2	6.2
Effective Green, g (s)		23.2			23.2			6.2			6.2	6.2
Actuated g/C Ratio		0.62			0.62			0.17			0.17	0.17
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1666			1922			258			210	243
v/s Ratio Prot												
v/s Ratio Perm		c0.26			0.25			0.01			c0.06	0.01
v/c Ratio		0.42			0.41			0.07			0.36	0.05
Uniform Delay, d1		3.6			3.6			13.2			13.8	13.1
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2			0.1			0.1			1.0	0.1
Delay (s)		3.8			3.7			13.3			14.9	13.2
Level of Service		A			A			B			B	B
Approach Delay (s)		3.8			3.7			13.3			14.1	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
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 (vph)	65	435	125	15	495	40	160	125	35	20	95	80
Future Volume (vph)	65	435	125	15	495	40	160	125	35	20	95	80
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	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1750	1454	1662	1715		1662	1684		1662	1617	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1750	1454	1662	1715		1662	1684		1662	1617	
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)	70	468	134	16	532	43	172	134	38	22	102	86
RTOR Reduction (vph)	0	0	72	0	3	0	0	10	0	0	29	0
Lane Group Flow (vph)	70	468	62	16	572	0	172	162	0	22	159	0
Confl. Peds. (#/hr)			1	1			4		1	1		4
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	5.4	41.0	41.0	1.1	36.7		13.1	28.2		1.8	16.9	
Effective Green, g (s)	5.9	41.5	41.5	1.6	37.2		13.6	28.7		2.3	17.4	
Actuated g/C Ratio	0.07	0.46	0.46	0.02	0.41		0.15	0.32		0.03	0.19	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	6.0	6.0	2.5	6.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	108	806	669	29	708		250	536		42	312	
v/s Ratio Prot	c0.04	0.27		0.01	c0.33		c0.10	0.10		0.01	c0.10	
v/s Ratio Perm			0.04									
v/c Ratio	0.65	0.58	0.09	0.55	0.81		0.69	0.30		0.52	0.51	
Uniform Delay, d1	41.1	17.9	13.7	43.9	23.3		36.2	23.2		43.4	32.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.2	2.0	0.2	16.9	8.0		7.0	0.2		8.7	1.0	
Delay (s)	52.3	19.9	13.9	60.8	31.3		43.3	23.4		52.1	33.5	
Level of Service	D	B	B	E	C		D	C		D	C	
Approach Delay (s)		22.1			32.1			33.3			35.4	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.4%	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 (vph)	165	1	340	2	5	5	460	930	1	1	885	95
Future Volume (vph)	165	1	340	2	5	5	460	930	1	1	885	95
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	4.0			3.5		4.0	4.0		4.0	4.0	5.5
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85			0.94		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1646	1488			1638		1662	3259		1662	3228	1434
Flt Permitted	0.95	1.00			0.86		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1646	1488			1427		1662	3259		1662	3228	1434
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	168	1	347	2	5	5	469	949	1	1	903	97
RTOR Reduction (vph)	0	284	0	0	5	0	0	0	0	0	0	61
Lane Group Flow (vph)	168	64	0	0	7	0	469	950	0	1	903	36
Confl. Peds. (#/hr)							3					3
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	3%	1%
Turn Type	Prot	NA		custom	NA		Prot	NA		Prot	NA	Perm
Protected Phases	3						1	6		5	2	
Permitted Phases		8		4	4							2
Actuated Green, G (s)	12.0	18.2			1.7		33.1	71.3		0.5	38.7	38.7
Effective Green, g (s)	12.0	19.2			2.7		34.1	72.8		1.5	40.2	38.7
Actuated g/C Ratio	0.11	0.18			0.03		0.32	0.69		0.01	0.38	0.37
Clearance Time (s)	5.0	5.0			4.5		5.0	5.5		5.0	5.5	5.5
Vehicle Extension (s)	2.5	2.5			5.0		2.5	4.8		2.5	4.8	4.8
Lane Grp Cap (vph)	187	270			36		537	2248		23	1230	526
v/s Ratio Prot	c0.10						c0.28	0.29		0.00	c0.28	
v/s Ratio Perm		c0.04			0.00							0.02
v/c Ratio	0.90	0.24			0.20		0.87	0.42		0.04	0.73	0.07
Uniform Delay, d1	46.1	36.9			50.3		33.7	7.2		51.3	28.1	21.7
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	38.1	0.3			5.6		14.5	0.3		0.6	2.7	0.1
Delay (s)	84.3	37.2			55.9		48.2	7.4		51.9	30.8	21.8
Level of Service	F	D			E		D	A		D	C	C
Approach Delay (s)		52.5			55.9			20.9			29.9	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	105.5	Sum of lost time (s)	17.5
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1	1	2	1	5	5	440	1	5	400	10
Future Vol, veh/h	5	1	1	2	1	5	5	440	1	5	400	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	6	1	1	3	1	6	6	550	1	6	500	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1085	1082	507	1083	1088	551	513	0	0	551	0	0
Stage 1	519	519	-	563	563	-	-	-	-	-	-	-
Stage 2	566	563	-	520	525	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	196	219	570	197	218	538	1063	-	-	1029	-	-
Stage 1	544	536	-	514	512	-	-	-	-	-	-	-
Stage 2	513	512	-	543	533	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	191	215	570	193	215	538	1063	-	-	1029	-	-
Mov Cap-2 Maneuver	191	215	-	193	215	-	-	-	-	-	-	-
Stage 1	540	532	-	510	508	-	-	-	-	-	-	-
Stage 2	502	508	-	536	529	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.5	16.3	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1063	-	-	215	329	1029	-	-
HCM Lane V/C Ratio	0.006	-	-	0.041	0.03	0.006	-	-
HCM Control Delay (s)	8.4	0	-	22.5	16.3	8.5	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection						
Int Delay, s/veh	5.2					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	55	1	50	60	5	115
Future Vol, veh/h	55	1	50	60	5	115
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	61	1	56	67	6	128

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	64	0	243	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	179	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1551	-	750	1006
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	857	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1548	-	720	1004
Mov Cap-2 Maneuver	-	-	-	-	720	-
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	857	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	988	-	-	1548	-
HCM Lane V/C Ratio	0.135	-	-	0.036	-
HCM Control Delay (s)	9.2	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection												
Int Delay, s/veh	3.2											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	630	30	170	760	5	10	1	170	5	1	2
Future Vol, veh/h	5	630	30	170	760	5	10	1	170	5	1	2
Conflicting Peds, #/hr	9	0	3	3	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	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	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	663	32	179	800	5	11	1	179	5	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	814	0	0	698	0	0	1451	1864	351	1512	1878	412
Stage 1	-	-	-	-	-	-	692	692	-	1170	1170	-
Stage 2	-	-	-	-	-	-	759	1172	-	342	708	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
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	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	822	-	-	908	-	-	93	74	651	84	72	595
Stage 1	-	-	-	-	-	-	405	448	-	208	269	-
Stage 2	-	-	-	-	-	-	369	269	-	652	441	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	815	-	-	905	-	-	77	58	649	50	57	590
Mov Cap-2 Maneuver	-	-	-	-	-	-	77	58	-	50	57	-
Stage 1	-	-	-	-	-	-	401	444	-	205	214	-
Stage 2	-	-	-	-	-	-	294	214	-	468	437	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.8	19.2	67.4
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	442	815	-	-	905	-	-	66
HCM Lane V/C Ratio	0.431	0.006	-	-	0.198	-	-	0.128
HCM Control Delay (s)	19.2	9.4	-	-	10	-	-	67.4
HCM Lane LOS	C	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	2.1	0	-	-	0.7	-	-	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	495	270	1	590	420	60
Future Volume (vph)	495	270	1	590	420	60
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		0.95	0.97	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.98	
Flt Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	1750	1457		3325	3182	
Flt Permitted	1.00	1.00		0.95	0.96	
Satd. Flow (perm)	1750	1457		3174	3182	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	532	290	1	634	452	65
RTOR Reduction (vph)	0	0	0	0	13	0
Lane Group Flow (vph)	532	290	0	635	504	0
Confl. Peds. (#/hr)		1	1			4
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	NA	Free	Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases		Free	6			
Actuated Green, G (s)	19.7	43.6		19.7	14.9	
Effective Green, g (s)	20.2	43.6		20.2	15.4	
Actuated g/C Ratio	0.46	1.00		0.46	0.35	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	4.0			4.0	3.5	
Lane Grp Cap (vph)	810	1457		1470	1123	
v/s Ratio Prot	c0.30				c0.16	
v/s Ratio Perm		0.20		0.20		
v/c Ratio	0.66	0.20		0.43	0.45	
Uniform Delay, d1	9.0	0.0		7.9	10.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.3		0.3	0.3	
Delay (s)	11.2	0.3		8.1	11.2	
Level of Service	B	A		A	B	
Approach Delay (s)	7.3			8.1	11.2	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	43.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	640	15	55	700	25	120
Future Volume (vph)	640	15	55	700	25	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0		-0.5	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3311		1630	3292	1662	1450
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3311		1630	3292	1662	1450
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	667	16	57	729	26	125
RTOR Reduction (vph)	1	0	0	0	0	34
Lane Group Flow (vph)	682	0	57	729	26	91
Confl. Peds. (#/hr)		6	6			9
Heavy Vehicles (%)	0%	0%	2%	1%	0%	1%
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						6
Actuated Green, G (s)	25.6		2.3	32.4	4.2	32.4
Effective Green, g (s)	26.6		7.3	33.4	4.7	33.4
Actuated g/C Ratio	0.58		0.16	0.72	0.10	0.72
Clearance Time (s)	5.0		4.5	5.0	4.5	5.0
Vehicle Extension (s)	4.2		2.5	4.2	2.5	4.2
Lane Grp Cap (vph)	1910		258	2385	169	1050
v/s Ratio Prot	c0.21		0.03	c0.22	c0.02	
v/s Ratio Perm						0.06
v/c Ratio	0.36		0.22	0.31	0.15	0.09
Uniform Delay, d1	5.2		16.9	2.2	18.9	1.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2		0.3	0.1	0.3	0.1
Delay (s)	5.4		17.2	2.4	19.2	1.9
Level of Service	A		B	A	B	A
Approach Delay (s)	5.4			3.4	4.9	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	46.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	2	445	45	5	390
Future Vol, veh/h	40	2	445	45	5	390
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	43	2	473	48	5	415

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	924	499	0	0	523	0
Stage 1	499	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	302	576	-	-	1054	-
Stage 1	614	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	300	575	-	-	1052	-
Mov Cap-2 Maneuver	300	-	-	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	664	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	307	1052	-
HCM Lane V/C Ratio	-	-	0.146	0.005	-
HCM Control Delay (s)	-	-	18.7	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	190	300	25	120	350
Future Vol, veh/h	40	190	300	25	120	350
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	60	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	43	202	319	27	128	372

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	962	334	0	0	347	0
Stage 1	334	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	286	712	-	-	1223	-
Stage 1	730	-	-	-	-	-
Stage 2	536	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	256	711	-	-	1222	-
Mov Cap-2 Maneuver	256	-	-	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	536	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	256	711	1222	-
HCM Lane V/C Ratio	-	-	0.166	0.284	0.104	-
HCM Control Delay (s)	-	-	21.8	12.1	8.3	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	1.2	0.3	-

Intersection						
Int Delay, s/veh	6.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	75	195	110	235	190	35
Future Vol, veh/h	75	195	110	235	190	35
Conflicting Peds, #/hr	1	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	82	214	121	258	209	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	730	229	248	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.11	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.209	-	-	-
Pot Cap-1 Maneuver	392	815	1324	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	356	814	1323	-	-	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	612	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.7	2.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1323	-	600	-	-
HCM Lane V/C Ratio	0.091	-	0.495	-	-
HCM Control Delay (s)	8	-	16.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.7	-	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	125	450	480	140	245	180
Future Volume (vph)	125	450	480	140	245	180
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1662	3325	3196		1662	1468
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1662	3325	3196		1662	1468
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	137	495	527	154	269	198
RTOR Reduction (vph)	0	0	29	0	0	147
Lane Group Flow (vph)	137	495	652	0	269	51
Confl. Peds. (#/hr)	2			2		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	8.0	30.0	18.0		13.4	13.4
Effective Green, g (s)	8.0	31.0	19.0		13.4	13.4
Actuated g/C Ratio	0.15	0.59	0.36		0.26	0.26
Clearance Time (s)	4.0	5.0	5.0		4.0	4.0
Vehicle Extension (s)	2.5	5.2	5.2		2.5	2.5
Lane Grp Cap (vph)	253	1967	1158		425	375
v/s Ratio Prot	c0.08	0.15	c0.20		c0.16	
v/s Ratio Perm						0.03
v/c Ratio	0.54	0.25	0.56		0.63	0.14
Uniform Delay, d1	20.5	5.1	13.4		17.3	15.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.9	0.2	1.1		2.7	0.1
Delay (s)	22.4	5.3	14.5		20.0	15.2
Level of Service	C	A	B		C	B
Approach Delay (s)		9.0	14.5		17.9	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	50	560	15	35	645
Future Volume (vph)	15	50	560	15	35	645
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1662	1488	1727		1662	1733
Flt Permitted	0.95	1.00	1.00		0.37	1.00
Satd. Flow (perm)	1662	1488	1727		645	1733
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	18	59	659	18	41	759
RTOR Reduction (vph)	0	54	1	0	0	0
Lane Group Flow (vph)	18	5	676	0	41	759
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	4		2			2
Permitted Phases		4			2	
Actuated Green, G (s)	3.2	3.2	27.9		27.9	27.9
Effective Green, g (s)	3.2	3.2	28.9		28.9	28.9
Actuated g/C Ratio	0.08	0.08	0.72		0.72	0.72
Clearance Time (s)	4.0	4.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	5.2		5.2	5.2
Lane Grp Cap (vph)	132	118	1244		464	1248
v/s Ratio Prot	c0.01		0.39			c0.44
v/s Ratio Perm		0.00			0.06	
v/c Ratio	0.14	0.04	0.54		0.09	0.61
Uniform Delay, d1	17.2	17.0	2.6		1.7	2.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.1	0.9		0.2	1.3
Delay (s)	17.6	17.2	3.5		1.9	4.1
Level of Service	B	B	A		A	A
Approach Delay (s)	17.3		3.5			4.0
Approach LOS	B		A			A

Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	130	190	30	180	200
Future Vol, veh/h	40	130	190	30	180	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	153	224	35	212	235

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	901	242	0	0	259	0
Stage 1	242	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	311	802	-	-	1317	-
Stage 1	803	-	-	-	-	-
Stage 2	518	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	253	802	-	-	1317	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	518	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	3.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	531	1317	-
HCM Lane V/C Ratio	-	-	0.377	0.161	-
HCM Control Delay (s)	-	-	15.8	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.7	0.6	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	170	100	1305	1270	35
Future Volume (vph)	15	170	100	1305	1270	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0		4.0	4.5	4.5	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.88		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1512		1646	3260	3247	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1512		1646	3260	3247	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	16	187	110	1434	1396	38
RTOR Reduction (vph)	165	0	0	0	2	0
Lane Group Flow (vph)	38	0	110	1434	1432	0
Confl. Peds. (#/hr)			1			1
Heavy Vehicles (%)	0%	1%	1%	2%	2%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	8		1	6	2	
Permitted Phases						
Actuated Green, G (s)	7.4		7.9	51.6	39.2	
Effective Green, g (s)	7.9		8.4	52.1	39.7	
Actuated g/C Ratio	0.12		0.12	0.76	0.58	
Clearance Time (s)	4.5		4.5	5.0	5.0	
Vehicle Extension (s)	2.5		2.5	4.8	4.8	
Lane Grp Cap (vph)	174		201	2479	1881	
v/s Ratio Prot	c0.02		0.07	c0.44	c0.44	
v/s Ratio Perm						
v/c Ratio	0.22		0.55	0.58	0.76	
Uniform Delay, d1	27.5		28.3	3.5	10.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.5		2.4	0.5	2.2	
Delay (s)	27.9		30.7	4.0	13.0	
Level of Service	C		C	A	B	
Approach Delay (s)	27.9			5.9	13.0	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	45	450	195	0	0
Future Vol, veh/h	0	45	450	195	0	0
Conflicting Peds, #/hr	0	0	0	0	2	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	16974	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	0	51	511	222	0	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	-	222	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.22	4.1	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.318	2.2	-
Pot Cap-1 Maneuver	0	818	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	818	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Control Delay, s	9.7	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	818	-	-
HCM Lane V/C Ratio	0.063	-	-
HCM Control Delay (s)	9.7	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	35	290	0	0	0	0	0	1380	95
Future Volume (vph)	0	0	0	35	290	0	0	0	0	0	1380	95
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
Lane Util. Factor					0.95						0.95	1.00
Frpb, ped/bikes					1.00						1.00	0.98
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					3305						3292	1457
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					3305						3292	1457
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)	0	0	0	37	305	0	0	0	0	0	1453	100
RTOR Reduction (vph)	0	0	0	0	20	0	0	0	0	0	0	26
Lane Group Flow (vph)	0	0	0	0	322	0	0	0	0	0	1453	74
Confl. Peds. (#/hr)	8		4	4		8	14		11	11		14
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					9.7						51.3	51.3
Effective Green, g (s)					10.2						51.8	51.8
Actuated g/C Ratio					0.15						0.74	0.74
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					0.2						0.2	0.2
Lane Grp Cap (vph)					481						2436	1078
v/s Ratio Prot											c0.44	
v/s Ratio Perm					0.10							0.05
v/c Ratio					0.67						0.60	0.07
Uniform Delay, d1					28.3						4.2	2.5
Progression Factor					1.09						1.00	1.00
Incremental Delay, d2					2.6						1.1	0.1
Delay (s)					33.5						5.3	2.6
Level of Service					C						A	A
Approach Delay (s)		0.0			33.5			0.0			5.1	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
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 (vph)	15	545	115	5	410	15	195	105	20	140	75	20
Future Volume (vph)	15	545	115	5	410	15	195	105	20	140	75	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	
Lane Util. Factor		1.00	1.00		0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.98		1.00		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	
Frt		1.00	0.85		0.99		1.00	0.98		1.00	0.97	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1748	1450		3303		1662	1709		1662	1695	
Flt Permitted		0.98	1.00		0.95		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1723	1450		3140		1662	1709		1662	1695	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	16	580	122	5	436	16	207	112	21	149	80	21
RTOR Reduction (vph)	0	0	66	0	3	0	0	9	0	0	12	0
Lane Group Flow (vph)	0	596	56	0	454	0	207	124	0	149	89	0
Confl. Peds. (#/hr)	3		3	3		3						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2		2	6								
Actuated Green, G (s)		27.1	27.1		27.1		14.3	8.2		11.3	5.2	
Effective Green, g (s)		27.6	27.6		27.6		14.8	8.7		11.8	5.7	
Actuated g/C Ratio		0.46	0.46		0.46		0.25	0.14		0.20	0.09	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		6.5	6.5		6.5		5.0	2.5		2.5	2.5	
Lane Grp Cap (vph)		791	665		1441		409	247		326	160	
v/s Ratio Prot							c0.12	c0.07		0.09	0.05	
v/s Ratio Perm		c0.35	0.04		0.14							
v/c Ratio		0.75	0.08		0.32		0.51	0.50		0.46	0.56	
Uniform Delay, d1		13.4	9.1		10.3		19.5	23.7		21.3	26.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.6	0.2		0.4		2.1	1.2		0.7	3.3	
Delay (s)		19.1	9.3		10.7		21.6	24.9		22.1	29.3	
Level of Service		B	A		B		C	C		C	C	
Approach Delay (s)		17.4			10.7			22.9			25.0	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	60.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	90	10	25	160	50	110
Future Vol, veh/h	90	10	25	160	50	110
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	106	12	29	188	59	129
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.6	8.2	8.5
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	90%	0%	31%
Vol Thru, %	10%	14%	0%
Vol Right, %	0%	86%	69%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	100	185	160
LT Vol	90	0	50
Through Vol	10	25	0
RT Vol	0	160	110
Lane Flow Rate	118	218	188
Geometry Grp	1	1	1
Degree of Util (X)	0.154	0.238	0.223
Departure Headway (Hd)	4.718	3.941	4.267
Convergence, Y/N	Yes	Yes	Yes
Cap	761	912	843
Service Time	2.742	1.961	2.288
HCM Lane V/C Ratio	0.155	0.239	0.223
HCM Control Delay	8.6	8.2	8.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.9	0.9

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	5	1	5	5	5	60	5	15	10	90	10	2
Future Vol, veh/h	5	1	5	5	5	60	5	15	10	90	10	2
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	1	6	6	6	71	6	18	12	106	12	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7.1	7.2	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	45%	7%	88%
Vol Thru, %	50%	9%	7%	10%
Vol Right, %	33%	45%	86%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	11	70	102
LT Vol	5	5	5	90
Through Vol	15	1	5	10
RT Vol	10	5	60	2
Lane Flow Rate	35	13	82	120
Geometry Grp	1	1	1	1
Degree of Util (X)	0.039	0.015	0.084	0.142
Departure Headway (Hd)	3.992	4.051	3.678	4.258
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	889	869	958	840
Service Time	2.051	2.145	1.763	2.292
HCM Lane V/C Ratio	0.039	0.015	0.086	0.143
HCM Control Delay	7.2	7.2	7.1	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0	0.3	0.5

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	5	15	5	1	10	5	20	65	5	5	80	10
Future Vol, veh/h	5	15	5	1	10	5	20	65	5	5	80	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	6	18	6	1	12	6	24	76	6	6	94	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.3	7.7	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	20%	6%	5%
Vol Thru, %	72%	60%	62%	84%
Vol Right, %	6%	20%	31%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	25	16	95
LT Vol	20	5	1	5
Through Vol	65	15	10	80
RT Vol	5	5	5	10
Lane Flow Rate	106	29	19	112
Geometry Grp	1	1	1	1
Degree of Util (X)	0.12	0.035	0.022	0.125
Departure Headway (Hd)	4.079	4.31	4.226	4.011
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	874	836	852	889
Service Time	2.13	2.31	2.227	2.061
HCM Lane V/C Ratio	0.121	0.035	0.022	0.126
HCM Control Delay	7.7	7.5	7.3	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.1	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	35	50	75	40	0	0	0	0	35	1750	25
Future Volume (vph)	0	35	50	75	40	0	0	0	0	35	1750	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	
Lane Util. Factor		1.00			1.00						0.91	
Frpb, ped/bikes		0.99			1.00						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		0.92			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1598			1693						4715	
Flt Permitted		1.00			0.75						1.00	
Satd. Flow (perm)		1598			1309						4715	
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)	0	37	53	79	42	0	0	0	0	37	1842	26
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	74	0	0	121	0	0	0	0	0	1904	0
Confl. Peds. (#/hr)	7		1	1		7	7		2	2		7
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.4	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.5	
Vehicle Extension (s)		0.2			0.2						0.2	
Lane Grp Cap (vph)		207			170						3563	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.09						0.40	
v/c Ratio		0.36			0.71						0.53	
Uniform Delay, d1		27.8			29.2						3.5	
Progression Factor		1.00			1.14						1.94	
Incremental Delay, d2		0.4			10.4						0.5	
Delay (s)		28.2			43.6						7.3	
Level of Service		C			D						A	
Approach Delay (s)		28.2			43.6			0.0			7.3	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	5	0	0	5	5	75	1485	3	0	0	0
Future Vol, veh/h	50	5	0	0	5	5	75	1485	3	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	3	3	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	100	0	0	0
Mvmt Flow	53	5	0	0	5	5	80	1580	3	0	0	0

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	955	1748	-	-	1747	795	2	0	0
Stage 1	2	2	-	-	1745	-	-	-	-
Stage 2	953	1746	-	-	2	-	-	-	-
Critical Hdwy	7.5	6.5	-	-	6.5	6.9	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	5.5	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	-	-	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	216	87	0	0	87	335	1634	-	-
Stage 1	-	-	0	0	142	-	-	-	-
Stage 2	282	142	0	0	-	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	134	51	-	-	51	334	1631	-	-
Mov Cap-2 Maneuver	134	51	-	-	51	-	-	-	-
Stage 1	-	-	-	-	84	-	-	-	-
Stage 2	154	84	-	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	63.2	51.5	1.7
HCM LOS	F	F	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	1631	-	-	117	88
HCM Lane V/C Ratio	0.049	-	-	0.5	0.121
HCM Control Delay (s)	7.3	1.4	-	63.2	51.5
HCM Lane LOS	A	A	-	F	F
HCM 95th %tile Q(veh)	0.2	-	-	2.3	0.4

Movement	EBT	EBR	EBR2	WBL2	WBL	WBT	SBL2	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	175	55	5	175	15	100	285	1355	145	70
Future Volume (vph)	175	55	5	175	15	100	285	1355	145	70
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0				4.5	4.0	4.0	4.0	5.5	
Lane Util. Factor	0.95				1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	0.99				1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00				0.99	1.00	0.99	1.00	1.00	
Frt	0.96				1.00	1.00	1.00	1.00	0.95	
Flt Protected	1.00				0.95	1.00	0.95	0.95	1.00	
Satd. Flow (prot)	3141				1587	1750	1611	3225	1631	
Flt Permitted	1.00				0.60	1.00	0.95	0.95	1.00	
Satd. Flow (perm)	3141				997	1750	1611	3225	1631	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	186	59	5	186	16	106	303	1441	154	74
RTOR Reduction (vph)	2	0	0	0	0	0	0	0	18	0
Lane Group Flow (vph)	248	0	0	0	202	106	303	1441	210	0
Confl. Peds. (#/hr)		8	8	8	8		12	12		1
Heavy Vehicles (%)	1%	0%	2%	2%	19%	0%	2%	0%	2%	0%
Turn Type	NA			Perm	Perm	NA	Perm	Split	NA	
Protected Phases	8					4		2	2	
Permitted Phases				4	4		2			
Actuated Green, G (s)	19.1				19.1	19.1	40.9	40.9	40.9	
Effective Green, g (s)	19.6				19.1	19.6	42.4	42.4	40.9	
Actuated g/C Ratio	0.28				0.27	0.28	0.61	0.61	0.58	
Clearance Time (s)	4.5				4.5	4.5	5.5	5.5	5.5	
Vehicle Extension (s)	2.5				2.5	2.5	6.1	6.1	6.1	
Lane Grp Cap (vph)	879				272	490	975	1953	952	
v/s Ratio Prot	0.08					0.06		c0.45	0.13	
v/s Ratio Perm					c0.20		0.19			
v/c Ratio	0.28				0.74	0.22	0.31	0.74	0.22	
Uniform Delay, d1	19.7				23.2	19.3	6.7	9.8	6.9	
Progression Factor	1.00				0.30	0.24	1.14	1.31	1.05	
Incremental Delay, d2	0.1				8.9	0.1	0.7	2.2	0.5	
Delay (s)	19.8				16.0	4.7	8.4	15.1	7.8	
Level of Service	B				B	A	A	B	A	
Approach Delay (s)	19.8					12.1			13.2	
Approach LOS	B					B			B	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	75.3%	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 (vph)	120	330	0	0	255	195	35	1270	145	0	0	0
Future Volume (vph)	120	330	0	0	255	195	35	1270	145	0	0	0
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			
Lane Util. Factor		0.95			1.00	1.00		0.95	1.00			
Frpb, ped/bikes		1.00			1.00	0.98		1.00	0.99			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.99			1.00	1.00		1.00	1.00			
Satd. Flow (prot)		3261			1750	1446		3221	1468			
Flt Permitted		0.69			1.00	1.00		1.00	1.00			
Satd. Flow (perm)		2295			1750	1446		3221	1468			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	122	337	0	0	260	199	36	1296	148	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	81	0	0	56	0	0	0
Lane Group Flow (vph)	0	459	0	0	260	118	0	1332	92	0	0	0
Confl. Peds. (#/hr)	6		10	10		6	5		1	1		5
Heavy Vehicles (%)	2%	0%	0%	0%	0%	1%	6%	3%	0%	0%	0%	0%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	3	8			4			6				
Permitted Phases	8					4	6		6			
Actuated Green, G (s)		17.8			17.8	17.8		42.2	42.2			
Effective Green, g (s)		18.3			18.3	18.3		43.7	43.7			
Actuated g/C Ratio		0.26			0.26	0.26		0.62	0.62			
Clearance Time (s)		4.5			4.5	4.5		5.5	5.5			
Vehicle Extension (s)		2.5			2.5	2.5		5.0	5.0			
Lane Grp Cap (vph)		599			457	378		2010	916			
v/s Ratio Prot					0.15							
v/s Ratio Perm		c0.20				0.08		0.41	0.06			
v/c Ratio		0.77			0.57	0.31		0.66	0.10			
Uniform Delay, d1		23.9			22.4	20.8		8.4	5.3			
Progression Factor		0.95			1.00	1.00		1.00	1.00			
Incremental Delay, d2		5.5			1.3	0.3		1.7	0.2			
Delay (s)		28.1			23.7	21.1		10.2	5.5			
Level of Service		C			C	C		B	A			
Approach Delay (s)		28.1			22.6			9.7			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	265	355	5	5	55
Future Vol, veh/h	50	265	355	5	5	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	0	0	0
Mvmt Flow	57	305	408	6	6	63

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	414	0	-	0	830	411
Stage 1	-	-	-	-	411	-
Stage 2	-	-	-	-	419	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1156	-	-	-	343	645
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	668	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1156	-	-	-	323	645
Mov Cap-2 Maneuver	-	-	-	-	323	-
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	668	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1156	-	-	-	596
HCM Lane V/C Ratio	0.05	-	-	-	0.116
HCM Control Delay (s)	8.3	0	-	-	11.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4

Intersection						
Int Delay, s/veh	2.3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	200	110	5	5	70
Future Vol, veh/h	35	200	110	5	5	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	3	4	0	0	1
Mvmt Flow	42	238	131	6	6	83

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	137	0	-	0	456	134
Stage 1	-	-	-	-	134	-
Stage 2	-	-	-	-	322	-
Critical Hdwy	4.1	-	-	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.309
Pot Cap-1 Maneuver	1459	-	-	-	566	918
Stage 1	-	-	-	-	897	-
Stage 2	-	-	-	-	739	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1459	-	-	-	550	918
Mov Cap-2 Maneuver	-	-	-	-	550	-
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	739	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1459	-	-	-	879
HCM Lane V/C Ratio	0.029	-	-	-	0.102
HCM Control Delay (s)	7.5	-	-	-	9.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	10	0	0	0	0	0	0	15	1040	15
Future Vol, veh/h	0	1	10	0	0	0	0	0	0	15	1040	15
Conflicting Peds, #/hr	5	0	2	2	0	5	12	0	2	2	0	12
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	-	-	16983	-	-	16983	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	11	0	0	0	0	0	0	16	1130	16

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	1184	587	2	0	0
Stage 1	-	1182	-	-	-	-
Stage 2	-	2	-	-	-	-
Critical Hdwy	-	6.54	7.14	5.34	-	-
Critical Hdwy Stg 1	-	5.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.02	3.92	3.12	-	-
Pot Cap-1 Maneuver	0	188	388	1151	-	-
Stage 1	0	262	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	384	1151	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	14.7	0.2
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	384	1151	-	-
HCM Lane V/C Ratio	0.031	0.014	-	-
HCM Control Delay (s)	14.7	8.2	0.1	-
HCM Lane LOS	B	A	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	10	0	115	0	1	10	5	1	0
Future Vol, veh/h	0	0	0	10	0	115	0	1	10	5	1	0
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	14	0	158	0	1	14	7	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	158	0	0	3	0	0	113	189	3	116	110	81
Stage 1	-	-	-	-	-	-	3	3	-	107	107	-
Stage 2	-	-	-	-	-	-	110	186	-	9	3	-
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	1434	-	-	1632	-	-	869	709	1087	865	784	985
Stage 1	-	-	-	-	-	-	1025	897	-	903	811	-
Stage 2	-	-	-	-	-	-	900	750	-	1017	897	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1434	-	-	1629	-	-	858	700	1085	846	775	983
Mov Cap-2 Maneuver	-	-	-	-	-	-	858	700	-	846	775	-
Stage 1	-	-	-	-	-	-	1023	895	-	903	803	-
Stage 2	-	-	-	-	-	-	888	743	-	1003	895	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	8.5	9.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1033	1434	-	-	1629	-	-	833
HCM Lane V/C Ratio	0.015	-	-	-	0.008	-	-	0.01
HCM Control Delay (s)	8.5	0	-	-	7.2	0	-	9.4
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	10	30	0	0	0	0	0	70	410
Future Vol, veh/h	0	0	0	10	30	0	0	0	0	0	70	410
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	0	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	91	91	91	92	92	92	91	91	91
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	0	1	1
Mvmt Flow	0	0	0	11	33	0	0	0	0	0	77	451

Major/Minor	Minor1			Major2		
Conflicting Flow All	81	77	-	-	-	0
Stage 1	0	0	-	-	-	-
Stage 2	81	77	-	-	-	-
Critical Hdwy	6.4	6.5	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	-	-	-	-
Pot Cap-1 Maneuver	926	817	0	0	-	0
Stage 1	-	-	0	0	-	0
Stage 2	947	835	0	0	-	0
Platoon blocked, %					-	
Mov Cap-1 Maneuver	926	0	-	-	-	-
Mov Cap-2 Maneuver	926	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	947	0	-	-	-	-

Approach	WB	SB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	WBLn1	WBLn2	SBT
Capacity (veh/h)	926	-	-
HCM Lane V/C Ratio	0.012	-	-
HCM Control Delay (s)	8.9	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	30	50	15	80	0	0	0	0	115	640	25
Future Vol, veh/h	0	30	50	15	80	0	0	0	0	115	640	25
Conflicting Peds, #/hr	0	0	16	16	0	0	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	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	0	0	0	0	0	0
Mvmt Flow	0	33	56	17	89	0	0	0	0	128	711	28

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	-	991	396	644	1005	-				0	0	0
Stage 1	-	991	-	0	0	-				-	-	-
Stage 2	-	0	-	644	1005	-				-	-	-
Critical Hdwy	-	6.5	6.9	7.5	6.5	-				4.1	-	-
Critical Hdwy Stg 1	-	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.5	5.5	-				-	-	-
Follow-up Hdwy	-	4	3.3	3.5	4	-				2.2	-	-
Pot Cap-1 Maneuver	0	248	609	362	243	0				-	-	-
Stage 1	0	327	-	-	-	0				-	-	-
Stage 2	0	-	-	433	322	0				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	-	246	603	295	241	-				-	-	-
Mov Cap-2 Maneuver	-	246	-	295	241	-				-	-	-
Stage 1	-	324	-	-	-	-				-	-	-
Stage 2	-	-	-	353	319	-				-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	16.9	29.9	
HCM LOS	C	D	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	390	248	-	-	-
HCM Lane V/C Ratio	0.228	0.426	-	-	-
HCM Control Delay (s)	16.9	29.9	-	-	-
HCM Lane LOS	C	D	-	-	-
HCM 95th %tile Q(veh)	0.9	2	-	-	-

Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	21	45	190	15	0	75	0	270	0	0	0
Future Vol, veh/h	0	21	45	190	15	0	75	0	270	0	0	0
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	93	93	93	92	93	92	93	92	92	92
Heavy Vehicles, %	2	0	0	0	3	2	1	2	1	2	2	2
Mvmt Flow	0	23	48	204	16	0	81	0	290	0	0	0

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	-	1	1	37	1	-				0	0	0
Stage 1	-	1	-	0	0	-				-	-	-
Stage 2	-	0	-	37	1	-				-	-	-
Critical Hdwy	-	6.5	6.2	7.1	6.53	-				4.12	-	-
Critical Hdwy Stg 1	-	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.53	-				-	-	-
Follow-up Hdwy	-	4	3.3	3.5	4.027	-				2.218	-	-
Pot Cap-1 Maneuver	0	899	1090	973	893	0				-	-	-
Stage 1	0	899	-	-	-	0				-	-	-
Stage 2	0	-	-	984	893	0				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	-	899	1090	912	893	-				-	-	-
Mov Cap-2 Maneuver	-	899	-	912	893	-				-	-	-
Stage 1	-	899	-	-	-	-				-	-	-
Stage 2	-	-	-	917	893	-				-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	8.8	10.2	0
HCM LOS	A	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1021	911	-	-	-
HCM Lane V/C Ratio	0.07	0.242	-	-	-
HCM Control Delay (s)	8.8	10.2	0	-	-
HCM Lane LOS	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	0.9	-	-	-

Appendix E

Preliminary Signal Warrant Analysis

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Newmark St	**Minor Street:**	Morrison St
Project:	Coos Bay TSP Update	**City/County:**	Coos Bay\
Year:	2040	**Alternative:**	0

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants		Percent of standard warrants	
		100	70	100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

X	100 percent of standard warrants
	70 percent of standard warrants[2]

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	2 or more	10600	16842	N
	Minor	1	2650	147	
Case B	Major	2 or more	15900	16842	N
	Minor	1	1350	147	

Analyst and Date:	Reviewer and Date:

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Technical Memorandum #8: System Alternatives

REVISED TECHNICAL MEMORANDUM #8

System Alternatives (Task 7.5)

Date: August 20, 2019

To: City of Coos Bay
City of North Bend
Oregon Department of Transportation, Region 3

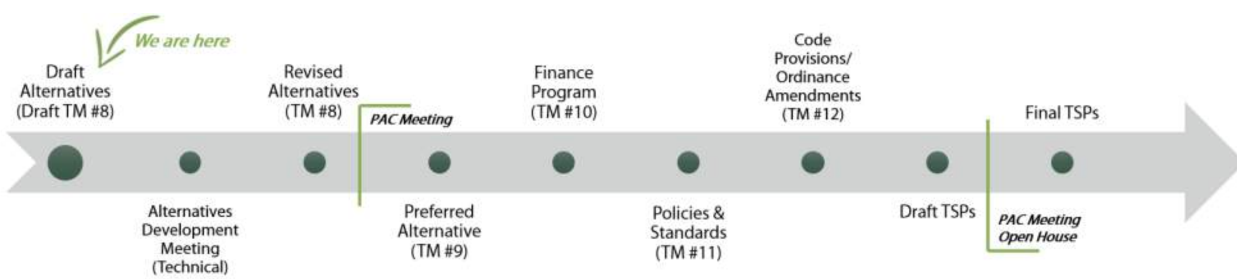
From: Angela Rogge, PE and Dana Shuff, EIT, David Evans and Associates, Inc.

Subject: Cities of Coos Bay and North Bend Transportation System Plan Updates

> The initial System Alternatives Memorandum is intended to be part of an interactive process to develop a menu of potential improvements prioritized into financially constrained and aspirational project lists. Additional stakeholder feedback, funding forecasts, and fatal flaw analysis will help to refine the list presented in this report. The refined list will eventually be included in the draft TSPs.

This memorandum outlines potential conceptual alternatives to address transportation needs identified previously in the evaluation of existing and future conditions. The suggested transportation guidelines provide the framework for future development of the transportation system, while the potential alternatives work to address identified deficiencies in connectivity, amenities, safety, and operations.

Through an iterative process, the alternatives presented in this document will become a collection of improvements that best achieve the Cities' goals and objectives, while considering the anticipated available funding. As summarized in the timeline below, the draft alternatives will be refined through stakeholder feedback and eventually result in "Financially Feasible" and "Illustrative" project lists for inclusion in the TSPs.



Transportation Tools and Guidelines

This section highlights current best practices, tools and guidelines that guide the alternatives development and selection for the TSP Updates.

Transportation System Management (TSM)

TSM measures are designed to make maximum use of existing transportation facilities. Efficient management of the transportation system can reduce costs by avoiding the need for more expensive roadway expansion projects. TSM strategies include traffic control improvements, traffic signal coordination, traffic calming, access management, local street connectivity, and intelligent transportation systems (ITS).

Traffic Calming: Uses physical design and other measures to improve safety for motorists, pedestrians and cyclists. It aims to encourage safer, more responsible driving and potentially reduce traffic flow. Examples: bike boulevard/neighborhood greenway, neighborhood traffic circle, curb bulb-outs (roadway narrowing), and raised crosswalks/medians.

Access Management: Includes the management of vehicular access points to enhance safety and potentially improve traffic operations. Examples: access and driveway spacing standards, channelized turn lanes, median treatments, and turn restrictions.

Intelligent Transportation Systems (ITS): Includes collecting and conveying information regarding roadway operations to improve the operations and efficiency of a facility. ITS can also be used to boost tourism by directing visitors to community features, parking areas, and alternate travel routes. Examples: variable message signs, adaptive signal timing, and variable speed limit signs.

The proposed alternatives outlined in this memorandum include projects that support TSM, such as improved bicycle wayfinding, access management, mid-block crossings, and bicycle sharrows (pavement marking indicating bikes share road with motorists – see TSM Toolbox below).

TSM Toolbox

This section provides a "toolbox" of alternatives to address multimodal connectivity and neighborhood traffic related concerns. This toolbox provides guidance to the Cities on various tools that could be implemented as needs arise and when funding is available.

Traffic Calming (Encouraged for developing a bicycle boulevard or neighborhood greenway)

Gateway (Curb Bulb-Out)

Google, May 2018 image capture

Pinch Point (Curb Extension)

Nacto.org Urban Street Design Guide

Diverters

Nacto.org Urban Bikeway Design Guide

Raised crosswalk

pedbikeimages.org/PennsylvaniaDOT

Speed Cushions

Nacto.org Urban Street Design Guide

Speed Management Median

Nacto.org Urban Bikeway Design Guide

Traffic Calming (continued)

Pedestrian Median Refuge

pedbikeimages.org/DanBurden

Chicanes

Nacto.org Urban Street Design Guide

Traffic Circle (Mini)

Oregon Bicycle and Pedestrian Design Guide

Signing and Striping

Sharrow

pedbikeimages.org/LyubovZuyeva

Wayfinding

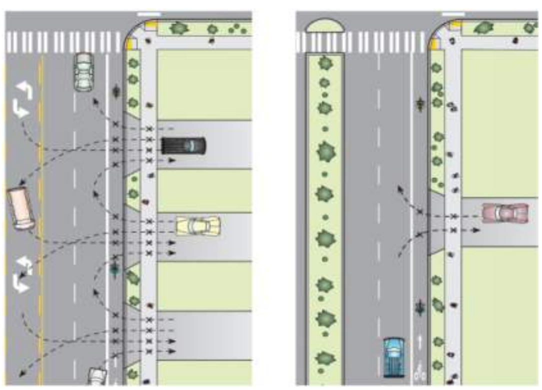
Nacto.org Urban Bikeway Design Guide

Share the Road

Mutcd.fhwa.dot.gov

Access Management

Access Consolidation and Non-traversable Median



Oregon Bicycle and Pedestrian Design Guide (Figure I-9)

Turn Restrictions

Mutcd.fhwa.dot.gov

ITS

Radar Speed Signs

Radarsign.com

Transportation Demand Management (TDM)

Transportation Demand Management (TDM) measures include various strategies that change travel behavior (how, when and where people travel) in order to increase efficiency and achieve specific planning objectives. TDM measures encourage the use of alternative, non-single-occupancy-vehicle travel modes by serving as a model for businesses and institutions in the community. Changing travel behavior and providing alternative mode choices will help accommodate growth by reducing the need to build new or expanded roadways.

Potential projects such as sidewalks, bicycle routes and transit enhancements, which support TDM, are detailed as part of the Transportation System Alternatives section. However, other TDM strategies described below should be pursued as well.

TDM measures that could be applicable for North Bend and Coos Bay include:

- Employer sponsored flexible or alternative work schedules
- Investing in pedestrian/bicycle facilities and amenities
- Improved amenities and access for transit stops
- Mass communication/marketing to increase awareness of transportation options
- Safe routes to school

Street Functional Classification

Street functional classification indicates purpose, design and function. The assigned functional classification ensures a street network with features that support demand from both the surrounding land uses and travel needs at a regional level.

Consistency with Federal Naming Conventions

It is important to align Coos Bay and North Bend's functional classification naming conventions with federal naming conventions as it may facilitate future efforts to obtain federal funding for local improvement projects. Suggested updates to the Cities' classification designations are shown in Table 1.

The Cities' previous TSPs have a "Neighborhood Route" classification. The proposed classification change would differentiate between major and minor collectors.

Table 1. Proposed Functional Classification Naming Conventions

Existing Classification Name	Proposed Classification Name
Principal Arterial (ODOT)	Principal Arterial (ODOT)
Minor Arterial (ODOT)	Minor Arterial (ODOT)
Arterial	Arterial
Collector	**Major Collector**
Neighborhood Route	**Minor Collector**
Local	Local

Bold indicates a proposed change in classification

Suggested Functional Classification System

The suggested functional classification system for roadways in North Bend and Coos Bay is described below. The functional classification map, Figure 1, shows the suggested classification for all roadways in the city, including new street extensions proposed as part of the Street Connectivity plan.

General descriptions of the classifications include:

> **Principal Arterials** are typically freeways and state highways that provide the highest level of connectivity. These routes connect over the longest distance (sometimes miles long) and are less frequent than other arterials or collectors.

Arterial streets serve to interconnect and support the principal arterial highway system and are often used as a transition between Principal Arterials and Collectors. These streets link major commercial, residential, industrial and institutional areas.

Major Collector streets provide both access and circulation within residential and commercial/industrial areas. Collectors differ from arterials in that they provide more of a citywide circulation function and do not require as extensive control of access and penetrate residential neighborhoods, distributing trips from the neighborhood and local street system.

Minor Collector streets serve mostly residential or mixed land uses. While through traffic connectivity is not a typical function, they may carry limited amounts.

Local streets have the sole function of providing access to immediate adjacent land. Service to "through traffic movement" on local streets is deliberately discouraged by design.

Depending on the road characteristics and function, neighborhood traffic management measures may be appropriate. However, it should not be construed that these routes automatically get speed cushions or any other measures. While these treatments can be beneficial, neighborhood traffic management is only one means of retaining neighborhood character and vitality.

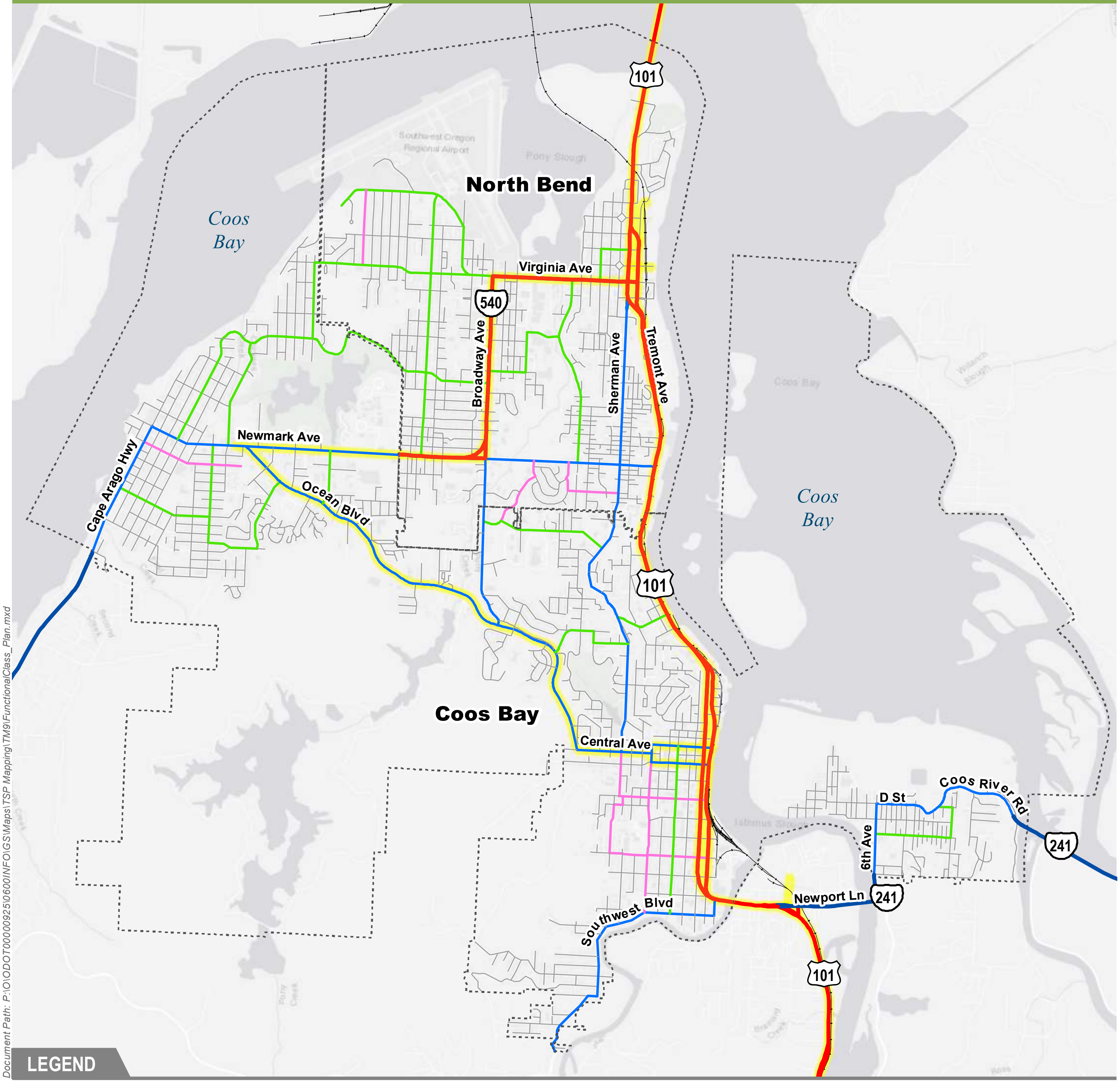
Suggested Functional Classification Changes

Table 2 summarizes the suggested changes to the existing functional classification of specific streets in North Bend and Coos Bay.

Table 2. Proposed City Functional Classification Changes for Existing Streets

Street	Existing City Functional Classification	Proposed Functional Classification	City
Arthur Street: Colorado Ave to Virginia Ave	Collector	Minor Collector	North Bend
Colorado Ave: Arthur St to West End	Local	Major Collector	North Bend
Koosbay Blvd: 10th St to US 101	Arterial	Major Collector	Coos Bay

Note: All streets currently classified as Collectors are proposed to become Major Collectors and all streets currently classified as Neighborhood Routes are proposed to become Minor Collectors unless otherwise noted in this table.



Document Path: P:\O\ODOT00000925\0600INFO\GIS\Maps\TSP Mapping\TM9\FunctionalClass_Plan.mxd

Urban Growth Boundary (UGB)

Functional Classification

State Highway	City	
		Principal Arterial
		Minor Arterial
		Major Collector
		Minor Collector
		Local
		National Highway System

N

0 0.5 1 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 1. Proposed Functional Classification Plan

Transportation System Alternatives

The following section presents draft multimodal system alternatives to address transportation needs across all modes. Included is a summary of the process used to develop and evaluate the alternatives, descriptions of the alternatives and a qualitative evaluation of their potential impacts.

Alternatives Development Process

The conceptual improvements and strategies identified for consideration in the TSP were developed using guidance provided by the goals and objectives with input from the following sources:

- Projects in 2004 TSPs and other Local and Regional Plans (Technical Memorandum #1)
- New Projects based on identified deficiencies and feedback from TSP public and advisory committees
- Evaluation of the existing and future deficiencies and needs (Technical Memorandum #4, #6 and #7)

Summary of Alternatives

This section provides detailed descriptions of the conceptual alternatives developed to address existing and anticipated future deficiencies within the Coos Bay and North Bend UGBs. In instances where there are multiple choices to address deficiencies, options are provided for consideration of the project team to determine the preferred concept for the Draft TSP.

The conceptual alternatives are organized by project type. Each alternative lists a location, description, primary funding Source (decision-maker/lead) and modal need the alternative addresses. The North Bend Draft Alternatives are summarized by mode in Table 5 (page 11), and the Coos Bay Draft Alternatives are summarized by mode in Table 6 (page 15). All alternatives are summarized in Figure 2 (Page 10). If an alternative addresses multiple modal deficiencies, it is listed under the mode that is expected to have the greatest benefit. The additional modal needs it addresses is noted as well.

Solutions Evaluation and Refinement

As part of the iterative process to determine the preferred concepts for the TSPs, a preliminary evaluation was done to screen and prioritize the alternatives. The following measures were used to evaluate and refine the draft list of alternatives. Additional refinement will occur through coordination with Agency staff and stakeholders.

Preliminary Planning-Level Cost Opinion

Preliminary planning level cost estimates were developed for each potential TSP project and are expressed in 2019 dollars. The cost estimates are based on professional experience, generalized unit costs and contingency factors (mobilization, traffic control, and engineering/design). If an alternative's extents and scope have yet to be defined, a cost estimate is not provided. Costs do not include right-of-way, utility relocation, new utilities or hazmat costs. Costs may change during refinement of project design.

Benefits and Impacts Qualitative Assessment

For each alternative, the environmental constraints are noted as well as a qualitative identification of the benefits/impacts to:

- Bicycle and pedestrian facilities and network
- Transit system
- Aviation and freight networks
- Land use
- Mobility
- Safety
- Environmental and cultural resources
- Title VI and Environmental Justice populations
- ADA compliance (if applicable)

The evaluation noted what kind of benefit/impact the proposed alternative is expected to have on the various systems (e.g. positive (+), neutral (/), negative (-)). If the project extents are loosely defined or there were multiple options, the benefits/impacts are listed as to be determined (TBD).

Goals and Objectives Evaluation Rating/Need

A broad set of evaluation criteria that represent the proposed set of goals for the North Bend and Coos Bay TSP Updates were used to evaluate proposed projects and alternatives. The evaluation criteria, listed in Table 3, were outlined in Technical Memorandum #2 and are intended to indicate how strongly each alternative supports community-expressed interests.

Table 3. Evaluation Criteria

Proposed Goal	Criteria
Goal #1 (Accessibility/Connectivity): Develop an interconnected, multimodal transportation network that connects all members of the community to destinations within and beyond the city.	• Improves or creates access to community destinations • Improves facilities for those using mobility devices • Enhances the active transportation or transit network
Goal #2 (Safety): Provide a transportation system that enhances the safety and security of all transportation modes.	• Project is primarily a safety improvement (crossings, intersections, visibility, all modes) • Enhances emergency preparedness/community resiliency • Project improves safe routes to school
Goal #3 (Mobility): Optimize the performance of the transportation system for the efficient movement of people and goods.	• Addresses known access issues on state highways or major arteria • Reduces reliance on highway system for shorter, local trips • Improves efficiency of transportation system
Goal #4 (Equity): Provide an equitable, balanced and connected multi-modal transportation system.	• Enhances public transportation services (e.g., new routes, shelters) • Improves bicycle and pedestrian connections to public transportation stops • Enhances transportation options to underserved areas
Goal #5 (Economic Vitality): Provide a transportation system that supports existing industry and encourages economic development in the city.	• Preserves or maintains existing transportation facilities • Enhances access to employment and tourist destinations • Improves or maintains freight access/connectivity

Proposed Goal	Criteria
Goal #6 (Coordination/Collaboration): Develop and maintain a Transportation System Plan that is consistent with the goals and objectives of the city, Coos County, and the state.	• Is consistent with local, state, and federal plans and policies • Supports the City's land use vision • Has regional benefits
Goal #7 (Strategic Investment): Provide a sustainable transportation system through responsible stewardship of financial resources.	• Alternative measure to increasing capacity • Provides significant increase in mobility/accessibility • Project involves funding collaboration with other agencies or groups
Goal #8 (Health/Environment): Provide a transportation system that enhances the health of residents and users and that minimizes impacts to the environment.	• Encourages active living and physical activity • Minimizes impacts to natural resources • Reduces/discourages through travel in residential neighborhoods

Table 4 presents an example of how a goal's evaluation criteria would be used to score a proposed project.

Table 4. Example Evaluation Criteria Scoring

Goal: Accessibility/Connectivity		
Evaluation Criteria: Criteria 1.a. Improves or creates access to community destinations	-4	Project eliminates access to multiple community destinations for multiple modes
	-2	Project eliminates access to a community destination for at least one mode
	0	No net impact / not applicable
	+2	Project creates access to a community destination for at least one mode
	+4	Project creates access to multiple community destinations for multiple modes

In order to further differentiate projects that received the same primary evaluation score within a given mode, sets of secondary criteria were applied. These project scores were converted into High, Medium, and Low Priority groupings. Higher priority was assigned to projects that improve the existing system without adding capacity, while lower priority was assigned to projects that increased capacity without adding connectivity or improvements to active transportation, which aligns with the directive provided in the project scope.

Figure 2. Summary of Draft Alternatives

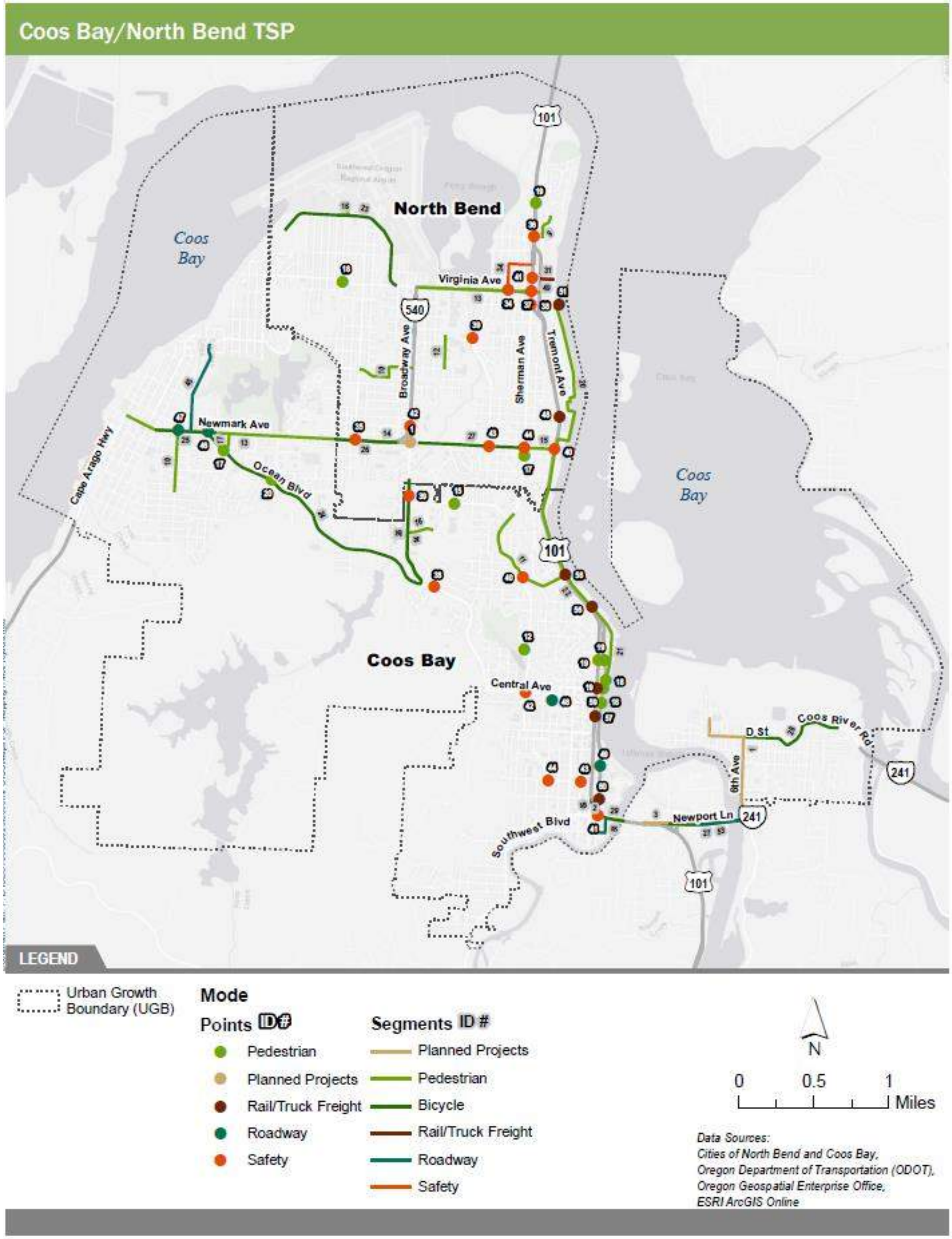


Figure 2. Summary of Draft Alternatives

Table 5. City of North Bend Draft Alternatives

ID	Location	Description	MODE						Primary Funding Source	Prelim. Cost Estimate (2019 $)	Environmental Constraints	Impacts/Benefits (Qualitative)									Prelim. Evaluation Rating/ Need
			Ped	Bike	Safety	Vehicle	Transit	Other				Bike/ Ped	Transit	Aviation / Freight	Land Use	Mobility	Safety	Environmental /Cultural Resources	Title VI/EJ	ADA	
		PLANNED PROJECTS																			
1	Broadway St at Newmark Ave	STIP project planned at this location	✓	✓	✓	✓			ODOT	Did not review benefits/impacts; STIP project will be complete before TSP adoption.											
		PLANS																			
2	City Wide (Trails)	Develop formalized Trail Map and continue to connect sidewalk system to trails or shared-use paths	✓	✓					North Bend	N/A	TBD	+	/	N/A	N/A	+	/	/	+	N/A	Low
3	Schools	Develop a Safe Routes to School Project List (Assess all connections to school, draft plan to connect safe routes to school)	✓		✓				North Bend	N/A	TBD	+	+	N/A	N/A	+	+	/	+	+	High
4	City wide	Change "Collector" term into "Major Collector" and the “Neighborhood Route” into "Minor Collector" to align with State Classification				✓			North Bend	See Proposed Functional Classification Plan											
5	Colorado Ave: Arthur St to West End	Update functional classification from “Local” to “Major Collector”				✓			North Bend	See Proposed Functional Classification Plan											
6	Arthur St	Update functional classification from collector to "Minor Collector"				✓			North Bend	See Proposed Functional Classification Plan											
7	City wide	Establish CIP and plan for annual/bi-annual update	✓	✓	✓	✓	✓	✓	North Bend	Will include as recommendation of TSP											
8	City wide	Include evacuation routes in TSP (DOGAMI Beat the Wave)			✓				North Bend	Will include as part of Emergency Preparedness Section in TSP											
		PEDESTRIAN																			
9	Sheridan Ave: Florida Ave to Bayview Ave	Add sidewalk on Sheridan Ave and upgrade RR crossing to connect Simpson Heights to downtown	✓						North Bend	$1.4M	None	+	N/A	N/A	N/A	+	+	N/A	+	/	High
10	16th St/17th: Broadway Ave to Oak St	Add sidewalk to provide connectivity to schools east of Broadway Ave via 16th St	✓						North Bend	$2.1M	None	+	+	N/A	N/A	+	+	N/A	+	+	High
11	Oak St: Colorado Ave to Newmark Ave	Establish Neighborhood Greenway (traffic calming measures and wayfinding) to improve pedestrian environment	✓	✓					North Bend	TBD	None	+	/	N/A	N/A	+	+	N/A	+	N/A	High
12	Pacific St: Crowell Ln to 16th St	Sidewalk on west side and enhanced crossings (visibility)	✓		✓				North Bend	$730k	None	+	+	N/A	N/A	+	+	N/A	+	/	Medium
13	Virginia Ave: US 101 to Broadway Ave	Identify opportunities for access consolidation (with redevelopment/change of use); traffic calming (landscaping, street furniture)	✓						ODOT	TBD	Tsunami Zone & 100 yr floodplain	+	+	/	-	-	+	N/A	N/A	+	Low
14	Newmark Ave: Broadway Ave to West City Limits	Access consolidation and medians	✓		✓				ODOT	$175k	None	+	+	/	-	-	+	N/A	N/A	+	Low
15	Newmark St: US 101 to Sherman Ave	Half street improvement Sherman Ave to US 101 to provide bicycle and pedestrian facilities	✓	✓		✓			North Bend	$1M	None	+	+	+	/	+	+	+	+	+	Medium
16	North Bend Senior Center	Marked crossing of Colorado Avenue and sidewalks from transit stop to Activity Center	✓				✓		North Bend	$375k	None	+	+	N/A	N/A	+	+	N/A	+	+	Medium
17	Boynton Park	Marked crossing of Sherman Avenue at Exchange Street transit stop	✓		✓		✓		North Bend	$65k	None	+	+	N/A	N/A	+	+	+	+	+	High
18	Airport Heights Market	Improve crossing for pedestrians	✓				✓		North Bend	TBD	None	+	+	N/A	N/A	+	+	N/A	+	+	Low

ID	Location	Description	MODE						Primary Funding Source	Prelim. Cost Estimate (2019 $)	Environmental Constraints	Impacts/Benefits (Qualitative)									Prelim. Evaluation Rating/ Need
			Ped	Bike	Safety	Vehicle	Transit	Other				Bike/ Ped	Transit	Aviation / Freight	Land Use	Mobility	Safety	Environmental /Cultural Resources	Title VI/EJ	ADA	
19	US 101 north of Florida Ave	Identify preferred location for pedestrian crossing of US 101. Locate near visitor center to provide connectivity to Simpson Park	✓	✓	✓				ODOT	TBD	TBD	+	/	N/A	N/A	+	+	TBD	+	+	High
20	North Bend, Mill Casino and Coos Bay Boardwalks	Connect the area boardwalks to create a five mile uninterrupted boardwalk.	✓	✓	✓				North Bend; Coos Bay; Private	TBD	Haz. Mat; Threatened/ Endangered; Wetland; Tsunami Zone; 100 yr floodplain	+	+	/	+	+	+	-	+	/	Low
21	Broadway Ave between Virginia and Newmark	Improve sidewalks and PLTS	✓																		
22	Maine Ave/Broadway Ave	Rapid Flashing Beacon and pedestrian refuge island on Broadway Ave at Maine Ave for North Bend Middle School students. Sidewalk infill on 14th St and Pacific Ave to create a complete route for students walking or biking to school.	✓	✓																	
		BICYCLE																			
23	City Wide	Create a Bicycle Transportation Plan that connects Arterials, Collectors (neighborhood calming, parallel routes, signing, formal striping)		✓					North Bend	TBD	TBD	+	+	N/A	N/A	+	+	/	+	N/A	High
24	Virginia Ave and Broadway Ave (Cape Arago Hwy)	Provide bicycle facilities through coordination with the OCBR (Priority Virginia Ave to 16th St)		✓					ODOT	TBD	None	+	N/A	TBD	N/A	+	+	N/A	+	N/A	Medium
25	Maple Leaf/Colorado	Stripe bicycle facilities (with repaving project)		✓		✓			North Bend	$1.6M	None	+	+	N/A	N/A	+	+	/	+	N/A	High
26	Sheridan Ave: Florida Ave to Bayview Ave	Provide bicycle facilities through signing/striping		✓					North Bend	*See Project 9*	None	+	+	N/A	N/A	+	+	/	+	N/A	Medium
27	City Wide	Establish Neighborhood Greenway (traffic calming measures and wayfinding): Harrison, Pony Creek, Crowell, 16th, Myrtle, 17th, Oak, Lakeshore, Virginia Ave		✓					North Bend	TBD	TBD	+	+	N/A	N/A	+	+	/	+	N/A	Medium
28	Newmark Ave: Broadway Ave to West City Limits	Provide bicycle facilities (OCBR) through lane diet or parallel routes/wayfinding. Parallel route options: Oak St, 16th/17th, Myrtle St, Commercial St. Consider narrowing travel lanes and widening sidewalks where parallel route is challenging.		✓					ODOT	$32,000	None	+	+	-	TBD	+	+	TBD	+	N/A	Low
29	Newmark St: Sherman Ave to Broadway Ave	Provide bicycle facilities restriping (with repaving project)		✓					North Bend	$6.1M	Tsunami zone & 100 yr floodplain	+	+	-	TBD	+	+	TBD	+	N/A	Low
30	US 101	Provide bicycle facilities (OCBR priority) through parallel routes		✓	✓				ODOT	TBD	TBD	+	+	N/A	N/A	+	+	/	+	N/A	Medium
		TRANSIT																			
31	Bay Area Loop	Add weekend service					✓		CCAT	N/A	None	+	+	N/A	TBD	+	N/A	N/A	+	+	High
32	All Transit Routes	Extend service hours					✓		CCAT	N/A	None	+	+	N/A	N/A	+	N/A	N/A	+	+	High
33	US 101 & Sherman Ave	Increase frequency & add additional route					✓		CCAT	N/A	TBD	+	+	N/A	TBD	+	N/A	N/A	+	+	High
34	All Transit Routes	Add shelters and stops near community destinations	✓	✓			✓		CCAT	N/A	TBD	+	+	TBD	TBD	+	N/A	TBD	+	+	Medium
35	All Transit Routes	Improve bicycle and ped connectivity to stops	✓	✓			✓		North Bend	Projects identified in Bike/Ped plans											

ID	Location	Description	MODE						Primary Funding Source	Prelim. Cost Estimate (2019 $)	Environmental Constraints	Impacts/Benefits (Qualitative)									Prelim. Evaluation Rating/ Need
			Ped	Bike	Safety	Vehicle	Transit	Other				Bike/ Ped	Transit	Aviation / Freight	Land Use	Mobility	Safety	Environmental /Cultural Resources	Title VI/EJ	ADA	
		SAFETY CONCERN																			
36	Virginia Ave at Meade Ave	Traffic calming along Meade and Connecticut: Narrow up street feeling (bulb outs, speed humps, formalize on street parking) -- Mimic aspects of Downtown Streetscape.	✓	✓	✓	✓			North Bend (Urban Renewal)	TBD	None	+	/	N/A	TBD	+	+	N/A	+	+	Medium
37	Newmark Ave at Oak St	Enhance visibility of signal and pavement paint/crossings -- recent improvements may improve conditions.			✓	✓			ODOT	No alternative identified; continue to monitor intersection recent changes were made to improve safety											
38	US 101 at Florida Ave	Monitor crash history in future -- recent improvements may improve conditions.			✓				North Bend	No alternative identified; continue to monitor intersection recent changes were made to improve safety											
39	US 101 South at Virginia Ave	Monitor crash history in future -- recent improvements may improve conditions.			✓				North Bend	No alternative identified; continue to monitor intersection recent changes were made to improve safety											
40	Washington Ave at US 101 South/Sherman Ave	Explore options to provide safer pedestrian crossing of highway (curb bulb outs, RRFB, median refuge, lighting, signage). Pedestrian signage is most viable option.	✓		✓				ODOT	$5k-$30k	None	+	+	TBD	TBD	+	+	N/A	+	+	Medium
41	Pony Creek Rd at Crowell Ln	Tighten radius of western curbs, pavement markings, formalize striping on Pony Creek Rd and consider all-way stop control	✓		✓	✓			North Bend	$50k	Tsunami Zone & 100 yr floodplain	+	N/A	N/A	TBD	+	+	N/A	+	+	High
42	US 101 at Newmark St	Monitor crash history in future -- recent timing improvements may improve conditions.			✓				ODOT	No alternative identified; continue to monitor intersection recent changes were made to improve safety											
43	US 101 near California Ave	Monitor crash history in future -- recent improvements may improve conditions.			✓				ODOT	No alternative identified; continue to monitor intersection recent changes were made to improve safety											
44	OR 540 near State St	Explore enhanced striping/channelization/overhead signage to improve sight distance and driver expectancy.			✓				ODOT	TBD	None	/	/	/	N/A	/	+	N/A	N/A	/	Low
45	Newmark St near Brussels St	Improve visibility by repave and restripe			✓	✓			North Bend	$850k	None	/	/	+	N/A	+	+	N/A	N/A	/	High
46	Newmark St at Sherman Ave	Improve visibility by repave and restripe			✓	✓			North Bend	$850k	None	/	/	+	N/A	+	+	N/A	N/A	/	Medium
		ROADWAY																			
47	Between Broadway Ave and Sherman Ave	Identify future connections in functional classification plan of Clark St, State St, Wall St, Lombard St for local street connectivity	✓	✓		✓			North Bend	Did not review benefits/impacts; Pony Creek Estuary Plan preserves space.											
48	City wide	Fix Potholes. Maintain/fix/strengthen existing pavement system, account for maintenance in funding plan. Critical: Arterials and collectors with fair or worse pavement conditions, such as 16^{th} St, 17^{th} St, Arthur St, Brussels St, Colorado Ave, Crowell Ln, Harrison Ave, Pacific St, Pony Creek St.	✓	✓		✓			North Bend	$16.5M (2014 $)	TBD	+	+	+	N/A	+	+	N/A	N/A	N/A	High
		RAIL/TRUCK FREIGHT																			
49	Coos Bay Rail Line	Make improvements to bridges, spurs, tracks, transload sidings, at grade crossings and tunnels as identified in the OFP to create or improve multimodal business opportunities						✓	ODOT (OFP); Coos Bay Rail	Did not review benefits/impacts; City not a decision-maker											
50	US 101 at Lewis Street/Mill Casino	Address Highway Over-Dimension Load Pinch Point by raising signal head				✓		✓	ODOT (OFP)	$250k	None	N/A	N/A	+	N/A	+	/	N/A	N/A	N/A	Low
51	California Ave between Sherman Ave, US 101 and	Address poor pavement condition (2015) data, widen roadway, improve safety at rail crossing, improve turning movements for one-way portion per OFP				✓		✓	ODOT (OFP);	$2M	TBD	N/A	+	+	TBD	+	/	TBD	N/A	N/A	Medium

ID	Location	Description	MODE: Ped	Bike	Safety	Vehicle	Transit	Other	Primary Funding Source	Prelim. Cost Estimate (2019 $)	Environmental Constraints	Impacts/Benefits (Qualitative): Bike/ Ped	Transit	Aviation / Freight	Land Use	Mobility	Safety	Environmental /Cultural Resources	Title VI/EJ	ADA	Prelim. Evaluation Rating/ Need
	the Dock Facility/North Bend Boardwalk								North Bend (pavement)												
52	US 101 at Florida Ave	Make modifications to accommodate high heavy vehicle volumes per OFP				✓		✓	ODOT (OFP)	Did not review benefits/impacts; information provided by ODOT suggested this is no longer a deficiency.											
		MARINE/AIRPORT																			
53	City Dock: Virginia Ave/Harbor Ave	Construct a new city dock at the eastern terminus of Virginia Ave (per *Downtown Waterfront District Master Plan*)						✓	North Bend;	TBD	Threatened/ Endangered; Wetland; Tsunami Zone; 100 yr floodplain	N/A	N/A	+	+	+	N/A	-	/	/	Low
54	Charleston boatyard	Improvements that include the Marine Ways						✓	Port of Coos Bay	Did not review benefits/impacts; not a City-led effort.											
55	Oregon Gateway	North Spit improvements to accommodate a multi-modal marine facility to handle bulk cargo, containers and an LNG export facility						✓	Port of Coos Bay	Did not review benefits/impacts; not a City-led effort.											
56	Coos Bay	Federal channel widening and deepening to accommodate larger ships and ensure safer operations						✓	Port of Coos Bay	Did not review benefits/impacts; not a City-led effort.											
57	Charleston boatyard	Dock replacements						✓	Port of Coos Bay	Did not review benefits/impacts; not a City-led effort.											
58	Airport	Add direct commercial passenger service between Southwest Regional Airport and northwest hubs (Portland)						✓	Coos County Airport District	Did not review benefits/impacts; not a City-led effort.											
59	Airport	Provide transit service to airport if air passenger service increases					✓	✓	CCAT	Did not review benefits/impacts; not a City-led effort.											

Notes:

1. ✓ **Bold Check Mark** indicates which mode benefits most from project
2. Cost estimates are provided for draft alternatives with defined scope/extents. Cost Estimates do not include right-of-way, utility relocation, new utilities or hazmat costs.

ODOT = Oregon Department of Transportation; OCBR = Oregon Coast Bike Route; CCAT = Coos County Area Transit; OFP = Oregon Freight Plan; POCB = Port of Coos Bay; CCAD = Coos County Airport District

Impacts/Benefits: (+) Positive; (-) Negative; (/) Neutral; (N/A) Not applicable; (TBD) To Be Determined

Table 6. City of Coos Bay Draft Alternatives

ID	Location	Description	MODE						Primary Funding Source	Prelim. Cost Estimate ($-$$$$)	Environmental Constraints	Impacts/Benefits (Qualitative)									Prelim. Evaluation Rating/ Need
			Ped	Bike	Safety	Vehicle	Transit	Other				Bike/ Ped	Transit	Aviation / Freight	Land Use	Mobility	Safety	Environmental /Cultural Resources	Title VI/EJ	ADA	
		PLANNED PROJECTS																			
1	D St/Coos River Hwy: 6th Ave to Ross Inlet Rd	Add sidewalks to both sides of roadway (safe routes to school)	✓		✓				Safe Routes to School	Did not review benefits/impacts; SRTS project will be complete before TSP adoption.											
2	Johnson Ave at US 101 North	STIP project planned to adjust timing			✓	✓			ODOT	Did not review benefits/impacts; STIP project will be complete before TSP adoption.											
3	Newport Ln: Flanagan Rd to Mullen Rd	STIP project planned to provide sidewalk from Flanagan Rd to Mullen Rd and provides static pedestrian crossings	✓	✓	✓				ODOT	Did not review benefits/impacts; STIP project will be complete near TSP adoption.											
		PLANS																			
4	City Wide (Trails)	Develop formalized Trail Map and continue to connect sidewalk system to trails or shared-use paths	✓	✓					Coos Bay	TBD	TBD	+	/	N/A	N/A	+	/	/	+	N/A	Low
5	Schools	Develop a Safe Routes to School Project List (Assess all connections to school, draft plan to connect safe routes to school)	✓		✓				Coos Bay	TBD	TBD	+	+	N/A	N/A	+	+	/	+	+	High
6	City wide	Change "collector" term into "major collector" and the neighborhood routes into "minor collectors" to align with State Classification				✓			Coos Bay	See Proposed Functional Classification Plan											
7	Koosbay Blvd: 10th St to US 101	Update functional classifications - Classification between 10th Street and US 101 (arterial) differs from the State's classification as an urban collector.				✓			Coos Bay	See Proposed Functional Classification Plan											
8	City wide	Include evacuation routes in TSP (DOGAMI Beat the Wave)			✓			✓	Coos Bay	Will include as part of Emergency Preparedness Section in TSP											
9	Front St	Traffic Safety Plan in support of future development of Front St			✓	✓			Coos Bay	TBD	TBD	+	+	+	+	+	+	/	+	+	High
		PEDESTRIAN																			
10	Morrison St: Newmark Ave to Pacific Ave	Upgrade sidewalks on both sides	✓		✓				Coos Bay	$2.5M	None	+	N/A	N/A	/	+	+	N/A	+	+	Medium
11	Sherman Ave/Koos Bay Blvd: North City Limits to US 101	Infill sidewalk to provide pedestrian access on at least one side of street. Establish Neighborhood Greenway (traffic calming measures and wayfinding) on parallel route (see project CB 31)	✓	✓					Coos Bay	TBD	Historic Landslide & 100 yr floodplain (east end)	+	+	N/A	N/A	+	+	N/A	+	/	Medium
12	Mingus Park	Wayfinding signs to park	✓	✓					Coos Bay	$20k-50k	None	+	/	N/A	N/A	+	/	N/A	+	N/A	High
13	Newmark Ave: Empire Blvd to Fir St	Improve PLTS score through access consolidation, median islands, mid-block ped crossing	✓						Coos Bay	TBD	None	+	/	N/A	/	+	+	N/A	+	+	Medium
14	Woodland Dr: North City Limits to Ocean Blvd	Add sidewalks on Woodland Dr, marked ped crossing (access to Hospital/Medical Park)	✓		✓		✓		Coos Bay	$3.2M	None	+	+	N/A	N/A	+	+	N/A	+	+	High
15	Thompson Road near Bay Area Hospital	Add marked crossing and mid-block crossing of Thompson Road to access hospital transit stop	✓				✓		Coos Bay	$50k	None	+	+	N/A	N/A	+	+	N/A	+	+	High
16	Hospital Way near Medical Center (Immediate Care Clinic)	Add sidewalk to connect to medical facilities	✓				✓		Coos Bay	$560k	None	+	+	N/A	N/A	+	+	N/A	+	+	High
17	Ocean Blvd at Wallace St (Three Rivers Casino)	Construct sidewalk along Wallace St and add RRFB crossing of Ocean Blvd at Wallace St to connect to transit	✓				✓		Coos Bay	$400k	None	+	+	N/A	N/A	+	+	+	+	+	Low

ID	Location	Description	MODE: Ped	Bike	Safety	Vehicle	Transit	Other	Primary Funding Source	Prelim. Cost Estimate ($-$$$$)	Environmental Constraints	Impacts/Benefits (Qualitative): Bike/ Ped	Transit	Aviation / Freight	Land Use	Mobility	Safety	Environmental /Cultural Resources	Title VI/EJ	ADA	Prelim. Evaluation Rating/ Need
18	Coos Bay Boardwalk (near Anderson Ave and Market Ave)	Construct at-grade multimodal improvements (pavement)	✓		✓	✓		✓	Coos Bay; Coos Bay Rail	$500k	100 yr floodplain	+	N/A	+	N/A	+	+	N/A	+	+	High
19	US 101: Commercial Ave and Alder Ave	Improved bike/pedestrian crossings across US 101 to be consistent with Front Street Action Plan	✓	✓	✓				ODOT	$100k	100 yr floodplain	+	+	/	N/A	+	+	N/A	+	+	High
20	Ocean Blvd at LcClair St	Construct a pedestrian crossing with RRFB and median refuge	✓	✓	✓				Coos Bay	$200k	None	+	/	/	N/A	+	+	N/A	+	+	Medium
21	Front St near Coos History Museum and Maritime Collection	North-south pedestrian pathway along the eastern side of Front St	✓	✓				✓	City/Private	Did not review benefits/impacts; recommend implement Project C1 in 2017 Front Street Action Plan (adopted)											
22	North Bend, Mill Casino and Coos Bay Boardwalks	Connect the area boardwalks to create a five mile uninterrupted boardwalk.	✓	✓	✓				North Bend; Coos Bay; Private	TBD	Haz. Mat; Threatened/ Endangered; Wetland; Tsunami Zone; 100 yr floodplain	+	+	/	+	+	+	-	+	/	Low
		BICYCLE																			
23	City Wide	City create a Bicycle Transportation Plan that connects Arterials, Collectors (neighborhood calming, parallel routes, signing, formal striping)		✓					Coos Bay	TBD	TBD	+	+	N/A	N/A	+	+	/	+	N/A	High
24	Ocean Blvd	Extend road diet west from Woodland Dr to Newmark Blvd and provide mid-block ped crossing at Wallace St and LaClair St	✓	✓	✓	✓			Coos Bay	$115k-300k	None	+	+	N/A	N/A	+	+	N/A	+	+	Medium
25	Newmark Ave: Ackerman Ave to Cammann St	Restripe road to provide bicycle facilities (road diet)		✓					Coos Bay	$25k	None	+	+	N/A	N/A	+	+	N/A	+	N/A	Medium
26	Woodland Dr: North City Limits to Ocean Blvd	Add bicycle facilities (add sharrows if ROW acquisition not feasible)		✓					Coos Bay	$40k	None	+	+	N/A	N/A	+	+	N/A	+	N/A	High
27	Newport Ln	Improve bicycle LTS through enhanced signage & wayfinding to connect Coos Bay UGB		✓	✓				Coos County	TBD	None	+	N/A	N/A	N/A	+	+	N/A	+	+	Medium
28	D St/Coos River Rd: 6th Ave to East City Limits	Widen paved shoulder and provide enhanced signage & wayfinding		✓	✓				Coos Bay	$690k	Near emergent wetland & 100 yr floodplain (east end)	+	/	N/A	N/A	+	+	N/A	+	N/A	Low
29	US 101: South couplet to Coalbank Slough Bridge	Restripe to accommodate bicycle lane (options for additional signing/striping/ramp at bridge)		✓	✓				ODOT	$20k-75k	100 yr floodplain	+	N/A	N/A	N/A	+	+	N/A	+	N/A	Medium
30	US 101	Provide bicycle lanes (OCBR priority) through road widening or lane diet.		✓	✓				ODOT	TBD	Varies	+	+	-	TBD	+	+	TBD	+	N/A	Medium
31	N 14th St: Teakwood Ave to Juniper Ave	Provide a parallel bicycle route to Koos Bay Blvd by providing sharrows and wayfinding on N 14th St		✓					Coos Bay	TBD	TBD	+	+	N/A	N/A	+	+	/	+	N/A	Medium
		TRANSIT																			
32	Bay Area Loop	Add weekend service					✓		CCAT	N/A	None	+	+	N/A	TBD	+	N/A	N/A	+	+	High
33	All Transit Routes	Extend service hours					✓		CCAT	N/A	None	+	+	N/A	N/A	+	N/A	N/A	+	+	High
34	US 101 & Ocean Blvd Routes	Increase frequency & add additional route					✓		CCAT	N/A	TBD	+	+	N/A	TBD	+	N/A	N/A	+	+	High

ID	Location	Description	MODE: Ped	Bike	Safety	Vehicle	Transit	Other	Primary Funding Source	Prelim. Cost Estimate ($-$$$$)	Environmental Constraints	Impacts/Benefits (Qualitative): Bike/ Ped	Transit	Aviation / Freight	Land Use	Mobility	Safety	Environmental /Cultural Resources	Title VI/EJ	ADA	Prelim. Evaluation Rating/ Need
35	All Transit Routes	Add shelters and stops near community destinations					✓		CCAT	N/A	TBD	+	+	TBD	TBD	+	N/A	TBD	+	+	High
36	All Transit Routes	Improve bicycle and ped connectivity to stops	✓	✓			✓		Coos Bay	Projects identified in Bike/Ped plans											
37	Bay Area	Support CCAT in their pursuit of regional transit hub					✓		CCAT	N/A	TBD	+	+	N/A	TBD	+	N/A	N/A	+	+	Medium
38	Coos Bay	Work with CCAT to identify locations for transit pull outs on busier streets					✓		CCAT	N/A	TBD	+	+	N/A	-	+	+	TBD	+	+	Low
		SAFETY CONCERN																			
39	Ocean Blvd at 19th St	Enhanced channelization of side street to improve safety			✓	✓			Coos Bay	TBD	None	/	N/A	N/A	N/A	+	+	N/A	N/A	N/A	Low
40	Thompson Ave at Woodland Dr	Restripe the east leg to remove the westbound right-turn bay and make the movement a shared thru/right to improve sight distance.			✓	✓			Coos Bay	$300k	None	+	+	N/A	N/A	N/A	+	N/A	N/A	N/A	Medium
41	Koosbay Blvd at 10th St	Realign intersection to "T" to improve visibility and safety			✓				Coos Bay	TBD	None	+	+	N/A	N/A	/	+	N/A	N/A	+	Medium
42	US 101: near Kruse Ave	Access management/channelization			✓				ODOT	$100k	100 yr floodplain	TBD	N/A	N/A	N/A	-	+	N/A	N/A	N/A	Low
43	S 10th St: near Central Ave	Curb bump outs (consistent through downtown)			✓				Coos Bay	$40k	None	+	N/A	N/A	N/A	/	+	N/A	N/A	+	Low
44	Ingersoll St: near S 2nd St	Curb bump outs (consistent through downtown)			✓				Coos Bay	$40k	100 yr floodplain	+	N/A	N/A	N/A	/	+	N/A	N/A	+	Medium
45	7th St at Ingersoll Ave	Curb bump outs	✓		✓				Coos Bay	$40k	None	+	N/A	N/A	N/A	/	+	N/A	N/A	+	Medium
		ROADWAY																			
46	Schoneman Ave: Lakeshore Dr to Newmark Ave	Upgrade to collector standard (storm/curb/gutter/sidewalk) and connect to trail system in John Topits Park	✓	✓		✓			Coos Bay	$1.4M	Near Riverine & Wetland	+	N/A	N/A	/	+	+	-	+	+	Medium
47	Newmark Ave at Ocean Blvd	Realign Ocean Blvd at Newmark Ave to "T", shorten ped crossing, improve connectivity to Transit	✓	✓	✓	✓	✓		Coos Bay	TBD	None	+	+	N/A	N/A	+	+	N/A	+	+	High
48	Newmark Ave at Morrison St	Operations expected to exceed City mobility target (LOS F) but low volumes do not warrant traffic control. Monitor.				✓			Coos Bay	No alternative identified; continue to monitor intersection as volumes do not warrant traffic control											
49	7th St at Anderson Ave	Channelization/access management of local streets				✓			Coos Bay	TBD	None	+	N/A	N/A	-	-	+	N/A	N/A	N/A	Low
50	Hall Ave at US 101 N	Monitor traffic congestion				✓			ODOT	No alternative identified; continue to monitor intersection as expected to meet ODOT mobility targets											
51	US 101 South: Johnson Ave to Kruse Ave	Provide landscaping or pedestrian buffer to reduce large, underutilized pavement area on east side of US 101 South.			✓	✓		✓	ODOT; City	$25k	100 yr floodplain	+	N/A	/	+	/	+	N/A	N/A	N/A	Low
52	US 101 South: Kruse Ave to S Front St	Upgrade S Front St to its arterial standard cross-section and limit access to right-in/right out at Kruse Ave/S 1st St	✓	✓	✓	✓			City	$1-2M	100 yr floodplain	+	N/A	N/A	/	+	+	N/A	+	+	Low
53	City wide	Fix Potholes. Maintain/fix/strengthen existing pavement system, account for maintenance in funding plan. Critical: Central Ave, Southwest Blvd, Koosbay Blvd, Blanco Ave, Radar Rd, Schoneman St, LaClair St, F St, Butler Rd, Juniper Ave and Fulton Ave				✓			Coos Bay	$66M (2015$)	TBD	+	+	+	N/A	+	+	N/A	N/A	N/A	High
54	Newport Ln/Isthmus Slough Bridge	Widen structure to accommodate bicycle and pedestrians. Consider interim option to provide "bicycle warning beacons" on either side of bridge to indicate when bicyclists are present.	✓	✓		✓			County; ODOT	Did not review benefits/impacts; not a City-led effort and illustrative project.											
		RAIL/TRUCK FREIGHT																			
55	Coos Bay Rail Line	Make improvements to bridges, spurs, tracks, transload sidings, at grade crossings and tunnels as identified in the OFP to create or improve multimodal business opportunities						✓	ODOT (OFP); Coos Bay Rail	Did not review benefits/impacts; City not a decision-maker											

ID	Location	Description	MODE						Primary Funding Source	Prelim. Cost Estimate ($-$$$$)	Environmental Constraints	Impacts/Benefits (Qualitative)									Prelim. Evaluation Rating/ Need
			Ped	Bike	Safety	Vehicle	Transit	Other				Bike/ Ped	Transit	Aviation / Freight	Land Use	Mobility	Safety	Environmental /Cultural Resources	Title VI/EJ	ADA	
56	Market Ave at Front St	Install at-grade rail active warning device			✓			✓	Coos Bay Rail	See Project 18	None	+	N/A	+	N/A	/	+	N/A	N/A	N/A	High
57	US 101 at US plywood-Central Dock Rd	Install at-grade rail active warning device			✓			✓	Coos Bay Rail	$500k	100 yr Floodplain	+	N/A	+	N/A	/	+	N/A	N/A	N/A	High
58	US 101 at Curtis Ave	Address Highway Over-Dimension Load Pinch Point by raising signal head				✓		✓	ODOT (OFP)	$50k-100k	None	N/A	N/A	+	N/A	+	/	N/A	N/A	N/A	Low
59	US 101 at Koosbay Blvd	Make modifications to accommodate high heavy vehicle volumes per OFP				✓		✓	ODOT (OFP)	TBD	100 yr Floodplain	N/A	+	+	TBD	+	/	TBD	N/A	N/A	Low
60	US 101 South at Commercial Ave	Make modifications to accommodate high heavy vehicle volumes per OFP				✓		✓	ODOT (OFP)	TBD	100 yr Floodplain	N/A	+	+	TBD	+	/	TBD	N/A	N/A	Low
61	US 101 North at Johnson Ave	Make modifications to accommodate high heavy vehicle volumes per OFP				✓		✓	ODOT (OFP)	TBD	100 yr Floodplain	N/A	+	+	TBD	+	/	TBD	N/A	N/A	Low
		MARINE/AIRPORT																			
62	Charleston boatyard	Improvements that include the Marine Ways						✓	POCB	Did not review benefits/impacts; not a City-led effort.											
63	Oregon Gateway	North Spit improvements to accommodate a multi-modal marine facility to handle bulk cargo, containers and an LNG export facility						✓	POCB	Did not review benefits/impacts; not a City-led effort.											
64	Coos Bay	Federal channel widening and deepening to accommodate larger ships and ensure safer operations						✓	POCB	Did not review benefits/impacts; not a City-led effort.											
65	Charleston boatyard	Dock replacements						✓	POCB	Did not review benefits/impacts; not a City-led effort.											
66	Airport	Add direct commercial passenger service between Southwest Regional Airport and northwest hubs (Portland)						✓	CCAD	Did not review benefits/impacts; not a City-led effort.											
67	Airport	Provide transit service to airport if air passenger service increases					✓	✓	CCAT	Did not review benefits/impacts; not a City-led effort.											

Notes:

1. ✓ **Bold Check Mark** indicates which mode benefits most from project
2. Cost estimates are provided for draft alternatives with defined scope/extents. Cost Estimates do not include right-of-way, utility relocation, new utilities or hazmat costs.

ODOT = Oregon Department of Transportation; OCBR = Oregon Coast Bike Route; CCAT = Coos County Area Transit; OFP = Oregon Freight Plan; POCB = Port of Coos Bay; CCAD = Coos County Airport District

Impacts/Benefits: (+) Positive; (-) Negative; (/) Neutral; (N/A) Not applicable; (TBD) To Be Determined

TECHNICAL MEMORANDUM #8 APPENDIX

System Alternatives (Task 7.5)

Civil West
Engineering Services, Inc.

South Coast Office
486 E Street
Coos Bay, OR 97420

Willamette Valley Office
213 Water Ave. NW, Suite 100
Albany, OR 97321

Rogue Valley Office
10558 Hwy 62, Suite B-1
Eagle Point, OR 97524

North Coast Office
609 SW Hurbert Street
Newport, OR 97365

Tel (541)266-8601 • Fax (541)266-8681

·MEMORANDUM·

TO	**Angela Rogge, PE** **Angela.Rogge@deainc.com** **David Evans and Associates, Inc.** **2100 SW River Pkwy** **Portland, OR 97201**	DATE **May 14, 2019**	JOB NO.: **1306-002**
		ATTN **Angela Rogge**	
		RE **Coos Bay/North Bend TSP Cost Estimates**	

Civil West
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South Coast Office
486 E Street
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Willamette Valley Office
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Albany, OR 97321

Rogue Valley Office
10558 Hwy 62, Suite B-1
Eagle Point, OR 97524

North Coast Office
609 SW Hurbert Street
Newport, OR 97365

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REMARKS

Angela,

I've completed most of the cost estimates sent over by David Evans and Associates. Seven of them were omitted due to budget constraints. Those that were chosen to be omitted were chosen due to a lack of information or clarity on scope.

I've attached a master list of the projects along with their total cost and any specific assumptions that were made. In addition to these specific assumptions, there are general assumptions that were made on the majority of the projects such as:

- Along curb and gutter, a 2' strip of asphalt is assumed in order to conform to grades.
- Sign costs are calculated at $500 per sign multiplied by a factor of 1.5
- Asphalt is assumed to be 4" of HMAC over 12" of aggregate base.
- Aggregate base is assumed at a depth of 4" for sidewalks, and 6" for driveways and curb and gutter.
- Drainage is based on an average cost per lineal foot of project length.
- One water quality feature is included per approximately 1,000 lineal feet of project length where applicable.
- Driveway widths are based on a rough measured width plus approximately 15' for the wings.
- Signs, ADA ramps, and additional footage for curb returns are evaluated on an individual basis for each project.

I've also attached a PDF of all of the cost estimates covered.

Respectfully,
Civil West Engineering Services
Sean Lloyd, PE
Project Engineer

PRELIMINARY COST ESTIMATE

SECTION				COUNTY	
1 - Sheridan Ave - Florida Avenue to Bayview Avenue				COOS	
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Pedestrian Improvements		5/7/19	Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$71,300	$71,300
	TRAFFIC CONTROL (5%)	LS	1	$35,650	$35,650
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$14,260	$14,260
	CLEARING AND GRUBBING	ACRE	0.23	$4,000	$940
	GENERAL EXCAVATION	CY	369	$30	$11,090
	SUBGRADE/FOUNDATION STABILIZATION	CY	37	$75	$2,780
	CONCRETE CURB & GUTTER	FOOT	1,860	$20	$37,200
	CONCRETE SIDEWALK	SQFT	8,965	$16	$143,440
	CONCRETE DRIVEWAY	SQFT	1,265	$20	$25,300
	EXTRA FOR ADA RAMP	EA	4	$3,500	$14,000
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	930	$100	$93,000
	WATER QUALITY	EACH	1	$30,000	$30,000
BASES					
	AGGREGATE BASE	CY	404	$50	$20,222
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	128	$210	$26,860
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$6,000	$6,000
	STRIPING	FOOT	930	$2.00	$1,860
	RAILROAD CROSSING	LS	1	$300,000.00	$300,000
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$21,390	$21,390
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$713,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$856,000**
	ENGINEERING & CONTINGENCIES			60%	$514,000
TOTAL CONSTRUCTION COST					**$1,370,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

PRELIMINARY COST ESTIMATE

SECTION				COUNTY	
2 - 16th and 17th Street - Broadway Ave to Oak Street				COOS	
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Pedestrian Improvements		5/7/19	Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$106,900	$106,900
	TRAFFIC CONTROL (5%)	LS	1	$53,450	$53,450
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$21,380	$21,380
	CLEARING AND GRUBBING	ACRE	0.60	$4,000	$2,420
	GENERAL EXCAVATION	CY	970	$30	$29,090
	SUBGRADE/FOUNDATION STABILIZATION	CY	97	$75	$7,280
	CONCRETE CURB & GUTTER	FOOT	4,780	$20	$95,600
	CONCRETE SIDEWALK	SQFT	19,773	$16	$316,360
	CONCRETE DRIVEWAY	SQFT	6,518	$20	$130,350
	EXTRA FOR ADA RAMP	EA	19	$3,500	$66,500
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	2,200	$100	$220,000
	WATER QUALITY	EACH	2	$30,000	$60,000
BASES					
	AGGREGATE BASE	CY	1,065	$50	$53,228
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	329	$210	$69,020
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$14,250	$14,250
	STRIPING	FOOT	2,200	$2.00	$4,400
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$32,070	$32,070
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$1,069,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$1,283,000**
	ENGINEERING & CONTINGENCIES			60%	$770,000
TOTAL CONSTRUCTION COST					**$2,053,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs**.

PRELIMINARY COST ESTIMATE

SECTION					COUNTY
Pacific Street - Crowell Lane to 16th Street					COOS
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Grading, Paving & Drainage		5/7/19	Civil West Engineering	

ITEM NUMBER	ITEM DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$37,800	$37,800
	TRAFFIC CONTROL (5%)	LS	1	$18,900	$18,900
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$7,560	$7,560
	CLEARING AND GRUBBING	ACRE	0.17	$4,000	$680
	GENERAL EXCAVATION	CY	261	$30	$7,820
	SUBGRADE/FOUNDATION STABILIZATION	CY	26	$75	$1,960
	CONCRETE CURB & GUTTER	FOOT	1,340	$20	$26,800
	CONCRETE SIDEWALK	SQFT	7,370	$16	$117,920
	EXTRA FOR ADA RAMP	EA	10	$3,500	$35,000
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	1,140	$100	$114,000
	WATER QUALITY	EACH	1	$30,000	$30,000
BASES					
	AGGREGATE BASE	CY	284	$50	$14,220
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	92	$210	$19,350
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$7,500	$7,500
	STRIPING	FOOT	1,140	$2.00	$2,280
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$11,340	$11,340
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$378,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$454,000**
	ENGINEERING & CONTINGENCIES			60%	$273,000
TOTAL CONSTRUCTION COST					**$727,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs**.

PRELIMINARY COST ESTIMATE

SECTION					COUNTY	
4 - Newmark Street - Broadway Avenue to West City Limits					COOS	
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER		
1306-002	Pedestrian Improvements		5/8/19	Civil West Engineering		
ITEM NUMBER	ITEM DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL	
MOBILIZATION AND TRAFFIC CONTROL						
	MOBILIZATION	LS	1	$10,000	$10,000	
	TRAFFIC CONTROL (5%)	LS	1	$4,400	$4,400	
ROADWAY						
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$1,760	$1,760	
	GENERAL EXCAVATION	CY	228	$30	$6,840	
	SUBGRADE/FOUNDATION STABILIZATION	CY	23	$75	$1,710	
	CONCRETE MEDIAN	FOOT	1,800	$20	$36,000	
BASES						
	AGGREGATE BASE	CY	229	$50	$11,460	
WEARING SURFACES						
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	124	$210	$25,990	
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES						
	SIGNS & CROSSING	LS	1	$3,750	$3,750	
	STRIPING	FOOT	900	$2.00	$1,800	
RIGHT OF WAY DEVELOPMENT						
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$2,640	$2,640	
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$88,000**	
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$107,000**	
	ENGINEERING & CONTINGENCIES			60%	$65,000	
TOTAL CONSTRUCTION COST					**$172,000**	

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

PRELIMINARY COST ESTIMATE

SECTION				COUNTY	
5 - Newmark Street - Highway 101 to Sherman Avenue				COOS	
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Pedestrian Improvements		5/7/19	Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$51,400	$51,400
	TRAFFIC CONTROL (5%)	LS	1	$25,700	$25,700
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$10,280	$10,280
	CLEARING AND GRUBBING	ACRE	0.14	$4,000	$570
	GENERAL EXCAVATION	CY	1,121	$30	$33,650
	SUBGRADE/FOUNDATION STABILIZATION	CY	112	$75	$8,420
	CONCRETE CURB & GUTTER	FOOT	1,110	$20	$22,200
	CONCRETE SIDEWALK	SQFT	6,105	$16	$97,680
	EXTRA FOR ADA RAMP	EA	4	$3,500	$14,000
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	1,030	$100	$103,000
	WATER QUALITY	EACH	1	$30,000	$30,000
BASES					
	AGGREGATE BASE	CY	1,094	$50	$54,680
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	687	$210	$144,240
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$3,000	$3,000
	STRIPING	FOOT	1,030	$2.00	$2,060
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$15,420	$15,420
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$514,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$617,000**
	ENGINEERING & CONTINGENCIES			60%	$371,000
TOTAL CONSTRUCTION COST					**$988,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs**.

PRELIMINARY COST ESTIMATE

SECTION					COUNTY
6 - Colorado Avenue - Sidewalks and Crossing					COOS
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Pedestrian Improvements		5/8/19	Civil West Engineering	

ITEM NUMBER	ITEM DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$19,500	$19,500
	TRAFFIC CONTROL (5%)	LS	1	$9,750	$9,750
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$3,900	$3,900
	CLEARING AND GRUBBING	ACRE	0.08	$4,000	$330
	GENERAL EXCAVATION	CY	124	$30	$3,740
	SUBGRADE/FOUNDATION STABILIZATION	CY	12	$75	$940
	CONCRETE CURB & GUTTER	FOOT	640	$20	$12,800
	CONCRETE SIDEWALK	SQFT	3,520	$16	$56,320
	EXTRA FOR ADA RAMP	EA	2	$3,500	$7,000
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	640	$100	$64,000
	WATER QUALITY	EACH	1	$30,000	$30,000
BASES					
	AGGREGATE BASE	CY	136	$50	$6,790
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	44	$210	$9,240
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$1,500	$1,500
	STRIPING	FOOT	680	$2.00	$1,360
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$5,850	$5,850
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$195,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$234,000**
	ENGINEERING & CONTINGENCIES			60%	$141,000
TOTAL CONSTRUCTION COST					**$375,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs**.

PRELIMINARY COST ESTIMATE

SECTION					COUNTY
7 - Boynton Park - Sherman Avenue Crossing					COOS
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Pedestrian Improvements		5/8/19	Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION	LS	1	$10,000	$10,000
	TRAFFIC CONTROL (5%)	LS	1	$1,350	$1,350
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$540	$540
	CLEARING AND GRUBBING	ACRE	0.01	$4,000	$40
	GENERAL EXCAVATION	CY	16	$30	$470
	SUBGRADE/FOUNDATION STABILIZATION	CY	2	$75	$120
	CONCRETE CURB & GUTTER	FOOT	80	$20	$1,600
	CONCRETE SIDEWALK	SQFT	440	$16	$7,040
	EXTRA FOR ADA RAMP	EA	4	$3,500	$14,000
BASES					
	AGGREGATE BASE	CY	17	$50	$850
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	6	$210	$1,160
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$1,500	$1,500
	STRIPING	FOOT	70	$2.00	$140
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$810	$810
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$27,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$40,000**
	ENGINEERING & CONTINGENCIES			60%	$24,000
TOTAL CONSTRUCTION COST					**$64,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs**.

PRELIMINARY COST ESTIMATE

SECTION	9 - Morrison Street: Newmark Ave to Pacific Ave			COUNTY	COOS
PROJECT # 1306-002	KIND OF WORK Pedestrian Improvements	LENGTH	DATE 5/14/19	ROADWAY DESIGNER Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$130,800	$130,800
	TRAFFIC CONTROL (5%)	LS	1	$65,400	$65,400
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$26,160	$26,160
	CLEARING AND GRUBBING	ACRE	0.65	$4,000	$2,600
	GENERAL EXCAVATION	CY	1,027	$30	$30,820
	SUBGRADE/FOUNDATION STABILIZATION	CY	103	$75	$7,710
	CONCRETE CURB & GUTTER	FOOT	5,140	$25	$128,500
	CONCRETE SIDEWALK	SQFT	23,760	$16	$380,160
	CONCRETE DRIVEWAY	SQFT	4,510	$20	$90,200
	EXTRA FOR ADA RAMP	EACH	32	$3,500	$112,000
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	2,170	$150	$325,500
	WATER QUALITY	EACH	2	$30,000	$60,000
BASES					
	AGGREGATE BASE	CY	1,125	$60	$67,530
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	353	$210	$74,210
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS	LS	1	$24,000	$24,000
	STRIPING	FOOT	2,170	$2.00	$4,340
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$39,240	$39,240
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$1,308,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$1,570,000**
	ENGINEERING & CONTINGENCIES			60%	$942,000
TOTAL CONSTRUCTION COST					**$2,512,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

PRELIMINARY COST ESTIMATE

SECTION				COUNTY	
10 - Woodland Drive - North City Limits to Ocean Blvd.				COOS	
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Surface & Drainage		5/8/19	Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$162,800	$162,800
	TRAFFIC CONTROL (5%)	LS	1	$81,400	$81,400
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$32,560	$32,560
	CLEARING AND GRUBBING	ACRE	0.93	$4,000	$3,710
	GENERAL EXCAVATION	CY	1,469	$30	$44,090
	SUBGRADE/FOUNDATION STABILIZATION	CY	147	$75	$11,030
	CONCRETE CURB & GUTTER	FOOT	7,340	$20	$146,800
	CONCRETE SIDEWALK	SQFT	33,523	$16	$536,360
	CONCRETE DRIVEWAY	SQFT	6,848	$20	$136,950
	EXTRA FOR ADA RAMP	EA	16	$3,500	$56,000
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	3,670	$100	$367,000
	WATER QUALITY	EACH	4	$30,000	$120,000
BASES					
	AGGREGATE BASE	CY	1,610	$50	$80,520
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	505	$210	$105,980
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$12,000	$12,000
	STRIPING	FOOT	3,670	$2.00	$7,340
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$48,840	$48,840
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$1,628,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$1,954,000**
	ENGINEERING & CONTINGENCIES			60%	$1,173,000
TOTAL CONSTRUCTION COST					**$3,127,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs**.

PRELIMINARY COST ESTIMATE

SECTION				COUNTY	
11 - Thompson Road Crossing				COOS	
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Surface & Drainage		5/8/19	Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION	LS	1	$10,000	$10,000
	TRAFFIC CONTROL (5%)	LS	1	$700	$700
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$280	$280
	GENERAL EXCAVATION	CY	4	$30	$120
	SUBGRADE/FOUNDATION STABILIZATION	CY	1	$75	$80
	CONCRETE CURB & GUTTER	FOOT	20	$20	$400
	CONCRETE SIDEWALK	SQFT	110	$16	$1,760
	EXTRA FOR ADA RAMP	EA	2	$3,500	$7,000
BASES					
	AGGREGATE BASE	CY	5	$50	$250
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	10	$210	$2,100
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$1,500	$1,500
	STRIPING	FOOT	50	$2.00	$100
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$420	$420
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$14,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$25,000**
	ENGINEERING & CONTINGENCIES			60%	$15,000
TOTAL CONSTRUCTION COST					**$40,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

PRELIMINARY COST ESTIMATE

SECTION 12 - Hospital Way				COUNTY COOS	
PROJECT # 1306-002	KIND OF WORK Surface & Drainage	LENGTH	DATE 5/6/19	ROADWAY DESIGNER Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$28,600	$28,600
	TRAFFIC CONTROL (5%)	LS	1	$14,300	$14,300
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$5,720	$5,720
	CLEARING AND GRUBBING	ACRE	0.12	$4,000	$480
	GENERAL EXCAVATION	CY	185	$30	$5,570
	SUBGRADE/FOUNDATION STABILIZATION	CY	19	75.00	$1,400
	CONCRETE CURB & GUTTER	FOOT	940	$20	$18,800
	CONCRETE SIDEWALK	SQFT	4,730	$16	$75,680
	CONCRETE DRIVEWAY	SQFT	440	$20	$8,800
	EXTRA FOR ADA RAMP	EA	6	$3,500	$21,000
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	940	$100	$94,000
	WATER QUALITY	EACH	1	$30,000	$30,000
BASES					
	AGGREGATE BASE	CY	203	$50	$10,150
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	65	$210	$13,580
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$4,500	$4,500
	STRIPING	FOOT	940	$2.00	$1,880
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$8,580	$8,580
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$286,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$344,000**
	ENGINEERING & CONTINGENCIES			60%	$207,000
TOTAL CONSTRUCTION COST					**$551,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs**.

PRELIMINARY COST ESTIMATE

SECTION					COUNTY
13 - Wallace Street					COOS
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Grading, Paving & Drainage		5/6/19	Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$20,500	$20,500
	TRAFFIC CONTROL (5%)	LS	1	$10,250	$10,250
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$4,100	$4,100
	CLEARING AND GRUBBING	ACRE	0.09	$4,000	$350
	GENERAL EXCAVATION	CY	135	$30	$4,050
	SUBGRADE/FOUNDATION STABILIZATION	CY	13	$75	$1,020
	CONCRETE CURB & GUTTER	FOOT	680	$20	$13,600
	CONCRETE SIDEWALK	SQFT	3,300	$16	$52,800
	CONCRETE DRIVEWAY	SQFT	440	$20	$8,800
	EXTRA FOR ADA RAMP	EA	3	$3,500	$10,500
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	620	$100	$62,000
	WATER QUALITY	EACH	1	$30,000	$30,000
BASES					
	AGGREGATE BASE	CY	148	$50	$7,390
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	47	$210	$9,820
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$3,000	$3,000
	STRIPING	FOOT	680	$2.00	$1,360
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$6,150	$6,150
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$205,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$246,000**
	ENGINEERING & CONTINGENCIES			60%	$148,000
TOTAL CONSTRUCTION COST					**$394,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs**.

PRELIMINARY COST ESTIMATE					
SECTION 15 - Front Street				COUNTY COOS	
PROJECT # 1306-002	KIND OF WORK Surface & Drainage	LENGTH	DATE 5/6/19	ROADWAY DESIGNER Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$62,200	$62,200
	TRAFFIC CONTROL (5%)	LS	1	$31,100	$31,100
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$12,440	$12,440
	CLEARING AND GRUBBING	ACRE	0.28	$4,000	$1,120
	GENERAL EXCAVATION	CY	452	$30	$13,580
	SUBGRADE/FOUNDATION STABILIZATION	CY	45	75.00	$3,400
	CONCRETE CURB & GUTTER	FOOT	2,210	$20	$44,200
	CONCRETE SIDEWALK	SQFT	8,470	$16	$135,520
	CONCRETE DRIVEWAY	SQFT	3,685	$20	$73,700
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	2,210	$100	$221,000
	WATER QUALITY	EACH	2	$30,000	$60,000
BASES					
	AGGREGATE BASE	CY	497	$50	$24,870
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	152	$210	$31,910
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$7,500	$7,500
	STRIPING	FOOT	2,210	$2.00	$4,420
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$18,660	$18,660
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$622,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$746,000**
	ENGINEERING & CONTINGENCIES			60%	$448,000
TOTAL CONSTRUCTION COST					**$1,194,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs**.

PRELIMINARY COST ESTIMATE

SECTION				COUNTY	
17 - Maple Leaf/Colorado Street Bicycle Improvements				COOS	
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Bicycle Improvements		5/6/19	Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$82,300	$82,300
	TRAFFIC CONTROL (5%)	LS	1	$41,150	$41,150
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$16,460	$16,460
	GENERAL EXCAVATION	CY	3,496	$30	$104,890
	SUBGRADE/FOUNDATION STABILIZATION	CY	350	$75	$26,230
BASES					
	AGGREGATE BASE	CY	3,278	$50	$163,890
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE HMAC MIXTURE	TON	2,434	$210	$511,090
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$4,500	$4,500
	STRIPING	FOOT	5,900	$2.00	$11,800
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$24,690	$24,690
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$823,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$987,000**
	ENGINEERING & CONTINGENCIES			60%	$593,000
TOTAL CONSTRUCTION COST					**$1,580,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

PRELIMINARY COST ESTIMATE

SECTION 18 - Newmark Avenue - Broadway Avenue to West City Limits				COUNTY COOS	
PROJECT # 1306-002	KIND OF WORK Bicycle Improvements	LENGTH	DATE 5/8/19	ROADWAY DESIGNER Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION	LS	1	$10,000	$10,000
	TRAFFIC CONTROL (5%)	LS	1	$450	$450
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	BICYLE SIGNS	EA	10	$750	$7,500
	SHARROW STRIPING	EA	2	$500	$1,000
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$270	$270
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$9,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$20,000**
	ENGINEERING & CONTINGENCIES			60%	$12,000
TOTAL CONSTRUCTION COST					**$32,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

PRELIMINARY COST ESTIMATE

SECTION				COUNTY	
19 - Newmark Street - Sherman Avenue to Broadway Avenue				COOS	
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Bicycle Improvements		5/10/19	Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$318,000	$318,000
	TRAFFIC CONTROL (5%)	LS	1	$159,000	$159,000
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$63,600	$63,600
	GENERAL EXCAVATION	CY	10,741	$30	$322,230
	SUBGRADE/FOUNDATION STABILIZATION	CY	1,074	$75	$80,560
BASES					
	AGGREGATE BASE	CY	13,426	$50	$671,300
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE HMAC MIXTURE	TON	9,969	$210	$2,093,440
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	STRIPING	FOOT	5,800	$2.00	$11,600
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$95,400	$95,400
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$3,180,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$3,816,000**
	ENGINEERING & CONTINGENCIES			60%	$2,290,000
TOTAL CONSTRUCTION COST					**$6,106,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs**.

PRELIMINARY COST ESTIMATE

SECTION				COUNTY	
20 - Ocean Blvd - Woodland to Newmark				COOS	
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Bicycle Improvements		5/10/19	Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION	LS	1	$10,000	$10,000
	TRAFFIC CONTROL (5%)	LS	1	$2,600	$2,600
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$1,040	$1,040
	GENERAL EXCAVATION	CY	19	$30	$560
	SUBGRADE/FOUNDATION STABILIZATION	CY	2	$75	$140
	CONCRETE CURB & GUTTER	FOOT	80	$25	$2,000
	CONCRETE SIDEWALK	SQFT	440	$16	$7,040
BASES					
	AGGREGATE BASE	CY	22	$50	$1,100
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	6	$210	$1,160
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	STRIPING	FOOT	9,800	$2.00	$19,600
	RRFB CROSSING	EA	2	$10,000	$20,000
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$1,560	$1,560
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$52,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$67,000**
	ENGINEERING & CONTINGENCIES			60%	$41,000
TOTAL CONSTRUCTION COST					**$108,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

PRELIMINARY COST ESTIMATE

SECTION **21 - Newmark Avenue - Ackermann Street to Cammann Street**				COUNTY **COOS**	
PROJECT # **1306-002**	KIND OF WORK **Bicycle Improvements**	LENGTH	DATE **5/10/19**	ROADWAY DESIGNER **Civil West Engineering**	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION	LS	1	$10,000	$10,000
	TRAFFIC CONTROL (5%)	LS	1	$250	$250
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$100	$100
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	STRIPING	FOOT	2,160	$2.00	$4,320
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$150	$150
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$5,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$15,000**
	ENGINEERING & CONTINGENCIES			60%	$9,000
TOTAL CONSTRUCTION COST					**$24,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

PRELIMINARY COST ESTIMATE

SECTION 22 - Woodland Drive - North City Limits to Woodland Boulevard				COUNTY COOS	
PROJECT # 1306-002	KIND OF WORK Bicycle Improvements	LENGTH	DATE 5/10/19	ROADWAY DESIGNER Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION	LS	1	$10,000	$10,000
	TRAFFIC CONTROL (5%)	LS	1	$550	$550
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$220	$220
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SHARROW STRIPING	FOOT	22	$500.00	$11,000
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$330	$330
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$11,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$23,000**
	ENGINEERING & CONTINGENCIES			60%	$14,000
TOTAL CONSTRUCTION COST					**$37,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

PRELIMINARY COST ESTIMATE

SECTION				COUNTY	
23 - D Street/Coos River Road - 6th Avenue to East City Limits				COOS	
PROJECT # 1306-002	KIND OF WORK Surface & Drainage	LENGTH	DATE 5/10/19	ROADWAY DESIGNER Civil West Engineering	
ITEM NUMBER	ITEM DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$35,900	$35,900
	TRAFFIC CONTROL (5%)	LS	1	$17,950	$17,950
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$7,180	$7,180
	CLEARING AND GRUBBING	ACRE	0.71	$4,000	$2,840
	GENERAL EXCAVATION	CY	1,144	$30	$34,340
	SUBGRADE/FOUNDATION STABILIZATION	CY	114	$75	$8,590
BASES					
	AGGREGATE BASE	CY	1,431	$50	$71,530
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	1,062	$210	$223,060
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$8,250	$8,250
	STRIPING	FOOT	5,150	$2.00	$10,300
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$10,770	$10,770
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$359,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$431,000**
	ENGINEERING & CONTINGENCIES			60%	$259,000
TOTAL CONSTRUCTION COST					**$690,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

PRELIMINARY COST ESTIMATE

SECTION				COUNTY	
26 - Pony Creek Road at Crowell Lane				COOS	
PROJECT # 1306-002	KIND OF WORK Surface & Drainage	LENGTH	DATE 5/10/19	ROADWAY DESIGNER Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION	LS	1	$10,000	$10,000
	TRAFFIC CONTROL (5%)	LS	1	$900	$900
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$360	$360
	GENERAL EXCAVATION	CY	50	$30	$1,500
	SUBGRADE/FOUNDATION STABILIZATION	CY	5	$75	$380
	CONCRETE CURB & GUTTER	FOOT	200	$20	$4,000
BASES					
	AGGREGATE BASE	CY	63	$50	$3,130
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	14	$210	$2,890
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS & CROSSING	LS	1	$2,250	$2,250
	STRIPING	FOOT	1,550	$2.00	$3,100
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$540	$540
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$18,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$30,000**
	ENGINEERING & CONTINGENCIES			60%	$18,000
TOTAL CONSTRUCTION COST					**$48,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

PRELIMINARY COST ESTIMATE

SECTION				COUNTY	
27 - US 101 South - South of Johnson Avenue				COOS	
PROJECT # 1306-002	KIND OF WORK Surface & Drainage	LENGTH	DATE 5/10/19	ROADWAY DESIGNER Civil West Engineering	
ITEM NUMBER	ITEM DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION	LS	1	$10,000	$10,000
	TRAFFIC CONTROL	LS	1	$2,000	$2,000
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$20	$20
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	STRIPING	FOOT	350	$2.00	$700
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$30	$30
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$1,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$13,000**
	ENGINEERING & CONTINGENCIES			60%	$8,000
TOTAL CONSTRUCTION COST					**$21,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

PRELIMINARY COST ESTIMATE

SECTION				COUNTY	
28 - US 101 - Near Kruse Avenue				COOS	
PROJECT #	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
1306-002	Bicycle Improvements		5/10/19	Civil West Engineering	
ITEM NUMBER	**ITEM DESCRIPTION**	**UNIT**	**AMOUNT**	**UNIT COST**	**TOTAL**
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$49,800	$49,800
	TRAFFIC CONTROL (5%)	LS	1	$24,900	$24,900
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (2%)	LS	1	$9,960	$9,960
	GENERAL EXCAVATION	CY	1,971	$30	$59,130
	SUBGRADE/FOUNDATION STABILIZATION	CY	197	$75	$14,790
	CONCRETE CURB & GUTTER	FOOT	2,150	$20	$43,000
BASES					
	AGGREGATE BASE	CY	1,866	$50	$93,320
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE HMAC MIXTURE	TON	1,330	$210	$279,370
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS	LS	1	$6,000	$6,000
	STRIPING	FOOT	1,125	$2.00	$2,250
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$14,940	$14,940
	CONSTRUCTION SUBTOTAL (without MOB/TRAFFIC CONTROL/REMOVAL/LS)				**$498,000**
	CONSTRUCTION SUBTOTAL (with MOB/TRAFFIC CONTROL/REMOVAL)				**$598,000**
	ENGINEERING & CONTINGENCIES			60%	$359,000
TOTAL CONSTRUCTION COST					**$957,000**

NOTES: **This estimate does not include right-of-way, utility relocation, new utilities or hazmat costs.**

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Technical Memorandum #9: Preferred Alternative Selection

TECHNICAL MEMORANDUM #9

Preferred Alternative Selection (Task 8.1)

Date: January 31, 2020

To: City of Coos Bay
City of North Bend
Oregon Department of Transportation, Region 3

From: Angela Rogge, PE, Justine Kuenne, EIT, David Evans and Associates, Inc.

Subject: Cities of Coos Bay and North Bend Transportation System Plan Updates

Table of Contents

This memorandum outlines preferred alternatives identified from the draft system alternatives in Technical Memorandum #8. It identifies the basis for selection and includes each project's effects on traffic operations, future safety, and future multimodal improvements. The preferred alternatives work to address identified deficiencies in connectivity, amenities, safety, and operations.

The alternatives presented in this memorandum are intended to serve as the baseline for a prioritized list of "financially feasible" and "aspirational" projects. The funding plan will be further detailed in *Technical Memorandum #10 (Transportation Improvement Finance Program)*.

Basis for Selection

This section discusses the basis for selecting the preferred alternatives from the draft system alternatives. Selections are based on three primary factors:

- Stakeholder Feedback via in-person meetings with the PAC, conference calls with technical Agency staff, comments received on technical memoranda, and project team communications
- Previous Plans (such as 2004 TSPs)
- Fatal Flaw Analysis against adopted standards and plans

The development of the preferred alternatives was an iterative process that created a menu of potential improvements. Stakeholder feedback and fatal flaw analysis helped to refine the list of concepts presented in this memorandum.

In addition to project descriptions and details of any analysis, project sheets were developed for projects and are included at this end of this memorandum. Project sheets were developed for projects where conceptual diagrams could be developed.

Preferred Alternatives

This section is broken out by each City and includes sections for the modal elements of the TSP. For projects requiring empirical analysis, a summary of the analysis and anticipated impacts is provided.

City of North Bend

Bicycle and Pedestrian

The pedestrian and bicycle element includes a citywide Bike Route map, a Safe Routes to school boundary as well as a list of projects to address the needs of bicycles and pedestrians.

Bike Routes

The Bike Route map identifies a citywide network of interconnected bike routes that would enable people to satisfy their daily travel needs within the city or surrounding region by bicycle. As illustrated in Figure 1, the network would provide connections to key local destinations, including schools, parks, the library, downtown North Bend, and other identified activity centers. The classifications help define the type of bicycle treatments planned for each roadway. This is an effort to more clearly prioritize and define the "Bicycle Action Plan" in the previous 2004 TSP.

- **Type I Bike Routes (Separated):** These facilities would consist of routes that separate bicycles from vehicular traffic with a physical barrier or striped buffer. Type I Bike Routes in North Bend are primarily shared use paths. Type I bike routes are intended to provide more separation and protection for cyclists from vehicles than a standard shoulder or bike lane.

- **Type II Bike Routes (Striped):** These routes would facilitate circulation within North Bend using bike lanes with a minimum width of 5 feet. Type II facilities would provide access between residential neighborhoods and local destinations, primarily on collector and arterial streets.
- **Type III Bike Routes (Neighborhood):** These neighborhood shared routes would be located mostly on residential and collector streets with low traffic volumes and speeds. They are designed to provide safe, comfortable, low-stress access within neighborhoods and for individuals of all bicycling confidence levels. Bicycle-specific infrastructure would consist of painted sharrow markings and signage to provide wayfinding. In some cases, Type III bike routes may serve as a parallel route if a Type I or II facility is not feasible on an arterial or collector roadway.

Oregon Coast Bike Route: The Oregon Coast Bike Route (OCBR) spans the Oregon coastline from Astoria to Brookings, primarily on US 101. It connects coastal communities, recreational destinations and viewpoints. Through North Bend, the OCBR is signed along US 101 from the north to and along Cape Arago Highway.

The OCBR is currently undergoing an update to improve the experience of biking on the route. Recommendations could include everything from wayfinding signs and secure bike parking to transit connections to and from the route, or educational campaigns to inform drivers and riders about how to safely share the road. The City of North Bend supports the update of the OCBR and supports providing local connections to the route.

Safe Routes to School

Sidewalk infill, enhanced street crossings, and dedicated bicycle facilities create safer routes between neighborhoods and schools. Improved local street connectivity shortens travel routes through neighborhoods, making walking and biking trips easier. To highlight where bicycle and pedestrian projects fall within a one-mile radius of a school, a boundary will be added to the modal plan maps in the TSP. The one-mile buffer boundary is depicted on Figure 2. ODOT has also developed an online GIS tool that allows users to access features of the school and crash history that may support grant applications.[1]

[1] Infrastructure Grant Applicant Resource Tool (ODOT Safe Routes to School): https://geo.maps.arcgis.com/apps/webappviewer/index.html?id=33d00a3d7181433d85abfce78b8ae879

Figure 1. North Bend Bicycle Route Plan

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 2. North Bend Safe Routes to School Boundary

Bicycle and Pedestrian Improvements

Table 1 summarizes the bicycle and pedestrian projects that are proposed for inclusion in the TSP update. Projects with the school () symbol indicate the project is within a 1-mile radius of a school and may be eligible for Safe Routes to School funding.

Table 1: City of North Bend Preferred Bicycle and Pedestrian Alternatives

NB ID	Project Name	Location	Description	Primary Funding Source	Prelim. Cost Estimate (2019 $)
PEDESTRIAN					
1	Sheridan Ave Pedestrian Improvements	Sheridan Ave: Florida Ave to Bayview Ave	Add sidewalk on Sheridan Ave and upgrade RR crossing to connect Simpson Heights to downtown	North Bend	$1.4M
2	16^{th} St/17^{th} St Sidewalks	16th St/17th: Broadway Ave to Oak St	Add sidewalk to provide connectivity to schools east of Broadway Ave via 16th St	North Bend	$2.1M
3	Oak St Neighborhood Greenway	Oak St: Colorado Ave to Newmark Ave	Establish Neighborhood Greenway (traffic calming measures and wayfinding) to improve pedestrian environment	North Bend	TBD
4	North Bend High School Pedestrian Crossings	Pacific St: Crowell Ln to 16th St	Sidewalk on west side and enhanced crossings (visibility)	North Bend	$730k
5	Virginia Ave Access Consolidation	Virginia Ave: US 101 to Broadway Ave	Identify opportunities for access consolidation (with redevelopment/change of use).	ODOT	TBD
6	Virginia Ave Pedestrian Crossing	Virginia Ave: Pony Creek Village to Broadway Ave	Provide pedestrian crossing between Broadway Ave and Pony Creek Village	ODOT	TBD
7	Newmark Ave Access Management	Newmark Ave: Broadway Ave to West City Limits	Access consolidation and medians	ODOT	$175k
8	Newmark St Half Street Improvement	Newmark St: US 101 to Sherman Ave	Half street improvement Sherman Ave to US 101 to provide westbound bicycle and pedestrian facilities	North Bend	$1M
9	North Bend Senior Activity Center Pedestrian Improvements	North Bend Senior Center	Marked crossing of Colorado Avenue and sidewalks from transit stop to Activity Center	North Bend	$375k
10	Boynton Park Pedestrian Crossing	Boynton Park	Marked crossing of Sherman Avenue at Exchange Street transit stop	North Bend	$65k
11	North US 101 Pedestrian Crossing	US 101 north of Florida Ave	Identify preferred location for pedestrian crossing of US 101. Locate near visitor center to provide connectivity to Simpson Park	ODOT	TBD

NB ID	Project Name	Location	Description	Primary Funding Source	Prelim. Cost Estimate (2019 $)
12	Connect the Boardwalks	North Bend, Mill Casino and Coos Bay Boardwalks	Connect the area boardwalks to create a five mile uninterrupted boardwalk.	North Bend; Coos Bay; Private	TBD
13	Broadway Ave Pedestrian Facilities	Broadway Ave between Virginia and Newmark	Improve sidewalks and PLTS	ODOT	TBD
14	North Bend Middle School Safe Routes to School	Maine Ave/Broadway Ave	Rapid Flashing Beacon and pedestrian refuge island on Broadway Ave at Maine Ave for North Bend Middle School students. Sidewalk infill on 14th St and Pacific Ave to create a complete route for students walking or biking to school. Recommend a pedestrian crossing at Broadway/14th.	Safe Routes to School	Funded
41	Newmark St Sidewalk	Newmark St: Sherman Ave to Broadway Ave	Provide sidewalk on the north side of the street	North Bend	TBD
BICYCLE					
15	Cape Arago Highway Bicycle Lanes	Cape Arago Highway: a) Virginia Ave b) Broadway Ave c) Newmark Ave	Provide bicycle facilities through coordination with the OCBR (Priority Virginia Ave to 16th St): a) Virginia Avenue Shared Use Path b) Broadway Avenue Bicycle Lanes c) Newmark Avenue Parallel Route	ODOT	TBD
16	NW North Bend Bicycle Facilities	Virginia/Maple Leaf/Colorado	Stripe bicycle facilities (with repaving project)	North Bend	$1.6M
17	Sheridan Ave Bicycle Facilities	Sheridan Ave: Florida Ave to Bayview Ave	Provide bicycle facilities through signing/striping	North Bend	*See Project 9*
18	Newmark St Bicycle Facilities	Newmark St: Sherman Ave to Broadway Ave	Provide bicycle facilities restriping (with repaving project)	North Bend	$6.1M
19	US 101	US 101	Provide bicycle facilities (OCBR priority) through parallel routes	ODOT	TBD

Notes:

1. Cost estimates are provided for draft alternatives with defined scope/extents. Cost Estimates do not include right-of-way, utility relocation, new utilities or hazmat costs.
2. Cost estimates were not prepared for projects where the scope/extents are undefined (TBD) or included in another adopted plan (N/A).

ODOT = Oregon Department of Transportation; OCBR = Oregon Coast Bike Route; CCAT = Coos County Area Transit; OFP = Oregon Freight Plan; POCB = Port of Coos Bay; CCAD = Coos County Airport District

Public Transportation

Public transportation service within Coos County is provided by Coos County Area Transit Service District (CCAT) and is not funded directly by the City. North Bend can support future transit viability by designing and building streets accessible by pedestrian and bicycle modes.

Transit Projects

The following concepts are suggested as opportunities for the City to collaborate with, or otherwise support, the Transit District in order to improve public transportation services in the Bay Area.

Table 2: City of North Bend Preferred Transit Alternatives

ID	Project Name	Location	Description	Primary Funding Source	Prelim. Cost Estimate (2019 $)
TRANSIT					
20	Bay Area Loop Weekend Service	Bay Area Loop	Add weekend service	CCAT	N/A
21	Transit Service Hours	All Transit Routes	Extend service hours	CCAT	N/A
22	Transit Frequency	US 101 & Sherman Ave	Increase frequency & add additional route	CCAT	N/A
23	Shelters and Stops	All Transit Routes	Add shelters and stops near community destinations	CCAT	N/A
24	Bike/Ped Transit Connectivity	All Transit Routes	Improve bicycle and pedestrian connectivity to stops	North Bend	Projects identified in Bike/Ped plans

Notes:

1. Cost estimates are provided for draft alternatives with defined scope/extents. Cost Estimates do not include right-of-way, utility relocation, new utilities or hazmat costs.
2. Cost estimates were not prepared for projects where the scope/extents are undefined (TBD) or included in another adopted plan (N/A).

ODOT = Oregon Department of Transportation; OCBR = Oregon Coast Bike Route; CCAT = Coos County Area Transit; OFP = Oregon Freight Plan; POCB = Port of Coos Bay; CCAD = Coos County Airport District

Roadway

This section summarizes the updated functional classification plan and the preferred alternatives for streets, freight, bridges, intersections and safety improvements.

Functional Classification Plan

Street functional classification indicates purpose, design and function. The assigned functional classification ensures a street network with features that support demand from both the surrounding land uses and travel needs at a regional level.

CONSISTENCY WITH FEDERAL NAMING CONVENTIONS

It is important to align North Bend's functional classification naming conventions with federal naming conventions as it may facilitate future efforts to obtain federal funding for local improvement projects. Suggested updates to North Bend's classification designations are shown in Table 3.

The City's previous TSP has a "Neighborhood Route" classification. The proposed classification change would differentiate between major and minor collectors.

Table 3. North Bend Proposed Functional Classification Naming Conventions

Existing Classification Name	Proposed Classification Name
Principal Arterial (ODOT)	Principal Arterial (ODOT)
Minor Arterial (ODOT)	Minor Arterial (ODOT)
Arterial	**Minor** Arterial
Collector	**Major Collector**
Neighborhood Route	**Minor Collector**
Local	Local

Bold indicates a proposed change in classification

SUGGESTED FUNCTIONAL CLASSIFICATION SYSTEM

The suggested functional classification system for roadways in North Bend is described below. The functional classification map, Figure 3, shows the suggested classification for all roadways in the city.

General descriptions of the classifications include:

Principal Arterials are typically freeways and state highways that provide the highest level of connectivity. These routes connect over the longest distance (sometimes miles long) and are less frequent than other arterials or collectors.

Minor Arterial streets serve to interconnect and support the principal arterial highway system and are often used as a transition between Principal Arterials and Collectors. These streets link major commercial, residential, industrial and institutional areas.

Major Collector streets provide both access and circulation within residential and commercial/industrial areas. Collectors differ from arterials in that they provide more of a citywide circulation function and do not require as extensive control of access and penetrate residential neighborhoods, distributing trips from the neighborhood and local street system.

Minor Collector streets serve mostly residential or mixed land uses. While through traffic connectivity is not a typical function, they may carry limited amounts.

Local streets have the sole function of providing access to immediate adjacent land. Service to "through traffic movement" on local streets is deliberately discouraged by design.

Depending on the road characteristics and function, neighborhood traffic management measures may be appropriate. However, it should not be construed that these routes automatically get speed cushions or any other measures. While these treatments can be beneficial, neighborhood traffic management is only one means of retaining neighborhood character and vitality.

SUGGESTED FUNCTIONAL CLASSIFICATION CHANGES

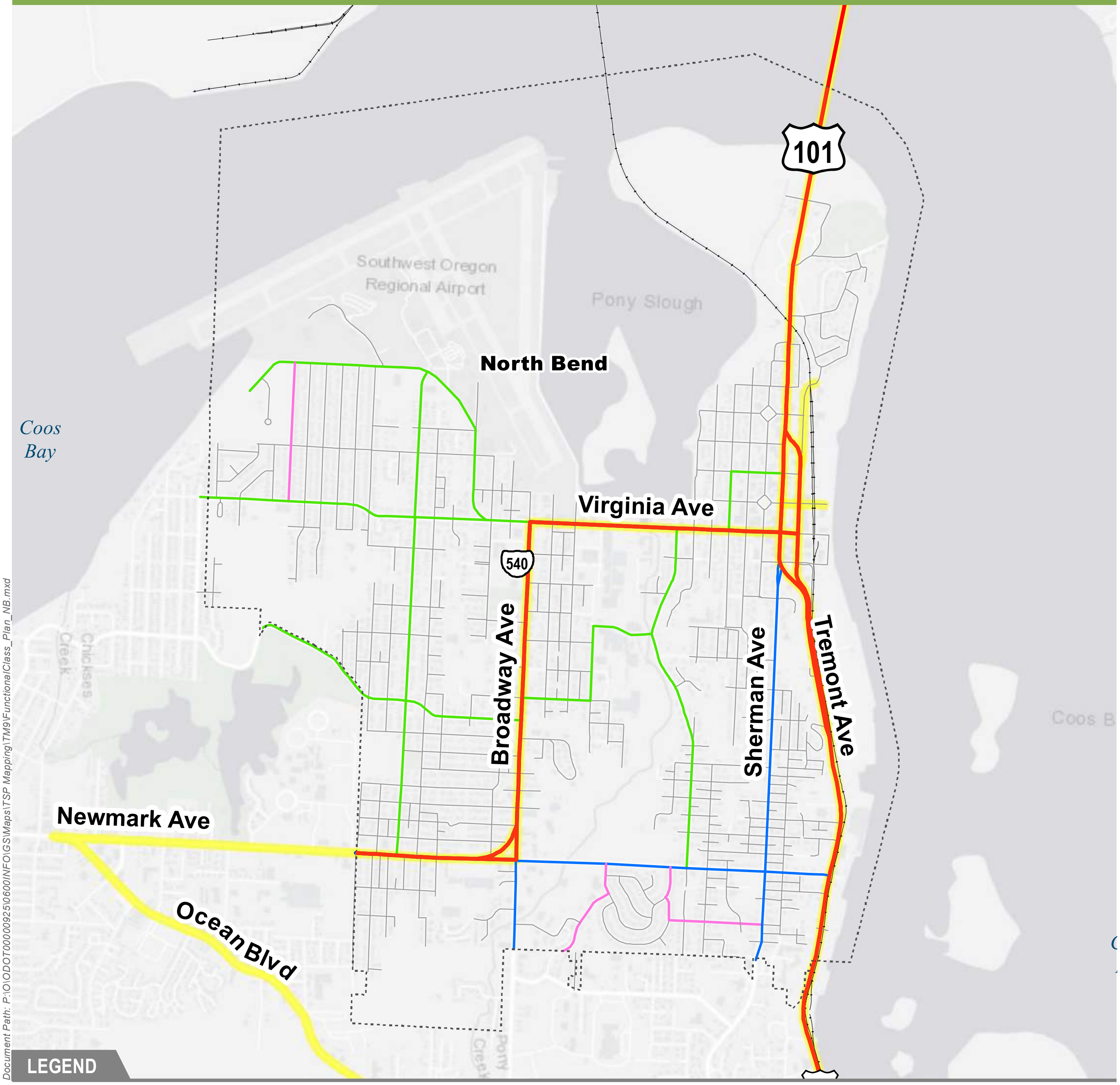
Table 4 summarizes the suggested changes to the existing functional classification of specific streets in North Bend.

Table 4. Proposed City Functional Classification Changes for Existing Streets

Street	Existing City Functional Classification	Proposed Functional Classification
Arthur Street: Colorado Ave to Virginia Ave	Collector	Minor Collector
Colorado Ave: Arthur St to West End	Local	Major Collector

Note: All streets currently classified as Collectors are proposed to become Major Collectors and all streets currently classified as Neighborhood Routes are proposed to become Minor Collectors unless otherwise noted in this table.

Coos Bay/North Bend TSP



Document Path: P:\ODOT00000925\0600INFO\GIS\Maps\TSP Mapping\TM9\FunctionalClass_Plan_NB.mxd

LEGEND

Urban Growth Boundary (UGB)

Functional Classification

State Highway	City	
		Principal Arterial
		Minor Arterial
		Major Collector
		Minor Collector
		Local
		National Highway System

0 0.5 1 Miles

N

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 3. North Bend Proposed Functional Classification Plan

Roadway Improvements

North Bend's preferred alternatives for roadway are summarized in Table 5. It is important to highlight that the community has underscored the need for fixing potholes and addressing pavement condition deficiencies before capital investment in other roadway projects.

Table 5: City of North Bend Preferred Alternatives - Roadway

NB ID	Project Name	Location	Description	Primary Funding Source	Prelim. Cost Estimate (2019 $)
SAFETY					
25	Virginia Ave/Meade Ave Traffic Calming	Virginia Ave at Meade Ave	Traffic calming along Meade and Connecticut: Narrow up street feeling (bulb outs, speed humps, formalize on street parking) -- Mimic aspects of Downtown Streetscape.	North Bend (Urban Renewal)	TBD
26	Washington Ave/US 101 Pedestrian Crossing Enhancements	Washington Ave at US 101 South/Sherman Ave	Enhanced pedestrian signage.	ODOT	$5k-$30k
27	Pony Creek Rd/Crowell Ln Intersection Modification	Pony Creek Rd at Crowell Ln	Tighten radius of western curbs, pavement markings, formalize striping on Pony Creek Rd and consider all-way stop control	North Bend	$50k
28	State St Visibility	OR 540 near State St	Explore enhanced striping/channelization/overhead signage to improve sight distance and driver expectancy.	ODOT	TBD
29	Newmark St/Brussels St Visibility	Newmark St near Brussels St	Improve visibility by repave and restripe	North Bend	$850k
30	Newmark St/Sherman Ave Visibility	Newmark St at Sherman Ave	Improve visibility by repave and restripe	North Bend	$850k
ROADWAY					
31	Fix Potholes	City wide	Fix Potholes. Maintain/fix/strengthen existing pavement system, account for maintenance in funding plan. Critical: Arterials and collectors with fair or worse pavement conditions, such as 16th St, 17th St, Arthur St, Brussels St, Colorado Ave, Crowell Ln, Harrison Ave, Pacific St, Pony Creek St.	North Bend	$16.5M

Notes:

1. Cost estimates are provided for draft alternatives with defined scope/extents. Cost Estimates do not include right-of-way, utility relocation, new utilities or hazmat costs.
2. Cost estimates were not prepared for projects where the scope/extents are undefined (TBD) or included in another adopted plan (N/A).

ODOT = Oregon Department of Transportation; OCBR = Oregon Coast Bike Route; CCAT = Coos County Area Transit; OFP = Oregon Freight Plan; POCB = Port of Coos Bay; CCAD = Coos County Airport District

Air, Water, Rail and Pipeline

The following describes identified needs and improvements related to the air, water, rail, and pipeline modes. The majority of the projects in this section are opportunities for the City to collaborate with, or otherwise support, the lead agency.

Air, Water, Rail and Pipeline Improvements

Table 6: City of North Bend Preferred Alternatives - Other

NB ID	Project Name	Location	Description	Primary Funding Source	Prelim. Cost Estimate (2019 $)
RAIL/TRUCK FREIGHT					
32	Lewis Street/Mill Casino Signal Head	US 101 at Lewis Street/Mill Casino	Address Highway Over-Dimension Load Pinch Point by raising signal head	ODOT (OFP)	$250k
33	California Ave Upgrades	California Ave between Sherman Ave, US 101 and the Dock Facility/North Bend Boardwalk	Address poor pavement condition, widen roadway, improve safety at rail crossing, improve turning movements for one-way portion per OFP	ODOT (OFP); North Bend (pavement)	$2M
MARINE/AIRPORT					
34	North Bend City Dock	City Dock: Virginia Ave/Harbor Ave	Construct a new city dock at the eastern terminus of Virginia Ave (per *Downtown Waterfront District Master Plan*)	North Bend	TBD
35	Marine Ways Enhancements	Charleston boatyard	Improvements that include the Marine Ways	POCB	N/A
36	North Spit Improvements	Oregon Gateway	North Spit improvements to accommodate a multi-modal marine facility to handle bulk cargo, containers and an LNG export facility	POCB	N/A
37	Channel Widening/Deepening	Coos Bay	Federal channel widening and deepening to accommodate larger ships / safer operations	POCB	N/A
38	Charleston Boatyard Dock Replacements	Charleston boatyard	Dock replacements	POCB	N/A
39	Expanded Passenger Service	Airport	Add direct commercial passenger service between Southwest Regional Airport and northwest hubs (Portland)	CCAD	N/A
40	Airport Transit Service	Airport	Provide transit service to airport if air passenger service increases	CCAT	N/A

Notes:
1. Cost estimates are provided for draft alternatives with defined scope/extents. Cost Estimates do not include right-of-way, utility relocation, new utilities or hazmat costs.
2. Cost estimates were not prepared for projects where the scope/extents are undefined (TBD) or included in another adopted plan (N/A).

ODOT = Oregon Department of Transportation; OCBR = Oregon Coast Bike Route; CCAT = Coos County Area Transit; OFP = Oregon Freight Plan; POCB = Port of Coos Bay; CCAD = Coos County Airport District

Safety and Operational Analysis

The projects requiring traffic operational or safety analysis are summarized below. For projects that may impact roadway or intersection capacity, traffic operations are reported for future conditions. For projects developed to specifically address a safety concern, the potential relative crash percentile reduction was determined. Table 7 summarizes the results.

Table 7. North Bend Safety and Operational Analysis

NB ID	Project	Traffic Operations	Crash Reduction Factor: Potential Relative Crash Reduction
BICYCLE			
15a	**Cape Arago Hwy Bicycle Facilities (Virginia Ave):** Provide bicycle facilities on Virginia Ave through parallel route, share use path and coordination with the OCBR	*Project not expected to significantly impact roadway or intersection capacity. Note: A road diet was evaluated but is not a preferred alternative.*	• Install shared use path: 25% Effectiveness
15b	**Cape Arago Hwy Bicycle Facilities (Broadway Ave):** Provide bicycle facilities on Broadway Ave through restriping/road diet and coordination with the OCBR	• No Build: TSP intersections meet mobility targets • With Project: TSP intersections meet mobility targets. Side street movements at 17th expected to experience more delay during peak hour.	• Convert Roadway to 3-Lane Roadway with Center Turn Lane (Road Diet): 29% Effectiveness
15c	**Cape Arago Hwy Bicycle Facilities (Newmark Ave):** Provide a parallel route to Newmark Ave with sharrows and wayfinding on local system.	*Project not expected to significantly impact roadway or intersection capacity.*	• Convert Roadway to 3-Lane Roadway with Center Turn Lane (Road Diet): 29% Effectiveness
30	**Newmark St Bicycle Facilities:** Provide bicycle facilities on Broadway Ave through restriping/road diet and coordination with repaving project	• No Build: TSP intersections meet mobility targets • With Project: TSP intersections meet mobility targets with negligible change from No Build.	• Convert Roadway to 3-Lane Roadway with Center Turn Lane (Road Diet): 29% Effectiveness
SAFETY CONCERN			
25	**Virginia Ave at Meade Ave Traffic Calming:** Narrow up street feeling (bulb outs, speed humps, formalize on street parking) -- Mimic aspects of Downtown Streetscape.	*Project not expected to significantly impact roadway or intersection capacity*	• Install Curb Ramps and Extensions with a Marked Crosswalk and Pedestrian Warning Signs: 37% Effectiveness • Install speed humps: 50% Effectiveness

NB ID	Project	Traffic Operations	Crash Reduction Factor: Potential Relative Crash Reduction
26	**Washington Ave at US 101 South/Sherman Ave Pedestrian Crossing:** Explore options to provide safer pedestrian crossing of highway (curb bulb outs, RRFB, median refuge, lighting, signage). Pedestrian signage is most viable option.	*Project not expected to significantly impact roadway or intersection capacity*	• Install Continental Crosswalk Markings and Advance Pedestrian Warning Signs at Uncontrolled Locations: 15% Effectiveness • Install Rectangular Rapid Flashing Beacon without Median: 10% Effectiveness
27	**Pony Creek Rd at Crowell Ln Traffic Control:** Tighten radius of western curbs, pavement markings, formalize striping on Pony Creek Rd and consider all-way stop control	• No Build: Meets mobility targets • With Project (all-way stop): Meets mobility targets. Delays decrease on Crowell Ln but increase slightly on Pony Creek Rd	• Convert to All-Way Stop Control (From Urban 2-Way or Yield Control): 18-75% Effectiveness • Install Curb Ramps and Extensions with a Marked Crosswalk and Pedestrian Warning Signs: 37% Effectiveness
28	**OR 540 near State St:** Explore enhanced striping/channelization/ overhead signage to improve sight distance and driver expectancy.	*Project not expected to significantly impact roadway or intersection capacity*	• Increase Triangle Sight Distance: 11-56% Effectiveness
29	**Newmark St near Brussels St:** Improve visibility by repaving, restriping and improving signal hardware	*Project not expected to significantly impact roadway or intersection capacity*	• Improve Signal Hardware: 15%-46% Effectiveness
30	**Newmark St at Sherman Ave Visibility:** Improve visibility by repaving, restriping and improving signal hardware	*Project not expected to significantly impact roadway or intersection capacity*	• Install Curb Ramps and Extensions with a Marked Crosswalk and Pedestrian Warning Signs: 37% Effectiveness • Install speed humps: 50% Effectiveness

Notes: Detailed traffic operations are located in the Appendix

City of Coos Bay

Bicycle and Pedestrian

The pedestrian and bicycle plan includes a citywide Bike Route map as well project lists that identify projects to address the needs of bicycles and pedestrians.

Bike Routes

The Bike Route map identifies a citywide network of interconnected bike routes that would enable people to satisfy their daily travel needs within the city or surrounding region by bicycle. As illustrated in Figure 4, the network would provide connections to key local destinations, including schools, parks, the library, downtown Coos Bay, and other identified activity centers. The classifications help define the type of bicycle treatments planned for each roadway. This is an effort to more clearly prioritize and define the "Bicycle Action Plan" in the previous 2004 TSP.

- **Type I Bike Routes (Separated):** These facilities would consist of routes that separate bicycles from vehicular traffic with a physical barrier or striped buffer. Type I Bike Routes in Coos Bay are primarily shared use paths. Type I bike routes are intended to provide more separation and protection for cyclists from vehicles than a standard shoulder or bike lane.
- **Type II Bike Routes (Striped):** These routes would facilitate circulation within Coos Bay using bike lanes with a minimum width of 5 feet. Type II facilities would provide access between residential neighborhoods and local destinations, primarily on collector and arterial streets.
- **Type III Bike Routes (Neighborhood):** These neighborhood shared routes would be located mostly on residential and collector streets with low traffic volumes and speeds. They are designed to provide safe, comfortable, low-stress access within neighborhoods and for individuals of all bicycling confidence levels. Bicycle-specific infrastructure would consist of painted sharrow markings and signage to provide wayfinding. In some cases, Type III bike routes may serve as a parallel route if a Type I or II facility is not feasible on an arterial or collector roadway.

Oregon Coast Bike Route: The OCBR spans the Oregon coastline from Astoria to Brookings, primarily on US 101. It connects coastal communities, recreational destinations and viewpoints. Through Coos Bay, the OCBR is signed along Cape Arago Highway (Newmark Avenue and Empire Boulevard).

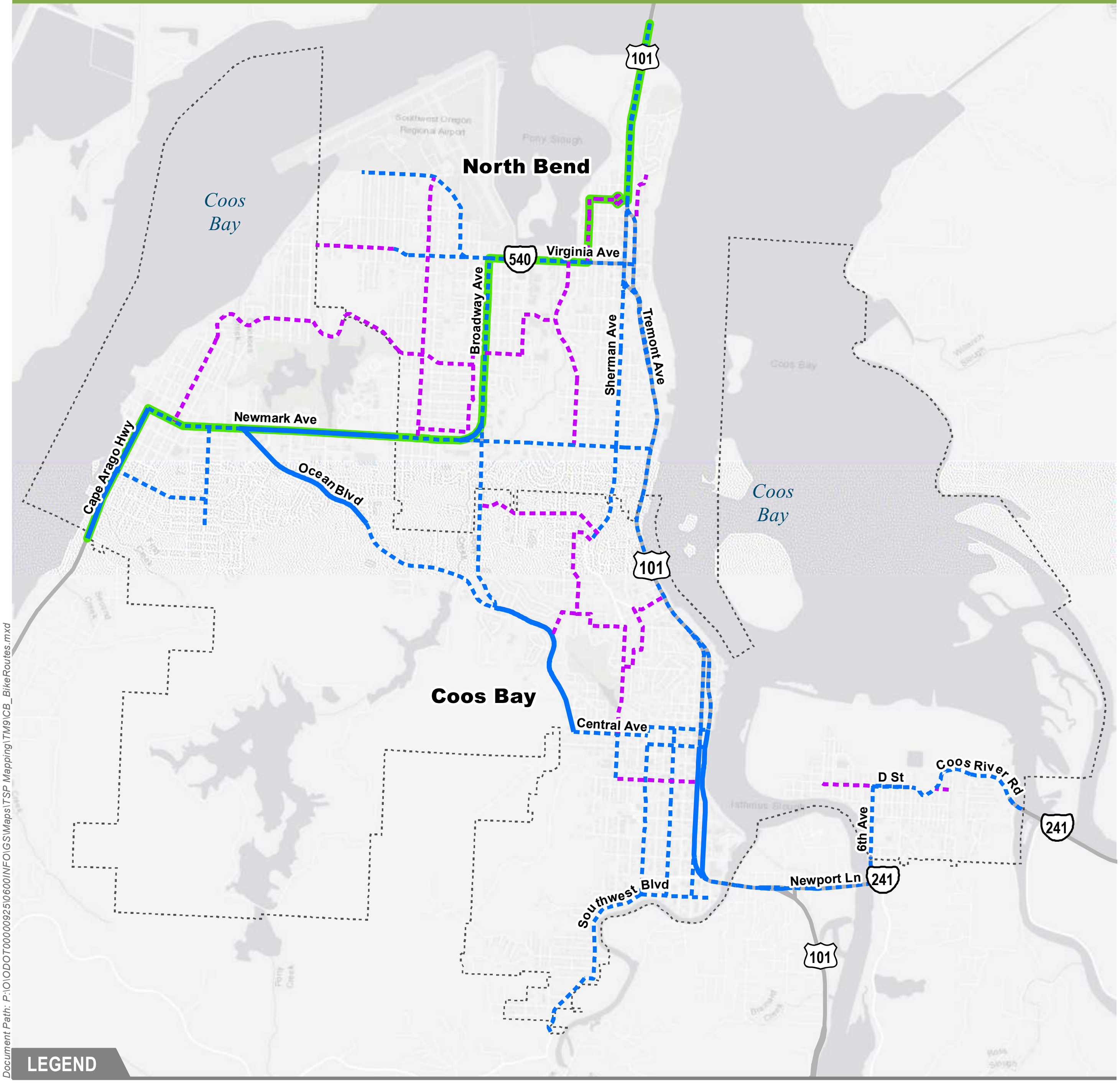
In Coos Bay, the OCBR update is looking at options to extend the route into Downtown Coos Bay via US 101 and Front Street. The City of Coos Bay supports the update of the OCBR and wishes to identify opportunities to attract riders to destinations in their community.

Safe Routes to School

Sidewalk infill, enhanced street crossings, and dedicated bicycle facilities create safer routes between neighborhoods and schools. Improved local street connectivity shortens travel routes through neighborhoods, making walking and biking trips easier. To highlight where bicycle and pedestrian projects fall within a one-mile radius of a school, a boundary will be added to the modal plan maps in the TSP. The one-mile buffer boundary is depicted on Figure 5. ODOT has also developed an online GIS tool that allows users to access information that may support grant applications.[2]

[2] Infrastructure Grant Applicant Resource Tool (ODOT Safe Routes to School): https://geo.maps.arcgis.com/apps/webappviewer/index.html?id=33d00a3d7181433d85abfce78b8ae879

Coos Bay/North Bend TSP



LEGEND

Urban Growth Boundary (UGB)

Bicycle Route Plan

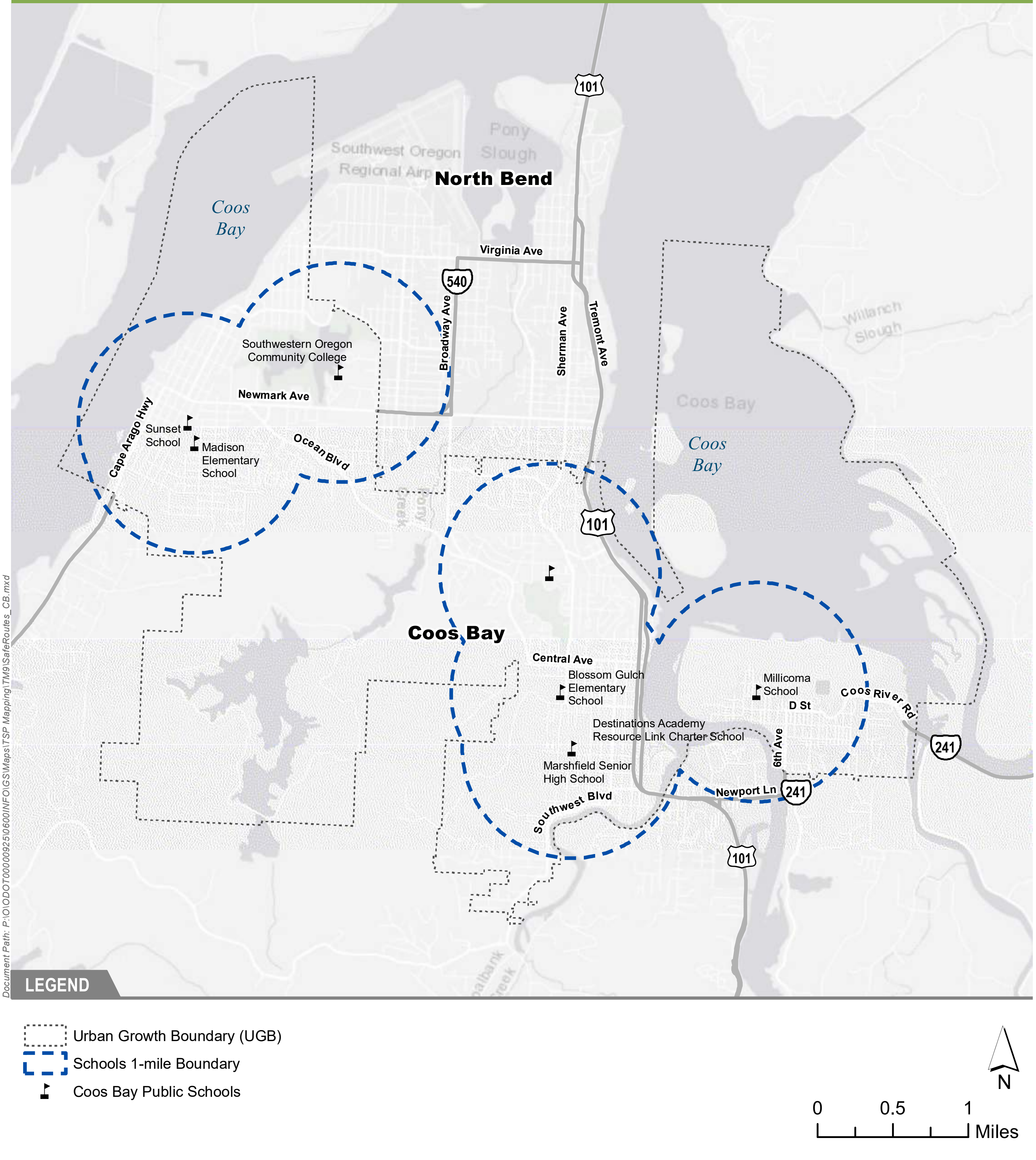
- Future Type I (Separated)
- Future Type II (Striped)
- Existing Type II (Striped)
- Future Type III (Neighborhood Route)
- Oregon Coast Bike Route

0 0.5 1 Miles

N

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 4. Coos Bay Bicycle Route Plan



Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 5. Coos Bay Safe Routes to School Boundary

Bicycle and Pedestrian Improvements

Table 8 summarizes the bicycle and pedestrian projects that are proposed for inclusion in the TSP update. Projects with the school ( ) symbol indicate the project is within a 1-mile radius of a school and may be eligible for Safe Routes to School funding.

Table 8: City of Coos Bay Preferred Alternatives - Bicycle and Pedestrian

CB ID	Project Name	Location	Description	Primary Funding Source	Prelim. Cost Estimate (2019 $)
PLANNED PROJECTS					
1	Front St Blueprint	Front St	This project will be the next step to realizing components of the larger Front Street Action Plan.	ODOT	Funded
PEDESTRIAN					
2	Morrison St Sidewalks	Morrison St: Newmark Ave to Pacific Ave	Upgrade sidewalks on both sides	Coos Bay	$2.5M
3	Mingus Park Wayfinding	Mingus Park	Wayfinding signs to park	Coos Bay	$20k-50k
4	Newmark Ave Pedestrian Improvements	Newmark Ave: Empire Blvd to Fir St	Improve PLTS score through access consolidation, median islands, mid-block ped crossing	Coos Bay	TBD
5	Woodland Dr Pedestrian Improvements	Woodland Dr: North City Limits to Ocean Blvd	Add sidewalks on Woodland Dr, marked ped crossing (access to Hospital/Medical Park)	Coos Bay	$3.2M
6	Thompson Rd Pedestrian Crossing	Thompson Road near Bay Area Hospital	Add marked crossing and mid-block crossing of Thompson Road to access hospital transit stop	Coos Bay	$50k
7	Hospital Way Sidewalk	Hospital Way near Medical Center (Immediate Care Clinic)	Add sidewalk to connect to medical facilities	Coos Bay	$560k
8	Wallace St Pedestrian Improvements	Ocean Blvd at Wallace St (Three Rivers Casino)	Construct sidewalk along Wallace St and add RRFB crossing of Ocean Blvd at Wallace St to connect to transit	Coos Bay	$400k
9	Coos Bay Boardwalk RR Crossing Pedestrian Improvements	Coos Bay Boardwalk (near Anderson Ave and Market Ave)	Construct at-grade multimodal improvements (pavement) to improve crossing of RR tracks.	Coos Bay; Coos Bay Rail	$500k
10	US 101 Downtown Pedestrian Crossings	US 101: Commercial Ave and Alder Ave	Improved bike/pedestrian crossings across US 101 to be consistent with Front Street Action Plan	ODOT	$100k
11	LaClair St Pedestrian Crossing	Ocean Blvd at LaClair St	Construct a pedestrian crossing with RRFB and median refuge	Coos Bay	$200k
12	Front Street Shared Use Path	Front St near Coos History Museum and Maritime Collection	North-south pedestrian pathway along the eastern side of Front St	City/ Private	Funded

CB ID	Project Name	Location	Description	Primary Funding Source	Prelim. Cost Estimate (2019 $)
13	Southwest Blvd Pedestrian Improvements	US 101 to south City Limits	Construct sidewalk on Southwest Blvd. Prioritize segment within Safe Routes to School boundary (California Ave to US 101)	City	$3M
14	Connect the Boardwalks	North Bend, Mill Casino and Coos Bay Boardwalks	Connect the area boardwalks to create a five mile uninterrupted boardwalk.	North Bend; Coos Bay; Private	TBD
BICYCLE					
15	Ocean Blvd Road Diet (Next Phase)	Ocean Blvd	Extend road diet west from Woodland Dr to Lindy Ln	Coos Bay	$115k-300k
16	Newmark Ave Road Diet	Newmark Ave: Cammann St to Wallace St and Hull St to east City Limits (Fir St)	Restripe road to provide bicycle facilities (road diet)	Coos Bay	$50k-$2M
17	Woodland Dr Bicycle Facilities	Woodland Dr: North City Limits to Ocean Blvd	Add bicycle facilities (add sharrows if ROW acquisition not feasible)	Coos Bay	$40k
18	Newport Ln Bicycle Signage/Wayfinding	Newport Ln	Improve bicycle LTS through enhanced signage & wayfinding to connect Coos Bay UGB	Coos County	TBD
19	D St/Coos River Rd Shoulder Widening	D St/Coos River Rd: 6th Ave to East City Limits	Widen paved shoulder and provide enhanced signage & wayfinding	Coos Bay	$1.1M
20	US 101 Southern Bicycle Lanes	US 101: South couplet to Coalbank Slough Bridge	Restripe to accommodate bicycle lane (options for additional signing/striping/ramp at bridge)	ODOT	$20k-75k
21	US 101 Bicycle Facilities	US 101/Front St	Provide bicycle lanes (OCBR priority) through road widening, lane diet or parallel route(s).	ODOT	TBD
22	N 14th St Bicycle Facilities	N 14th St: Teakwood Ave to Juniper Ave	Provide a parallel bike route to Koos Bay Blvd by providing sharrows and wayfinding on N 14th St	Coos Bay	$50,000
23	Front St Bicycle Facilities	Front St	Identify opportunities for bicycle facilities on Front St as development occurs	Coos Bay	As development occurs

Notes:

1. Cost estimates are provided for draft alternatives with defined scope/extents. Cost Estimates do not include right-of-way, utility relocation, new utilities or hazmat costs.
2. Cost estimates were not prepared for projects where the scope/extents are undefined (TBD) or included in another adopted plan (N/A).

ODOT = Oregon Department of Transportation; OCBR = Oregon Coast Bike Route; CCAT = Coos County Area Transit; OFP = Oregon Freight Plan; POCB = Port of Coos Bay; CCAD = Coos County Airport District

Public Transportation

Public transportation service within Coos County is provided by Coos County Area Transit Service District (CCAT) and is not funded directly by the City. Coos Bay can support future transit viability by designing and building streets accessible by pedestrian and bicycle modes.

Transit Projects

The following concepts are suggested as opportunities for the City to collaborate with, or otherwise support, the CCAT in order to improve public transportation services in the Bay Area.

Table 9: City of Coos Bay Preferred Alternatives - Transit

CB ID	Project Name	Location	Description	Primary Funding Source	Prelim. Cost Estimate (2019 $)
TRANSIT					
24	Bay Area Loop Weekend Service	Bay Area Loop	Add weekend service	CCAT	N/A
25	Transit Service Hours	All Transit Routes	Extend service hours	CCAT	N/A
26	Transit Frequency	US 101 & Ocean Blvd Routes	Increase frequency & add additional route	CCAT	N/A
27	Shelters and Stops	All Transit Routes	Add shelters and stops near community destinations	CCAT	N/A
28	Bike/Ped Transit Connectivity	All Transit Routes	Improve bicycle and ped connectivity to stops	Coos Bay	N/A
29	Regional Transit Hub	Bay Area	Support CCAT in their pursuit of regional transit hub	CCAT	N/A
30	Transit Pull Outs	Coos Bay	Work with CCAT to identify locations for transit pull outs on busier streets	CCAT	N/A

Notes:

1. Cost estimates are provided for draft alternatives with defined scope/extents. Cost Estimates do not include right-of-way, utility relocation, new utilities or hazmat costs.
2. Cost estimates were not prepared for projects where the scope/extents are undefined (TBD) or included in another adopted plan (N/A).

ODOT = Oregon Department of Transportation; OCBR = Oregon Coast Bike Route; CCAT = Coos County Area Transit; OFP = Oregon Freight Plan; POCB = Port of Coos Bay; CCAD = Coos County Airport District

Roadway

This section summarizes the updated functional classification plan and the preferred alternatives for streets, freight, bridges, intersections and safety improvements.

Functional Classification Plan

CONSISTENCY WITH FEDERAL NAMING CONVENTIONS

It is important to align Coos Bay's functional classification naming conventions with federal naming conventions as it may facilitate future efforts to obtain federal funding for local improvement projects. Suggested updates to Coos Bay's classification designations are shown in Table 10. The City's previous TSP has a "Neighborhood Route" classification. The proposed classification change would differentiate between major and minor collectors.

Table 10. Proposed Functional Classification Naming Conventions

Existing Classification Name	Proposed Classification Name
Principal Arterial (ODOT)	Principal Arterial (ODOT)
Minor Arterial (ODOT)	Minor Arterial (ODOT)
Arterial	**Minor** Arterial
Collector	**Major Collector**
Neighborhood Route	**Minor Collector**
Local	Local

Bold indicates a proposed change in classification

SUGGESTED FUNCTIONAL CLASSIFICATION SYSTEM

The suggested functional classification system for roadways in Coos Bay is described below. The functional classification map, Figure 6, shows the suggested classification for all roadways in the city.

General descriptions of the classifications include:

> **Principal Arterials** are typically freeways and state highways that provide the highest level of connectivity. These routes connect over the longest distance (sometimes miles long) and are less frequent than other arterials or collectors.
>
> **Minor Arterial** streets serve to interconnect and support the principal arterial highway system and are often used as a transition between Principal Arterials and Collectors. These streets link major commercial, residential, industrial and institutional areas.
>
> **Major Collector** streets provide both access and circulation within residential and commercial/industrial areas. Collectors differ from arterials in that they provide more of a citywide circulation function and do not require as extensive control of access and penetrate residential neighborhoods, distributing trips from the neighborhood and local street system.
>
> **Minor Collector** streets serve mostly residential or mixed land uses. While through traffic connectivity is not a typical function, they may carry limited amounts.
>
> **Local streets** have the sole function of providing access to immediate adjacent land. Service to "through traffic movement" on local streets is deliberately discouraged by design.

Depending on the road characteristics and function, neighborhood traffic management measures may be appropriate. However, it should not be construed that these routes automatically get speed cushions or any other measures. While these treatments can be beneficial, neighborhood traffic management is only one means of retaining neighborhood character and vitality.

SUGGESTED FUNCTIONAL CLASSIFICATION CHANGES

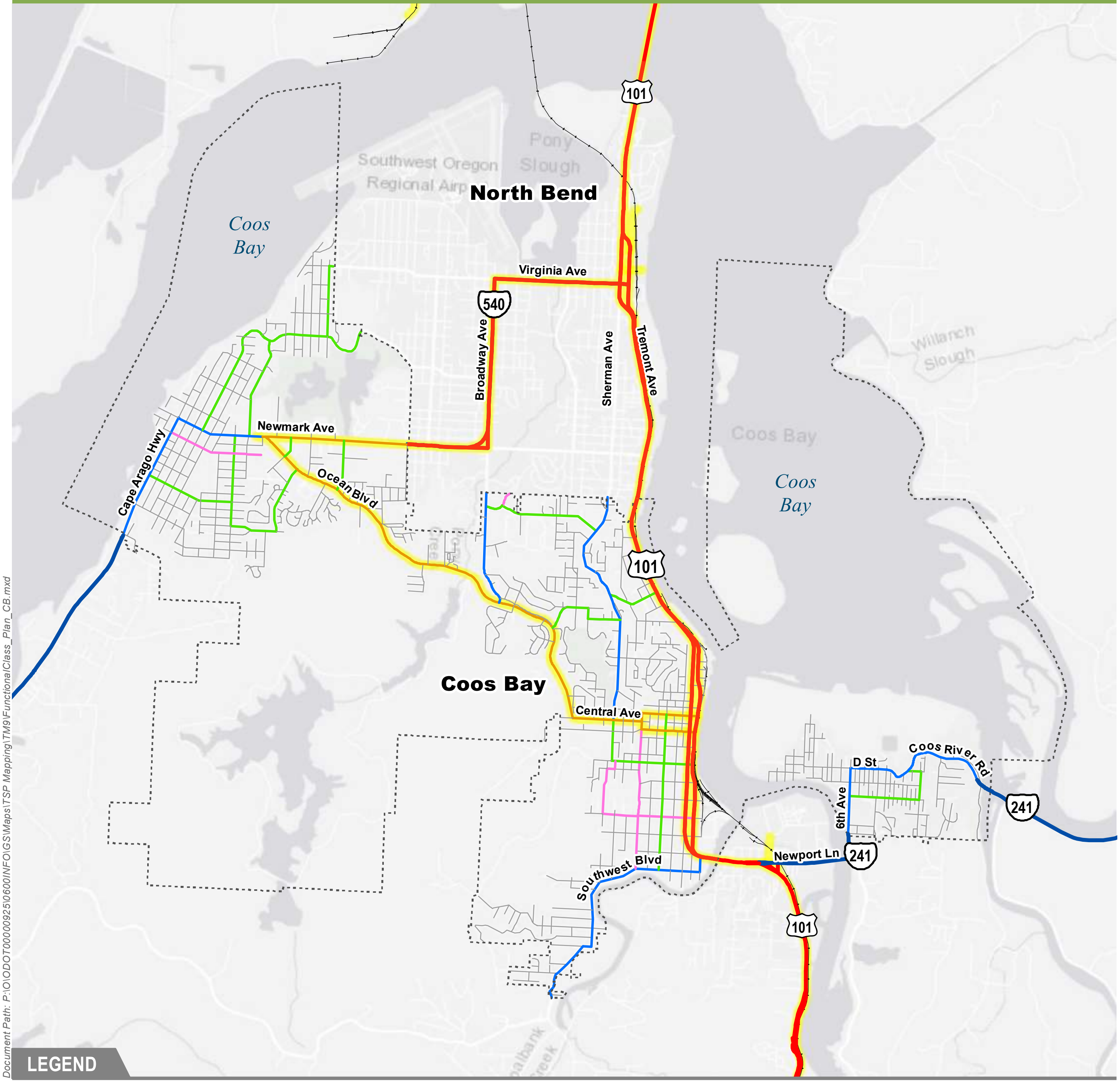
Table 11 summarizes the suggested changes to the existing functional classification of specific streets in Coos Bay.

Table 11. Proposed City Functional Classification Changes for Existing Streets

Street	Existing City Functional Classification	Proposed Functional Classification

Koosbay Blvd: 10th St to US 101	Arterial	Major Collector

Note: All streets currently classified as Collectors are proposed to become Major Collectors and all streets currently classified as Neighborhood Routes are proposed to become Minor Collectors unless otherwise noted in this table.



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Urban Growth Boundary (UGB)

Functional Classification

State Highway | City

- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- National Highway System

0 0.5 1 Miles

N

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

Figure 6. Coos Bay Proposed Functional Classification Plan

Roadway Improvements

Coos Bay's preferred alternatives for roadway are summarized in Table 12. It is important to highlight that the community has underscored the need for fixing potholes and addressing pavement condition deficiencies before capital investment in other roadway projects.

Table 12: City of Coos Bay Preferred Alternatives - Roadway

CB ID	Project Name	Location	Description	Primary Funding Source	Prelim. Cost Estimate (2019 $)
SAFETY CONCERN					
31	Ocean Blvd/19th St Access Management	Ocean Blvd at 19th St	Enhanced channelization of side street to improve safety	Coos Bay	TBD
32	Thompson Ave/Woodland Dr Safety Enhancements	Thompson Ave at Woodland Dr	Restripe the east leg to remove the westbound right-turn bay and make the movement a shared thru/right to improve sight distance.	Coos Bay	$300k
33	Koosbay Blvd/10th St Realignment	Koosbay Blvd at 10th St	Realign intersection to "T" to improve visibility and safety	Coos Bay	TBD
34	US 101/Kruse Ave Access Management	US 101: near Kruse Ave	Access management/channelization	ODOT	$100k
35	S 10th St Curb Extensions	S 10th St: near Central Ave	Curb bump outs (consistent through downtown)	Coos Bay	$40k
36	Ingersoll St Curb Extensions	Ingersoll St: near S 2nd St	Curb bump outs (consistent through downtown)	Coos Bay	$40k
37	7th St Curb Extensions	7th St at Ingersoll Ave	Curb bump outs	Coos Bay	$40k
38	4th Street Safety	4th St: Market Ave to Golden Ave	Restripe to a 3-lane cross-section with sidewalk bump-outs.	Coos Bay	$4.8M
ROADWAY					
39	Schoneman Ave Street Upgrade	Schoneman Ave: Lakeshore Dr to Newmark Ave	Upgrade to collector standard (storm/curb/gutter/sidewalk) and connect to trail system in John Topits Park	Coos Bay	$1.4M
40	Newmark Ave/Ocean Blvd Realignment	Newmark Ave at Ocean Blvd	Provide raised "porkchop" median to shorten crossing distance and provide a pedestrian crossing of Ocean Blvd.	Coos Bay	TBD
41	South Coos Bay Pavement	US 101 South: Johnson Ave to Kruse Ave	Provide landscaping or pedestrian buffer to reduce large, underutilized pavement area on east side of US 101 South.	ODOT; City	$25k
42	S Front St Street Upgrade	US 101 South: Kruse Ave to S Front St	Upgrade S Front St to its arterial standard cross-section and limit access to right-in/right out at Kruse Ave/S 1st St	City	$1-2M
45	Newmark Ave/Empire Blvd Intersection Treatment	Newmark Ave at Empire Blvd	Determine appropriate intersection treatments to improve safety and bike/ped access.	City	TBD

CB ID	Project Name	Location	Description	Primary Funding Source	Prelim. Cost Estimate (2019 $)
43	Pavement Maintenance	City wide	Fix Potholes. Maintain/fix/strengthen existing pavement system, account for maintenance in funding plan. Critical: Central Ave, Southwest Blvd, Koosbay Blvd, Blanco Ave, Radar Rd, Schoneman St, LaClair St, F St, Butler Rd, Juniper Ave and Fulton Ave	Coos Bay	$66M (2015$)
44	Newport Ln/Isthmus Slough Bridge Widening	Newport Ln/Isthmus Slough Bridge	Widen structure to accommodate bicycle and pedestrians. Consider interim option to provide “bicycle warning beacons” on either side of bridge to indicate when bicyclists are present.	County; ODOT	N/A

Notes:

1. Cost estimates are provided for draft alternatives with defined scope/extents. Cost Estimates do not include right-of-way, utility relocation, new utilities or hazmat costs.
2. Cost estimates were not prepared for projects where the scope/extents are undefined (TBD) or included in another adopted plan (N/A).

ODOT = Oregon Department of Transportation; OCBR = Oregon Coast Bike Route; CCAT = Coos County Area Transit; OFP = Oregon Freight Plan; POCB = Port of Coos Bay; CCAD = Coos County Airport District

Safety and Operational Analysis

The projects requiring traffic operational or safety analysis are summarized below. For projects that may impact roadway or intersection capacity, traffic operations are reported for future conditions. For projects developed to specifically address a safety concern, the potential relative crash percentile reduction was determined. Table 13 summarizes the results.

Table 13. Coos Bay Safety and Operational Analysis

CB ID	Project	Traffic Operations	Crash Reduction Factor: Potential Relative Crash Reduction
BICYCLE			
15	**Ocean Blvd Road Diet (Next Phase)** Extend road diet west from Woodland Dr to Lindy Ln	• Turning movements were not collected for this section of Ocean Blvd. • Operations are expected to meet mobility targets, similar to other Ocean Blvd road diet projects.	• Convert Roadway to 3-Lane Roadway with Center Turn Lane (Road Diet): 29% Effectiveness • Install Continental Crosswalk Markings and Advance Pedestrian Warning Signs at Uncontrolled Locations: 15% Effectiveness • Install RRFB without Median: 10% Effectiveness

CB ID	Project	Traffic Operations	Crash Reduction Factor: Potential Relative Crash Reduction
16	**Newmark Ave Road Diet** Restripe road to provide bicycle facilities (road diet) on Newmark Ave from Ackerman Ave to Cammann St	• No Build: TSP intersections meet mobility targets, with the exception of the SB movements at Morrison St • With Project: TSP intersections meet mobility targets, with the exception of the SB movements at Morrison St	• Convert Roadway to 3-Lane Roadway with Center Turn Lane (Road Diet): 29% Effectiveness
SAFETY CONCERN			
31	**Ocean Blvd/19th St Access Management** Enhanced channelization of side street to improve safety by limiting turns onto 19th St from Ocean Blvd	• Turning movements were not collected for this intersection. • Operations expected to improve at 19th St • Volumes expected to shift to Woodland Dr/Ocean Blvd	• CRF not available
32	**Thompson Ave/Woodland Dr Safety Enhancements** Restripe the east leg to remove the westbound right-turn bay and make the movement a shared thru/right to improve sight distance.	• No Build: Intersection meets mobility targets • With Project: Intersection meets mobility targets	• Increase Triangle Sight Distance: 11-56% Effectiveness
33	**Koosbay Blvd/10th St Realignment** Realign intersection to "T" to improve visibility and safety	*Project not expected to significantly impact roadway or intersection capacity*	• Install Curb Ramps and Extensions with a Marked Crosswalk and Pedestrian Warning Signs: 37% Effectiveness • Increase Triangle Sight Distance: 11-56% Effectiveness • Reduce Intersection Skew Angle (Minor Street Stop-Controlled Intersections Only) on 3-Leg intersection (Highway Safety manual – no CRF available)

CB ID	Project	Traffic Operations	Crash Reduction Factor: Potential Relative Crash Reduction
34	**US 101/Kruse Ave Access Management** Upgrade S Front St to its arterial standard cross-section and limit access to right-in/right out at Kruse Ave/S 1st St	• Turning movements were not collected for this intersection. • *Project not expected to significantly impact roadway or intersection capacity*	• Install right-in0right-out operations at stop-controlled intersections: 45% Effectiveness
35-37	**Curb Extensions** • S 10th St Curb Extensions • Ingersoll St Curb Extensions • 7th St Curb Extensions • 4th St Curb Extensions	*Project not expected to significantly impact roadway or intersection capacity*	• Install Curb Ramps and Extensions with a Marked Crosswalk and Pedestrian Warning Signs: 37% Effectiveness • Install speed humps: 50% Effectiveness
ROADWAY			
40	**Newmark Ave/Ocean Blvd Realignment** Reconfigure turn lanes to increase safety and decrease pedestrian crossing distance.	• No Build: Intersection meets mobility targets • With Project: Intersection meets mobility targets	• Channelized Right Turn Lane with Raised Median: 25%-50%

Notes: Detailed traffic operations are located in the Appendix

Air, Water, Rail and Pipeline

The following describes identified needs and improvements related to the air, water, rail, and pipeline modes. The majority of the projects in this section are opportunities for the City to collaborate with, or otherwise support, the lead agency.

Air, Water, Rail and Pipeline Improvements

Table 14: City of Coos Bay Preferred Alternatives - Other

CB ID	Location		Description	Primary Funding Source	Prelim. Cost Estimate (2019 $)
RAIL/TRUCK FREIGHT					
46	Market Ave/Front St RR Crossing Upgrade	Market Ave at Front St	Install at-grade rail active warning device	Coos Bay Rail	See Project 9
47	Central Dock Rd RR Crossing Upgrade	US 101 at US plywood-Central Dock Rd	Install at-grade rail active warning device	Coos Bay Rail	$500k
48	US 101/Curtis Ave Signal Head Upgrade	US 101 at Curtis Ave	Address Highway Over-Dimension Load Pinch Point by raising signal head	ODOT (OFP)	$50k-100k
49	US 101/Koosbay Blvd Upgrades	US 101 at Koosbay Blvd	Make modifications to accommodate high heavy vehicle volumes per OFP	ODOT (OFP)	TBD

CB ID	Location		Description	Primary Funding Source	Prelim. Cost Estimate (2019 $)
50	US 101/Commercial Ave Upgrades	US 101 South at Commercial Ave	Make modifications to accommodate high heavy vehicle volumes per OFP	ODOT (OFP)	TBD
51	US 101 North/Johnson Ave Upgrades	US 101 North at Johnson Ave	Make modifications to accommodate high heavy vehicle volumes per OFP	ODOT (OFP)	TBD
MARINE/AIRPORT					
52	Marine Ways Enhancements	Charleston boatyard	Improvements that include the Marine Ways	POCB	N/A
53	North Spit Improvements	Oregon Gateway	North Spit improvements to accommodate a multi-modal marine facility to handle bulk cargo, containers and an LNG export facility	POCB	N/A
54	Channel Widening/Deepening	Coos Bay	Federal channel widening and deepening to accommodate larger ships and ensure safer operations	POCB	N/A
55	Charleston Boatyard Dock Replacements	Charleston boatyard	Dock replacements	POCB	N/A
56	Expanded Passenger Service	Airport	Add direct commercial passenger service between Southwest Regional Airport and northwest hubs (Portland)	CCAD	N/A
57	Airport Transit Service	Airport	Provide transit service to airport if air passenger service increases	CCAT	N/A

Notes:

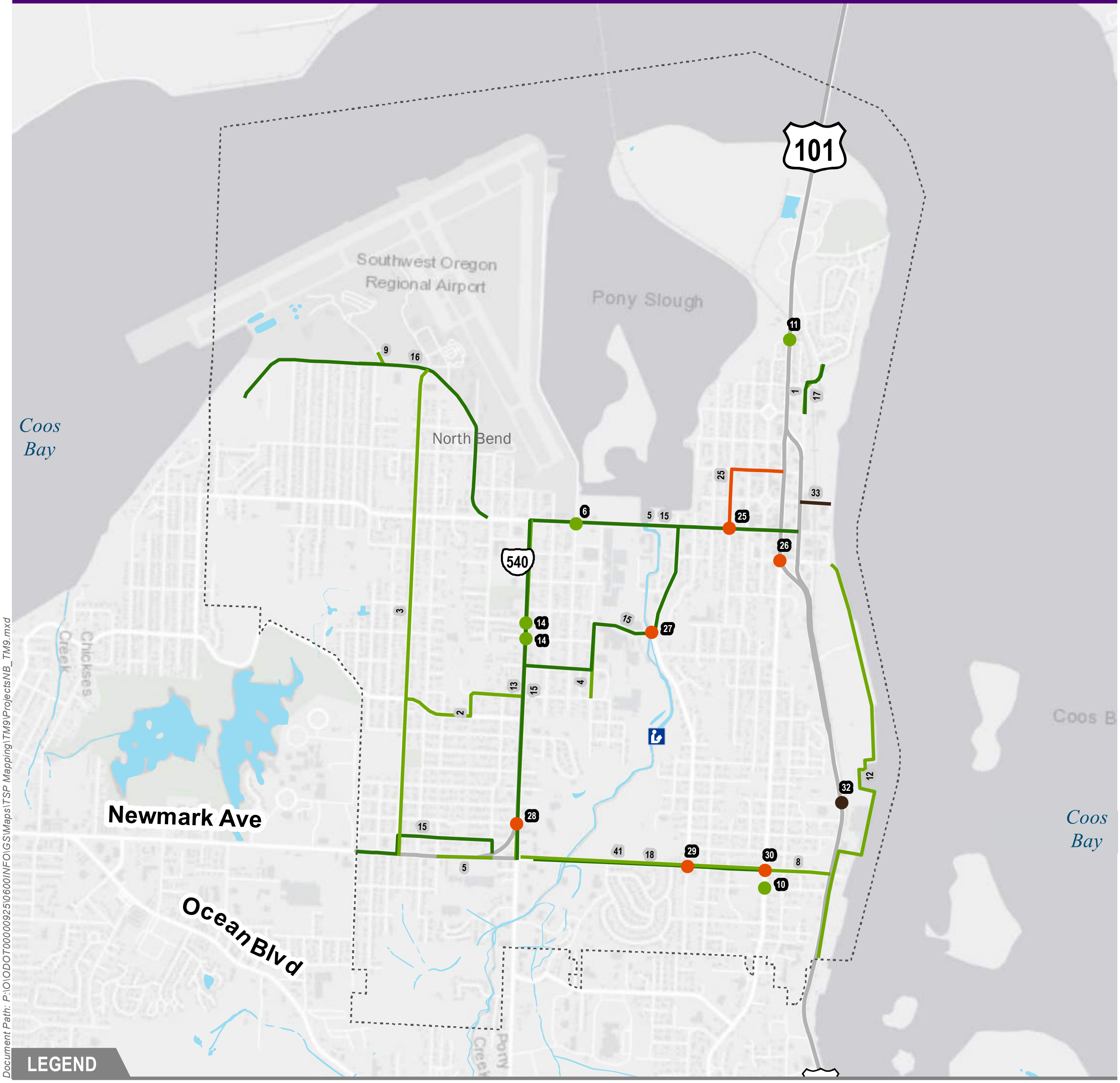
1. Cost estimates are provided for draft alternatives with defined scope/extents. Cost Estimates do not include right-of-way, utility relocation, new utilities or hazmat costs.
2. Cost estimates were not prepared for projects where the scope/extents are undefined (TBD) or included in another adopted plan (N/A).

ODOT = Oregon Department of Transportation; OCBR = Oregon Coast Bike Route; CCAT = Coos County Area Transit; OFP = Oregon Freight Plan; POCB = Port of Coos Bay; CCAD = Coos County Airport District

Preferred Project Maps

The project locations for North Bend and Coos Bay are summarized in Figure 7 and Figure 8, respectively. City wide projects such as pavement maintenance and transit service enhancements are not displayed as their location is not fixed.

North Bend TSP



LEGEND

Urban Growth Boundary (UGB)
Schools 1-mile Boundary
Coos Bay Public Schools
Post Office
City Hall

Projects (by primary mode)

Spot Locations ID#	Segments ID #
Pedestrian	Pedestrian
Transit	Bicycle
Roadway	Roadway
Rail/Truck Freight	Rail/Truck Freight
Safety	Safety
Marine/Airport	

N

0 0.25 0.5 Miles

Data Sources:
Cities of North Bend and Coos Bay,
Oregon Department of Transportation (ODOT),
Oregon Geospatial Enterprise Office,
ESRI ArcGIS Online

FIGURE 7. North Bend Preferred Projects

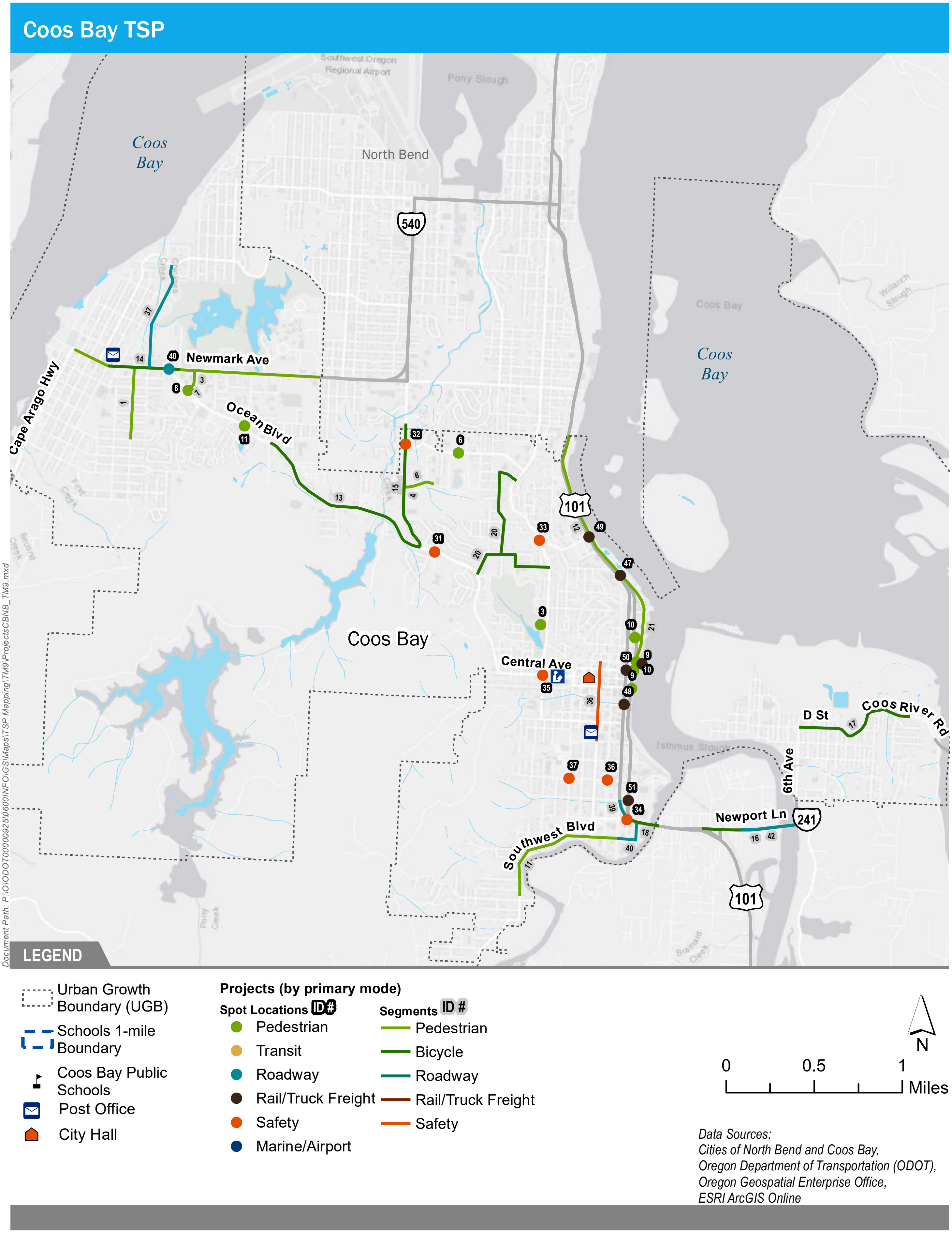


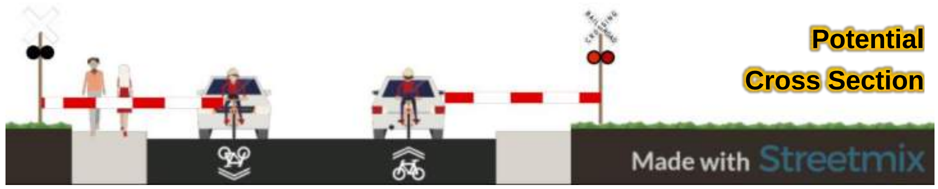
FIGURE 8. Coos Bay Preferred Projects

Project Sheets

Project sheets were developed for several of the preferred alternatives to highlight important features of the project area and to serve as a resource for future project development. The project sheets include a description of the proposed project and possible options and considerations for design elements. Not all of the preferred alternatives have a project sheet; they were created for projects that benefit from additional details or figures.

The images provided in this document are conceptual and for planning purposes only. Should a project be selected by the City or ODOT to be pursued further, the design features and cost estimates will be refined through the engineering process.

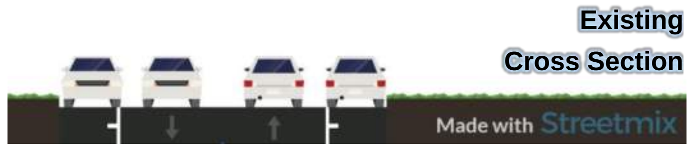
NB-1
Sheridan Avenue Pedestrian Improvements



Purpose	• Provide safe pedestrian connection from Simpson Heights neighborhood to downtown North Bend. • Modernize to local road standard.	
Description	Add sidewalks on Sheridan Avenue between Florida Avenue and Bayview Avenue and upgrade RR crossing to provide activated crossing of existing passive at grade crossing.	
Location	Sheridan Ave: Florida Ave to Bayview Ave	
Roadway Characteristics	• Local road • Pavement Width: 20-24' • Lanes: 2 • No curb, gutter or sidewalk. • Posted speed: 25 mph • At-grade rail crossing (cross bucks and stop signs) • Existing (2018) ADT: <500 veh/day • Forecast (2040) ADT: <500 veh/day	5-Year Crash History (2012-2016): • No reported crashes
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Lacks pedestrian facilities • Lacks bicycle facilities • Rail traffic is expected to increase • Substandard roadway width for local street classification	**With Improvement** • Pedestrian facilities from new sidewalks • Widened roadway could provide for more comfortable shared travel between bicycles and pedestrians • Active warning signs could improve safety
Additional Considerations	• Road Authority: City of North Bend • This is a public rail crossing and will need to be coordinated with ODOT Rail • Environmental constraints: None • Sheridan Avenue is part of the route for North Bend's annual July Jubilee Jaunt 5k fun run. • Design features: Could consider providing sharrows on Sheridan to provide route for bicycles	
Cost Opinion	Cost: $1.4 million (includes cost for upgraded rail crossing) *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Could be triggered with a pavement maintenance project • Medium priority due to low traffic volumes and seasonal pedestrian use	

NB-2 | *North Bend*

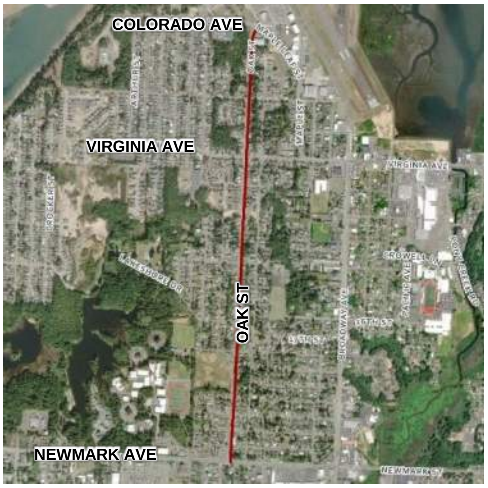
16th St/17th St Pedestrian Connectivity | *Transportation System Plan*



Purpose	• Fill in sidewalk to enhance pedestrian connectivity to extend sidewalks west of Broadway Avenue to provide connection to High School and Middle School on east side of Broadway Avenue • Provide sidewalks on a collector street	
Description	Add sidewalk on 16th Street, Madrona Street and 17th Street to provide connectivity to schools east of Broadway Ave via 16th Street.	
Location	16th St: Broadway Ave to Madrona St Madrona St: 16th St to 17th St 17th St: Madrona Ave to Oak St	
Roadway Characteristics	• Madrona St and 16th St: Local road • 17th St: Major Collector • Lanes: 2 • Pavement Widths: 28-36’ • Sidewalk present on north side of 16th St • Posted speed: 25 mph • Existing (2018) ADT: 500-1,000 veh/day • Forecast (2040) ADT: 1,000-1,500 veh/day	5-Year Crash History (2012-2016): • Oak St at 16th/17th St: 1 crash • Broadway Ave at 16th St: 13 crashes • Broadway Ave at 17th St: 9 crashes • Intersections do not exceed critical crash rate or 90th percentile crash rate
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Lacks pedestrian facilities • Lacks bicycle facilities • Substandard roadway cross-section for Local and Major Collector street classification	**With Improvement** • Pedestrian facilities from new sidewalks • Separates pedestrians from vehicular traffic. • Formalized pedestrian connections to schools
Additional Considerations	• Road Authority: City of North Bend • Environmental constraints: None • Provides access to high ground outside tsunami hazard area • Design features: Could consider just providing sidewalk on one side as an interim project. Suggest the east or west side of Madrona Street and the north side of 17th Street. • The grade of the road increases between Broadway Ave and Oak St • If desired to upgrade to roadway cross-section standard, property impacts would be needed to meet ROW requirements of a Major Collector (current code dictates 50’ minimum street width)	
Cost Opinion	Cost: $2.1 million (includes cost for ADA ramp improvements) *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Could be triggered with a pavement maintenance project • Medium priority	

NB-3 | ***North Bend***

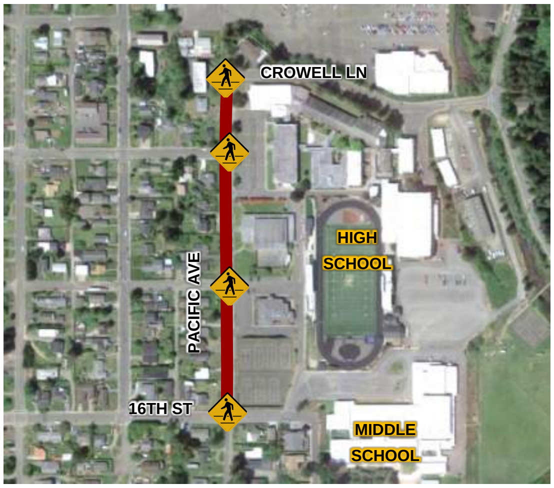
Oak Street Neighborhood Greenway | ***Transportation System Plan***



Purpose	• Improves comfort of the pedestrian and bicycle network • Neighborhood traffic calming (slow speeds) • Parallel bicycle and pedestrian route to higher traffic speed/volume road	
Description	Establish Neighborhood Greenway along Oak Street (provide traffic calming measures and wayfinding) to improve pedestrian environment. Prioritize corridor for sidewalk infill.	
Location	Oak St: Colorado Ave/Maple Leaf St to Newmark Ave	
Roadway Characteristics	• Oak St: Major Collector • Lanes: 2 • Pavement Width: 33’-36’ • Limited sidewalk (only near Oak St Park Fields) • Posted speed: 25 mph • Existing (2018) ADT: 1,000-2,500 veh/day • Forecast (2040) ADT: 1,000-2,500 veh/day	5-Year Crash History (2012-2016): • 18 crashes along Oak St (primarily south of 16th St/17th St) • Intersections do not exceed critical crash rate or 90th percentile crash rate
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Gaps in the sidewalk system • Lacks bicycle facilities • Substandard roadway cross-section for Major Collector street classification	**With Improvement** • Pedestrian facilities from new sidewalks • Bicycle facilities through striping sharrows • Separates pedestrians from vehicular traffic. • Formalized pedestrian connections to schools
Additional Considerations	• Road Authority: City of North Bend • Environmental constraints: None • Provides access to high ground outside tsunami hazard area • If desired to upgrade to roadway cross-section standard, property impacts would be needed to meet ROW requirements of a Major Collector (current code dictates 50’ minimum street width). Concept does not consider widening roadway. • Design features: Sharrows must be accompanied by proper “share the road” signage. Wayfinding could be added to indicate this is a bicycle route. If speed limits are a concern, a radar speed limit sign could be added to remind drivers of their speed.	
Cost Opinion	Cost: $2.1 million (includes cost for ADA ramp improvements) *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Sharrows could be striped with a pavement maintenance project • Prioritize sidewalk infill between Newmark Ave and 16th St/17th St to connect to community destinations • Signing and striping a high priority, sidewalk infill is medium priority	

NB-4 | *North Bend*

North Bend High School Pedestrian Crossings | *Transportation System Plan*



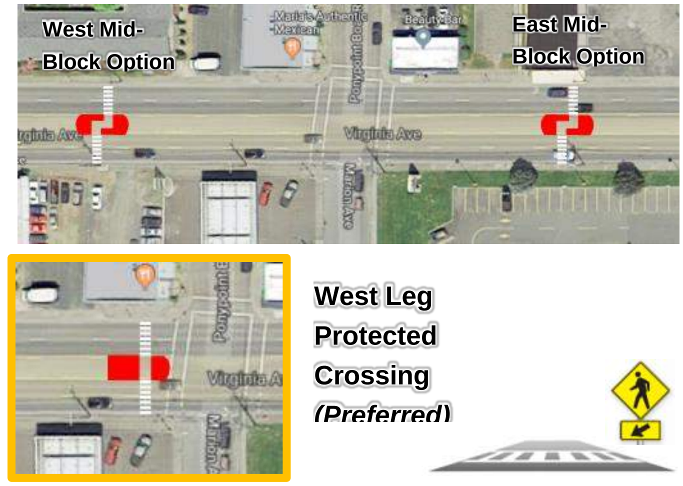
Purpose	• Improves comfort of the pedestrian network • Addresses curb ramp deficiencies • Provides enhanced road crossing/visibility near school	
Description	Provide a sidewalk on west side of Pacific Avenue and upgrade pedestrian crossing visibility and curb ramps at the intersections.	
Location	Pacific Ave: Crowell Ln to 16th St	
Roadway Characteristics	• Pacific Ave: Major Collector • Lanes: 2 • Pavement Width: 33' • Sidewalk on east side only • Posted speed: 20 mph (school zone) • Existing (2018) ADT: 1,000-1,500 veh/day • Forecast (2040) ADT: 1,000-1,500 veh/day	5-Year Crash History (2012-2016): • 2 crashes along Pacific Ave • Intersections do not exceed critical crash rate or 90th percentile crash rate
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Sidewalks on one side only and substandard ADA ramps adjacent to school • Lacks bicycle facilities • Substandard roadway cross-section for Major Collector street classification	**With Improvement** • Pedestrian facilities from new sidewalks • Enhanced crossing safety and visibility
Additional Considerations	• Road Authority: City of North Bend • Environmental constraints: None • If desired to upgrade to roadway cross-section standard, property impacts would be needed to meet ROW requirements of a Major Collector (current code dictates 50' minimum street width). Concept does not consider widening roadway. • Design features: Signing and striping should be done simultaneously. Sidewalk improvements can be a secondary phase if desired. • If used, the In-Street Pedestrian Crossing sign shall be placed in the roadway at the crosswalk location, the center line, on a lane line, or on a median island. The In-Street Pedestrian Crossing Sign shall not be post-mounted on the left-hand or right-hand side of the roadway.	
Cost Opinion	Cost: $730,000 (includes cost for ADA ramp improvements) *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Striping could be paired with a pavement maintenance project • Signing, striping and ramps a high priority, sidewalk infill is medium priority since sidewalk already exists on one side of the street	

NB-5 | *North Bend*
Virginia Ave Access Consolidation | *Transportation System Plan*

Consolidate driveways where alternate access is available.

Purpose	• Improves comfort and safety of the pedestrian network • Addresses curb ramp deficiencies	
Description	Identify opportunities for access consolidation (with redevelopment/change of use) for closely spaced driveways.	
Location	Virginia Ave (OR 540): US 101 southbound to Broadway Ave (MP 0 – MP 0.77)	
Roadway Characteristics	• Principal Arterial/District Highway • Lanes: 4-5 • Pavement Width: 50’-60’ • Posted speed: 25-30 mph • Lacking dedicated bicycle facilities, limited protected pedestrian crossing opportunities • Existing sidewalk, curb and gutter • Existing (2018) ADT: 10,000 – 15,000 veh/day • Forecast (2040) ADT: 18,000 – 20,000 veh/day	5-Year Crash History (2012-2016): • Of the nearly 150 crashes reported on this segment of Virginia Ave, three were pedestrian related • There was one fatal and one serious injury collision at the intersection of Meade/Virginia
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Substandard ADA ramps • Several driveways/accesses	**With Improvement** • Improved pedestrian level of traffic stress • Enhanced driveway crossing safety and visibility • Reduced conflict points for vehicles
Additional Considerations	• Road Authority: ODOT • Environmental constraints: None • Airport overlay zone • Project should not remove access unless an alternate access is available or provided. • Design features: Consider emergency vehicle access, limit impacts to business.	
Cost Opinion	Cost: TBD with design refinement	
Implementation	• Could be paired with a pavement maintenance or sidewalk project • Project could be paired with ADA ramp work. • Other ways to improve ped level of stress: Provide wider sidewalk or landscape buffer.	

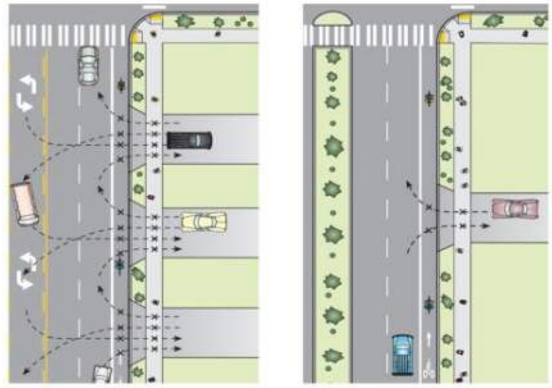
NB-6 Virginia Ave Pedestrian Crossing		*North Bend* *Transportation System Plan*



Purpose	• Improves comfort of the pedestrian network • Addresses curb ramp deficiencies • Provides formal pedestrian crossing of Virginia Ave between Broadway Ave and Pony Village	
Description	Provide a pedestrian crossing between Broadway Ave and Pony Creek Village.	
Location	Virginia Ave (OR 540): US 101 southbound to Broadway Ave (MP 0 – MP 0.77)	
Roadway Characteristics	• Principal Arterial/District Highway • Lanes: 4-5 • Pavement Width: 50’-60’ • Posted speed: 25-30 mph • Lacking dedicated bicycle facilities, limited protected pedestrian crossing opportunities • Existing sidewalk, curb and gutter • Existing (2018) ADT: 10,000 – 15,000 veh/day • Forecast (2040) ADT: 18,000 – 20,000 veh/day	5-Year Crash History (2012-2016): • Of the nearly 150 crashes reported on this segment of Virginia Ave, three were pedestrian related
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Substandard ADA ramps • Several driveways/accesses • Lacks bicycle facilities • Existing pedestrian crossing at Marion Ave is not an ODOT approved crossing.	**With Improvement** • Improved pedestrian level of traffic stress • Enhanced crossing safety and visibility
Additional Considerations	• Road Authority: ODOT • Environmental constraints: None • Airport overlay zone • Project should maintain westbound left-turn onto Marion Ave from Virginia Ave. • Design features: Consider emergency vehicle access, limit impacts to business access. Consider continental striping of crosswalks for higher visibility. Need a median refuge. Volumes do not warrant a HAWK signal.	
Cost Opinion	Cost: TBD with design refinement	
Implementation	• Could be paired with a pavement maintenance project • Pedestrian crossing is a priority west of Pony Village since current crossing at Marion Ave is unapproved. • Project could be paired with ADA ramp work. • Other ways to improve ped level of stress: Tighten curb and add continental striping of Marion Ave • Pedestrian crossing on ODOT facilities requires ODOT engineering approval	

NB-7 | ***North Bend***
Newmark Avenue Access Management | ***Transportation System Plan***

Access Consolidation and Non-traversable Median



Oregon Bicycle and Pedestrian Design Guide (Figure I-9)

Turn Restrictions

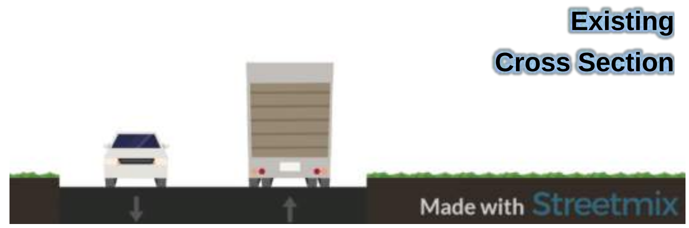
Mutcd.fhwa.dot.gov

Purpose	• Move toward access spacing goals • Consolidate multiple full access points • Decrease vehicular conflict points (safety concern) • Narrow up feeling of Newmark Ave	
Description	Provide access management measures on Newmark Ave between Broadway Ave and Cedar St by installing a non-traversable median. Considering maintaining a full movement access or right-in, right-out, left-in access to property on south side of Newmark Ave.	
Location	Newmark Ave (OR 540): Broadway Ave to Cedar St (M.P. 1.81 to 1.99)	
Roadway Characteristics	• Principal arterial/ODOT District Highway • Lanes: 5 • Pavement Width: 64' • Sidewalk on east side only • Posted speed: 30-35 mph • Existing (2018) ADT: 15,000-20,000 veh/day • Forecast (2040) ADT: 20,000-25,000 veh/day	5-Year Crash History (2012-2016): • 49 crashes along Newmark Ave in this section, mostly turning related • Broadway Ave at Newmark Ave/St exceeds critical crash rate and 90th percentile crash rate (1.12 creash/mev) • One fatality just west of location near Oak St
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Doesn't meet access spacing recommendations • Trend in turning related collisions	**With Improvement** • Reduced conflict points • Anticipated reduction in turning collisions
Additional Considerations	• Road Authority: ODOT • Environmental constraints: None • A STIP project is planned for the intersection of Newmark Ave at Broadway Ave that impacts Newmark Ave and includes some minor access management measures. • Design needs to maintain some access to businesses. • Consider impacts to Broadway Ave if traffic is diverted to the existing driveway there.	
Cost Opinion	Cost: $175000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Could consider implementing with STIP project planned in vicinity. • Need to conduct pedestrian access study with the addition of a non-traversable median. • Potential crossing at Cedar St. • High priority	

NB-8 | *North Bend*

Newmark Street Half Street Improvement

Transportation System Plan

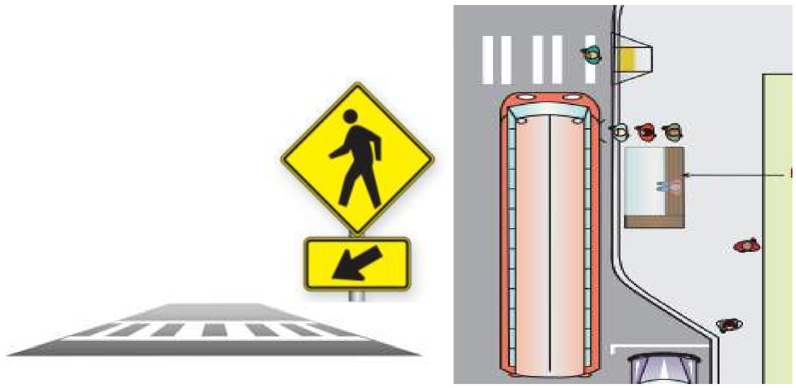


Purpose	Provide bicycle and pedestrian east-west connectivity from US 101. This project would provide facilities for cyclists and pedestrians and establish Newmark Street as a key east-west connection in North Bend's bike and pedestrian network.	
Description	Construct a half street improvement on Newmark Street from Sherman Ave to US 101 to provide bicycle and pedestrian facilities and move toward the arterial roadway standard cross-section.	
Location	Newmark St: Sherman Ave to US 101	
Roadway Characteristics	• Arterial • Lanes: 2-3 • Pavement Width: 33'-53' • No sidewalks or bike lanes • Posted speed: 25 mph • Existing (2018) ADT: 11,000-13,000 veh/day • Forecast (2040) ADT: 13,000-15,000 veh/day • Steep grade change west of US 101	5-Year Crash History (2012-2016): • 70 crashes along Newmark St in this section • US 101 at Newmark St exceeds critical crash rate and 90th percentile crash rate (1.11 creash/mev)
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Limited number of east-west connections between Broadway Ave and US 101 • Trend in turning related collisions • No sidewalks or bike lanes on this section of Newmark St • Future v/c expected to be at or exceeding mobility target	**With Improvement** • East-west bicycle and pedestrian connectivity • Separates bike/peds from vehicles on an uphill grade • Partial modernization of an Arterial road
Additional Considerations	• Road Authority: North Bend, near ODOT facility of US 101 • Environmental constraints: None • Available ROW is 80' • Could have property and utility impacts on north side of road	
Cost Opinion	Cost: $1 million *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Could be part of a pavement preservation project • High priority	

NB-9
North Bend Senior Activity Center Pedestrian Improvements

North Bend
Transportation System Plan

Potential
Crosswalk Treatment and Signing

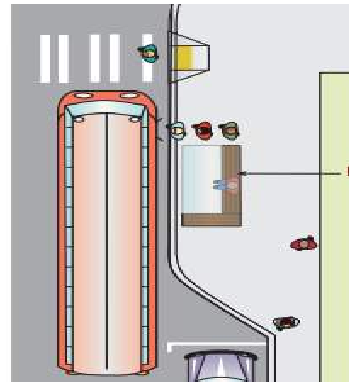


Purpose	• Provide a marked crossing to enhance pedestrian access to transit stop • Improve pedestrian connectivity to community features (Airport Heights Park and North Bend Senior Activity Center)	
Description	Construct a marked crossing of Colorado Avenue to provide access to the transit stop and construct sidewalk connection (or multiuse path) from the activity center to the bus stop.	
Location	Airport Lane (west side) and Colorado Avenue (north side) to connect North Bend Senior Activity Center to Airport Heights Park bus stop.	
Roadway Characteristics	• Major Collector • Lanes: 2 • Pavement Width: 42’, poor pavement • Posted speed: 25 mph • Varied on-street parking • Lacking dedicated bicycle facilities • Existing sidewalk (varies), curb and gutter • Existing (2018) ADT: <1,000 veh/day • Forecast (2040) ADT: <1,000 veh/day	5-Year Crash History (2012-2016): • 5 total crashes on this segment of Maple/Colorado Ave
How Improvement Addresses Deficiencies	**<u>Existing/Future Deficiency</u>** • No marked crossing of Colorado Ave at Airport Heights Park and transit stop • No sidewalk on north side of Colorado Ave or west side of Airport Ln	**<u>With Improvement</u>** • Pedestrian connectivity between community features • Improved access to transit
Additional Considerations	• Road Authority: North Bend • Environmental constraints: Near leaking underground storage tank. Tribal land parcel to south ~ ¼-mile • A less expensive option could be to provide a multiuse path connection through the park from the activity center to the bus stop.	
Cost Opinion	Cost: $375,000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Low priority • Could coordinate with CCTD to consider enhanced transit stop amenities • Should consider how design would work if bicycle lanes are striped on Colorado Ave.	

NB-10
Boynton Park Pedestrian Crossing

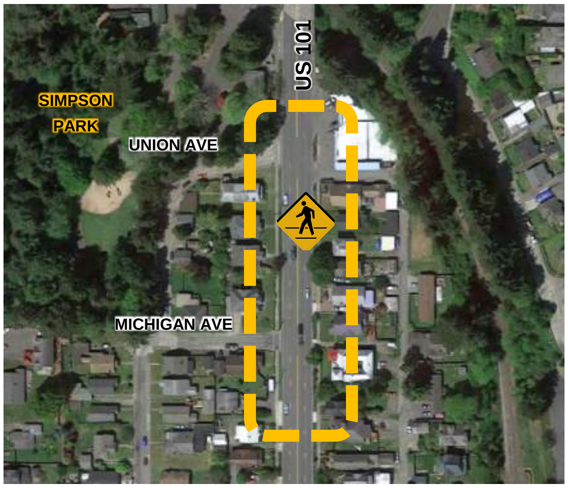
North Bend
Transportation System Plan

Potential Crosswalk Treatment and Signing



Purpose	• Provide a marked crossing to enhance pedestrian access to transit stop • Improve pedestrian connectivity to community features (Boynton Park)	
Description	Construct a marked crossing of Sherman Avenue at Exchange Street to provide access to the transit stop and Boynton park.	
Location	Sherman Ave at Exchange St (near transit stop and park trail)	
Roadway Characteristics	• Arterial • Lanes: 2 • Pavement Width: 50’ • Posted speed: 25 mph • Sidewalk, on street parking and landscape buffer • Existing (2018) ADT: 6,000-8,000 veh/day • Forecast (2040) ADT: 6,000-8,000 veh/day • Grade change south of Exchange St	5-Year Crash History (2012-2016): • Off-State Facility 10% SPIS site (2016) • No reported crashes at the intersection of the proposed crossing
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • No marked crossing of Sherman Ave at Boynton Park trail head and transit stop • Visibility of pedestrians crossing at the bottom of a hill	**With Improvement** • East-west pedestrian connectivity • Improved access to transit
Additional Considerations	• Road Authority: North Bend • Environmental constraints: None • Available ROW is 80’ • Could consider providing curb bulb outs as well but would need to coordinate design with transit stop • Design should consider removing parking in spaces on Sherman Ave that could block sight of pedestrians waiting to cross	
Cost Opinion	Cost: $65,000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• High priority • Could coordinate with CCTD to consider enhanced transit stop amenities	

NB-11 Simpson Park US 101 Pedestrian Crossing		*North Bend* *Transportation System Plan*



Purpose	• Enhance pedestrian access across US 101 in Northwest North Bend • Improve pedestrian connectivity to community features (Simpson Park)	
Description	Construct a marked crossing of US 101 near Union Ave or Michigan Ave to provide access to Simpson Park.	
Location	US 101 near Union Ave or Michigan Ave (MP 234.79-234.93)	
Roadway Characteristics	• Principal Arterial/Statewide Highway • OHP Freight Route • Lanes: 4 • Pavement Width: 48' • Posted speed: 30 mph • Sidewalk and landscape buffer • Existing (2018) ADT: 16,500 veh/day • Forecast (2040) ADT: 18,500 veh/day	5-Year Crash History (2012-2016): • 15% SPIS site (2016) • 10 reported crashes in this segment of US 101
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • No marked crossing of US 101 north of Colorado Ave to the McCullough Bridge • Bicycle/pedestrian connectivity across US 101	**With Improvement** • East-west pedestrian connectivity • Improved access to community features
Additional Considerations	• Road Authority: ODOT • Environmental constraints: None • Could be constructed within available ROW • Exact location and design will be determined during design • A rectangular rapid flashing beacon (RRFB) treatment is not feasible at this location. • Static signs or an overhead signal could be considered. • Could consider a crossing north of Simpson Park, possible at Simpson Ave.	
Cost Opinion	Cost: $5,000 to $30,000 (depends on selected treatments) *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• High priority • This effort would be led by ODOT • Pedestrian crossing on ODOT facilities requires ODOT engineering approval	

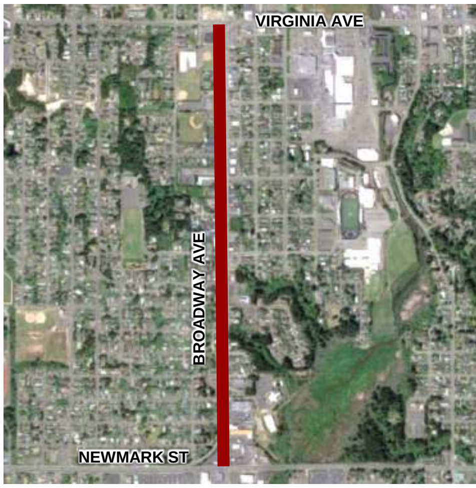
NB-12 | ***North Bend***
Connect the Boardwalks | ***Transportation System Plan***

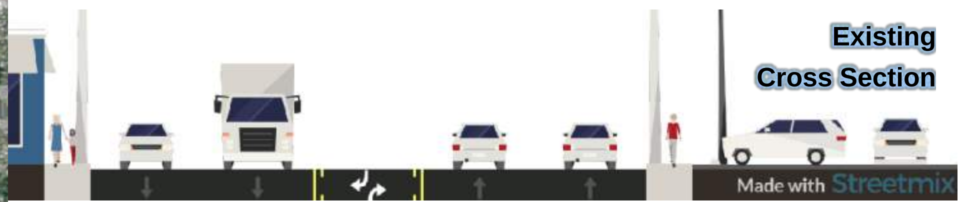
Source: Old "CONNECT! the Boardwalks" Brochure

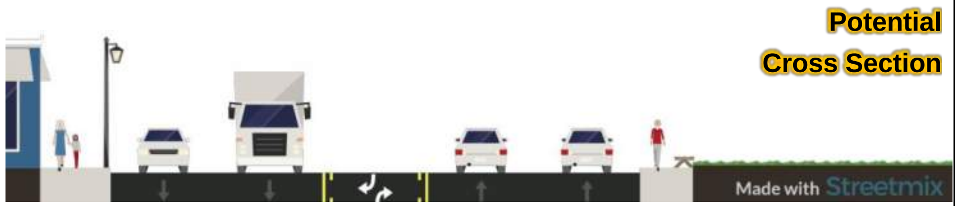
Purpose	• Enhance north-south pedestrian connectivity in the Bay Area • Enhance access to Coos Bay (marina) natural resources and recreation (tourism)	
Description	Connect the area boardwalks to create a five mile uninterrupted boardwalk along the west side of Coos Bay (marina).	
Location	West side of Coos Bay (marina)	
How Improvement Addresses Deficiencies	<u>**Existing/Future Deficiency**</u> • Bay Area lacks uninterrupted separated pedestrian connection between Cities • Bay Area lacks connected public access to the Coos Bay	<u>**With Improvement**</u> • Provides a continuous north-south pedestrian connection along Coos Bay between the Cities of North Bend and Coos Bay • Opportunity for economic development and tourism
Additional Considerations	• Spans multiple jurisdictions: North Bend, Coos Bay, Tribal Lands, Port of Coos Bay • Environmental considerations: Hazardous Materials; Threatened/Endangered species; Wetlands; Tsunami Zone; 100 yr floodplain • Features and impacts will be determined during design • A (now disbanded) non-profit led a previous effort to raise funds for CONNECT! the Boardwalks	
Cost Opinion	Cost estimate not prepared as part of the TSP development	
Implementation	• Broad interest from Bay Area communities • This project would require significant coordination and a variety of funding sources. It is recognized as a special project and will be included as "aspirational" in the TSP.	

NB-13
Broadway Ave Pedestrian Improvements

North Bend
Transportation System Plan







Purpose	• Improve pedestrian comfort and access on Broadway Avenue • Improve safety for all users • Reduce barriers to pedestrian motility • Bring roadway closer to cross-section standard	
Description	Improve sidewalks on Broadway Avenue between Virginia Avenue and Newmark Street through utility relocation, improved ADA ramps and sidewalk widening with reconstruction.	
Location	Broadway Ave (OR 540): Virginia Ave to Newmark St (MP 0.77 – MP 1.81)	
Roadway Characteristics	• Principal Arterial/District Highway • Lanes: 5 • Pavement Width: 60' • Posted speed: 35 mph • Substandard sidewalks, ramps • Existing (2018) ADT: 10,000 – 20,000 veh/day • Forecast (2040) ADT: 15,000 – 25,000 veh/day	5-Year Crash History (2012-2016): • Of the nearly 100 crashes reported on this segment of Broadway Ave, four of them were pedestrian related
How Improvement Addresses Deficiencies	**<u>Existing/Future Deficiency</u>** • Sidewalks contain barriers such as utility poles • No shoulder between vehicular traffic and sidewalk • Many driveway crossings	**<u>With Improvement</u>** • ADA ramps are being addressed by ODOT outside of this proposed project • Improved comfort and pedestrian motility
Additional Considerations	• Road Authority: ODOT • Environmental constraints: None • Could have property or driveway impacts • ADA ramp needs will be addressed by an already planned and funded ODOT project • Project could be constructed in phases as funding becomes available • Could be part of a large OR 540 corridor study to evaluate multimodal improvements.	
Cost Opinion	Cost: $1.5-2 million (depends on selected treatments) *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Medium priority • This effort would be led by ODOT	

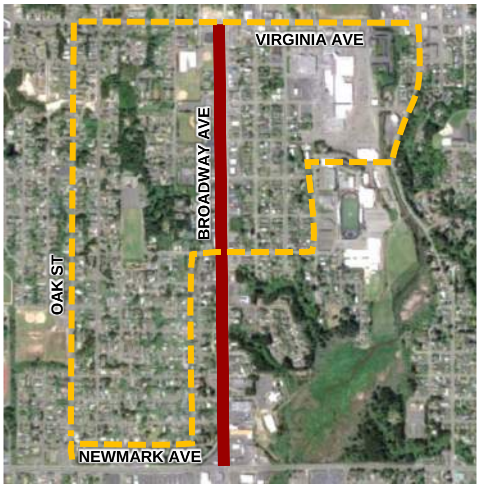
NB-15a *North Bend*

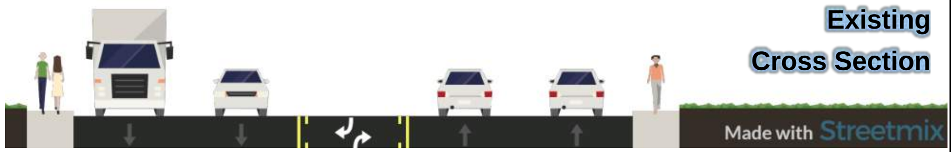
Cape Arago Highway Bicycle Lanes (Virginia Avenue Alternate Route) *Transportation System Plan*

***Preferred option**: Provide a parallel route with sharrows and wayfinding on local system*

Purpose	Provide designated bicycle facilities on the Oregon Coast Bike Route (OCBR) on Virginia Avenue	
Description	Repurpose the available pavement to add bicycle lanes with a striped buffer between vehicular travel and bicycle travel.	
Location	Virginia Ave (OR 540): US 101 southbound to Broadway Ave (MP 0 – MP 0.77)	
Roadway Characteristics	• Principal Arterial/District Highway • Lanes: 4-5 • Pavement Width: 50’-60’ • Posted speed: 25-30 mph • Lacking dedicated bicycle facilities • Existing sidewalk, curb and gutter • Existing (2018) ADT: 10,000 – 15,000 veh/day • Forecast (2040) ADT: 18,000 – 20,000 veh/day	5-Year Crash History (2012-2016): • Of the nearly 150 crashes reported on this segment of Virginia Ave, three were pedestrian related • There was one fatal and one serious injury collision at the intersection of Meade/Virginia • Virginia Ave at US 101 South exceeds the critical and 90th percentile crash rate (1.51 crashes/mev)
How Improvement Addresses Deficiencies	**<u>Existing/Future Deficiency</u>** • Virginia Ave is part of the OCBR and does not have separated bicycle facilities • Parallel routes are not convenient as they require weaving through local roads	**<u>With Improvement</u>** • Widens center turn lane (where applicable) • Provides buffered bicycle lanes on the OCBR on Virginia Ave • Improves pedestrian comfort by providing a buffer between vehicular traffic • Could see queuing delays and an increase in rear end collisions
Additional Considerations	• Road Authority: ODOT • Environmental considerations: Tsunami Zone & 100 year floodplain • Could have property or driveway impacts • Will likely lower vehicular speeds due to reduced vehicular capacity • Could be part of a large OR 540 corridor study to evaluate multimodal improvements. • An alternate or intermediate option would be to provide a parallel route to Virginia Ave by striping sharrows and providing wayfinding along Harrison Ave, Crowell Ln, Pacific Ave, $16^{th}/17^{th}$, Myrtle St, Commercial St, Oak St.	
Cost Opinion	Cost: Cost opinion not developed as part of the TSP.	
Implementation	• Further analysis will determine feasibility of lane reconfiguration. • Low priority • This effort would be led by ODOT	

NB-15b
Cape Arago Highway Bicycle Lanes (Broadway Ave Lane Reconfiguration)



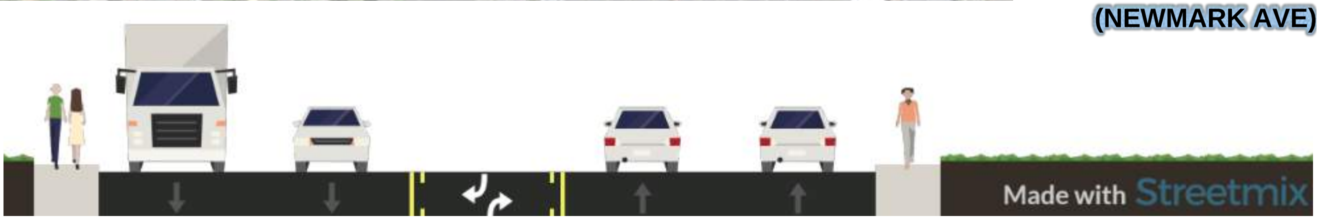


Alternate option: Provide a parallel route with sharrows and wayfinding on local system

Purpose	Provide designated bicycle facilities on the Oregon Coast Bike Route (OCBR) on Broadway Avenue	
Description	Repurpose the available pavement to add bicycle lanes with a striped buffer between vehicular travel and bicycle travel.	
Location	Broadway Ave (OR 540): Virginia Ave to Newmark Ave (MP 0.77 – MP 1.81)	
Roadway Characteristics	• Principal Arterial/District Highway • Lanes: 4-5 • Pavement Width: 60’ • Posted speed: 35 mph • Lacking dedicated bicycle facilities • Existing sidewalk, curb and gutter • Existing (2018) ADT: 10,000 – 20,000 veh/day • Forecast (2040) ADT: 15,000 – 25,000 veh/day	5-Year Crash History (2012-2016): • Of the nearly 100 crashes reported on this segment of Broadway Ave, four of them were pedestrian related
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Broadway Ave is part of the OCBR and does not have separated bicycle facilities • Sidewalk is not adequate to share with pedestrians	**With Improvement** • Widens center turn lane • Provides buffered bicycle lanes on the OCBR on Broadway Ave • Improves pedestrian comfort by providing a buffer between vehicular traffic
Additional Considerations	• Road Authority: ODOT • Environmental constraints: None • Could have property or driveway impacts • Will likely lower vehicular speeds due to reduced vehicular capacity • Could be part of a large OR 540 corridor study to evaluate multimodal improvements. • An alternate or intermediate option would be to provide a parallel route to Broadway Avenue by striping sharrows and providing wayfinding along Oak St, 16th/17th, Myrtle St, Commercial St.	
Cost Opinion	Cost: Cost opinion not developed as part of the TSP.	
Implementation	• Medium priority • This effort would be led by ODOT	

NB-15c *North Bend*
Cape Arago Highway Bicycle Lanes (Newmark Ave Alternate Route) *Transportation System Plan*

Existing
Cross Section
(NEWMARK AVE)

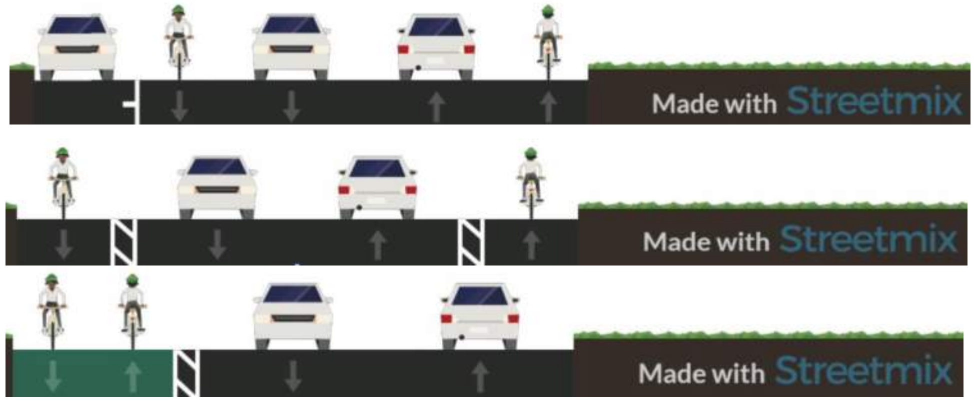


Purpose	Provide designated bicycle facilities on the Oregon Coast Bike Route (OCBR) on Newmark Avenue
Description	Provide a parallel route to Newmark Ave with sharrows and wayfinding on local system.
Location	Newmark Ave: Broadway Ave to West City Limits (MP 1.81 MP 2.24)
Roadway Characteristics	• Principal arterial/ODOT District Highway • Lanes: 5 • Pavement Width: 64’ • Sidewalk on east side only • Posted speed: 30-35 mph • Existing (2018) ADT: 15,000-20,000 veh/day • Forecast (2040) ADT: 20,000-25,000 veh/day 5-Year Crash History (2012-2016): • 49 crashes along Newmark Ave in this section, mostly turning related • Broadway Ave at Newmark Ave/St exceeds critical crash rate and 90th percentile crash rate (1.12 creash/mev) • One fatality just west of location near Oak St
How Improvement Addresses Deficiencies	<u>**Existing/Future Deficiency**</u> • Newmark Ave is part of the OCBR and does not have separated bicycle facilities • Not enough available pavement width to stripe dedicated bicycle facilities <u>**With Improvement**</u> • Provides an alternate route to the OCBR via • Removes bicycles from high vehicular volume road
Additional Considerations	• Road Authority: ODOT and City of North Bend • Environmental constraints: None • Consider connecting to planned STIP project at Newmark Ave/Broadway Ave that will provide new bicycle facilities • Could be part of a large OR 540 corridor study to evaluate multimodal improvements.
Cost Opinion	Cost: $32,000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*
Implementation	• Medium priority • This effort would be led by ODOT through coordination with the City

NB-16
Maple Leaf/Colorado Avenue Bicycle Lanes

North Bend Transportation System Plan

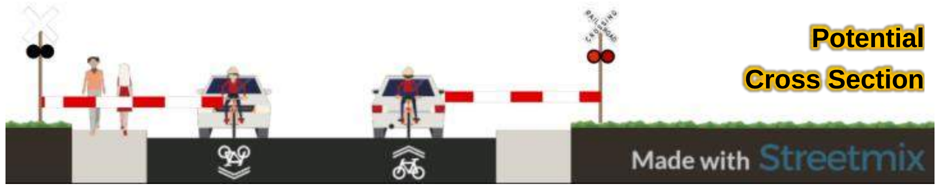
Potential Cross Sections



Purpose	• Provide bicycle facilities on a Major Collector • Bring roadway closer to cross-section standard	
Description	Repurpose the available pavement to add bicycle lanes to Maple Leaf/Colorado Avenue. This could be done within the existing pavement width by restriping to 11-12' travel lanes and 6' bike lanes.	
Location	Maple St/Colorado Ave: Virginia Ave to Arthur St	
Roadway Characteristics	• Major Collector • Lanes: 2 • Pavement Width: 42', poor pavement • Posted speed: 25 mph • Varied on-street parking • Lacking dedicated bicycle facilities • Existing sidewalk (varies), curb and gutter • Existing (2018) ADT: <1,000 veh/day • Forecast (2040) ADT: <1,000 veh/day	5-Year Crash History (2012-2016): • 5 total crashes on this segment of Maple/Colorado Ave
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Poor pavement condition • Lacking dedicated bicycle facilities to NW North Bend • Lacking multimodal options to access the airport	**With Improvement** • Addresses pavement condition if paired with pavement preservation • Provides high quality dedicated bicycle facilities
Additional Considerations	• Road Authority: North Bend • Environmental considerations: None • Three options: • Option A: Parking on one side with striped bicycle facilities on each side • Option B: No Parking and buffered bike lanes on each side • Option C: No parking and a two-way cycle track on one side of street – Not preferred as volumes are low on this road with limited thru traffic/turns.	
Cost Opinion	Cost: $1.6 million (assumes complete repaving project) *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Medium priority • Triggered with pavement maintenance project	

NB-17 | ***North Bend***

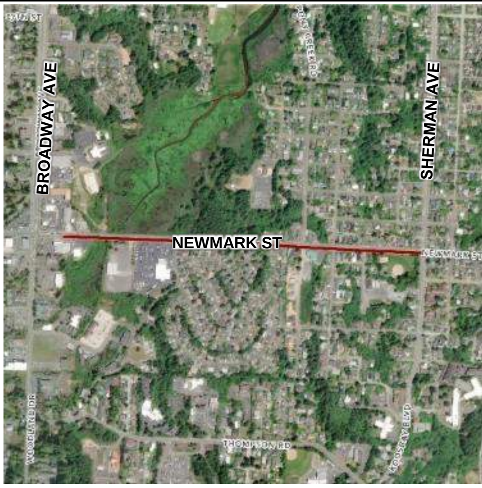
Sheridan Avenue Bicycle Improvements | ***Transportation System Plan***

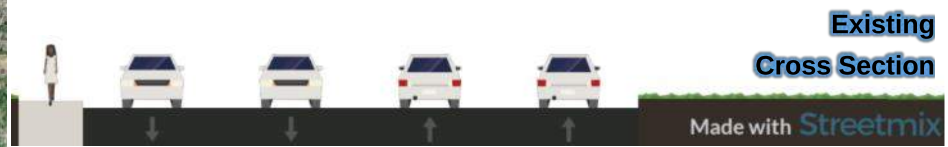


Purpose	• Provide safe bicycle connection from Simpson Heights neighborhood to downtown North Bend. • Modernize to local road standard.	
Description	Add sidewalks and sharrows on Sheridan Avenue between Florida Avenue and Bayview Avenue and upgrade RR crossing to provide activated crossing of existing passive at grade crossing.	
Location	Sheridan Ave: Florida Ave to Bayview Ave	
Roadway Characteristics	• Local road • Pavement Width: 20-24' • Lanes: 2 • No curb, gutter or sidewalk. • Posted speed: 25 mph • At-grade rail crossing (cross bucks and stop signs) • Existing (2018) ADT: <500 veh/day • Forecast (2040) ADT: <500 veh/day	5-Year Crash History (2012-2016): • No reported crashes
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Lacks pedestrian facilities • Lacks bicycle facilities • Rail traffic is expected to increase • Substandard roadway width for local street classification	**With Improvement** • Pedestrian facilities from new sidewalks • Widened roadway could provide for more comfortable shared travel between bicycles and pedestrians • Active warning signs could improve safety
Additional Considerations	• Road Authority: City of North Bend • This is a public rail crossing and will need to be coordinated with ODOT Rail • Environmental constraints: None • Sheridan Avenue is part of the route for North Bend's annual July Jubilee Jaunt 5k fun run. • Design features: Could consider providing sharrows on Sheridan to provide route for bicycles	
Cost Opinion	Cost: $1.4 million (includes cost for upgraded rail crossing) *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Could be triggered with a pavement maintenance project • Medium priority due to low traffic volumes and seasonal pedestrian use	

NB-18 | *North Bend*

Newmark Street Bicycle Facilities | *Transportation System Plan*





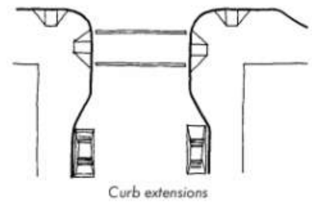
Purpose	Provide designated bicycle facilities on Newmark St	
Description	Repurpose the available pavement to add bicycle lanes with a striped buffer between vehicular travel and bicycle travel. This would repurpose two vehicle lanes to provide bicycle lanes and a shared two-way left-turn lane.	
Location	Newmark St: Broadway Ave to Sherman Ave	
Roadway Characteristics	• Arterial • Lanes: 4 • Pavement Width: 53' • Posted speed: 25 mph • Lacking dedicated bicycle facilities • Existing sidewalk (south side), curb and gutter • Existing (2018) ADT: 15,000 – 20,000 veh/day • Forecast (2040) ADT: 20,000 – 25,000 veh/day	5-Year Crash History (2012-2016): • Intersections do not exceed critical crash rate or 90th percentile crash rate • Collisions on Newmark St in this segment are concentrated to the intersections with Sherman Ave or Broadway Ave
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Newmark St is a substandard Arterial • Sidewalks are only on the south side • There are no bicycle facilities on Newmark St • Pavement condition is deteriorating	**With Improvement** • New pavement • Provides a protected bicycle facility to connect to important north-south routes like Pony Creek and Sherman Ave and provide east-west connectivity. • Intersections expected to operate similarly to No Build condition.
Additional Considerations	• Road Authority: City of North Bend • Environmental constraints: None. • Could require upgrades to existing traffic signals at Brussels St and Sherman Ave. • Will likely result in more consistent vehicle speeds due to reduced vehicular capacity.	
Cost Opinion	Cost: $2.1 million (includes cost for ADA ramp improvements) *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Could be triggered with a pavement maintenance project • Low priority	

NB-25
Virginia Ave/Meade Ave Traffic Calming

North Bend
Transportation System Plan

Existing Intersection

Potential Intersections – Bulb Outs



Purpose	• Neighborhood traffic calming (slow speeds) • Minimize cut-through traffic on Meade Avenue and Connecticut Avenue	
Description	Provide traffic calming treatments to narrow up the street feeling, such as curb bulb outs (curb extensions) and formalized on street parking (mimic aspects of the Downtown Streetscape).	
Location	Meade Avenue and Connecticut Avenue between US 101 and Virginia Avenue	
Roadway Characteristics	• Meade Ave/Connecticut: Major Collector • Lanes: 2 • Pavement Width: 50'-55' • Posted speed: 25 mph • Existing (2018) ADT: 3,300 – 5,000 veh/day • Forecast (2040) ADT: 3,500 – 5,000 veh/day	5-Year Crash History (2012-2016): • 16 crashes at the intersection of Meade Ave at Virginia Ave, one fatality • Top 10% SPIS site
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Wide pedestrian crossing of Meade Ave • Lacks bicycle facilities • Cut-through traffic from US 101 uses this route • Safety concerns at this intersection	**With Improvement** • Narrowed pedestrian crossing of Meade Ave • Traffic calming measures • Clear definition between modes
Additional Considerations	• Road Authority: City of North Bend (Meade Ave) and ODOT (Virginia Ave/OR 540) • Environmental constraints: None. • Design features: Clear delineations between vehicle path, bicyclists and parking lane. • Consider impacts to school buses and emergency vehicles during design	
Cost Opinion	Cost: Cost to be determined during design and funded through Urban Renewal	
Implementation	• Sharrows or bicycle lane could be striped with a pavement maintenance project	

NB-26
US 101 South at Washington Ave/Sherman Ave Ped. Crossing

Potential
Crosswalk Treatment and Signing

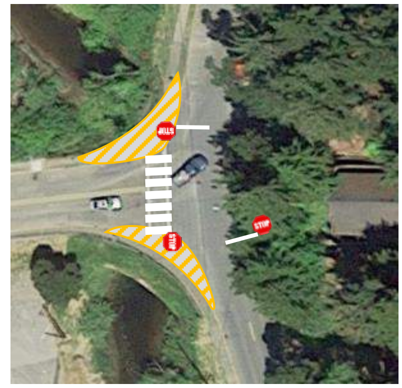
Purpose	• Improves comfort of the pedestrian network • Addresses curb ramp deficiencies • Provides enhanced road crossing/visibility across US 101	
Description	Upgrade pedestrian crossing visibility and curb ramps across US 101 southbound at Washington Ave/Sherman Avenue.	
Location	US 101 South and Washington Ave/Sherman Ave	
Roadway Characteristics	• Functional Classification: • Lanes: 3 • Pavement Width: 48’-60’ • Posted speed: 20 mph • Existing (2018) ADT: 9,800 veh/day • Forecast (2040) ADT: 10,600 veh/day	5-Year Crash History (2012-2016): • 16 crashes • Exceeds statewide 90th percentile crash rate. • There is no distinct pattern in collision type; however, most were due to not yielding the right-of-way or disregarding a stop sign.
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Non-standard intersection • Long pedestrian crossing distance • High traffic volumes • Uncomfortable for pedestrians • Limited visibility of crossing • Closest formal crossing of US 101 to the south is over a mile away	**With Improvement** • Enhanced crossing safety and visibility • Improved pedestrian comfort
Additional Considerations	• Road Authority: ODOT • Environmental constraints: Near leaking underground storage tank but this is not expected to impact improvement • Project can be constructed within available right of way • Overhead signage not feasible • Need to maintain “hole in the air” for freight movement along US 101	
Cost Opinion	Cost: $5,000 - $30,000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Striping could be paired with a pavement maintenance project • Signing, striping and ramps a medium priority	

NB-27 | ***North Bend***

Pony Creek Road/Crowell Lane Intersection Improvements | ***Transportation System Plan***

Existing Intersection

Proposed Improvement



Purpose	• Improves comfort of the pedestrian network • Addresses curb ramp deficiencies • Traffic calming along Pony Creek Estuary	
Description	Tighten radius of western curbs, provide pavement markings, formalize striping on Pony Creek Rd and consider all-way stop control.	
Location	Pony Creek Rd at Crowell Ln	

Roadway Characteristics	• Functional classification: Major Collector
	• Lanes: 2
	• Pavement Width:
	  • Pony Creek St: 30’-32’
	  • Crowell Ln: 30’
	• Posted speed: 20-25 mph
	• Existing (2018) ADT: <3,500 veh/day
	• Forecast (2040) ADT: <3,500 veh/day
	• Crowell lane is currently STOP-controlled
		5-Year Crash History (2012-2016):
		• Just exceeds statewide 90th percentile crash rate.
		• Three crashes reported at this low volume intersection
		• All three crashes occurred during low light/dark conditions and were due to improper driving (speeding or failing to yield right-of-way).

How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Wide pedestrian crossing distance of Crowell Ln • Pony Creek Rd is free flowing and has limited sight distance due to adjacent slope and vegetation	**With Improvement** • Anticipated reduction in turning collisions • Narrower pedestrian crossing • Traffic calming on Pony Creek Rd • Traffic operations expected to operate within City standards as 2-way OR all-way STOP control
Additional Considerations	• Road Authority: North Bend • Environmental constraints: Near Pony Creek and within 100-year flood zone • Structure crossing Pony Creek is on the west leg could influence design treatments • Project can be constructed within available right of way • Enhanced lighting, signing and striping should be considered to increase visibility of intersection • Design should consider existing residential driveway on east side of Pony Creek Rd	
Cost Opinion	Cost: $50,000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	High priority	

CB-2 | ***Coos Bay***

Morrison Street Sidewalks | ***Transportation System Plan***

Purpose	• Construct sidewalk to enhance pedestrian connectivity • Provide parallel connection to Middle School and Elementary school one block west • Provide sidewalks on a Collector street	
Description	Construct sidewalk on both sides of Morrison Street to provide a north-south spine that connects the east-west sidewalk system.	
Location	Morrison St: Newmark Ave to Pacific Ave	
Roadway Characteristics	• Functional Classification: Major Collector • Lanes: 2 • Pavement Width: 36’ • Posted speed: 25 mph • Existing (2018) ADT: 3,500-5,000 veh/day • Forecast (2040) ADT: 3,500-5,000 veh/day	5-Year Crash History (2012-2016): • Intersections do not exceed critical crash rate or 90th percentile crash rate • There were 9 reported crashes on Morrison St within this segment
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Lacks pedestrian facilities • Lacks bicycle facilities • Substandard roadway cross-section for Local and Major Collector street classification	**With Improvement** • Pedestrian facilities from new sidewalks • Separates pedestrians from vehicular traffic • Improved pedestrian connections to schools
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: Leaking Underground Storage Tank at north end of road • This is within a mile radius of a school and could be eligible for Safe Routes to School funding • If reconstructing the road, should consider upgrading to Collector standard • Improvement will impact existing residential frontage and driveways	
Cost Opinion	Cost: $2.5M *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Medium priority	

CB-3 | *Coos Bay*

Mingus Park Wayfinding | *Transportation System Plan*

- Potential Wayfinding Locations

Wayfinding

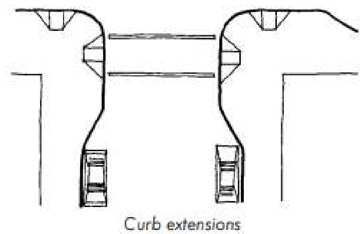
Pavement Markings

Purpose	Enhance pedestrian and bicycle awareness and connectivity to Coos Bay park system	
Description	Wayfinding signs to Mingus Park	
Location	Mingus Park and surrounding local streets	

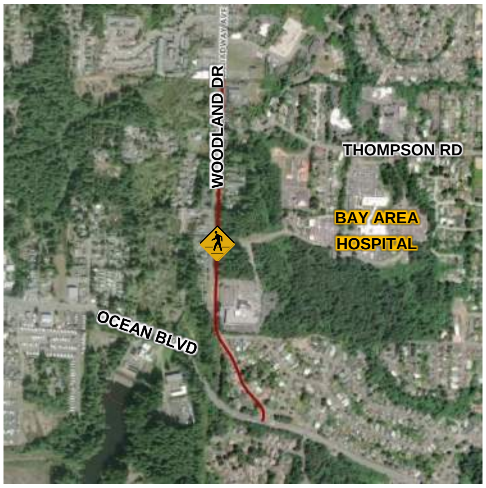
Roadway Characteristics	• Varies:
	  • Ocean Blvd: Minor Arterial (3 lane)
	  • 10th St: Minor Arterial (2 lane)
	  • Hemlock Ave: Major Collector (2 lane)
		5-Year Crash History (2012-2016):
		• Koosbay Blvd at 10th St exceeds critical crash rate and 90th percentile crash rate

How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Few signs exist to direct visitors or new residents to local park/trail system • Lack of dedicated bicycle lanes and routes • Coos Bay lacks signage from the OCBR to community features	**With Improvement** • Potential for bicycle facilities through striping sharrows along with wayfinding • Enhances connectivity of bicycle and pedestrian system • Potential safety benefits from directing users to correct routes
Additional Considerations	• Road Authority: Coos Bay • Environmental considerations: Mingus Park has a freshwater pond and is near a historic landslide location. There are several leaking underground storage tanks surrounding Mingus Park, however this should not be impacted by this improvement. • Available ROW: Signs and striping can be placed within the public ROW • Located within a 1-mile radius of a school • Consider providing estimated time to get to destination on the wayfinding sign • Coordination with Coos Bay Parks and Recreation • Does not require new pavement or reconstruction to provide wayfinding • Consider sign placement along transit routes	
Cost Opinion	Cost: \$20,000 – \$50,000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• High priority • Project could be coordinated with "N 14th St Bicycle Facilities" and other wayfinding and neighborhood bicycle routes	

Potential
Pedestrian Treatment



Purpose	• Provide facilities for all travel modes • Address existing safety concerns • Improve pedestrian level of traffic stress (PLTS)	
Description	Improve PLTS score through improved pedestrian crossing and sidewalk widening.	
Location	Newmark Avenue: Fir Street to Cammann Street	
Roadway Characteristics	• Functional Classification: Arterial • Lanes: 5 • Pavement Width: 46'-66' • Posted speed: 30-35 mph • Existing (2018) ADT: 10,000-13,000 veh/day • Forecast (2040) ADT: 10,000-15,000 veh/day	5-Year Crash History (2012-2016): • 5 pedestrian-related collisions in Coos Bay on Newmark Ave • 1 bicycle-related collision in Coos Bay on Newmark Ave
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Existing sidewalk has utility poles and sign posts that hinder pedestrian travel • Existing driveways and access points throughout the corridor • Wide sidewalk crossing distances • PLTS 3 and PLTS 4	**With Improvement** • Improves safety of pedestrians along the corridor from continuous sidewalks • Provides access to transit stops • Accommodates mobility devices with adequate width and updated curb cuts • Benefits disadvantaged populations
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: None • Sidewalk should be wide enough to provide 5' travel width around street furniture (i.e., mailboxes, power poles, etc.). This may require that sidewalks are wider than 5' in some locations or that a landscape strip that can accommodate street furniture is incorporated into the design for some segments. • Additional ROW or easements appear needed to accommodate sidewalks • Some property impacts (including parking lots) to add sidewalks, but no building impacts anticipated; some existing substandard sidewalks may remain to avoid building impacts	
Cost Opinion	Cost: $3.2M *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Medium • Related to other proposed TSP project: Newmark Ave at Ocean Blvd	



Existing Cross Section

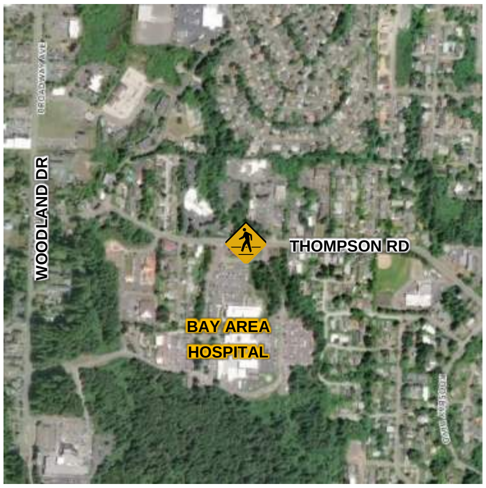
Potential Cross Section

Potential Crosswalk Treatment and Signing

Purpose	• Provide pedestrian connectivity to Medical Park • Bring Woodland Dr closer to Arterial standard	
Description	Add sidewalks on Woodland Dr and provide a marked pedestrian crossing of Woodland Dr to provide access to Hospital/Medical Park.	
Location	Woodland Dr: North City limits to Ocean Blvd	
Roadway Characteristics	• Functional Classification: Arterial • Lanes: 2-3 • No bicycle lanes or sidewalk • Pavement Width: 40' • Posted speed: 35 mph • Existing (2018) ADT: 10,000 veh/day • Forecast (2040) ADT: 11,000 veh/day	5-Year Crash History (2012-2016): • Thompson Rd at Woodland Dr exceeds critical crash rate and 90th percentile crash rate • Ocean Blvd at Woodland Dr exceeds critical crash rate and 90th percentile crash rate • There were 18 recorded crashes along this segment of Woodland Dr
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Limited marked pedestrian crossings of Woodland Ave • Lacks bicycle facilities • Substandard roadway cross-section for Arterial street classification • Limited/no pedestrian access to Medical Park	**With Improvement** • East-west pedestrian connectivity • Connectivity to Medical Park • Sidewalk would improve safety of pedestrians along the corridor • Sidewalk would provide access to the existing transit stop • Closer to Arterial standard
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: None • There is also a transit stop at the Medical Park • Could consider sidewalk on just one side if funding is limited (east side of Woodland Dr) • Additional storm water treatment needed with impervious surface	
Cost Opinion	Cost: $3.2 million *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• High priority • Could couple with a bicycle project on Woodland Dr to save total costs	

CB-6 | ***Coos Bay***

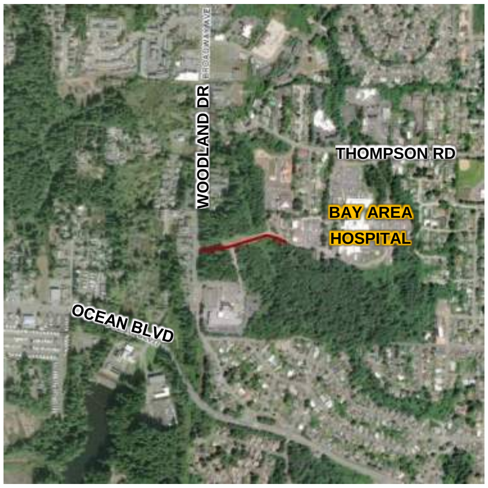
Thompson Road Pedestrian Crossing | ***Transportation System Plan***



Purpose	• Provide pedestrian connectivity to Hospital • Provide a marked crossing to enhance pedestrian access to transit stop at Hospital	
Description	Add marked mid-block crossing of Thompson Road to access hospital transit stop.	
Location	Thompson Rd near Bay Area Hospital driveways	
Roadway Characteristics	• Functional Classification: Major Collector • Lanes: 2-3 • Pavement Width: 36’ • Sidewalk, curb, gutter • 14’ travel lanes • Posted speed: 30 mph • Existing (2018) ADT: <5,000 veh/day • Forecast (2040) ADT: 5,000 veh/day	5-Year Crash History (2012-2016): • Thompson Rd at Woodland Dr exceeds critical crash rate and 90th percentile crash rate • There were 4 reported collisions on Thompson Rd between Pacific St and 16th St
How Improvement Addresses Deficiencies	**<u>Existing/Future Deficiency</u>** • No marked crossing of Thompson Rd near Hospital and Hospital transit stop • Pedestrian connectivity to Medical Park	**<u>With Improvement</u>** • North-south pedestrian connectivity • Improved access to transit
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: None • There is enough space in the median to provide a center island pedestrian refuge if desired. • Location of crossing should not conflict with turn bays. • Designs would need to be coordinated with existing driveway locations • No ROW impacts	
Cost Opinion	Cost: $50,000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• High priority	

CB-7 | ***Coos Bay***

Hospital Way Sidewalk | ***Transportation System Plan***



Purpose	This project would provide facilities for pedestrians and work toward establishing Hospital Way as a route with a pedestrian level of traffic stress score of 2 or better, a recommended target for access to medical centers	
Description	Add sidewalk to north side of Hospital Way to connect to medical facilities.	
Location	Hospital Way near Medical Center (Immediate Care Clinic)	
Roadway Characteristics	• Functional Classification: Local • Lanes: 2 • No sidewalk, curb, gutter • No bicycle facilities • Pavement Width: 28’-30’ • Posted speed: 20 mph • Existing (2018) ADT: 500-1,000 veh/day • Forecast (2040) ADT: 500-1,000 veh/day	Pedestrians traveling on Hospital Way must walk on roadway where there is limited to no shoulder. 5-Year Crash History (2012-2016): • No crashes reported on Hospital Way
How Improvement Addresses Deficiencies	**<u>Existing/Future Deficiency</u>** • Limited to non-existent pedestrian facilities/connectivity on Hospital Way • Lacks bicycle facilities • No shoulder on bridge	**<u>With Improvement</u>** • East-west pedestrian connectivity • Increased connectivity to Medical Park • Increased safety • Enhanced pedestrian environment
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: Crosses stream with wetland potential • Available ROW: Existing structure and guardrail limit ability to easily provide pedestrian connectivity on Hospital Way • Could consider a multi-use path as an alternative, but the slope/grade are not pedestrian-friendly • Additional ROW or easements appear needed to accommodate sidewalks • Some property impacts (including parking lots) to add sidewalks but no building impacts anticipated • Additional storm water treatment needed with increased impervious surface	
Cost Opinion	Cost: $560k *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Medium priority; short section gives limited connectivity/access.	

CB-8 | ***Coos Bay***
Wallace Street Pedestrian Improvements | ***Transportation System Plan***

Existing
Cross Section
OCEAN BLVD

Potential
Crosswalk Treatment and Signing

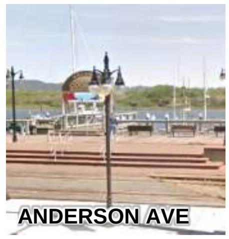
Refuge Island

Rapid Rectangular
Flashing Beacon (RRFB)

Purpose	• Provide pedestrian connectivity across Ocean Blvd • Provide connectivity to transit stops	
Description	Construct sidewalk along Wallace Street and add Rapid Rectangular Flashing Beacon (RRFB) crossing of Ocean Blvd at Wallace St to connect to transit.	
Location	Wallace St/Ocean Blvd	
Roadway Characteristics	• Ocean Blvd: Arterial, 3 lanes Bicycle lanes, sidewalk • Pavement Width: 54'-56' • Posted speed: 35 mph • Wallace St: Local, 2 lanes • Existing (2018) ADT: 10,000-15,000 veh/day • Forecast (2040) ADT: 10,000-15,000 veh/day	5-Year Crash History (2012-2016): • There were four reported crashes at the intersection of Wallace St at Ocean Blvd.
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Wide/long crossing of Ocean Blvd • Bicycle/pedestrian connectivity across Ocean Blvd is limited or requires out-of-direction travel • Wallace St lacks sidewalks • Wide curb radii	**With Improvement** • East-west pedestrian connectivity • Improved access to community features • More substantial mid-street refuge for pedestrians crossing roadway • No significant impacts to traffic operations • Improved pedestrian access to transit benefits disadvantaged populations
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: There is a leaking underground storage tank near Wallace St/Ocean Blvd intersection. • Assume sidewalks are constructed on south side of Wallace St • Provides access to tribal lands • Provides a shortened crossing of Ocean Blvd when compared to existing crossing at Newmark Ave • Crosswalk should consider median island refuge.	
Cost Opinion	Cost: $400,000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Low priority	

CB-9 | ***Coos Bay***

Coos Bay Boardwalk RR Crossing Pedestrian Improvements | ***Transportation System Plan***



Existing Crossing

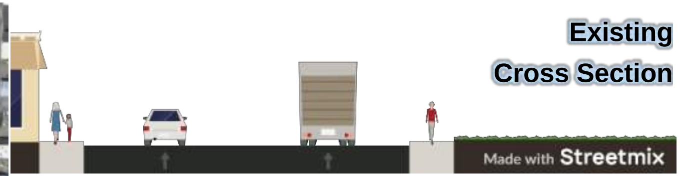
Potential Pedestrian RR Crossing Treatment

Purpose	• At-grade RR crossing safety • Pedestrian connectivity to community features (boardwalk)	
Description	Construct at-grade multimodal improvements across the RR near the Coos Bay boardwalk.	
Location	RR crossing to Coos Bay Boardwalk (near Anderson Ave and Market Ave)	
Roadway Characteristics	The RR travels down the center of Front Street.	There have been no recorded pedestrian fatalities by the Coos Bay Rail within Coos Bay.
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Access to the Boardwalk has several uncontrolled crossings and limited active warning signals for vehicles and pedestrians. Rail traffic is expected to increase in the future. • There are multiple tracks to cross	**With Improvement** Could improve safety with new signing, pavement paint, and/or activated pedestrian gates at the RR crossings.
Additional Considerations	• Road Authority: Coos Bay; Coos Bay Rail • Environmental constraints: 100 year floodplain • Available ROW: City has right-of-way along Front Street • Pedestrian gates could separate pedestrians from rail traffic and discourage them from crossing the tracks except at designated locations or when there is no anticipated rail • Activated warning devices should be considered to indicate when trains are approaching • At-grade crossings with multiple tracks can present additional dangers to pedestrians and separate warnings may be necessary for these locations to help alert pedestrians of the full extent of the danger of the at-grade rail crossing.	
Cost Opinion	Cost: Up to $500,000 per crossing, depending on treatment selected *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• High priority • Coordinate with Front Street Traffic Safety Plan • Coordinate with ODOT Rail and Coos Bay Rail • Any new pedestrian crossing of an ODOT facility will require ODOT engineering approval.	

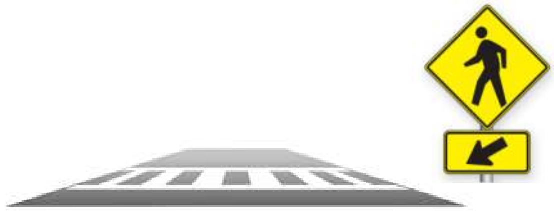
CB-10
US 101 Northbound Downtown Pedestrian Crossings

Coos Bay
Transportation System Plan

Existing Cross Section



Potential Crosswalk Treatment and Signing

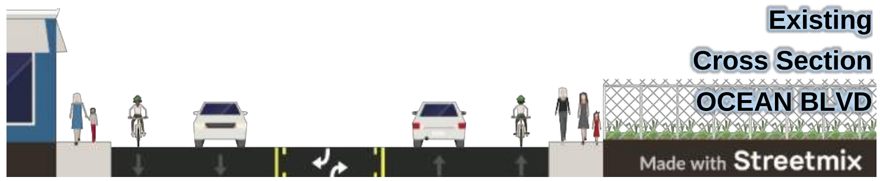


Rapid Rectangular Flashing Beacon (RRFB)

Purpose	• Increase pedestrian and bicycle network connectivity and safety across US 101.	
Description	Improved bike/pedestrian crossings across US 101 to be consistent with Front Street Action Plan	
Location	US 101 at Commercial Ave and Alder Ave	
Roadway Characteristics	• Functional Classification: Principal Arterial • Lanes: 2 • Pavement Width: 40'-50' • Travel lanes are >20' • Posted speed: 25-30 mph • Existing (2018) ADT: 10,000-15,000 veh/day • Forecast (2040) ADT: 10,000-15,000 veh/day • There are no striped bicycle lanes	5-Year Crash History (2012-2016): • No crash data trends at either intersection.
How Improvement Addresses Deficiencies	<u>**Existing/Future Deficiency**</u> • Limited marked crossing of US 101 northbound to connect to north end of Front St • Limited bicycle/pedestrian connectivity across US 101	<u>**With Improvement**</u> • Increased east-west pedestrian connectivity • Improved access to community features • Pedestrian crossing of US 101 North
Additional Considerations	• Road Authority: ODOT • Environmental constraints: 100 year flood plain • Available ROW: Project can be constructed within the available ROW • Consider striping or candlesticks to "narrow up" the feeling of the cross-section without limiting freight movement • Must maintain "hole in the air" as US 101 is a freight route	
Cost Opinion	Cost: $100,000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• High priority • Any pedestrian crossing of US 101 would require State engineering approval. • Coordinate with Front Street Blueprint Plan (a crossing at US 101 northbound at Alder Ave can be studied under the context of the upcoming Front Street Blueprint.	

CB-11 | ***Coos Bay***

Ocean Blvd/La Clair St Pedestrian Crossing | ***Transportation System Plan***



Potential
Crosswalk Treatment and Signing

Rapid Rectangular Flashing Beacon (RRFB)

Purpose	• Provide pedestrian connectivity across Ocean Blvd • Fill gap in protected crossings of Ocean Blvd • Enhance safety for pedestrians crossing midblock or at unsignalized locations	
Description	Construct a pedestrian crossing with a median refuge and Rapid Rectangular Flashing Beacon (RRFB).	
Location	Across Ocean Blvd just west of LaClair St	
Roadway Characteristics	• Ocean Blvd: Arterial, 3 lanes Bicycle lanes, sidewalk • Pavement Width: 54’-56’ • Posted speed: 40 mph • Existing (2018) ADT: 10,000-15,000 veh/day • Forecast (2040) ADT: 10,000-15,000 veh/day	5-Year Crash History (2012-2016): • There were seven reported crashes at the intersection of LaClair St at Ocean Blvd.
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Wide/long crossing of Ocean Blvd • Bicycle/pedestrian connectivity across Ocean Blvd • Gap in crossings between Newmark and Woodland (>1.5 miles between signalized crossings)	**With Improvement** • East-west pedestrian connectivity • Improved access to community features • More substantial mid-street refuge for pedestrians crossing roadway • Provide transit users or other pedestrians with opportunity to break up crossing movement into two stages • Negligible impacts to traffic operations
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: None • Designs would need to be coordinated with existing cross-section; there is a section of pavement near LaClair St with a striped buffer shoulder (north side of Ocean Blvd) • Location would need to consider sight distance of vehicles based on posted speed limit • Could affect access at some driveway locations – might limit movements to right-in/right-out • No ROW impacts	
Cost Opinion	Cost: $200,000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Medium priority • Consider if crash rate increases.	

CB-14
Connect the Boardwalks

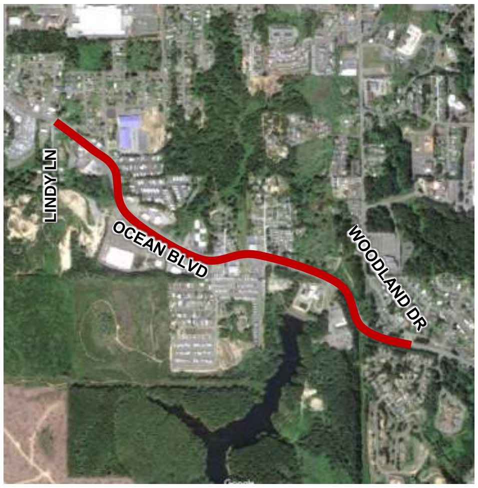
Coos Bay
Transportation System Plan

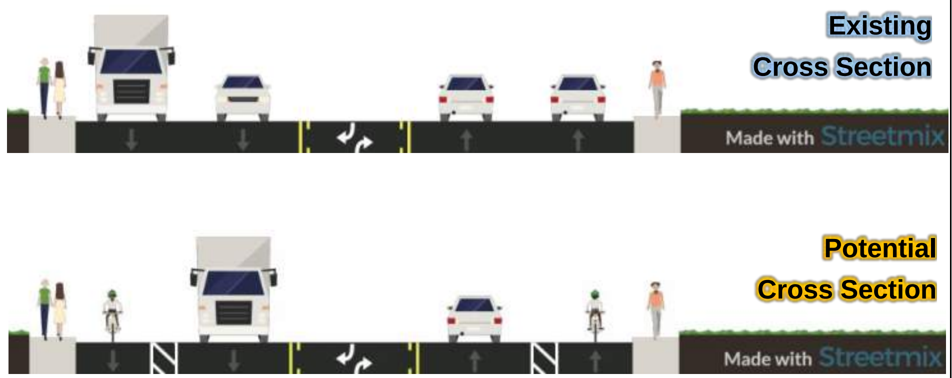
Source: Old "CONNECT! the Boardwalks" Brochure

<table>
<tr><td>Purpose</td><td colspan="2">• Enhance north-south pedestrian connectivity in the Bay Area
• Enhance access to Coos Bay (marina) natural resources and recreation (tourism)</td></tr>
<tr><td>Description</td><td colspan="2">Connect the area boardwalks to create a five mile uninterrupted boardwalk along the west side of Coos Bay (marina).</td></tr>
<tr><td>Location</td><td colspan="2">West side of Coos Bay (marina)</td></tr>
<tr><td>How Improvement Addresses Deficiencies</td><td><u>Existing/Future Deficiency</u>
• Bay Area lacks uninterrupted separated pedestrian connection between Cities
• Bay Area lacks connected public access to the Coos Bay</td><td><u>With Improvement</u>
• Provides a continuous north-south pedestrian connection along Coos Bay between the Cities of North Bend and Coos Bay
• Opportunity for economic development and tourism</td></tr>
<tr><td>Additional Considerations</td><td colspan="2">• Spans multiple jurisdictions: North Bend, Coos Bay, Tribal Lands, Port of Coos Bay
• Environmental considerations: Hazardous Materials; Threatened/Endangered species; Wetlands; Tsunami Zone; 100 yr floodplain
• Features and impacts will be determined during design
• A (now disbanded) non-profit led a previous effort to raise funds for CONNECT! the Boardwalks</td></tr>
<tr><td>Cost Opinion</td><td colspan="2">Cost estimate not prepared as part of the TSP development</td></tr>
<tr><td>Implementation</td><td colspan="2">• Broad interest from Bay Area communities
• This project would require significant coordination and a variety of funding sources. It is recognized as a special project and will be included as "aspirational" in the TSP.</td></tr>
</table>

CB-15 | *Coos Bay*

Ocean Blvd Road Diet (Final Phase) | ***Transportation System Plan***

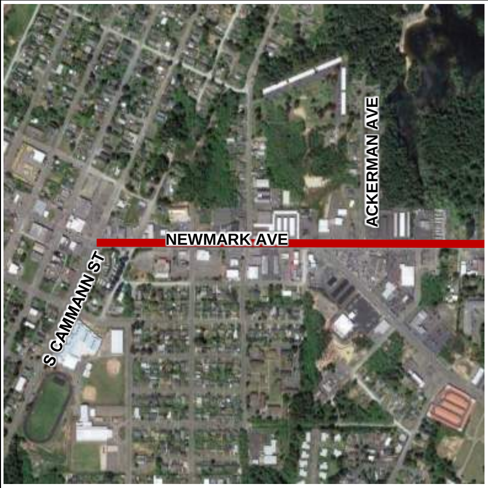


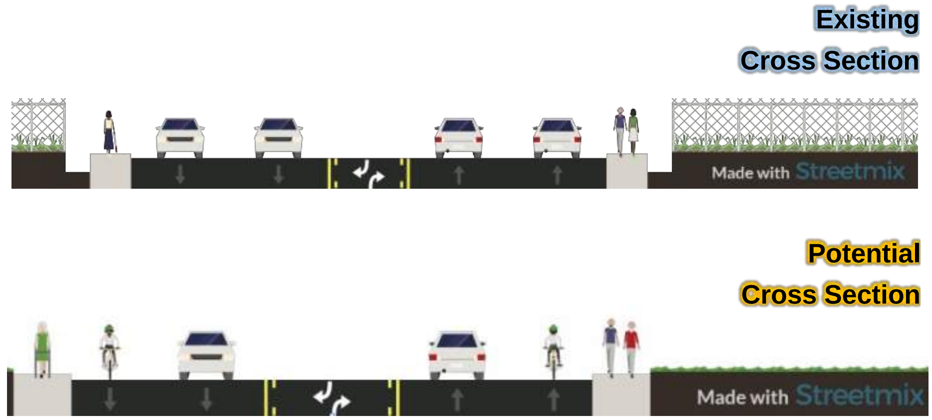


Purpose	• Provide a continuous bicycle facility connection along Ocean Blvd • Provide multimodal connectivity between Newmark Ave and Downtown Coos Bay • Improve safety • Slow vehicular speeds	
Description	Complete the Ocean Blvd pavement reallocation ("road diet") project. Repurpose two vehicular travel lanes for bicycle lanes.	
Location	Ocean Blvd: Woodland Dr to Lindy Ln	
Roadway Characteristics	• Ocean Blvd: Arterial • Lanes: 5 • Sidewalks • Pavement Width: 54'-56' • Posted speed: 40 mph • Existing (2018) ADT: 10,000-15,000 veh/day • Forecast (2040) ADT: 10,000-15,000 veh/day	5-Year Crash History (2012-2016): • Approximately 65 crashes reported on Ocean Blvd within this segment • One fatality near Woodland Dr
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Bicycle connectivity • Bicycle facilities on Arterials • Safety	**With Improvement** • Completes bicycle lanes on Ocean Blvd • Provides a multi-modal facility • Safety benefits
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: None • This project could be coordinated with the proposed pedestrian crossings of Ocean Blvd • No change in roadway surface • Preferred striping would limit wide areas of bare pavement in order to "narrow up" roadway • Preferred to restripe with paving project to avoid stripe removal lines • No impacts to adjacent properties	
Cost Opinion	Cost: $115,00 – $300,000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Medium priority • Could be implemented in tandem with Ocean Blvd pedestrian crossing projects	

CB-16 *Coos Bay*

Newmark Ave Road Diet *Transportation System Plan*

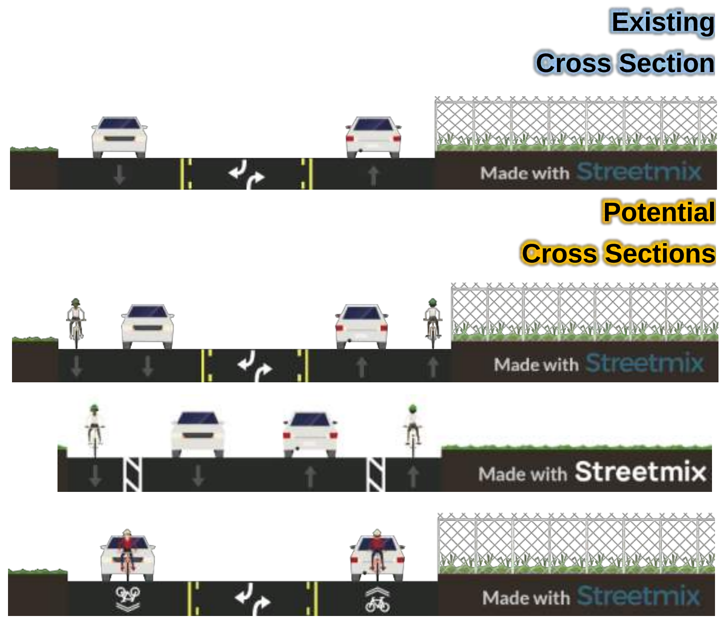




Purpose	• Reallocate street space to create a more balanced facility that accommodates vehicles, bicycles and pedestrians	
Description	Restripe road to provide bicycle facilities (road diet)	
Location	Cammann St to Wallace St and Hull St to east City Limits (Fir St)	
Roadway Characteristics	• Functional Classification: Arterial • Lanes: 5 • Pavement Width: 46'-66' • Posted speed: 30-35 mph • Existing (2018) ADT: 7,500-10,000 veh/day • Forecast (2040) ADT: 7,500-10,000 veh/day	5-Year Crash History (2012-2016): • Intersections do not exceed critical crash rate or 90th percentile crash rate • 9 reported crashes at Morrison St intersection • 17 reported crashes at Ocean Blvd intersection
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Level of traffic stress of 4 (highest) for both cyclists and pedestrians, indicating a high-stress environment • Lacks bicycle facilities • Narrow sidewalks directly adjacent vehicular traffic	**With Improvement** • Striped bicycle lanes • Provides buffer for pedestrians from vehicular traffic • Increases safety for cyclists and pedestrians • Improves active transportation network • Traffic operations could mimic current operations of section of Newmark Ave west of Cammann St
Additional Considerations	• Road Authority: Coos Bay • Part of the Oregon Coast Bike Route (OCBR) • Environmental constraints: None • Available ROW: Can be constructed within available ROW • Design should consider how this project could work with a realignment of Ocean Blvd/Newmark Ave • No change in roadway surface • No impacts to adjacent properties	
Cost Opinion	Cost: $25k *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs. Cost opinion does not include potential impacts to existing signalized intersections.*	
Implementation	• Medium priority • Coordinate with OCBR	

CB-17 | *Coos Bay*

Woodland Dr Bicycle Facilities | *Transportation System Plan*



Purpose	• Provide facilities for cyclists and establish Woodland Dr as a key north-south connection in Coos Bay's bike network	
Description	Add bicycle facilities (add sharrows or remove center turn lane if ROW acquisition not feasible)	
Location	Woodland Dr, from North City Limits to Ocean Blvd	
Roadway Characteristics	• Functional Classification: Arterial • Lanes: 3 • Pavement Width: 40' • Posted speed: 35 mph • Existing (2018) ADT: 10,000 veh/day • Forecast (2040) ADT: 11,000 veh/day	5-Year Crash History (2012-2016): • Woodland Dr and Thompson Rd intersection exceeds critical crash rate, with 11 reported crashes • 17 reported crashes at Woodland Dr and Ocean Blvd intersection
How Improvement Addresses Deficiencies	<u>**Existing/Future Deficiency**</u> • Lack of bicycle facilities • Bicycle level of traffic stress is 4 (highest), indicating high-stress environment • Intermittant sidewalk • Current bicyclists must share road with vehicles or use an alternate route	<u>**With Improvement**</u> • Bicycle facilities (sharrows where ROW acquisition not feasible) • Increased safety and accessibility for cyclists • Increases multi-modal network connectivity
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: None • Sharrows are not recommended on roads with a posted speed >30 mph. If sharrows are considered on Woodland Dr, traffic calming and a reduction a speed study should be pursued. • Enhanced signage should be considered to indicate presence of cyclists • There could be conflicts with existing residential driveways	
Cost Opinion	Cost: $40k-$2 million *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• High priority	

CB-18 **Coos Bay**

Newport Ln Bicycle Signage/Wayfinding ***Transportation System Plan***

Potential Wayfinding Signage

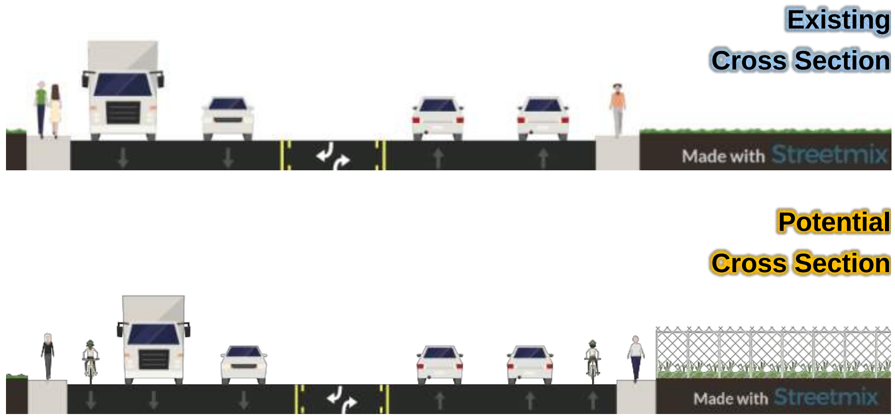
Wayfinding

"Bikes on Bridge" activated warning. Source: Maryland Transportation Authority)

Purpose	Facilitate improved connections for cyclists traveling between Coos Bay's downtown and Eastside district	
Description	Improve bicycle LTS through enhanced signage and wayfinding to connect Coos Bay UGB	
Location	Newport Ln between the Coos Bay UGB boundary and across the Isthmus Slough Bridge	
Roadway Characteristics	• Functional Classification: Minor Arterial • Lanes: 2 • Pavement Width: 24-26' • Posted speed: 30 mph • Existing (2018) ADT: 8,000-10,000 veh/day • Forecast (2040) ADT: 10,000-12,000 veh/day	• Bicyclists must share road with vehicles • Top 85% SPIS site near Ellen Rd and on structure (2014-2016) 5-Year Crash History (2012-2016): • Majority of collisions are concentrated at intersection with US 101 and at bridge ends.
How Improvement Addresses Deficiencies	<u>**Existing/Future Deficiency**</u> • Lack of wayfinding signage to direct cyclists to downtown and Eastside • Bicycle level of traffic stress is 4 (highest), indication a high-stress environment	<u>**With Improvement**</u> • Increases cyclists' level of comfort and ability to access Coos Bay destinations • Improves multi-modal network
Additional Considerations	• Road Authority: Coos County • Environmental constraints: This project is outside the UGB; the TSP did not inventory the environmental constraints outside the UGB, however it is within the 100-year flood plain • There is a planned STIP project at the west end of Newport Lane • Consider bicyclist activated push button "Bikes on Bridge" warning sign to utilize the existing ROW across the Isthmus Slough Bridge	
Cost Opinion	Cost estimates was not prepared for projects where the scope/extents are undefined	
Implementation	• High priority • This is outside of the City's UGB and would need to be led by Coos County or ODOT	

CB-20
US 101 Southern Bicycle Lanes

Coos Bay
Transportation System Plan



Purpose	• Provide facilities for cyclists on US 101 to the southern extent of the Coos Bay UGB • Provide facilities for all travel modes	
Description	Restripe to accommodate bicycle lane between southern end of couplet and the Coalbank Slough Bridge (options for additional signing/striping/ramp at bridge)	
Location	US 101: South couplet to Coalbank Slough Bridge	
Roadway Characteristics	• Functional Classification: Principal Arterial • Lanes: 5 • Pavement Width: 72’ • Posted speed: 30 mph • Existing (2018) ADT: 26,500 veh/day • Forecast (2040) ADT: 30,000 veh/day	5-Year Crash History (2012-2016): • 2 documented fatal or serious injury crashes in the immediate vicinity
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Lack of formal bicycle facilities on US 101 east of Kruse Ave and 1st St • Cyclists are forced to mix with vehicles or ride on sidewalk to cross bridge • Bicycle lanes end at southern end of couplet • Bicycles traveling in 14’ curb lane with traffic	**With Improvement** • 5’-6’ striped bike lanes with 12’ vehicle lanes • Increased safety and accessibility for cyclists • Improved bicycle network
Additional Considerations	• Road Authority: ODOT • Environmental constraints: Located within the 100-year floodplain • Could be constructed within available right of way • Maintains “hole in the wall” for freight route • Should consider with rebuilding of curb ramps	
Cost Opinion	Cost: $20k – $75k *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• High priority • Coordinate with Oregon Coast Bike Route	

CB-22 | ***Coos Bay***
N 14th St Bicycle Facilities | ***Transportation System Plan***

- Potential Wayfinding Locations

Wayfinding

Pavement Markings

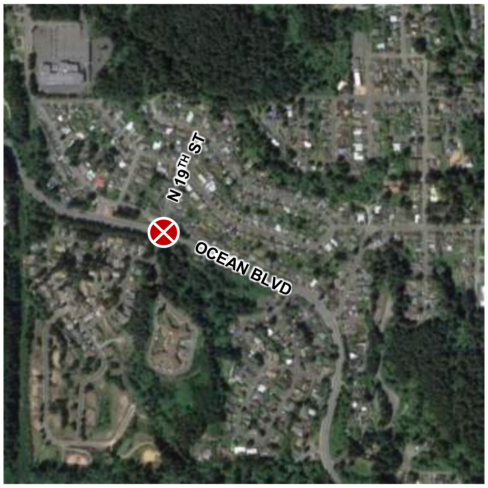
Purpose	• Enhance pedestrian and bicycle awareness and connectivity to Coos Bay park system • Provide a parallel route to Koos Bay Blvd • Provide a local north-south bicycle connection from North Bend to Coos Bay
Description	N 14th Street Bicycle Facilities
Location	N 14th St: Teakwood Ave to Juniper Ave

Roadway Characteristics	• Varies:
	  • Teakwood Ave: Local (2 lane)
	  • N 14th Ave: Local (2 lane)
	  • Butler Rd: Major Collector (2 lane)
	  • Juniper Rd: Major Collector (2 lane)
	  • Hemlock Ave: Major Collector (2 lane)
	• Posted speed: 25 mph
	• Existing (2018) ADT: <3,000 veh/day
	• Forecast (2040) ADT: <3,000 veh/day
	
	5-Year Crash History (2012-2016):
	• Less than 10 crashes combined on the 5 roads
	• No pedestrian or bicycle collisions

How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Koos Bay Blvd is a narrow, 2-lane road that cannot accommodate dedicated bicycle facilities • Lack of dedicated bicycle lanes and routes • Coos Bay lacks signage from the OCBR to community features **With Improvement** • Potential for bicycle facilities through striping sharrows along with wayfinding • Enhances connectivity of bicycle and pedestrian system • Potential safety benefits from directing users to correct routes
Additional Considerations	• Road Authority: Coos Bay • Environmental considerations: Koosbay Blvd is along a historic landslide site. There are several leaking underground storage tanks in the vicinity, however this should not be impacted by this improvement. • Available ROW: Signs and striping can be placed within the public ROW • Portions of the route are within a 1-mile radius of a school • Consider providing estimated time to get to destination on the wayfinding sign • Coordination with Coos Bay Parks and Recreation • Does not require new pavement or reconstruction to provide wayfinding
Cost Opinion	Cost: \$20,000 – \$50,000 *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*
Implementation	• Medium priority

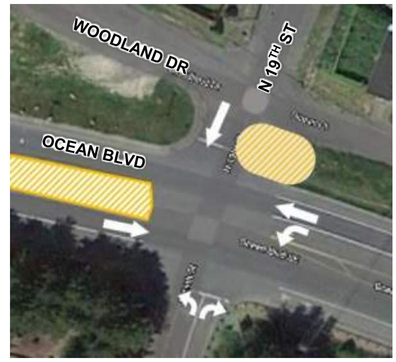
CB-31
Ocean Blvd/19th St Access Management

Coos Bay
Transportation System Plan



Existing Intersection

Proposed Access Management



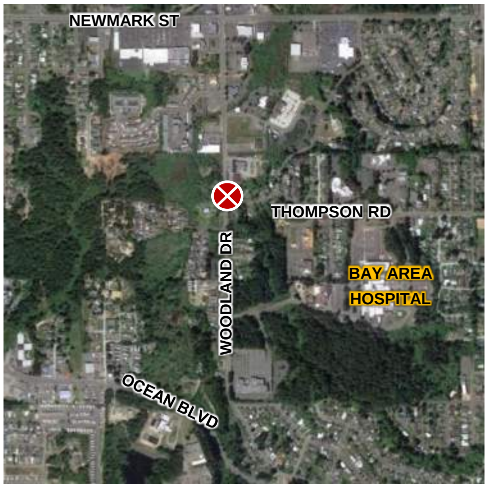
Purpose	Address existing safety concerns by limiting the number of allowable traffic movements into and out of 19th St at Ocean Blvd	
Description	Enhanced channelization of side street to improve safety by limiting turns onto 19th St from Ocean Blvd.	
Location	Ocean Blvd at 19th St	

Roadway Characteristics	• Functional Classification:
	  • Ocean Blvd: Minor Arterial
	  • Woodland Dr/19th St/Ocean Ct: Local
	• Lanes:
	  • Ocean Blvd: 3 lanes
	  • Woodland Dr/19th St/Ocean Ct: 2 lanes
	• 19th St Pavement Width: 45’
	• Posted speed:
	  • Ocean Blvd: 40 mph
	  • Woodland Dr/19th St/Ocean Ct: 25 mph
	• ADT not available
		5-Year Crash History (2012-2016):
		• 1 fatal injury crash at intersection

How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Fatal injury crash at intersection • Existing safety concerns • High volume and higher speed roadway (Ocean Blvd) with many turning movements to and from minor street • Limited sight distance	**With Improvement** • Limited conflict points at the intersection of Woodland Dr/19th St and at Ocean Blvd/19th St • Improved safety • Traffic could access the neighborhood from Woodland Dr to the west or Ocean Ct to the east
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: None • Available ROW: Could be constructed within available right of way • Could also consider right-in/right-out only instead – would need to confirm turning movement traffic volumes to determine best access management option	
Cost Opinion	Cost: TBD *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Low priority	

CB-32 — Thompson Ave/Woodland Dr Safety Enhancements

Coos Bay Transportation System Plan



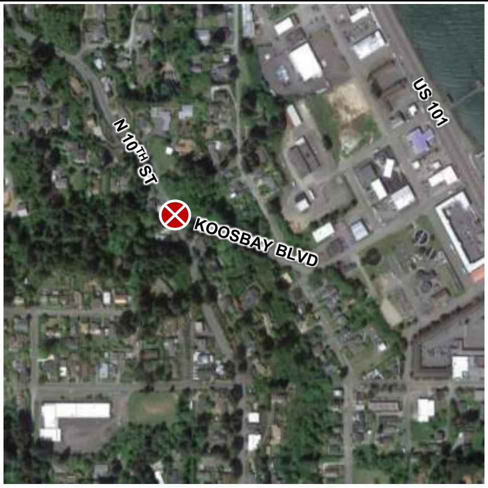
Existing Intersection

Proposed Lane Configuration

Purpose	• Address an existing safety concern at the unsignalized intersection of Thompson Rd and Woodland Dr • Address sight distance concerns turning onto Woodland Dr	
Description	Restripe the east leg to remove the westbound right-turn bay and make the movement a shared thru/right to improve sight distance.	
Location	Thompson Rd at Woodland Dr	
Roadway Characteristics	• Thompson Rd Functional Classification: Major Collector • Lanes: 2 (3 lanes at intersection) • Pavement Width: 36’ • Posted speed: 25 mph • Existing (2018) ADT: <4,000 veh/day • Forecast (2040) ADT: <4,000 veh/day (40 lefts, 190 rights)	5-Year Crash History (2012-2016): • 11 crashes at intersection • Exceeds the statewide 90th percentile crash rate and the critical crash rate
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Sight distance for westbound right-turning vehicles can be blocked or restricted by westbound left-turning vehicles	**With Improvement** • Improved sight distance for vehicles traveling west on Thompson Rd • Increase turn radius for southbound left-turns • Reduction one shared turn lane may cause longer delays for the westbound right-turn, although the left-turns are low in comparison.
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: Thompson Rd crosses potential wetlands • Improvement can be constructed within available right of way • Could also pair improvement with vegetation trimming on Woodland Ave and improved pedestrian crossing • Project may trigger ramp upgrades	
Cost Opinion	Cost: $15-25k *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Medium priority	

CB-33 | ***Coos Bay***

Koosbay Blvd/10th St Realignment | ***Transportation System Plan***



Existing Intersection

Potential "T" Intersection Alignment

Purpose	• This project will address and existing safety concern, caused by poor sight lines and the angle in Koosbay Blvd's approach.	
Description	Realign intersection to "T" to improve visibility and safety	
Location	Koosbay Blvd at 10th St	

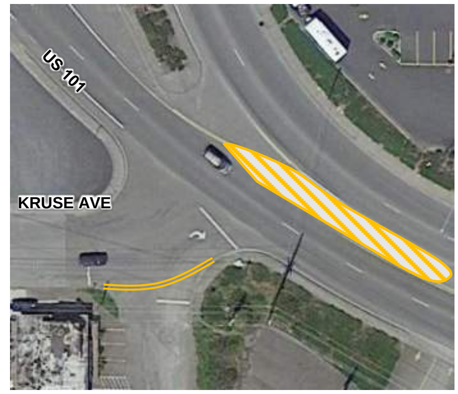
Roadway Characteristics	• Functional Classification:
	  ◦ Koosbay Blvd: Major Collector
	  ◦ 10th St: Minor Arterial
	• Lanes: 2
	• Pavement Width: 28 – 36'
	• Posted speed: 30 mph
	• Existing (2018) ADT: 5,000-8,000 veh/day
	• Forecast (2040) ADT: 5,000-8,000 veh/day
		5-Year Crash History (2012-2016):
		• Exceeds statewide 90th percentile crash rate and critical crash rate
		• Six of the eight crashes were rear end collisions, and the remaining two were turning collisions due to a range of improper driver behavior was the cause (following too closely, failing to yield right-of-way, inattention and speeding).

How Improvement Addresses Deficiencies	**<u>Existing/Future Deficiency</u>** • Acute angle intersection • Limited visibility, particularly for older drivers and those with difficulties turning their heads, necks, or upper bodies to get an adequate line of sight • Difficult turning movements and increased exposure time to thru traffic	**<u>With Improvement</u>** • Proper 90 degree alignment • Increased line of sight • Shorter exposure time and crossing distances • Increased visibility and safety • Could improve truck turning (NBR)
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: Koosbay Blvd is on a historic landslide • Potential right of way impacts in the southeast quadrant • Clearing of vegetation within sight triangles could also improve sight distance • Koosbay Blvd at US 101 was identified in the Oregon Freight Plan as an intersection that should be modified to accommodate heavy vehicles	
Cost Opinion	Cost: TBD *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Medium priority	

CB-34 | ***Coos Bay***
US 101/Kruse Ave Access Management | ***Transportation System Plan***

Existing Intersection

Potential Improvement



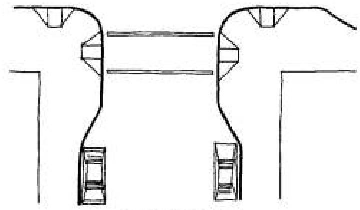
Purpose	• Address existing safety concerns along US 101 near Coos Bay's southern city limits. • Move toward access management	
Description	Convert the intersection of Kruse Ave at US 101 to right-in/right-out, close access to 1st Street from Kruse Ave and improve S Front Street to minor arterial standard.	
Location	US 101 at Kruse Ave	
Roadway Characteristics	• Functional Classification: Principal Arterial • Lanes: 5 • Pavement Width: 72' • Posted speed: 30 mph • Existing (2018) ADT: 27,500 veh/day • Forecast (2040) ADT: 30,000 veh/day	5-Year Crash History (2012-2016): • 2 documented fatal or serious injury crashes in the immediate vicinity • Top 10% SPIS site (2013-2015)
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Lack of channelization between US 101, Kruse Ave and 1st St • Increased density of driveways • Top 10% Safety Priority Index System site	**With Improvement** • Channelization and improved access management off the US 101 mainline • Improved safety • Fewer conflicts
Additional Considerations	• Road Authority: ODOT (US 101) and Coos Bay (S Front Street) • Environmental constraints: Project is located within the 100-year floodplain • This improvement can be completed within the available right of way • Would need to ensure access to 1st St from Front St or other local road network	
Cost Opinion	Cost: $100k *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Should not limit left-in to Kruse Ave until Front Street is improved to minor arterial standard • Low priority	

CB-35/36/37 — *Coos Bay*

Curb Bump Outs at Multiple Locations — *Transportation System Plan*

Existing Intersections

Proposed Improvement

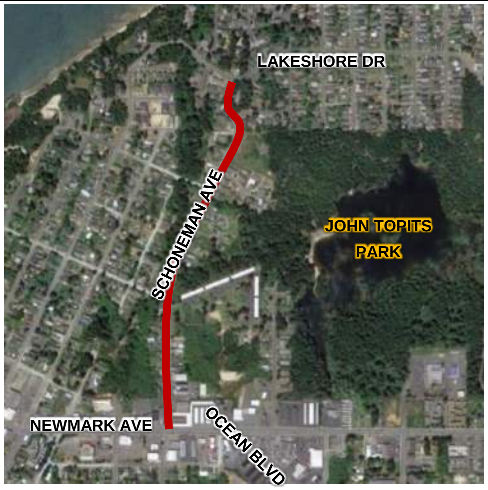


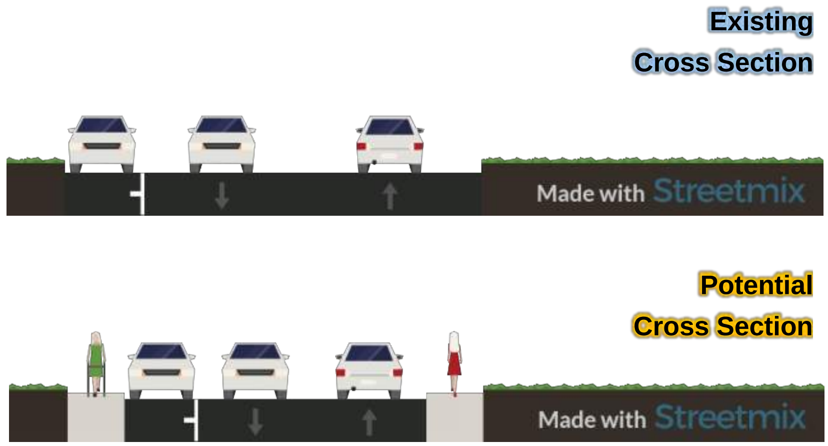
Curb extensions

Purpose	• Improve pedestrian safety through downtown Coos Bay • Enhance pedestrian environment • Traffic calming	
Description	Curb bump outs/extensions (consistent through downtown)	
Location	10 St, near Central Ave; Ingersoll Ave, near 2nd St; and 7th St at Ingersoll Ave	
Roadway Characteristics	• Varies – collector and arterial that serve as important east-west connections from downtown Coos Bay to the northwest and North Bend via Ocean Blvd • Lanes: 2 • Speed limit: 25 mph • Existing (2018) ADT: 27,500 veh/day • Forecast (2040) ADT: 30,000 veh/day	5-Year Crash History (2012-2016): • 2 crashes at 7th St and Ingersoll Ave, which exceeds the Statewide 90th percentile crash rate. Both crashes recorded were the result of drivers failing to yield the right-of-way. • 17 crashes at 10th St and Central Ave; 1 pedestrian-related collision • Ingersoll St near 2nd St is sited by Top 10% Safety Index System
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Unmarked pedestrian crossings • Lack of awareness of pedestrians by motorists	**With Improvement** • Improved pedestrian crossings • Increased pedestrian visibility and safety • Enhanced pedestrian network • Decreased crossing lengths • Marked crosswalks identify the presence of pedestrian activity in the area • Improved pedestrian and transit access benefits disadvantaged populations
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: Intersection at Ingersoll St and S 2nd Ave is in 100 year floodplain • Can be implemented within available right if way • Use striping or materials that maximize crosswalk visibility • Drainage and freight/emergency vehicle movement must be considered in design of curb extensions	
Cost Opinion	Cost: $120k ($40k at each intersection) *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Low to medium priority	

CB-39
Schoneman Ave Street Upgrade

Coos Bay
Transportation System Plan



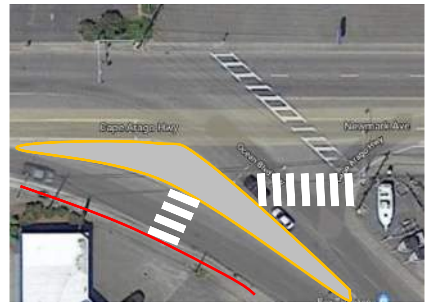


Purpose	• Update Schoneman Ave to urban street standards to support future transportation needs • Improve network connectivity and connection to John Topits Park	
Description	Upgrade to collector standard (storm/curb/gutter/sidewalk) and connect to trail system in John Topits Park	
Location	Schoneman Ave, near Lakeshore Dr to Newmark Ave	
Roadway Characteristics	• Functional Classification: Major Collector • Lanes: 2 • Pavement Width: 36’ • Posted speed: 25 mph • Traffic volumes not available, but road serves mostly residential land uses	5-Year Crash History (2012-2016): • 1 crash at Morrison St (continuation of Schoneman Ave – north) and Lakeshore Dr
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Important north-south network connection with out-of-date standards • Lacking sidewalks • Limited connectivity between Schoneman Ave and existing trail system in John Topits Park	**With Improvement** • Updated to collector standards with stormwater, curb, gutter, and sidewalks • Increased network connectivity • Increased accessibility for pedestrians • Improved connections to John Topits Park
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: Project is located near sensitive lands (riverine and wetland) – need to minimize/avoid impacts. • Would require additional right of way and driveway impacts • Potential major utility relocation required to meet collector standard	
Cost Opinion	Cost: $1.4M *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Low priority	

CB-40 | *Coos Bay*
Newmark Ave/Ocean Blvd Realignment | *Transportation System Plan*

Existing Intersection

Proposed Improvement



Purpose	• Address and existing safety concern, caused by poor sight lines and the angle in Koosbay Blvd's approach • Traffic calming • Enhanced pedestrian crossing
Description	Provide raised "porkchop" median to shorten crossing distance and provide a pedestrian crossing of Ocean Blvd.
Location	Newmark Ave at Ocean Blvd

Roadway Characteristics	• Functional Classification: Minor Arterial
	• Pavement Width: Newmark Ave: 46-66'; Ocean Blvd: 56'
	• Posted speed: Newmark Ave: 30-35 mph; Ocean Blvd: 30-40 mph
	• Existing (2018) ADT:
	  • Newmark Ave: 10,000-13,000 veh/day
	  • Ocean Blvd: 10,000-15,000 veh/day
	• Forecast (2040) ADT:
	  • Newmark Ave: 10,000-15,000 veh/day
	  • Ocean Blvd: 10,000-15,000 veh/day
	
	5-Year Crash History (2012-2016):
	• 17 crashes at intersection of Newmark Ave and Ocean Blvd

How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Skewed intersection • Increased pedestrian crossing distances • Skewed/long crossing of Newmark Ave and no crossing of Ocean Blvd • High volume intersection of two minor arterials and limited pedestrian crossing opportunities **With Improvement** • Increased line of sight • Shorter exposure time and crossing distances for pedestrians • Increased visibility and safety • Increased access to transit • Pedestrian refuge
Additional Considerations	• Road Authority: Coos Bay • Environmental constraints: None • Could be constructed within available right of way • Would likely trigger improvements to traffic signal and current crossing of Newmark Ave • Access management of the driveways in the southwest quadrant would be needed to provide pedestrian crossing
Cost Opinion	Cost: TBD; Cost estimates were not prepared for projects where the scope/extents are undefined *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*
Implementation	• High priority

CB-41 *Coos Bay*
South Coos Bay Pavement Repurposing ***Transportation System Plan***

Existing

Potential Improvement

Purpose	• Traffic calming • Improve safety • Repurpose "pavement desert"	
Description	Provide landscaping or pedestrian buffer to reduce large, underutilized pavement area on east side of US 101 South.	
Location	US 101 South (east side): Johnson Ave to Kruse Ave	
Roadway Characteristics	• Functional Classification: Principal Arterial • Lanes: 2 • Pavement Width: 72' • Posted speed: 30 mph • Existing (2018) ADT: 15,000 veh/day • Forecast (2040) ADT: 17,000 veh/day • Parking is currently allowed on east side of US 101 in this section	5-Year Crash History (2012-2016): • 2 documented fatal or serious injury crashes in the immediate vicinity • Top 10% SPIS site (2013-2015)
How Improvement Addresses Deficiencies	**Existing/Future Deficiency** • Wide area of pavement for only two lanes of traffic • Underutilized pavement	**With Improvement** • Delineation of US 101 and shoulder • "Narrowed up" feeling of US 101 • Traffic calming
Additional Considerations	• Road Authority: ODOT • Environmental constraints: Project is located within the 100-year floodplain • This improvement can be completed within the available right of way • Could consider either landscaping, bioswale or pavement markings and candlesticks to delineate vehicular travel lanes from wide shoulder • May impact existing business accesses • Design would need to consider sight distance for travelers on US 101 and from business driveways	
Cost Opinion	Cost: $25k *Cost opinion is in 2019 dollars and does not assume right-of-way, utility relocation, new utilities or hazmat costs.*	
Implementation	• Low priority • Consider extending north to Johnson Blvd to maintain continuity with planned ODOT improvements.	

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Technical Memorandum #10:
Transportation Improvement Finance Program

TECHNICAL MEMORANDUM #10

Transportation Improvement Finance Program – Coos Bay (Task 8.4)

Date: April 11, 2020

To: City of Coos Bay
Oregon Department of Transportation, Region 3

From: Angela Rogge, PE, David Evans and Associates, Inc.
Matt Hartnett, EIT, David Evans and Associates, Inc.

Subject: Cities of Coos Bay and North Bend Transportation System Plan Updates

The purpose of this memorandum is to present what the City is reasonably likely able to fund and implement within the twenty (20) year planning horizon. The revenue forecasts developed in for *Technical Memorandum #3: Financial Funding Forecast* and the projects from *Technical Memorandum #9: Preferred Alternative* were used to assess the feasibility of funding the proposed solutions.

The alternatives were prioritized into two (2) systems:

> **Financially Feasible System (Tier 1)** – List of Projects that are feasible to fund and implement within the twenty (20) year planning horizon using some combination of federal, state, local, and private funds
>
> **Illustrative System (Tier 2)** - List of Projects that are needed and acceptable, but that are not reasonably likely to be funded within the twenty (20) year planning horizon. This list must be limited to the most important and strategic Projects for the area that go beyond current understanding of what is financially feasible

For projects to be included in the Tier 1 list, they should have:

- General estimate of timing for planned transportation facilities and major improvements;
- Planning-level cost estimates for each Project and service;
- Agency and Cities support;
- Acceptable costs relative to the anticipated benefits; and
- A well-defined and reasonable scale.

Revenue Sources

The TSP helps guide future investments in the transportation system, from operations and maintenance to capital improvements. This section reviews the funding sources Coos Bay has historically used for improvements and maintenance to the transportation system, as well as a funding forecast through the 2040 planning horizon.

Historic Funding Sources

Current and primary revenue sources that fund transportation system maintenance, operations, and capital improvements include:

- State Highway Fund or Surface Transportation Block Grant (STBG) program;
- State operating grants;
- State gas tax receipts;
- City franchise fees;
- Local Improvement Districts;
- Transportation Utility Fee;
- Jurisdictional Exchange Fund; and
- Urban Renewal.

State Funding Sources

State Highway Fund or Surface Transportation Block Grant (STBG): This is a special federal-aid from the FHWA that provides flexible funding to States, Cities and other public agencies for transportation improvement and preservation projects. They are reimbursable federal aid funds, and may be used for projects on any public road, including active transportation infrastructure and transit.

State Operating Grants: Grants can be awarded by the federal government, private, or non-profit organizations. In most cases, agencies requiring funding for a transportation project have to apply to the plethora of grants available. The awarding organization then evaluates the grant proposal from each applicant, and selects a winner. The funds are provided with specific instructions on how they are to be used.

State Gas Tax Receipts: Taxes charged on fuel become part of the State's revenue which can then be used for transportation construction and improvement projects. Taxes are collected on fuels including gasoline, ethanol blends, diesel, biodiesel, propane, CNG (compressed natural gas), aircraft fuel, as well as any other usable fuel that can power a motor vehicle or aircraft. Currently, Oregon collects a fuel tax of $0.34 per gallon of gasoline.

City Funding Sources

City Franchise Fees: The City collects franchise fees from companies that utilize the public right-of-way to provide their services.

Local Improvement Districts (LIDs): This mechanism allows neighboring property owners to group together in order to improve public facilities, paying for them over time through individual assessments. LIDs are generally used to complete local street improvements, sidewalk improvements, or improvements to business districts.

Coos Bay has two designated LIDs: 22nd Street and Minnesota Ave. The City has a Special Improvement (LID) Fund, which it uses for sewer, storm water, and street maintenance and improvements. Recently, most spending from this fund has provided for pavement maintenance and repair.

Tax Increment Financing (TIF)/Urban Renewal: TIF is a public financing method used to subsidize redevelopment, infrastructure, and other community-improvement projects. Through use of TIF, a city can divert future property tax revenue increases from a defined area or district (typically termed an urban renewal district) and apply those revenues toward an economic development project or public improvement project in the community.

Coos Bay maintains an Urban Renewal Fund, monies from which are earmarked for capital streetscape improvements in the Downtown and Empire areas.

Transportation Utility Fee: Transportation utility fees are charges levied on developed properties and/or residents within a city. Revenues from these fees are used to maintain local streets and transportation facilities.

Jurisdictional Exchange Fund: In 2000, Coos Bay assumed ownership of 23 lane miles of formerly State owned and operated roadways along with $4.8 Million to maintain these roads in perpetuity. Coos Bay City Charter dictates that only the interest collected on the monies in this fund can be used for maintenance if the jurisdictional exchange streets or debt service on road maintenance projects. Those streets involved in this transfer include parts of all of the following: Newmark Avenue, Empire Boulevard, Ocean Boulevard, Central Avenue, Commercial Avenue, Anderson Avenue, 6th Avenue, D Street, and Coos River Road.

In recent years, incomes from interest have been very small, and available revenues have been used to pay debt service for the Ocean Boulevard project. The City anticipates being able to have more resources that are available in this fund in the upcoming years to be used on maintenance of the jurisdictional exchange streets.

Funding Forecast

Revenue and Expenses

Using adopted budgets and a number of key assumptions, total revenue and expenses are estimated to determine available revenue to implement the projects identified in the TSP. Total revenue is estimated at approximately $58-$61 million and total expenses are estimated at approximately $26 million (see Table 1).

Coos Bay continues to be proactive in examining and pursuing other funding sources for transportation operations and maintenance and capital. The above estimates do not include revenues from any of the many strategies for which the City has discussed opportunities for implementation in the future. Receipt of grant awards and STP funds could also facilitate the completion of major capital improvement projects, however these monies are not assumed here.

The transportation expenses shown in Table 1 are assumed consistent with average levels for FY12 to FY17. If Coos Bay continues its funding levels for street maintenance, the City will have roughly $32 to $34 Million available for capital projects through the planning horizon (2040). Alternatively, Coos Bay could increase its level of maintenance spending and dedicate the remaining revenues to capital projects.

Table 1. Coos Bay Transportation Revenue/Expenses through 2040

City of Coos Bay	2019-2040
Revenue (Case A)	
St Hwy Fund - Allocated to City	$30,001,000
Franchise Fees	$8,800,000
Transportation Utility Fee	$20,000,000
Total	**$58,801,000**
Revenue (Case B)	
St Hwy Fund - Allocated to City	$32,230,000
Franchise Fees	$8,800,000
Transportation Utility Fee	$20,000,000
Total	**$61,030,000**
Expense	
Operations and Maintenance	$22,000,000
Capital Expenditures	$4,400,000
Total	**$26,400,000**
Funding Forecast:	***$32.4M - $34.6M***

Potential Additional Local Funding Mechanisms

Local Fuel Tax: Over two dozen Oregon cities and counties have adopted local fuel taxes, ranging from one ($0.01) to ten ($0.10) cents per gallon. Distributors of fuel within the city limits pay these taxes to the city monthly.

In November 2016, voters in both Coos Bay and North Bend defeated a measure proposing a local fuel tax dedicated to street improvement and maintenance. Leadership in the two cities jointly proposed the measure and conditioned its approval on it passing in both communities.

City officials are interested in reengaging citizens on a local fuel tax. In order to build broader political support for a new measure, Coos Bay and North Bend may want to consider a local fuel tax that is only levied during the summer months, when the area experiences higher visitor volumes. The cities of Newport and Reedsport levy seasonally adjusted local fuel taxes.

Transportation System Development Charges (SDCs): SDCs are collections from developers as new development occurs in the City. These charges are commonly based on trip generation rates associated with different type of development. Where implemented, SDC revenues are typically earmarked for transportation improvements related to the new development.

Coos Bay established SDCs in 2006, but placed a moratorium on them in 2008. The City has approximately $15,000 remaining in its Transportation SDC Fund from the period during which it levied these charges. Reversing this moratorium and reinstituting SDCs could bolster Coos Bay’s ability to expand its transportation network, particularly in higher growth areas.

Parking District Assessment: Parking district assessments are taxes levied on property owners in parking districts in order to provide for the operation and maintenance of parking facilities. Coos Bay is interested in exploring this strategy. Currently, resources from the City’s State Gas Tax and Street Improvement Funds are used to operate and maintain public parking infrastructure.

Development Exactions: To provide adequate infrastructure in response to site-specific growth, capital improvements can be exacted as conditions of approval for building permits, subdivisions, and zoning actions. Developers may be required to complete frontage street improvements and other off-site transportation improvements to mitigate traffic impacts. Exactions are to be related to the project's measured impact on the infrastructure, known as "rational nexus".

General Obligation Bonds: Bonds are a funding mechanism for constructing capital improvement projects in the City. Voter-approved bonds are sold to fund street improvement projects. Transportation projects are usually grouped in “bond packages” that go before the public for voter approval. Voter-approved General Obligation Bonds are then supported through the City’s property tax base.

Coos Bay has one general obligation bond at present – its 2009 fire station bond.

City General Fund Revenues: To secure more funding to build, operate, and maintain transportation facilities, the City may choose to use general property tax dollars or an increasing share of other General Fund revenues. Using this strategy, however, places transportation system funding in direct competition with other City services that may be already obligated, such as police, fire, libraries, and parks.

Other Local Funding Mechanisms: There are several other local taxes and fees that Oregon cities may consider in funding transportation capital and operations. These include, but are not limited to hotel/motel tax, employer payroll tax, and parking in-lieu fees.

Implementation

Through the planning horizon, the City of Coos Bay will need to balance their existing maintenance backlog and needs with new capital projects. The community has expressed concern in the condition of the roads, and thus maintenance and road rehabilitation is a priority.

The suggested plan for implementation would allot nearly all of the transportation revenue for operations, maintenance and road rehabilitation for the first five years of the planning horizon. During this time, the city can continue to implement new projects if they can be packaged as part of a larger maintenance or rehabilitation project. After five years, the amount of revenue directed towards operations, maintenance and rehabilitation would shift to nearly 70 percent, with the remaining 30 percent focused on new capital projects. The City should continue to seek opportunities to pair maintenance with improvement projects where possible.

The Tier 1 list of projects in the TSP (next chapter) assumes the implementation plan proposed above. Priorities may change over time and unexpected opportunities may arise to fund particular projects. The City is free pursue any of these opportunities at any time. The proposed timeline for allocating transportation revenue is meant to guide, not dictate, the implementation of projects in the TSP.

Transportation Improvement Finance Program

Recommended solutions were developed through an iterative process. The solutions (projects) work to address identified deficiencies in connectivity, amenities, safety, and operations with a focus on creating a balanced system able to provide travel options for a wide variety of needs and users.

Because the advancement of any project is contingent upon the availability of future funding, it is important to establish a flexible program of prioritized projects that meet the needs of diverse stakeholders while leveraging current and future funding opportunities. Ultimately, this refined and prioritized list is intended to serve as a menu of projects, with multiple factors that can be used together to assess the highest priority projects that can be completed within the available budget.

The recommended project list is composed of the following two lists, created based on each project's priority and likelihood to be funded:

1. The Tier 1 (Financially Constrained) Projects list identifies the projects (in no particular order) that could be constructed with funding anticipated through 2040. This list includes projects already committed in adopted documents.
2. Tier 2 (Needed but Unfunded) Projects list identifies projects (in no particular order) that are highly supported but that, due to cost or jurisdiction, were unable to be included in the Tier 1 list. Should additional funding become available, these are projects the City may want to consider.

The City is not required to implement projects identified on the Financially Constrained Projects list first. Priorities may change over time and unexpected opportunities may arise to fund particular projects. The City is free pursue any of these opportunities at any time.

The purpose of the Tier 1 Financially Constrained Projects list is to establish reasonable expectations for the level of improvements that will occur, and give the City initial direction on where funds should be allocated. The project design elements are identified for the purpose of creating a reasonable cost estimate for planning purposes. The actual design elements for any project are subject to change and will ultimately be determined through a preliminary design and final design process, and are subject to City, Douglas County, and/or ODOT approval.

Project Sheets

Project sheets were developed for several of the preferred alternatives to highlight important features of the project area and to serve as a resource for future project development. The project sheets may be found in *Technical Memorandum #9*. The project sheets include a description of the proposed project and possible options and considerations for design elements. Not all of the preferred alternatives have a project sheet; they were created for projects that benefit from additional details or figures.

The images provided in this document are conceptual and for planning purposes only. Should a project be selected by the City or ODOT to be pursued further, the design features and cost estimates will be refined through the engineering process.

Tier 1: Financially Constrained Project List

The Financially Constrained Project list includes projects that could be constructed with funding anticipated through 2040, if the City desires.

Table 2. Tier 1 Projects

ID	Project Name	Location	Description	Pedestrian	Bicycle	Safety	Vehicle	Transit	Other	SRTS[1]	Primary Funding Source[2]	Prelim. Cost Estimate (2019 $)[3]
Operations and Maintenance												
43	Pavement Maintenance	City wide	Fix Potholes. Maintain/fix/strengthen existing pavement system, account for maintenance in funding plan. Critical: Central Ave, Southwest Blvd, Koosbay Blvd, Blanco Ave, Radar Rd, Schoneman St, LaClair St, F St, Butler Rd, Juniper Ave and Fulton Ave			X	X			X	Coos Bay	$52,850,000 (Operations/ Maintenance)
Capital Improvements												
3	Mingus Park Wayfinding	Mingus Park	Wayfinding signs to park	X	X					X	Coos Bay	$50,000
5	Woodland Dr Pedestrian Improvements	Woodland Dr: North City Limits to Ocean Blvd	Add sidewalks on Woodland Dr, marked pedestrian crossing (access to Hospital/Medical Park)	X	X						Coos Bay	$3,200,000
6	Thompson Rd Pedestrian Crossing	Thompson Road near Bay Area Hospital	Add marked crossing and mid-block crossing of Thompson Road to access hospital transit stop	X	X	X		X			Coos Bay	$50,000
7	Hospital Way Sidewalk	Hospital Way near Medical Center (Immediate Care Clinic)	Add sidewalk to connect to medical facilities	X	X						Coos Bay	$560,000
10	US 101 Downtown Pedestrian Crossings	US 101: Commercial Ave and Alder Ave	Improved bike/pedestrian crossings across US 101 to be consistent with Front Street Action Plan	X	X	X					Coos Bay	$100,000

ID	Project Name	Location	Description	Pedestrian	Bicycle	Safety	Vehicle	Transit	Other	SRTS[1]	Primary Funding Source[2]	Prelim. Cost Estimate (2019 $)[3]
22	N 14th St Bicycle Facilities	N 14th St: Teakwood Ave to Juniper Ave	Provide a parallel bicycle route to Koos Bay Blvd by providing sharrows and wayfinding on N 14th St		X						Coos Bay	$50,000
28	Bike/Ped Transit Connectivity	All Transit Routes	Improve bicycle and ped connectivity to stops	X	X	X		X			Coos Bay	N/A
38	4th Street Safety	4th St: Market Ave to Golden Ave	Restripe to a 3-lane cross-section with sidewalk bump-outs.	X		X					Coos Bay	$4,500,000
											Operations/Maintenance	$52,850,000
											Capital Projects	$8,510,000
											Total	**$62,310,000**

Tier 2: Illustrative

The Tier 2 Projects list identifies projects classified as "Needed but Unfunded", also referred to during the planning process as "illustrative." The projects are highly supported but, because of their cost or jurisdiction, were unable to be included in the Tier 1 list. Should additional funding become available, these are projects the City may want to consider.

Table 3. Tier 2 Projects

ID	Project Name	Location	Description	Pedestrian	Bicycle	Safety	Vehicle	Transit	Other	SRTS[1]	Primary Funding Source[2]	Prelim. Cost Estimate (2019 $)[3]
Capital Projects												

ID	Project Name	Location	Description	Pedestrian	Bicycle	Safety	Vehicle	Transit	Other	SRTS[1]	Primary Funding Source[2]	Prelim. Cost Estimate (2019 $)[3]
2	Morrison St Sidewalks	Morrison St: Newmark Ave to Pacific Ave	Upgrade sidewalks on both sides	X	X	X				X	Coos Bay	$2,500,000
4	Newmark Ave Pedestrian Improvements	Newmark Ave: Empire Blvd to Fir St	Improve PLTS score through access consolidation, median islands, mid-block pedestrian crossing	X		X				X	Coos Bay	N/A
8	Wallace St Pedestrian Improvements	Ocean Blvd at Wallace St (Three Rivers Casino)	Construct sidewalk along Wallace St and add RRFB crossing of Ocean Blvd at Wallace St to connect to transit	X	X	X				X	Coos Bay	$400,000
11	LaClair St Pedestrian Crossing	Ocean Blvd at LaClair St	Construct a pedestrian crossing with RRFB and median refuge	X	X	X				X	Coos Bay	$200,000
13	Southwest Blvd Pedestrian Improvements	US 101 to south City Limits	Construct sidewalk on Southwest Blvd. Prioritize segment within Safe Routes to School boundary (California Ave to US 101)	X	X					X	Coos Bay	$3,000,000
15	Ocean Blvd Road Diet (Next Phase)	Ocean Blvd	Extend road diet west from Woodland Dr to Lindy Ln	X	X	X				X	Coos Bay	$115,000-$300,000
16	Newmark Ave Road Diet	Newmark Ave: Cammann St to Wallace St and Hull St to east City Limits (Fir St)	Restripe road to provide bicycle facilities (road diet)	X	X	X				X	Coos Bay	$50,000-$2,000,000
17	Woodland Dr Bicycle Facilities	Woodland Dr: North City Limits to Ocean Blvd	Add bicycle facilities (add sharrows if ROW acquisition not feasible)		X	X					Coos Bay	$40,000
19	D St/Coos River Rd	D St/Coos River Rd: 6th Ave to East City Limits	Widen paved shoulder and provide enhanced signage & wayfinding		X	X	X			X	Coos Bay	$690,000

ID	Project Name	Location	Description	Pedestrian	Bicycle	Safety	Vehicle	Transit	Other	SRTS[1]	Primary Funding Source[2]	Prelim. Cost Estimate (2019 $)[3]
	Shoulder Widening											
23	Front St Bicycyle Facilities	Front St	Identify opportunities for bicycle facilities on Front St as development occurs		X	X					Coos Bay	As development occurs
31	Ocean Blvd/19th St Access Management	Ocean Blvd at 19th St	Enhanced channelization of side street to improve safety			X					Coos Bay	N/A
32	Thompson Ave/Woodland Dr Safety Enhancements	Thompson Ave at Woodland Dr	Restripe the east leg to remove the westbound right-turn bay and make the movement a shared thru/right to improve sight distance.			X	X				Coos Bay	$300,000
33	Koosbay Blvd/10th St Realignment	Koosbay Blvd at 10th St	Realign intersection to "T" to improve visibility and safety	X		X	X				Coos Bay	N/A
37	7th St Curb Extensions	7th St at Ingersoll Ave	Curb bump outs	X		X				X	Coos Bay	$50,000
39	Schoneman Ave Street Upgrade	Schoneman Ave: Lakeshore Dr to Newmark Ave	Upgrade to collector standard (storm/curb/gutter/sidewalk) and connect to trail system in John Topits Park				X			X	Coos Bay	$1,400,000
40	Newmark Ave/Ocean Blvd Realignment	Newmark Ave at Ocean Blvd	Provide raised “porkchop” median to shorten crossing distance and provide a pedestrian crossing of Ocean Blvd.	X	X	X	X			X	Coos Bay	N/A
42	S Front St Street Upgrade	US 101 South: Kruse Ave to S Front St	Upgrade S Front St to its arterial standard cross-section and limit access to right-in/right out at Kruse Ave/S 1st St	X		X	X				Coos Bay	$1,000,000-$2,000,000
Projects and Programs Requiring Coordination with Partner Agency												

ID	Project Name	Location	Description	Pedestrian	Bicycle	Safety	Vehicle	Transit	Other	SRTS[1]	Primary Funding Source[2]	Prelim. Cost Estimate (2019 $)[3]
9	Coos Bay Boardwalk RR Crossing Pedestrian Improvements	Coos Bay Boardwalk (near Anderson Ave and Market Ave)	Construct at-grade multimodal improvements (pavement)	X	X	X					Coos Bay/Coos Bay Rail	$500,000
14	Connect the Boardwalks	North Bend, Mill Casino and Coos Bay Boardwalks	Connect the area boardwalks to create a five mile uninterrupted boardwalk.	X	X	X					North Bend; Coos Bay; Private	N/A
18	Newport Ln Bicycle Signage/Wayfinding	Newport Ln	Improve bicycle LTS through enhanced signage & wayfinding to connect Coos Bay UGB		X	X					Coos County	N/A
20	US 101 Southern Bicycle Lanes	US 101: South couplet to Coalbank Slough Bridge	Restripe to accommodate bicycle lane (options for additional signing/striping/ramp at bridge)		X	X					ODOT	$20,000-$75,000
21	US 101 Bicycle Facilities	US 101	Provide bicycle lanes (OCBR priority) through road widening or lane diet.		X	X					ODOT	N/A
24	Bay Area Loop Weekend Service	Bay Area Loop	Add weekend service	X				X			CCATD	N/A
25	Transit Service Hours	All Transit Routes	Extend service hours	X				X			CCATD	N/A
26	Transit Frequency	US 101 & Ocean Blvd Routes	Increase frequency & add additional route	X				X			CCATD	N/A
27	Shelters and Stops	All Transit Routes	Add shelters and stops near community destinations	X	X	X		X			CCATD	N/A

ID	Project Name	Location	Description	Pedestrian	Bicycle	Safety	Vehicle	Transit	Other	SRTS[1]	Primary Funding Source[2]	Prelim. Cost Estimate (2019 $)[3]
29	Regional Transit Hub	Bay Area	Support CCATD in their pursuit of regional transit hub					X			CCATD	N/A
30	Transit Pull Outs	Coos Bay	Work with CCATD to identify locations for transit pull outs on busier streets			X	X	X			CCATD	N/A
34	US 101/Kruse Ave Access Management	US 101: near Kruse Ave	Access management/channelization			X	X				ODOT	$100,000
41	South Coos Bay Pavement	US 101 South: Johnson Ave to Kruse Ave	Provide landscaping or pedestrian buffer to reduce large, underutilized pavement area on east side of US 101 South.			X	X		X		ODOT; Coos Bay	$25,000
44	Newport Ln/Isthmus Slough Bridge Widening	Newport Ln/Isthmus Slough Bridge	Widen structure to accommodate bicycle and pedestrians. Consider interim option to provide “bicycle warning beacons” on either side of bridge to indicate when bicyclists are present.	X	X	X	X	X			County; ODOT	N/A
45	Market Ave/Front St RR Crossing Upgrade	Market Ave at Front St	Install at-grade rail active warning device	X	X	X	X		X		Coos Bay Rail	See Project 9
46	Central Dock Rd RR Crossing Upgrade	US 101 at US plywood-Central Dock Rd	Install at-grade rail active warning device	X	X	X	X		X		Coos Bay Rail	$500k
47	US 101/Curtis Ave Signal Head Upgrade	US 101 at Curtis Ave	Address Highway Over-Dimension Load Pinch Point by raising signal head			X	X		X		ODOT (OFP)	$50k-100k
48	US 101/Koosbay Blvd Upgrades	US 101 at Koosbay Blvd	Make modifications to accommodate high heavy vehicle volumes per OFP				X		X		ODOT (OFP)	N/A
49	US 101/Commerc	US 101 South at Commercial Ave	Make modifications to accommodate high heavy vehicle volumes per OFP				X		X		ODOT (OFP)	N/A

ID	Project Name	Location	Description	Pedestrian	Bicycle	Safety	Vehicle	Transit	Other	SRTS[1]	Primary Funding Source[2]	Prelim. Cost Estimate (2019 $)[3]
	ial Ave Upgrades											
50	US 101 North/ Johnson Ave Upgrades	US 101 North at Johnson Ave	Make modifications to accommodate high heavy vehicle volumes per OFP				X		X		ODOT (OFP)	N/A
51	Marine Ways Enhancements	Charleston boatyard	Improvements that include the Marine Ways						X		POCB	N/A
52	North Spit Improvements	Oregon Gateway	North Spit improvements to accommodate a multi-modal marine facility to handle bulk cargo, containers and an LNG export facility						X		POCB	N/A
53	Channel Widening/ Deepening	Coos Bay	Federal channel widening and deepening to accommodate larger ships and ensure safer operations						X		POCB	N/A
54	Charleston Boatyard Dock Replacements	Charleston boatyard	Dock replacements	X					X		POCB	N/A
55	Expanded Passenger Service	Airport	Add direct commercial passenger service between Southwest Regional Airport and northwest hubs (Portland)						X		CCAD	N/A
56	Airport Transit Service	Airport	Provide transit service to airport if air passenger service increases	X				X	X		CCATD	N/A

N/A = Cost estimate not developed as part of the TSP

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Technical Memorandum #11:
Policies and Standards

TECHNICAL MEMORANDUM #11

Policies and Standards (Task 9.1) – Coos Bay

Date: October 17, 2019

To: City of Coos Bay
Oregon Department of Transportation, Region 3

From: Darci Rudzinski, Shayna Rehberg, and Courtney Simms, Angelo Planning Group
Angela Rogge, PE, David Evans and Associates, Inc.

Subject: Cities of Coos Bay and North Bend Transportation System Plan Updates

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This memorandum presents policies and standards necessary to implement the updated City of Coos Bay Transportation System Plan (TSP). The first section describes an approach to updating the City's transportation policies and identifies areas that are important to retain and/or refine, consistent with the recommendations of the draft TSP. The second section focuses on transportation standards. Standards will be updated for inclusion in the draft TSP, as well as implemented through the Coos Bay Development Code. This memorandum describes potential changes to both the TSP and the code. Recommendations in this memorandum will be reflected in the draft TSP and will be addressed in Technical Memorandum #12, which includes proposed updated City policy and development standards.

Transportation Policy

The currently adopted TSP includes goal, policies, and action items. Proposed revisions to adopted goals and a set of objectives to guide the TSP update project are included in Technical Memorandum #2. These were revised after City staff review and feedback from the Public Advisory Committee. A set of the final Goals and Objectives are in Attachment A. Many of the project objectives can serve as the City's transportation policy after TSP adoption. A few objectives are more specific to the update process itself and will need to be slightly modified to provide policy that will help guide future land use and transportation decision making. Some objectives may be better stated as action items; new action items also may be desired as a result of outstanding items in the draft updated TSP.

Capital Improvements

The annual budget is a policy document that sets standards and establishes an action, operational, and financial plan for the delivery of city services. It has been prepared to provide a comprehensive overview of all City funds and services, and to give residents a better understanding of the city's operating and fiscal programs. While the city budget is a one-year document, a multi-year approach is used to consider the future implications of current fiscal conditions and decisions.

The budget accounts for Capital Improvement Funds, which provide funding for annual improvements such as street repairs, park enhancements, and wastewater collection and treatment infrastructure repairs and upgrades. The City of Coos Bay uses their TSP as a tool for identifying capital improvements related to transportation, but also relies on community feedback to address concerns on the local road system.

Maintenance

A policy area that is addressed in the adopted TSP, but not in the update objectives, relates to maintenance. Existing Policy f. under Goal #3 (a safe transportation system) states that the City will provide "satisfactory levels of maintenance to the transportation system in order to preserve user safety, facility aesthetics, and the integrity of the system as a whole." The City recently adopted a Transportation Utility Fee which produces funds exclusively for street repair and maintenance.

Another aspect of this policy area is the management of unmaintained facilities. For the purpose of this memorandum, "unmaintained" refers to unpaved public roads (dirt, gravel). The City is not responsible for maintenance of graveled roadway. However, on public roads, the City will grade and provide dust control, or maintain to a minimum standard to protect and access utilities.

The draft TSP will include a map depicting roadway jurisdiction and will identify the parties responsibly for maintenance and improvements. Existing policy statements will be reviewed and revisions as necessary will be developed to reflect the City's current plan and procedures related to maintaining roadways.

Jurisdictional Exchange

The City took jurisdiction of 23 lane miles of streets from ODOT in 2000. The streets are Empire Boulevard, Newmark Avenue, Ocean Boulevard, Central Avenue, Anderson, Commercial, a portion of 4th Street, 6th Avenue, and Coos River Highway. At the time, a Jurisdictional Exchange Fund was created and can only be used to maintain those facilities. The City Charter further restricted the use of this resource whereby only the interest generated by the $4.8 million (held in trust in its own interest-bearing account) could be used for the repair and maintenance of the aforementioned streets.

The City is not currently interested in pursuing specific policy language surrounding Jurisdictional Exchanges; they do not have the available resources to manage and maintain additional facilities at this time. The jurisdictional map of roadway facilities along with continued partnering and coordination between various partner Agencies is how Coos Bay plans to determine responsibility for addressing facility needs.

Multimodal Networks

The Goals and Objectives that guided the TSP update focus on multi-modal transportation solutions, including reducing reliance on single-occupancy vehicle trips by planning for bicycle facilities and providing safe passage for cyclists (See Attachment A, Goal #3, Objective b.). There is City interest in providing better connections to the Oregon Coast Bike Route (OCBR), which is the current subject of a long-range planning effort.[1] Updated policy language can articulate the City's interest and intent in providing enhanced connections to the OCBR.

Development Review

The City is also currently revising residential infill policy. Revisions to housing standards may result in needed supportive transportation policy language and modifications to local street standards. See discussion under *Transportation Standards* in this memorandum.

[1] https://www.oregon.gov/odot/projects/pages/project-details.aspx?project=PAB33870

Proposed policies, based on the TSP update objectives and consistent with draft TSP recommendations, will be included in Technical Memorandum #12.

Land Use Decisions

A policy area that would facilitate land use approval sought by government agencies other than the City pertains to who may initiate a land use application. In Coos Bay, current property owners are authorized to initiate land use applications (CBMC 17.130.050 and 17.360.020). The challenge for agencies like the Oregon Department of Transportation (ODOT), which has responsibility to plan for state transportation facilities and has the power of eminent domain, is one of timing. ODOT may not yet be the owner of the property where the improvement is planned at which time land use approval is needed, as property acquisition often happens very late in the project timeline. Allowing agencies with eminent domain powers (e.g., ODOT)) to initiate land use applications would simplify and facilitate project approval and development. This idea can be established in policy language as well as in development code language.

This idea can be established in policy language as well as in development code language. Proposed policies, based on the TSP update objectives and consistent with draft TSP recommendations, will be included in Technical Memorandum #12.

Transportation Standards

Draft TSP Standards

Street Standards

The City provides cross-section guidelines that reflect their accepted minimum right-of-way and roadway widths, which are summarized in the Coos Bay Municipal Code (CBMC) 18.15.010(2)(a)i) (Table 3-1) and summarized below. Typical cross-sections are included in the current TSP (adopted in 2004) and outline recommendations and requirements for number of travel lanes, bicycle and pedestrian facilities, and other amenities such as landscape strips and on-street parking. These cross sections are intended for planning and designing new roadways, as well as for improving existing roadways where it is physically and economically feasible.

Additional language (to be presented in Technical Memorandum #12) for the adopted TSP will specify circumstances under lesser right of way standards may be permitted.

Table 1. Coos Bay Lane Widths and Configuration in the Vehicular Zone (Existing)

TYPE OF STREET	MIN ROW WIDTH	MINIMUM PAVING WIDTH CURB TO CURB					MAX GRADE
		VEHICLE TRAVEL LANE	MEDIAN OR CENTER TURN LANE	ON STREET PARKING	BIKE LANE (A)	SIDEWALK CURB (B)	
Arterial/Collector							
5-lane (c)	100’	12’ 11’	14’	-	2 @ 6’ (g)	2 @ 6’/5’	8%
3-lane (c)	76’	12’	14’ (optional)	-	2 @ 6’ (g)	2 @ 6’/5’	8%
2-lane	50’	12’	-	-	2 @ 6’ (g)	2 @ 6’/5’	8%
28’ Standard Residential	50’	10’	-	1 @ 8’	-	2 @ 5’	
36’ Neighborhood Residential	50’	10’	-	2 @ 8’	-	2 @ 5’	16%

TYPE OF STREET	MIN ROW WIDTH	MINIMUM PAVING WIDTH CURB TO CURB					MAX GRADE
		VEHICLE TRAVEL LANE	MEDIAN OR CENTER TURN LANE	ON STREET PARKING	BIKE LANE (A)	SIDEWALK CURB (B)	
40’ Standard Commercial/ Industrial	60’	12’	-	2 @ 8’	-	2 @ 5’	16%
Dead End (d)	50’	10’	-	2 @ 8’	-	2 @ 5’	16%
Cul-de-sac (e)	50’	10’	-	(d)	-	1 @ 5’ (f)	16% (d)
Alley							
1-way	20’	12’	-	-	-	-	-
2-way	20’	16’	-	-	-	-	-

(a) New construction: six feet; reconstruction: five feet
(b) Wider sidewalks may be required in commercial areas
(c) The minimum right-of-way width includes the option of two six-foot-wide landscape strips for arterials or two four-foot-wide strips for local commercial/ industrial
(d) A dead end must be less than 400 feet in length and terminate with a circular or hammerhead turnaround with a maximum grade of eight percent.
(e) No parking is permitted at the end of a cul-de-sac which must have adequate space for emergency equipment turnaround, usually a 45-foot unobstructed radius.
(f) At the end of the cul-de-sac, a five-foot sidewalk is required along the perimeter adjacent to the development.
(g) Bike lanes are allowed to be reduced to five feet in width if the project is a reconstruction.

The CBMC and TSP will need to be revised to align with current best practices which allow for multi-modal facilities. The direction is to move toward slightly narrower lanes while still maintaining access for transit and emergency vehicles. This can be achieved through flexibility in cross-sections and minimum standards.

For Coos Bay, the TSP will recommend a minimum lane width of 11 feet on arterials and collectors not on a freight route. We would also propose at minimum right-of-way width on local roads of 40 feet, with minimum pavement widths of 20-28’ (based on whether parking is allowed). Since the TSP will recommend the removal of the “Neighborhood Route” functional classification, the table will be revised to relabel the “Neighborhood Residential” to reflect that the cross-section is the “Standard Residential” with parking on both sides.

Municipal code language capturing the proposed changes will be proposed in Technical Memorandum #12.

Mobility Targets

Mobility targets for roads under Coos Bay jurisdiction are summarized in CBMC 18.15.005 and will be referenced in the TSP Update. The purpose of mobility targets is to facilitate adequate traffic flow. Proposed development shall provide necessary street improvements and access management to, at a minimum, maintain the mobility targets and safety of abutting public streets as required by the TSP. The current code language is summarized below:

> CBMC 18.15.005 Generally –" Level of Service (LOS). The level of service standard to determine what is acceptable or unacceptable traffic flow on streets shall be based on a volume-to-capacity ratio. City streets shall maintain a LOS of “D” during the p.m. peak hour of the day.

The wording in the CBMC will need to be revised (indicated with ***bold italic*** text) for consistency with current accepted terminology. The language should be revised to note that

> Level of Service (LOS). The level of service standard to determine what is acceptable or unacceptable traffic flow on streets shall be based on ***average seconds of delay***. City streets shall maintain a LOS of "D" during the ***peak 15 minutes*** of the day***.***

Code language capturing the proposed changes will be included in Technical Memorandum #12.

Access Management Standards

Minimum access spacing standards are established in the adopted TSP in tables that present minimum roadway standards and specifications. The current TSP will include the access spacing standards as outlined below. Additional language (to be presented in Technical Memorandum #12) for the adopted TSP will specify circumstances under which lesser standards access spacing could be allowed for right-in-right-out only access points.

TYPE OF STREET	MINIMUM ACCESS SPACING*
Arterial Streets	Between new access points: 500 feet
Collector Streets	Between new access points: 300 feet
Arterial-arterial intersections	From the intersection: 300 feet
Arterial-Collector intersections	From the intersection: 300 feet
Collector-Collector intersections	From the intersection: 150 feet
State Highways or County Roads	ODOT or county standards supersede city standards
*For City facilities, existing developed or undeveloped lots or parcels cannot be denied access. The maximum access spacing possible should be provided unless it renders access to individual lots or parcels impractical.	

Development Code Standards

The City's development regulations will need to be consistent with updated transportation standards. The Transportation Planning Rule (Oregon Administrative Rules Chapter 660, Division 12, or "TPR")[2] specifies requirements related to local TSP implementation.[3] This section provides a summary of recommendations related to the consistency of the CBMC with TPR requirements. Additional ideas for potential code modification have emerged during the TSP update process; these are also explored in this section. These recommendations and ideas will be reflected in adoption-ready municipal code amendments presented in Technical Memorandum #12.

An evaluation of Title 17 (Coos Bay Development Code) and Title 18 (Engineering Design Standards)[4] found that City requirements are largely consistent with the TPR. The full code evaluation is included in this memorandum as Attachment B. The evaluation also identifies some opportunities for the City to

[2] Oregon Administrative Rules (OAR) 660-012-0045 and 660-012-0060
[3] Note that several items identified in Task 9.1 of the project Statement of Work directly relate to TPR compliance.
[4] Title 17 and Title 18 of the City of Coos Bay Municipal Code (CBMC), available at: https://www.codepublishing.com/OR/CoosBay/

better achieve and strengthen consistency with the TPR; Table 2 is a summary of those recommendations.

Table 2. Summary of TPR Consistency Recommendations

	Recommendation	TPR Citation
1.	**Transportation projects –** Establish that transportation projects that are consistent with the TSP are permitted outright in each zoning district (CBMC Chapters 17.220-17.270).	Section -0045(1)(a) and (b)
2.	**Access spacing standards** • Add access spacing standards from the 2020 TSP, or references to the standards in the 2020 TSP, to the code (in CBMC 18.15.010(8)). • Add standards for local streets.	Section -0045(2)(a)
3.	**Mobility standards –** Ensure that mobility standards in the code (CBMC18.15.005) are consistent with recommendations in the 2020 TSP.	Section -0045(2)(b)
4.	**Agency coordination –** Specify that transportation agencies be invited to participate in pre-application conferences (CBMC 17.130.020) and be required to receive hearing notices (CBMC 17.130.120).	Section -0045(2)(d)
5.	**Bicycle parking –** Add bicycle parking requirements for transit transfer stations and park-and-ride lots in Table 17.330.030 (the number and design of spaces to be determined through development review). ***Note: This recommendation requires further vetting with the City to determine appropriate wording.***	Section -0045(3)(a)
6.	**Pedestrian access** • Require pedestrian access to the street (sidewalk), adjacent properties, and existing and planned transit stops for development other than single-family residential development. Consider as a new subsection in CBMC Chapter 17.335 (Supplementary Development Standards). • Require "crosswalks" (walkways) through parking areas over a certain number of square feet or with more than a certain number of parking spaces in a new parking area design subsection in CBMC 17.330.030. • Add requirements for non-motorized connections from cul-de-sacs to CBMC 18.15.10(9). • Institute block size standards according to street functional classification in a new subsection in CBMC Chapter 18.15 (Transportation Facilities).	Section -0045(3)(d) and (6)
7.	**Transit-supportive development requirements –** Establish requirements related to transit stops, including required amenities and building entrance orientation, for development other than single-family residential development in a new subsection in CBMC Chapter 17.335 (Supplementary Development Standards).	Section -0045(4)(a), (b), and (f)
8.	**Rideshare parking –** Include preferential location provisions for rideshare (e.g., carpool) parking in a new subsection in parking design standards (CBMC 17.330.030).	Section -0045(4)(d)
9.	**Transit facilities in parking lots –** Establish redevelopment of parking areas for transit uses (e.g., park-and-rides) as a permitted use in new	Section -0045(4)(e)

	Recommendation	TPR Citation
	provisions in CBMC Title 17, Section 17.330.020 (Joint use of facilities). ***Note: This recommendation requires further vetting with the City to determine appropriate wording.***	
10.	**Minimized pavement –** Establish narrower paved widths standards, as compared to existing standards in Table 3-1 in CBMC 18.15.010(2), under certain circumstances.	Section -0045(7)
11.	**TPR consistency –** Add consistency with TPR Section -0060 as a specific approval criterion for plan amendments and zone changes in CBMC 17.360.060.	Section -0045(2)(g) and -0060

The following are other topic areas discussed during this planning process that reflect the desire for strong consistency and connections between the draft TSP and existing standards.

Travel Safety and Security

- Expand the purpose and intent statements in key land use districts in the city, such as Commercial Districts and the Waterfront Heritage District, to refer to safe and secure travel as referenced in TSP goals and objectives.

Pedestrian and Bicycle Access

- Add pedestrian and bicycle access references to all commercial and central land use districts in the city. Alternatively, create a new code section addressing pedestrian and bicycle access under Supplementary Development Standards. (See Recommendation #6 in Table 2.)
- Add language to the Urban Public District requiring pedestrian access between neighboring properties. Alternatively, address this type of standard in a new code section regarding pedestrian and bicycle access. (See Recommendation #6 in Table 2.)
- Add criteria and requirements for pedestrian access to and along the waterfront (e.g., boardwalk opportunities) in the Waterfront Heritage District, the Waterfront Industrial District, and Hollering Place District.
- Update bicycle parking standards (in CBMC Table 17.330.030) to reduce the number of spaces required for schools and increase the number of spaces required for commercial uses.

Administration and Housekeeping

- Require right-of-way dedications necessary to provide sufficient right-of-way in the development standards for the Industrial-Commercial District.
- Reconcile existing trip/traffic impact analysis requirements for the Waterfront Heritage District with the addition of language in CBMC Title 17 Section 17.240 and the City's existing traffic impact analysis requirements established in the Engineering Design Standards (CBMC Chapter 18.40).
- Relocate transit facilities requirements and cross-access easement requirements from Engineering Design Standards to the Development Code because they are more like development standards than engineering standards.

Attachment A

Goals and Objectives (Task 3.2)

The following are the recommended goals and objectives to guide the update of the North Bend and Coos Bay TSP as developed in *Technical Memorandum #2: Goals, Objectives and Evaluation Criteria.*

Note: There is desire from City of Coos Bay staff to revisit the objectives listed below. In order to separate the review of deliverables, the proposed revisions to the objectives will be provided at a later date for the Public Advisory Committee to review – during the preparation of the Draft TSP document.

Revising Transportation Goals and Objectives

At the most basic level, a TSP provides a blueprint for all modes of travel: motor vehicle (both personal and freight), bicycle, pedestrian, and transit. It is also an opportunity to build on community values and protect what makes the Bay Area a great place to live, work, and visit. The TSP should support a shared vision to be accessible, equitable, and livable communities.

A TSP's goals and objectives serve as the basis of evaluation criteria to assess multimodal plan options and identify plan priorities. For this update, current goals have been augmented to provide a more complete framework for planning for the cities multi-modal transportation system. Objectives associated with each goal guide the development or update of a TSP. Policies and action items in the existing TSPs largely provided this guidance. For this TSP update project, objectives are proposed that are aligned with project expectations.[5] Objectives both reflect direction in the adopted TSPs, where still valid, and provide new direction. Topic areas in the proposed objectives that better reflect today's needs include tourism and recreation, health, agency coordination, and strategic investments.

Table 3. Summary of Existing vs. Proposed Goals

Existing Goal	Proposed Goal
Goal #1: Transportation facilities designed and constructed in a manner to enhance [North Bend/Coos Bay]'s livability and meet federal, state, regional, and local requirements.	Eliminate and retain topics under proposed goals.
Goal #2: A balanced transportation system.	Goal #1: Continue development of an interconnected, multimodal transportation network that connects all members of the community to destinations within and beyond the city.
Goal #3: A safe transportation system.	Goal #2: Provide a transportation system that enhances the safety and security of all transportation modes.
Goal #4: An efficient transportation system that reduces the number and length of trips, limits congestion, and improves air quality.	Goal #3: Optimize the performance of the transportation system for the efficient movement of people and goods.
Goal #5: Transportation facilities that serve and are accessible to all members of the community.	Goal #4: Provide an equitable, balanced and connected multi-modal transportation system.
Goal #6: Transportation facilities that provide efficient movement of goods and services.	Goal #5: Provide a transportation system that supports existing industry and encourages economic development in the city.
Goal #7: Implement the transportation plan by working cooperatively with federal, State, regional, and local governments, the private sector, and residents. Create a stable, flexible financial system.	Goal #6: Develop and maintain a Transportation System Plan that is consistent with the goals and objectives of the city, Coos County, and the state.
	Goal #7: Provide a sustainable transportation system through responsible stewardship of financial resources.
	Goal #8: Provide a transportation system that enhances the health of residents and users and that minimizes impacts to the environment.

[5] Current adopted TSP policies have an implementation focus, rather than plan development focus. The recommendation is to update the cities' policies at the implementation phase of the project.

Goal #1: Continue development of an interconnected, multimodal transportation network that connects all members of the community to destinations within and beyond the city.

Objectives:

a) Improve, as needed, and retain existing connections between households and schools, parks, transit stops, the waterfront and other essential destinations and recreational areas. Provide a network of arterials, collectors and local streets that are interconnected, appropriately spaced, and reasonably direct in accordance with city and state design standards and the Transportation System Plan.
b) For new development, provide for multi-modal circulation internally on site and externally to adjacent land use and existing and planned multi-modal facilities.
c) Support off roadway walkways and bikeways that help to connect communities, provide options to motorized travel, or promote and support walking and biking tourism.
d) Require sidewalks on all new streets within the Urban Growth Boundary and that these facilities be designed to the standards in the adopted Transportation System Plan.
e) Ensure access to schools, parks, and other activity centers for all members of the community, including children, disabled, low-income, and elderly people.
f) Ensure adequate access to transit facilities and services.
g) Upgrade existing transportation facilities, including retrofitting for American Disability Act (ADA) compliance, and work with public transportation providers to provide services that improve access for all users.
h) Ensure American Disability Act (ADA) compliance for new transportation facility infrastructure.
i) Ensure planned pedestrian throughways are clear of obstacles and obstructions (e.g., utility poles) and continue to identify, and as resources permit, eliminate obstacles and obstructions for existing facilities.

Goal #2: Provide a transportation system that enhances the safety and security of all transportation modes.

Objectives:

a) Address existing safety issues at high collision locations and locations with a history of severe vehicle, bicycle- and/or pedestrian-related crashes.
b) Manage access to transportation facilities consistent with their applicable classification to reduce and separate conflicts and provide reasonable access to land uses.
c) Improve the safety of rail crossings.
d) Identify and improve safe crossings for vehicles, bicycles and pedestrians across Highway 101 and major arterials.
e) Maintain and enhance lifeline and evacuation routes in coordination with local, regional, state and private entities.
f) Coordinate with law enforcement and emergency service providers to increase public safety and security.
g) Consider neighborhood traffic management strategies to improve safety for pedestrians, bicyclist, and vehicles and where certain techniques may be warranted.
h) Identify and designate bus routes to and around schools that are safe for pedestrians and bicyclists, as well as people in cars and arriving by bus.

Goal #3: Optimize the performance of the transportation system for the efficient movement of people and goods.

Objectives:

a) Maintain, and modify as necessary, street functional classifications, along with operational guidance and cross-sectional and right-of-way standards, to ensure streets are able to serve their intended purpose.
b) Reduce reliance on single-occupancy vehicle trips by planning for bicycle and pedestrian facilities that encourage non-vehicular travel and provide safe passage for pedestrians and bicyclists.
c) Reduce reliance on the state system for making local trips by providing a network of arterials, collectors and local streets that are interconnected, appropriately spaced, and reasonably direct in accordance with city and state design standards and the Transportation System Plan.
d) Preserve and maintain the existing transportation system in a state of good repair.
e) Develop a program to systematically implement improvements for all modes that enhance mobility at designated high-priority locations.
f) Adopt a standard for mobility to help maintain a minimum level of freight and/or motor vehicle travel efficiency and by which land use proposals can be evaluated. State and city mobility standards will be supported on facilities under the respective jurisdiction.
g) Work with [North Bend/Coos Bay], Coos County, and ODOT to develop, operate and maintain intelligent transportation systems and technological solutions that reduce travel delay and improve system efficiency, including coordination of traffic signals and improved traveler information.
h) Coordinate with Coos County Area Transit to develop system enhancements that support the movement of people in high traffic corridors.

Goal #4: Provide an equitable, balanced and connected multi-modal transportation system.

Objectives:

a) Ensure that the transportation system provides equitable access to underserved and vulnerable populations. Prioritize walking and biking investments in underserved areas with transportation disadvantaged populations.
b) Provide connections for all modes that meet applicable city and Americans with Disabilities Act (ADA) standards.
c) Require multi-modal circulation internal to a development site, as well as connecting to adjacent land use and existing and planned multi-modal facilities.

Goal #5: Provide a transportation system that supports existing industry and encourages economic development in the city.

Objectives:

a) Improve the movement of goods and delivery of services throughout the city while balancing the needs of all users with a variety of travel modes and preserving livability in residential areas and established neighborhoods.
b) Prioritize efficient freight movement on identified freight routes and recognize the importance of freight intermodal connectors as the last mile connections between state highways and intermodal freight facilities.
c) Identify lower cost options or provide funding mechanisms for transportation improvements necessary for development to occur.
d) Program transportation improvements to facilitate the development of desired land uses and activities.
e) Encourage recreational tourism by developing connections to and between major recreational locations and destinations and key services in the city.
f) Encourage tourism by promoting and upgrading bicycle and pedestrian recreational routes and services through the city.

g) Designate major tourist routes for provisions of enhanced streetscape and directional markings.
h) Support recreational transit use to boost tourism, enhance economic development, and reduce the environmental impacts of automobile traffic. Explore options to enhance tourist transit use with Coos County Area Transit, including the use of seasonal trolleys, and with businesses that attract tourists, such as local casinos.

Goal #6: Develop and maintain a Transportation System Plan that is consistent with the goals and objectives of the city, Coos County, and the state.

Objectives:

a) Ensure consistency with state, regional and local planning rules, regulations, and standards.
b) Coordinate land use, financial, and environmental planning to prioritize strategic transportation investments.
c) Coordinate land use and transportation decisions to efficiently use public infrastructure investments to:
   - Maintain the mobility and safety of the roadway system
   - Foster efficient development patterns
   - Encourage the availability and use of transportation options such as biking, walking and taking transit
   - Plan for efficient and safe emergency response and evacuation needs
d) Coordinate with [North Bend/Coos Bay], Coos County, and the Oregon Department of Transportation to implement system management and operations strategies on arterials and highways.
e) Coordinate with Coos County Area Transit to strengthen the efficiency and performance of the transit network and to support the multimodal system.

Goal #7: Provide a sustainable transportation system through responsible stewardship of financial resources.

Objectives:

a) Develop and support reasonable alternative mobility targets for motor vehicles that align with economic and physical limitations on state highways and city streets where necessary.
b) Preserve and maintain the existing transportation system assets to extend their useful life.
c) Improve travel reliability and efficiency of existing major travel routes in the city before adding capacity.
d) Pursue grants and collaboration with other agencies to efficiently fund transportation improvements and supporting programs.
e) Identify and maintain stable and diverse revenue sources to meet the need for transportation investments in the city.
f) Identify new and creative funding sources to leverage high priority transportation projects.

Goal #8: Provide a transportation system that enhances the health of residents and users and that minimizes impacts to the environment.

Objectives:

a) Identify and seek funding for programs that encourage walking, bicycling, and transit.

b) Provide convenient and direct pedestrian and bicycle facilities and routes to promote health and the physical and social well-being of residents, to reduce vehicular traffic congestion, to provide community and recreational alternatives, and to support local commerce and economic development.
c) Plan for a multi-modal system that limits users' exposure to pollution and that enhances air quality.
d) Consider noise attenuation in the design, redesign, and reconstruction of arterial streets immediately adjacent to residential development.
e) Relate the design of street capacity and improvements to the intended use of the facility.
f) Minimize impacts to the scenic, natural and cultural resources in the city.
g) Avoid or minimize impacts to natural resources, which may include alternative transportation facility designs in constrained areas.
h) Reduce the number of vehicle-miles traveled.
i) Increase the number of walking, bicycling, and transit trips in the city.
j) Develop transportation standards that preserve and protect the integrity of neighborhoods.
k) Support alternative vehicle types by identifying potential electric vehicle plug-in stations and developing implementing code provisions.
l) Evaluate and implement, where cost-effective, environmentally friendly materials and design approaches (water reduction methods to protect waterways, solar infrastructure, impervious materials).
m) Support technology applications that improve travel mobility and safety with less financial and environmental impact than traditional infrastructure projects.
n) Roadways within the city shall be multi-modal or "complete streets," with each street servicing the needs of the various modes of travel.

Evaluation Criteria

The evaluation criteria will be used to evaluate and prioritize future transportation programs and improvements against the goals and objectives. A broad set of evaluation criteria that represent the proposed set of goals are summarized below.

Table 4. Proposed Evaluation Criteria

Proposed Goal	Criteria
Goal #1: Develop an interconnected, multimodal transportation network that connects all members of the community to destinations within and beyond the city.	• Improves or creates access to community destinations • Improves facilities for those using mobility devices • Enhances the active transportation or transit network
Goal #2: Provide a transportation system that enhances the safety and security of all transportation modes.	• Project is primarily a safety improvement (crossings, intersections, visibility, all modes) • Enhances emergency preparedness/community resiliency • Project improves safe routes to school
Goal #3: Optimize the performance of the transportation system for the efficient movement of people and goods.	• Addresses known access issues on state highways or major arteria • Reduces reliance on highway system for shorter, local trips • Improves efficiency of transportation system
Goal #4: Provide an equitable, balanced and connected multi-modal transportation system.	• Enhances public transportation services (e.g., new routes, shelters) • Improves bicycle and pedestrian connections to public transportation stops • Enhances transportation options to underserved areas
Goal #5: Provide a transportation system that supports existing industry and encourages economic development in the city.	• Preserves or maintains existing transportation facilities • Enhances access to employment and tourist destinations • Improves or maintains freight access/connectivity
Goal #6: Develop and maintain a Transportation System Plan that is consistent with the goals and objectives of the city, Coos County, and the state.	• Is consistent with local, state, and federal plans and policies • Supports the City's land use vision • *Note: No evaluation criteria for Goal 8, this is required for all solutions.*
Goal #7: Provide a sustainable transportation system through responsible stewardship of financial resources.	• Alternative measure to increasing capacity • Provides significant increase in mobility/accessibility • Project involves funding collaboration with other agencies or groups
Goal #8: Provide a transportation system that enhances the health of residents and users and that minimizes impacts to the environment.	• Encourages active living and physical activity • Minimizes impacts to natural resources • Reduces/discourages through travel in residential neighborhoods

Attachment B

TPR Evaluation of the Coos Bay Municipal Code Title 17 (Development Code) and Title 18 (Engineering Design Standards)

TPR Requirement	Local Development Code Reference
OAR 660-012-0045	
(1) Each local government shall amend its land use regulations to implement the TSP.	
(a) The following transportation facilities, services and improvements need not be subject to land use regulations except as necessary to implement the TSP and, under ordinary circumstances do not have a significant impact on land use: **(A) Operation, maintenance, and repair of existing transportation facilities identified in the TSP, such as road, bicycle, pedestrian, port, airport and rail facilities, and major regional pipelines and terminals;** **(B) Dedication of right-of-way, authorization of construction and the construction of facilities and improvements, where the improvements are consistent with clear and objective dimensional standards;** **(C) Uses permitted outright under ORS 215.213(1)(j)–(m) and 215.283(1)(h)–(k), consistent with the provisions of OAR 660-012-0065; and** **(D) Changes in the frequency of transit, rail and airport services.** **(b) To the extent, if any, that a transportation facility, service, or improvement concerns the application of a comprehensive plan provision or land use regulation, it may be allowed without further land use review if it is permitted outright or if it is subject to standards that do not require interpretation or the exercise of factual, policy or legal judgment.**	(a) The purpose of this provision is to allow for certain transportation uses, such as operation, maintenance, and repair of transportation facilities identified in the TSP, without being subject to land use regulations. Title 12 of the Coos Bay Municipal Code (CBMC) regulates streets, sidewalks, and public places. This includes public rights-of-way, including regulatory authority and standards for work within the rights-of-way. Chapter 18.15 of CBMC Title 18 (Engineering Standards) regulates the transportation facility construction and maintenance responsibilities regarding street improvements and nonmotorized facilities and transit infrastructure. The Coos Bay Development Code, Title 17 of the CBMC, contains the permitted uses for each of the zoning districts within the city. (b) Transportation improvements generally are not listed as permitted uses in zone use tables in Title 17. Public transit facilities (e.g., park and rides), commercial parking structures, and bus shelters are generally permitted outright. Recommendation(s): Permit transportation facilities outright that are consistent with the adopted TSP. Identify them as such under "Nonresidential Permitted Uses," "Public Services and Facilities," or "Civic" categories as appropriate in each zoning district (CBMC Chapters 17.220 through 17.270).
(c) In the event that a transportation facility, service or improvement is determined to have a significant impact on land use or requires interpretation or the exercise of factual, policy or legal judgment, the local government shall provide a review and approval process that is consistent with 660-012-0050. To facilitate implementation of the TSP, each local government shall amend regulations to provide for consolidated	This TPR section references project development and implementation - how a transportation facility or improvement authorized in a TSP is designed and constructed (660-012-0050). Project development may or may not require land use decision-making. The TPR directs that during project development, projects authorized in an acknowledged TSP will not be subject to further justification with regard to their need, mode, function, or general location. To this end, the TPR calls for consolidated review of land use decisions and proper noticing requirements for

TPR Requirement	Local Development Code Reference
review of land use decisions required to permit a transportation project.	affected transportation facilities and service providers. The CBMC allows for concurrent applications for more than one type of review for a given development, unless otherwise prohibited from doing so by law. No prohibition for transportation projects specifically exists. Recommendation(s): Existing code language complies with this requirement and no amendments are recommended.
(2) Local governments shall adopt land use or subdivision ordinance regulations, consistent with applicable federal and state requirements, to protect transportation facilities corridors and sites for their identified functions. Such regulations shall include:	
(a) Access control measures, for example, driveway and public road spacing, median control and signal spacing standards, which are consistent with the functional classification of roads and consistent with limiting development on rural lands to rural uses and densities;	Engineering design standards for transportation facilities are regulated under Chapter 18.15, which includes lane widths and configurations by road classification in Table 18.15.005(3-1). Existing access spacing standards are established for collector and arterial streets in the adopted 2004 Coos Bay TSP (Tables 3-6 and 3-7). CBMC 18.15.010(8), which addresses access to City streets, states that access to a City street requires a permit from the City; however, the section does not establish or reference access spacing standards, Recommendation(s): Confirm with the City whether existing spacing standards (2004 TSP Tables 3-6 and 3-7) are sufficient. Consider adding standards for neighborhood route and local streets. Add access spacing standards or references to them in the code (in CBMC 18.15.010(8)).
(b) Standards to protect the future operations of roads, transitways and major transit corridors;	CBMC 18.15.005 and CBMC Chapter 18.40 address Traffic Impact Analysis (TIA) requirements for developments that may impact operations of transportation facilities, based on listed applicability criteria. Mobility standards (a minimum level of service "D" on City streets during the p.m. peak hour) are established in CBMC 18.15.005. Recommendation(s): Ensure that existing mobility standards in the Code are consistent with recommendations in the updated TSP.

TPR Requirement	Local Development Code Reference
(c) Measures to protect public use airports by controlling land uses within airport noise corridors and imaginary surfaces, and by limiting physical hazards to air navigation;	The Southwest Oregon Regional Airport is located in North Bend. No airport noise corridor or areas impacted by the airport are located within Coos Bay. Recommendation(s): Existing code language complies with this requirement and no amendments are recommended.
(d) A process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites;	See response and proposed amendments related to -0045(1)(c). Pre-application (CBMC 17.130.020) and hearing notice (CBMC 17.130.120) procedures currently state that "affected service districts" may be invited to attend pre-application meetings and "agencies with jurisdiction" must be notified of public hearings. Transportation and transit agencies are not specified. Recommendation(s): Specify that transportation agencies be included in pre-application conferences and hearing notices.
(e) A process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors or sites;	This section is implemented by CBMC Chapter 18.40 (Traffic Impact Analysis Requirements). Chapter 18.40 states: "The TIA shall determine all improvements and/or mitigation measures necessary to meet City performance standards. For each phase of development, improvements shall be identified to accommodate additional traffic generated by this project." Chapter 17.347 addresses Conditional Uses. Chapter 17.347 provides that the Planning Commission has the ability to impose conditions of approval necessary to provide public facilities with the capacity and design to serve the proposed use. Recommendation(s): Existing code language complies with this requirement and no amendments are recommended.
(f) Regulations to provide notice to public agencies providing transportation facilities and services, MPOs, and ODOT of: **(A) Land use applications that require public hearings;** **(B) Subdivision and partition applications;** **(C)Other applications which affect private access to roads; and** **(D)Other applications within airport noise corridor and imaginary surfaces which affect airport operations; and**	Notice of applications for Type II and hearings for Type III will be sent to all agencies with jurisdiction over the subject property (CBMC 17.130.120 (4)). Per CBMC 17.130.020 (4), pre-application notice is sent to interested agencies within a week of the pre-application receipt. The Director determines who is invited to the meeting, which can include: the design assistance team (DAT), public works and community development director, or their designee, the consulting city engineer, a representative from affected service districts, and representatives from interested state agencies and neighborhood

TPR Requirement	Local Development Code Reference
	associations recognized by the city council or by Coos County. Recommendation(s): Existing code language complies with this requirement and no amendments are recommended.
g) Regulations assuring amendments to land use designations, densities, and design standards are consistent with the functions, capacities and performance standards of facilities identified in the TSP.	See response and proposed amendments related to TIAs in -0045(2)(b) and plan and land use regulation amendments in -0060. Recommendation(s): Augment criteria for plan amendments and zone changes to specifically refer to require consistency with the TSP for all improvements to sites during TIAs.
(3) Local governments shall adopt land use or subdivision regulations for urban areas and rural communities as set forth below. The purposes of this section are to provide for safe and convenient pedestrian, bicycle and vehicular circulation consistent with access management standards and the function of affected streets, to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel in areas where pedestrian and bicycle travel is likely if connections are provided, and which avoids wherever possible levels of automobile traffic which might interfere with or discourage pedestrian or bicycle travel.	
(a) Bicycle parking facilities as part of new multi-family residential developments of four units or more, new retail, office and institutional developments, and all transit transfer stations and park-and-ride lots.	Table 17.330.030 in Chapter 17.330 addresses bicycle parking for multifamily residential, commercial, industrial, institutional, and public uses. Recommendation(s): Existing code language generally complies with this requirement. It is recommended that bicycle parking for transit transfer stations and park-and-ride lots be specified (number and design of spaces to be determined as part of development review).
(b) On-site facilities shall be provided which accommodate safe and convenient pedestrian and bicycle access from within new subdivisions, multi-family developments, planned developments, shopping centers, and commercial districts to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. Single-family residential developments shall generally include streets and accessways. Pedestrian circulation through parking lots should generally be provided in the form of accessways.	On-site circulation and connections: Addressed as part of the CBMC 17.365.050 (Submittal requirements). For Type II and Type III site plan reviews, proposed pedestrian access must be shown; however, minimum requirements regarding this access are not established. Pedestrian access requirements are established in some zones (e.g., in the Industrial-Commercial District, CBMC 17.235.040(7)). Parking Lots: Pedestrian access through parking lots is required to be shown in site plans for Type III site plan review applications. Pedestrian access for multifamily properties is required to be provided to transit corridors without having to pass through parking lots (CBMC 17.330.060).

TPR Requirement	Local Development Code Reference
(A) "Neighborhood activity centers" includes, but is not limited to, existing or planned schools, parks, shopping areas, transit stops or employment centers; **(B) Bikeways shall be required along arterials and major collectors. sidewalks shall be required along arterials, collectors and most local streets in urban areas except that sidewalks are not required along controlled access roadways, such as freeways;** **(C) Cul-de-sacs and other dead-end streets may be used as part of a development plan, consistent with the purposes set forth in this section;** **(D) Local governments shall establish their own standards or criteria for providing streets and accessways consistent with the purposes of this section. Such measures may include but are not limited to: standards for spacing of streets or accessways; and standards for excessive out-of-direction travel;** **(E) Streets and accessways need not be required where one or more of the following conditions exist:** **(i) Physical or topographic conditions make a street or accessway connection impracticable. Such conditions include but are not limited to freeways, railroads, steep slopes, wetlands or other bodies of water where a connection could not reasonably be provided;** **(ii) Buildings or other existing development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; or** **(iii) Where streets or accessways would violate provisions of leases, easements, covenants, restrictions or other agreements existing as of May 1, 1995, which preclude a required street or accessway connection.**	Bikeways and sidewalks: Street standards are addressed in CBMC 18.15.010. Bicycle lanes are required along arterials/collector streets, and sidewalks are required on all streets but alleys. Street standards and pedestrian access is identified in CBMC 18.15.010(3) (Walking Zone). Cul-de-sacs: Street standards for cul-de-sacs are addressed in Chapter 18.15. Layout for cul-de-sacs includes requirements to allow turning for emergency access vehicles. No requirements regarding non-motorized connections through cul-de-sacs are mentioned. Street and Accessway layout: CBMC 17.362.040 addresses access and roads in planned unit developments. Block lengths for streets do not have standards. Recommendation(s): Require “crosswalks” (walkways) through parking areas over a certain size in a new parking area design subsection in CBMC 17.330.030. Require pedestrian access to the street (sidewalk), adjacent properties, and transit stops (existing or planned) for all commercial, institutional, and multifamily development. Consider adding as a new subsection in CBMC Chapter 17.335 (Supplementary Development Standards). Require non-motorized connections from cul-de-sacs in CBMC 18.15.10(9). Institute block size standards according to street functional classification in a new subsection in CBMC Chapter 18.15 (Transportation Facilities).
(c) Where off-site road improvements are otherwise required as a condition of development approval, they shall include facilities accommodating convenient pedestrian and bicycle and pedestrian travel,	See response about authority to condition approval in -0045(2)(e) [and any other provisions to cite from local development code]. Recommendation(s):

TPR Requirement	Local Development Code Reference
including bicycle ways on arterials and major collectors. **[Note: Subsection (d) defines safe and convenient.]**	Existing code language complies with this requirement and no amendments are recommended.
(e) Internal pedestrian circulation within new office parks and commercial developments shall be provided through clustering of buildings, construction of accessways, walkways and similar techniques.	Access, circulation and transportation requirements are required to be evaluated in a TIA done on any commercial/industrial space over 20,000 square feet. See response and proposed amendments related to access/spacing standards in -0045(3)(b). Recommendation(s): Existing code language complies with this requirement and no amendments are recommended.
(4) To support transit in urban areas containing a population greater than 25,000, where the area is already served by a public transit system or where a determination has been made that a public transit system is feasible, local governments shall adopt land use and subdivision regulations as provided in (a)-(g) below:	
(a) Transit routes and transit facilities shall be designed to support transit use through provision of bus stops, pullouts and shelters, optimum road geometrics, on-road parking restrictions and similar facilities, as appropriate;	Transit facilities must be coordinated with Coos County Area Transit per CBMC 18.15.040 if the site is located within 100 feet of an existing or planned transit route or stop. ADA-accessible transit stop improvements, pedestrian connections to transit stop locations and furnishings such as shelters, benches, bicycle racks and/or other amenities may be required by public works. Recommendation(s): Establish transit-supportive development requirements for development other than single-family residential development in a new subsection in CBMC Chapter 17.335 (Supplementary Development Standards). Requirements include coordination and provision of transit stop amenities and orientation of building entrances toward transit streets.
(b) New retail, office and institutional buildings at or near major transit stops shall provide for convenient pedestrian access to transit through the measures listed in (A) and (B) below. **(A) Walkways shall be provided connecting building entrances and streets adjoining the site;** **(B) Pedestrian connections to adjoining properties shall be provided except where such a connection is impracticable. Pedestrian connections shall connect the [sic] circulation system to existing or proposed**	CBMC 18.15.040 provisions that developers coordinate with the transit provider and public works, which may require pedestrian connections to transit stop locations. This section is required to be part of the TIA evaluations regarding access, circulation and other transportation requirements. TIAs are required for development or redevelopment projects over 20,000 square feet or more or commercial/industrial space or multifamily projects of 20 or more units. Requirements in the Commercial-Industrial District (CBMC 17.235.040(6) and (7)) address transit stop improvements and pedestrian access. However,

TPR Requirement	Local Development Code Reference
streets, walkways, and driveways that abut the property. Where adjacent properties are undeveloped or have potential for redevelopment, streets, accessways and walkways on site shall be laid out or stubbed to allow for extension to the adjoining property; **(C) In addition to (A) and (B) above, on sites at major transit stops provide the following:** **(i) Either locate buildings within 20 feet of the transit stop, a transit street or an intersecting street or provide a pedestrian plaza at the transit stop or a street intersection;** **(ii) A reasonably direct pedestrian connection between the transit stop and building entrances on the site;** **(iii) A transit passenger landing pad accessible to disabled persons;** **(iv) An easement or dedication for a passenger shelter if requested by the transit provider; and** **(v) Lighting at the transit stop.**	other zoning districts do not appear to establish similar requirements. Recommendation(s): Establish transit-supportive development requirements for development other than single-family residential development in a new subsection in CBMC Chapter 17.335 (Supplementary Development Standards). Requirements include coordination and provision of transit stop amenities and orientation of building entrances toward transit streets.
(c) Local governments may implement (4)(b)(A) and (B) above through the designation of pedestrian districts and adoption of appropriate implementing measures regulating development within pedestrian districts. Pedestrian districts must comply with the requirement of (4)(b)(C) above;	The City of Coos Bay does not currently have pedestrian district designations. Identifying and determining the requirements related to a specific pedestrian district or districts that include existing or planned major transit routes is not an anticipated outcome of the TSP planning project. Recommendation(s): Existing code language complies with this requirement and no amendments are recommended.
(d) Designated employee parking areas in new developments shall provide preferential parking for carpools and vanpools;	Table 17.330.010(A) (Off-Street Parking Requirements) addresses off-street parking requirements based on use. Employee parking areas are addressed in CBMC 17.330.030, which states that off-street parking shall be primarily employee parking. No carpool/vanpool requirements are established. Recommendation(s): Include preferential location provisions for rideshare (e.g., carpool and vanpool) parking in a new subsection in parking design standards (CBMC 17.330.030).
(e) Existing development shall be allowed to redevelop a portion of existing parking areas	Redevelopment of parking areas for transit-oriented uses or facilities is not addressed within the CBMC.

TPR Requirement	Local Development Code Reference
for transit-oriented uses, including bus stops and pullouts, bus shelters, park and ride stations, transit-oriented developments, and similar facilities, where appropriate;	Recommendation(s): Provide allowances for redevelopment of parking areas for transit uses as new provisions in CBMC 17.330.030 (Joint use of facilities).
(f) Road systems for new development shall be provided that can be adequately served by transit, including provision of pedestrian access to existing and identified future transit routes. This shall include, where appropriate, separate accessways to minimize travel distances;	See response about authority to condition approval in -0045(4)(a). Recommendation(s): Establish transit-supportive development requirements for development other than single-family residential development in a new subsection in CBMC Chapter 17.335 (Supplementary Development Standards). Requirements include coordination and provision of transit stop amenities and orientation of building entrances toward transit streets.
(g) Along existing or planned transit routes, designation of types and densities of land uses adequate to support transit.	See response about authority to condition approval in -0045(4)(a). Recommendation(s): Create new transit-supportive development requirements including coordination and provision of transit stop amenities and orientation of building entrances toward transit streets.
(6) In developing a bicycle and pedestrian circulation plan as required by 660-012-0020(2)(d), local governments shall identify improvements to facilitate bicycle and pedestrian trips to meet local travel needs in developed areas. Appropriate improvements should provide for more direct, convenient and safer bicycle or pedestrian travel within and between residential areas and neighborhood activity centers (i.e., schools, shopping, transit stops). Specific measures include, for example, constructing walkways between cul-de-sacs and adjacent roads, providing walkways between buildings, and providing direct access between adjacent uses.	The TSP update will make recommendations to the bicycle and pedestrian plan that are consistent with TPR -0020. This TPR requirement is currently addressed in the following areas: Walkways between cul-de-sacs and adjacent roads – See response and recommendations related to cul-de-sacs, Section -0045(3)(b). Walkways between buildings – See response and recommendations related to accessways, Section -0045(3)(b). Access between adjacent uses – See response and recommendations related to accessways, Section -0045(3)(b). Recommendation(s): Require “crosswalks” (walkways) through parking areas over a certain size. Pedestrian access to transit corridors should be provided without having to pass through parking lots for all commercial/institutional developments, as well as multifamily. Require non-motorized connection through cul-de-sacs. Institute block length standards for new streets, subdivisions, and PUDs.

TPR Requirement	Local Development Code Reference
(7) Local governments shall establish standards for local streets and accessways that minimize pavement width and total ROW consistent with the operational needs of the facility. The intent of this requirement is that local governments consider and reduce excessive standards for local streets and accessways in order to reduce the cost of construction, provide for more efficient use of urban land, provide for emergency vehicle access while discouraging inappropriate traffic volumes and speeds, and which accommodate convenient pedestrian and bicycle circulation. Notwithstanding section (1) or (3) of this rule, local street standards adopted to meet this requirement need not be adopted as land use regulations.	Street standards are located in Title 18 Engineering Design Standards, specifically in Chapter 18.15 (Transportation Facilities). Standard residential street pavement and ROW widths from Table 3-1 in CBMC 18.15.010(2) are listed below. Pavement ROW Standard Residential Street (1 parking) 28' 50' Neighborhood Residential Street (2 parking) 36' 50' Adopted standards are wider than the recommended widths illustrated in the Transportation Growth Management Neighborhood Street Design Guidelines (listed below). Pavement ROW No On-Street Parking 20’ 42-48’ Parking on One Side 24’ 47-52’ Parking on Two Sides 28’ 52-56’ Recommendation(s): Provide options allowing for minimized pavement in street design standards. Ensure that existing street design standards in the Code are consistent with the updated TSP.
OAR 660-12-0060	
(1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule… **(2) If a local government determines that there would be a significant effect, then the local government must ensure that allowed land uses are consistent with the identified function, capacity, and performance standards of the facility measured at the end of the planning period identified in the adopted TSP through one or a combination of the remedies listed in (a) through (e) below, unless the amendment meets the balancing**	Comprehensive Plan Amendments and Zone Changes are addressed in Chapter 17.360. Consistency with the TSP is not specifically provisioned; however, CBMC 17.30.040 requires that all applications for amendments and zone changes include an analysis of the potential cumulative effects of the proposal and the effects on public services, including streets. CBMC 17.360.060 states the approval criteria for Type III and IV review includes that the proposed amendments are consistent with the policies of the comprehensive plan and do not result in a decreased level of service for facilities and services identified in the capital improvement plan(s). Recommendation(s): Existing code language generally complies with this requirement. It is recommended that consistency with TPR Section -0060 be added as a specific approval criterion in CBMC 17.360.060.

TPR Requirement	Local Development Code Reference
test in subsection (2)(e) of this section or qualifies for partial mitigation in section (11) of this rule…	

CITY OF COOS BAY

Transportation System Plan

VOLUME 2

Technical Memorandum #12:
Code Provisions and Ordinance Amendments

TECHNICAL MEMORANDUM #12 AMENDMENT

Code Provisions and Ordinance Amendments Memorandum (Task 9.2) – Coos Bay

Date:	March 13, 2020
To:	Project Management Team, City of Coos Bay TSP Update
From:	Darci Rudzinski, Shayna Rehberg, and Courtney Simms, Angelo Planning Group Angela Rogge, PE, David Evans and Associates, Inc.
Subject:	Cities of Coos Bay and North Bend Transportation System Plan Updates Amendment

Introduction

This memorandum presents proposed regulatory amendments to implement the updated City of Coos Bay Transportation System Plan (TSP). Specifically, it identifies recommended modifications to the Coos Bay Municipal Code to ensure that regulatory requirements are consistent with and implement the updated TSP and are consistent with the requirements of the Oregon Transportation Planning Rule (OAR 660-012, the "TPR"). Transportation policy areas, transportation standards, and TPR compliance were discussed in detail in Technical Memorandum #11.

Transportation Standards

Development Code Standards

The City's development regulations will need to be consistent with updated transportation standards. In addition, the TPR specifies requirements related to local TSP implementation. This section provides a summary of proposed modifications related to the consistency of the Coos Bay Municipal Code (CBMC) with the draft TSP and TPR requirements. Additional concepts for potential code modifications have emerged during the TSP update process; these are also addressed in this section.

An evaluation of Title 17 (Coos Bay Development Code) and Title 18 (Engineering Design Standards)[1] found that City requirements are largely consistent with the TPR.[2] However, the evaluation did identify a few opportunities for the City to both implement the TSP and better achieve and strengthen consistency with the TPR; Table 1 is a summary of those recommendations.[3] Proposed modifications to specific code language are provided in Attachment A, Recommended Development Ordinance Amendments.

Table 1. Summary of Code Recommendations

	Code Section	Recommendation	Citation
1	**17.240, 17.250**	Expand the purpose and intent statements in key land use districts in the city, such as the Waterfront Heritage District, to refer to safe and secure travel as referenced in TSP goals and objectives.	City recommendation
2	**17.235**	Address right-of-way dedications necessary to provide sufficient right-of-way in the development standards for the Industrial-Commercial District.	City recommendation
3	**17.240**	Reconcile trip analysis requirements for the Waterfront Heritage District with traffic impact analysis requirements in the Engineering Design Standards.	City recommendation
4	**17.245 and 17.250**	Establish provisions for pedestrian access to the waterfront and along the waterfront (e.g., boardwalk opportunities) in the Waterfront Industrial District and Hollering Place District.	City recommendation
5	**17.330.020**	Allow for redevelopment of parking areas for transit uses (e.g., park-and-rides) as new provisions in CBDC 17.330.020 (Joint use of facilities). Require development to provide park-and-rides per location and design guidance in the Coos County Transit Master Plan.	TPR -0045(4)(e), City recommendation
6	**17.330.030**	Include preferential location provisions for rideshare (e.g., carpool) parking in a new subsection in parking design standards	TPR -0045(4)(d)
7	**17.330.030**	Require “crosswalks” (pedestrian connections) through parking areas over a certain size in a new parking area design subsection in CBDC 17.330.030.	TPR -0045(3)(d) and (6)
8	**17.330.030**	Add bicycle parking requirements for transit transfer stations and park-and-ride lots in Table 17.330.030 (the location and design of spaces to be determined through development review).	TPR -0045(3)(a), City recommendation

[1] Title 17 and Title 18 of the City of Coos Bay Municipal Code, available at: https://www.codepublishing.com/OR/CoosBay/

[2] The full code evaluation is found in Attachment B of Technical Memorandum #11, Draft Policies and Standards (Task 9.1) – Coos Bay.

[3] Table 1 Items 18-20 were added in response to additional code amendments requested by City staff and included in the project scope of work in February 2020. These items were also added to the “Administration and Housekeeping” list in Technical Memorandum #11.

	Code Section	Recommendation	Citation
9	**17.335.090**	Require pedestrian access to the street (sidewalk), adjacent properties, and existing and planned transit stops for development other than single-family residential development.	City recommendation, TPR -0045(3)(d) and (6)
10	**17.335.090**	Establish requirements related to transit stops, including required building entrance orientation, for development other than single-family residential development in a new subsection in CBDC Chapter 17.335 (Supplementary Development Standards).	TPR -0045(3)(d) and (6)
11	**17.335.100**	Add transit facilities requirements to the Supplementary Development Standards in Title 17.	TPR -0045(3)(d) and (6)
12	**17.360.060**	Add consistency with TPR Section -0060 as a specific approval criterion for plan amendments and zone changes in CBDC 17.360.060.	TPR -0045(2)(g) and -0060
13	**18.15.005**	Ensure that mobility standards in the code are consistent with recommendations in the Draft TSP.	TPR -0045(2)(b)
14	**18.15.010**	Institute block size standards according to street functional classification in a new subsection in CBMC Chapter 18.15 (Transportation Facilities).	TPR -0045(3)(d) and (6)
15	**18.15.010**	Consider narrower paved widths standards, as compared to existing standards in Table 3-1 in CBMC 18.15.010(2).	TPR -0045(7)
16	**18.15.010**	Ensure that requirements are consistent with spacing standards (updated, or existing 2004 TSP Tables 3-6 and 3-7). Add access spacing standards in the code.	TPR -0045(2)(a) -0045(7)
17	**18.15.010**	Add requirements for non-motorized connections from cul-de-sacs to CBMC 18.15.10(9).	TPR -0045(3)(d) and (6) and -0045(2)(a)
18	**17.362, 17.367**	Address vision clearance area requirements. *Clear-vision area requirements are found in 18.15.010(6)(b). No modifications are recommended to Chapter 18, but cross-references to street standards in 18.15 are recommended to be included in the City's PUD and subdivision standards.*	City recommendation
19	**17.330.030**	Review parking standards. *A proposed new section, Parking Stall Design and Minimum Dimensions, includes requirements for off-street parking.*	City recommendation
20	**17.235, 17.240**	Require easement dedication for access along Front Street. *The alignment for the planned Coos Waterfront Walkway traverses land zoned Industrial-Commercial Waterfront-Heritage. Requirements for right-of-way easements are proposed for these zones.*	City recommendation

Attachment A: Recommended Code Amendments

The following Coos Bay Municipal Code modifications are numbered to correspond to recommendations in Table 1. Recommended changes are in an adoption-ready format; text that is recommended to be added is shown as underlined, and text recommended to be removed is shown in ~~strikeout~~.

Recommendation 1

Expand the purpose and intent statements in key land use districts in the city, such as the Waterfront Heritage District, to refer to safe and secure travel as referenced in TSP goals and objectives.

Chapter 17.230 Commercial Districts (C and Mx)

17.230.010 Purpose.

(1) Commercial (C) District. These commercial areas are intended to provide for the regular shopping and service needs for the community and adjacent service areas. Typical allowed uses include convenience food markets, beauty and barber shops, bakeries and service industries. These areas are held to a high standard of site plan review due to the close proximity of residential zones. Development activity shall meet, as applicable, the design guidelines contained in this code and ensure that there is safe, interconnected, and multimodal transportation access to and within development sites.

(2) The mixed-use (MX) district requires mixed-use developments to provide the community with a mix of mutually supporting retail, service, office and medium- or high-density residential uses. The zone is designed to promote cohesive site planning and design that integrates and interconnects two or more land uses into a development that is mutually supportive. It can provide incentives to develop a higher density, active, urban environment than generally would be found in a suburban community. This type of development is further expected to:

(a) Achieve the goals and objectives of the city's comprehensive plan and capital facilities plans;

(b) Enhance livability, environmental quality and economic vitality;

(c) Maximize efficient use of public facilities and services;

(d) Create a safe, attractive and convenient environment for a variety of uses including living, working, recreating and traveling by all transportation modes.

…

Chapter 17.240 Waterfront Heritage District (WH)

17.240.010 Intent.

The WH district is created to achieve the following objectives:

(1) To diversify the local economy.

(2) To preserve the city's historical waterfront and guide private and public development in a direction that strengthens a relationship to that setting.

(3) To guide the construction of private and public improvements to evoke historic architectural styles which existed in the Coos Bay area between the 1870s and the 1920s.

(4) To provide for a mix of uses and improvements that include:

(a) Existing waterfront industrial uses;

(b) New water-oriented, water-related and non-water-related service businesses;

(c) Amenities and attractions which encourage public access to and enjoyment of the waterfront;

(d) Urban residential opportunities; and

(e) Non-water-dependent industrial uses.

(5) To provide an opportunity to reclaim the city's waterfront heritage and express pride in our past and present by redevelopment which evokes, but does not necessarily duplicate, the appearance of the early days of Euro-American settlement.

(6) To promote physical, cultural and commercial links among Front Street, the boardwalk and the downtown core area.

(7) To ensure that there is safe, interconnected, and multimodal transportation access to and within development sites.

(8) To accommodate Pedestrian connectivity to and along the Coos Bay waterfront.

…

Chapter 17.250 Hollering Place District (HP)

17.250.010 Intent.

The area encompassed by the Hollering Place zoning district is intended to be developed as a planned unit development (PUD) based on the guidelines and requirements outlined below and the Hollering Place master plan. A cohesive design celebrating historic seaside architecture, reclamation of native shoreline habitats, sustainability, interpretation of local history and reconnection to the water are unifying elements relevant to the zoning district.

Development on the site must complement and connect with the existing business district to the east and act as a catalyst to help spur additional development and investment in the Empire area. A small-scaled gateway development near the intersection of Newmark Avenue and Empire Boulevard should act as a connection to the existing business district and as an entry statement signaling the presence of the remainder of the project. Preserving and enhancing views is a key component and must be balanced with achieving the right development mix and ensuring safe, secure, and multimodal access for people and vehicles. The myriad of weather and environmental factors is also significant, as is making sure the new development is complementary to adjacent uses.

The master plan referred to herein was prepared not as a detailed requirement, but as an example of the uses, property organization and development, site design, and architectural form and composition that can meet the intent of this code.

…

Recommendation 2

Address right-of-way dedications necessary to provide sufficient right-of-way in the development standards for the Industrial-Commercial District.

Chapter 17.235 Industrial-Commercial District (I-C)

17.235.040 Industrial-Commercial Development Standards.

Developments in the I-C zoning district shall be designed and constructed in accordance with the following standards:

…

(12) Electromagnetic Interference. Electric fields and magnetic fields shall not be created that adversely affect the normal operation of equipment or instruments or normal radio, telephone, or television reception from off the premises where the activity is conducted. This section does not apply to telecommunication facilities which are regulated by the Federal Communications Commission under the Federal Telecommunications Act of 1996 or its successor.

(13) Sufficient right-of-way shall be dedicated to ensure space necessary for freight access, as determined by the street functional classification and right-of-way standards in CBMC 18.15.010(2) Table 3-1.

Recommendation 3

Reconcile trip analysis requirements for the Waterfront Heritage District with traffic impact analysis requirements in the Engineering Design Standards.

Chapter 17.240 Waterfront Heritage District (WH)

17.240.070 Property Development Requirements.

(16) Trip Analysis. For the purposes of this section, a “trip analysis” is a study or report consistent with methods described in CBMC Section 18.40.010 ~~that specifies the ADT (average daily traffic) for a use~~.

(a) Prior to approval of any use, or the expansion of a use, in the area comprised of subdistrict WH-3 and the portion of subdistricts WH-1 and WH-2 lying east of Front Street, it is necessary to ensure that the cumulative ADT generated in this area only, by existing uses and the proposed use, does not exceed a total 8,000 ADT.

(b) The applicant must complete a trip analysis for development or re-development of 20 or more residential units or 20,000 s.f. or more of commercial or industrial development or as required by the Director. The trip analysis must conform to the ~~demonstrating the change in the current ADT due to the proposal and compute the cumulative ADT~~ methods described within CBMC 18.40.010~~using one of the following methods:~~

> ~~(i) Retain a professional engineer with expertise in traffic or transportation engineering;~~
>
> ~~(ii) Trip generation figures for similar uses based on the latest edition of the publication "Trip Generation" by the Institute of Transportation Engineers (ITE Manual); or~~
>
> ~~(iii) Compute the average daily trips using a minimum of three sites with the same type and size of activity as proposed.~~

~~(c) The director may require a particular computation method upon determining that the development may have a substantial impact on the average daily trips to ensure the most reliable projections of impacts will be obtained.~~

(~~d~~c) A copy of the analysis and cumulative figures shall be sent to the Oregon Department of Transportation, Region 3, which will have 10 days to respond to the city in writing before approval may be granted.

(~~e~~d) The 8,000-ADT limitation for the area shall be removed or modified only in accordance with OAR 660-012-0060.

Recommendation 4

Establish provisions for pedestrian access to the waterfront and along the waterfront (e.g., boardwalk opportunities) in the Waterfront Industrial District and Hollering Place District.

Chapter 17.245 Waterfront Industrial District (W-I)

17.245.030 Property Development Requirements.

…

(9) Noise. Maximum permissible noise level shall not exceed permitted levels measured at the appropriate measuring points established by the Oregon Department of Environmental Quality. If there is doubt that the proposed use will violate these standards or if a valid complaint has been registered about the level of noise, the owner or agent may be required to show written compliance with state regulations.

(10) Pedestrian Circulation. Pedestrian connectivity to and along the waterfront shall be provided throughout the project pursuant to CBDC 17.330.030 and 17.335.090.

…

Chapter 17.250 Hollering Place District (HP)

17.250.080 Site Design, Guidelines and Standards.

All development in the HP district shall be consistent with the intent of the Hollering Place master plan and shall be consistent with the site design, guidelines and standards listed in this section, and the Hollering Place Master Plan Section 6 specifications for Vehicle Circulation, Parking, Pedestrian Circulation, Internal Circulation, Site Design elements and Landscaping. Site design shall respond to environmental, cultural and historic site features by taking advantage of existing view corridors, land use patterns, landforms, prevailing winds, and water-related activities. Long-term sustainable practices should be a focus, including marine resource protection, restoration of native plant communities, and habitat enhancement.

(1) Vehicle Circulation. The existing street patterns, access points and rights-of-way off of Empire Boulevard shall remain. The primary entry point to the lower development will be from Newmark Avenue with a secondary access along Mill Street off of Michigan Avenue. Access to existing businesses and uses will remain, but will be modified to support on-street parking. Existing access to the boat ramp and parking lot shall remain. Parking along Holland Avenue, the south property line of the subject property, shall remain as boat ramp parking.

(2) Pedestrian Circulation. Pedestrian connectivity is required for new development consistent with CBDC 17.330.030 and 17.335.090. ~~and continuity be provided throughout the project with clear crosswalks, curb cuts that meet code, and adequate lighting. Provide high-quality site furnishings suitable for coastal environments with long life and low maintenance~~.

…

17.250.090 General Design Guidelines and Standards – Architectural Form and Composition.

Establish visual linkages between the Empire business district and development on the bluff along Empire Boulevard, the various development areas on the lower site, views to the bay, and potential future development on adjacent sites. Design and locate buildings to minimize the effects of undesirable bay winds at ground level. The following design guidelines and standards are provided for all development in the HP zoning district:

(1) Respond to public streets and public spaces. Along pedestrian routes, design development to encourage use by pedestrians by providing a safe, comfortable, and interesting walking environment consistent with building design building design requirements of Sections 17.250.090 (2) and (3).

…

Recommendation 5

Allow for redevelopment of parking areas for transit uses as new provisions in CBDC 17.330.030 (Joint use of facilities). Require development to provide park-and-rides per guidance in the Coos County Transit Master Plan.

17.330.020 Joint Use of Facilities.

Joint parking and/or loading facilities serving two or more uses, structures, or parcels of land may be approved to satisfy the requirements of both facilities, provided the owners or operators of the uses, structures, or parcels show that their operations and parking needs do not overlap in point of time. If the uses, structures, or parcels are under separate ownership, the right to joint use of the parking space must be evidenced by a deed, lease, contract, or other appropriate written document to establish the joint use. [Ord. 503 § 1 (Exh. B), 2018; Ord. 473 § 3 (Exh. A), 2016. Formerly 17.340.020].

Parking spaces and parking areas may be used for transit related uses such as transit stops and park-and-ride/rideshare areas, provided minimum parking space and design requirements for the site can still be met. Development required to provide park-and-rides shall be consistent with the location and design specifications of the Coos County transit master plan.

Recommendation 6

Include preferential location provisions for rideshare (e.g., carpool) parking in a new subsection in parking design standards

Chapter 17.330 Off-Street Parking and Loading Requirements

17.330.030 Parking Design Standards.

…

(2) Location. Off-street parking facilities shall be located on site to the extent feasible. Off-site parking shall be no further than 300 feet from the site, measured from the nearest point of the parking facility to the nearest point of the nearest building that the facility is required to serve. Off-site parking shall be primarily employee parking.

Parking areas that have designated employee parking and more than 20 automobile parking spaces shall provide at least 10% of the employee parking spaces (minimum two spaces) as preferential carpool and vanpool parking spaces. Preferential carpool and vanpool parking spaces shall be closer to the employee entrance of the building than other parking spaces, with the exception of ADA-accessible parking spaces.

Recommendation 7

Require "crosswalks" (pedestrian connections) through parking areas over a certain size in a new parking area design subsection in CBDC 17.330.030.

17.330.030 Parking Design Standards

…

(3) Materials, Design, and Lighting.

(a) Off-street parking facilities shall be surfaced with a durable and dustless surface, shall be graded and drained so as to dispose of surface water to the satisfaction of the public works department and shall be maintained in good condition, free of weeds, dust, trash, and debris.

(b) Except for a single-family or duplex dwelling, groups of more than two parking spaces per lot must:

(i) Provide aisles or turnaround areas so that all vehicles may enter the street in a forward manner; and

(ii) Serve a driveway designed and constructed to facilitate the flow of traffic on and off the site, with due regard to pedestrian and vehicle safety, and shall be clearly and permanently marked and defined. In no case shall two-way and one-way driveways be less than 20 feet and 12 feet, respectively, and arranged so as not to use any part of adjoining public sidewalks, street, or alley rights-of-way, except for ingress and egress.

(iii) Provide internal pedestrian connections in parking lots with more than ten (10) parking spaces located in commercial districts and in parking lots with more than thirty (30) parking spaces located in non-commercial districts. These connections shall be a minimum of five (5) feet wide and distinguished from vehicular areas through changes in elevation or contrasting paving materials (such as light-color concrete inlay between asphalt). Paint or thermo-plastic striping and similar types of non-permanent applications may be approved for crossings of parking lot areas that do not exceed 24 feet in crossing length.

(iv) Provide at-grade pedestrian lighting- level of no less than two footcandles.

…

Recommendation 8[4]

Add bicycle parking requirements for transit transfer stations and park-and-ride lots in Table 17.330.030 (the number and design of spaces to be determined through development review).

17.330.030 Parking Design Standards.

…

(4) All uses, except for single-family dwellings and duplexes, required to provide off-street vehicle parking shall provide bicycle parking consistent with the standards in Table 17.330.030(B).

Table 17.330.030(B) – Bicycle Parking

Type of Use	Number of Bicycle Parking Spaces
Multifamily residential	One space per dwelling unit
Commercial	One space per use plus one space per ~~50~~ 15 vehicle parking spaces
Industrial, institutional and public uses	Schools – One space per ~~10~~25 students Transit Stops – Two spaces Transit Centers – Four spaces or one per 10 vehicle spaces, whichever is greater Other uses – One space per use plus one space per 10 vehicle parking spaces

(a) Bicycle parking space may be located within garage, storage shed, basement, utility room or similar area.

(b) Bicycle Parking Location. Bicycle parking shall be located in lighted, secure locations within 50 feet of the main entrance to a building, but not further from the entrance than the closest general-purpose automobile parking space. Where a building has multiple entrances, required

[4] Table name was updated since Technical Memo #12 original draft to include (B), as Recommendation #19 added a table to Subsection 17.330.030, prompting renaming of original table 17.330.030 – Bicycle Parking.

bicycle parking shall be no farther than 50 feet from an entrance. Bicycle parking shall be located and designed so as to not impede or create a hazard to pedestrians (at least 36 inches between bicycles and other obstructions or buildings).

(c) Bicycle Parking for Transit. The location and design of bicycle parking for transit stops and transit centers shall be determined through the development review process.

Recommendation 9

Require pedestrian access to the street (sidewalk), adjacent properties, and existing and planned transit stops for development other than single-family residential development.

Chapter 17.335 Supplementary Development Standards

Sections:

17.335.010 Generally.

17.335.020 Height of fences and hedges.

17.335.030 Solid waste.

17.335.040 Lighting.

17.335.050 Noise.

17.335.060 Landscaping.

17.335.070 Drive-ins/drive-throughs.

17.335.080 Indoor marijuana-related businesses.

17.335.090 Pedestrian and Bicycle Access.

17.335.100 Transit Facilities.

17.335.090 Pedestrian and Bicycle Access.

Pathways within developments shall provide safe, reasonably direct and convenient connections between primary entrances and all adjacent streets, adjacent properties, and existing or planned transit stops based on the following definitions:

(1) Reasonably Direct. A route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for likely users.

(2) Safe and Convenient. Bicycle and pedestrian routes that are reasonably free from hazards and provide a reasonably direct route of travel between destinations.

(3) For commercial, industrial, mixed use, public, and institutional buildings, the "primary entrance" is the main public entrance to the building. In the case where no public entrance exists, street connections shall be provided to the main employee entrance.

(4) For residential buildings the "primary entrance" is the front door (i.e., facing the street).

(5) For multifamily buildings in which each unit does not have its own exterior entrance, the "primary entrance" may be a lobby, courtyard or breezeway which serves as a common entrance for more than one dwelling.

(6) Pathways shall be concrete, asphalt, brick/masonry pavers, or another city-approved durable surface meeting ADA requirements.

Recommendation 10

Establish requirements related to transit stops, including required building entrance orientation, for development other than single-family residential development in a new subsection in CBDC Chapter 17.335 (Supplementary Development Standards).

17.335.090 Pedestrian and Bicycle Access.

…

(5) Retail, office, and institutional developments proposed on the same site as, or adjacent to, an existing or planned transit stop as designated in an adopted transportation or transit plan shall provide the following transit access:

(a) Reasonably direct pedestrian connections between the transit stop and primary entrances of the buildings on site. For the purpose of this Section, "reasonably direct" means a route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for users.

(b) The primary entrance of the building closest to the street where the transit stop is located that is oriented to that street.

(c) Easements and/or transit stop improvements in coordination with the transit service provider and consistent with an adopted plan, pursuant to CBDC 17.335.100.

Recommendation 11

Add transit facilities requirements to the Supplementary Development Standards in Title 17.

17.335.100 Transit Facilities.

Developers shall coordinate and provide documentation of coordination with Coos County Area Transit, the local transit provider, with regard to the design of the street and other transportation facilities that are located within 100 feet of existing or planned transit routes and stops and of development sites that are adjacent to existing or planned transit stops. ADA-accessible transit stop improvements, pedestrian connections to transit stop locations, and furnishings such as shelters, benches, bicycle racks, and/or other amenities may be required by public works, consistent with adopted plans.

Recommendation 12

Add consistency with TPR Section -0060 as a specific approval criterion for plan amendments and zone changes in CBDC 17.360.060.

Chapter 17.360 Plan Amendments and Zone Changes

17.360.060 Approval Criteria.

(1) With a ~~Type III or~~ Type IV review, the city council shall approve the proposal upon finding that:

(a) The proposed amendment is consistent with the applicable policies of the comprehensive plan or that a significant change in circumstances requires an amendment to the plan or map;

(b) The proposed amendment is in the public interest; ~~and~~

(c) Approval of the amendment will not result in a decrease in the level of service for capital facilities and services ~~identified in the Coos Bay capital improvement plan(s).~~;

(d) The proposed amendment is consistent with the City of Coos Bay's planned transportation system as described within the Transportation System Plan;

(e) The proposed amendment is consistent with the adopted transportation system plan and would facilitate the planned function, capacity, and performance standards of the impacted facility or facilities; and

(f) The proposed amendment shall be consistent with the Oregon Administrative Rule (OAR) 660-012-0060 requirements. Where it is found that a proposed amendment would have a significant effect on a transportation facility in consultation with the applicable roadway authority, the City shall work with the roadway authority and applicant to modify the amendment request or mitigate the impacts in accordance with the TPR and applicable law.

Recommendation 13

Ensure that mobility standards in the code are consistent with recommendations in the Draft TSP.

Chapter 18.15 Transportation Facilities

18.15.005 Generally.

…

Level of Service (LOS). The level of service standard to determine what is acceptable or unacceptable traffic flow on streets shall be based on average seconds of delay ~~a volume-to-capacity ratio~~. City streets shall maintain a LOS of “D” during the peak 15 minutes of the day ~~p.m. peak hour of the day~~. However, the developer will be responsible for making appropriate safety improvements should warrants for turn lanes, traffic signals, and/or other traffic safety improvements be met.

Recommendation 14

Institute block size standards according to street functional classification in a new subsection in CBMC Chapter 18.15 (Transportation Facilities).

18.15.010 City Streets.

(1) Street Classifications. The city has adopted the following functional classification of streets based on the context of the surrounding land use:

(a) Principal arterial (state highway under ODOT jurisdiction);

(b) Arterial street;

(c) Collector street;

(d) Neighborhood route;

(e) Local street.

Refer to the city’s transportation system plan (TSP) for a map showing the city’s functional classification street designations.

(2) Block Length and Perimeter.

(a) The maximum block length shall not exceed 600 feet between street corner lines in residential and commercial districts, 400 feet in the downtown zone, and 1,000 feet in other zones unless it is adjacent to an arterial street or unless the topography or the location of adjoining streets design exception pursuant to CBMC Section 18.10.060.

(b) The minimum length of blocks along an arterial in zones other than Residential, downtown, and C-MX is 1,800 feet.

(c) A block shall have sufficient width to provide for two tiers of building sites unless topography or location of adjoining streets justifies an exception.

(3~~2~~) Vehicular Zone.

[Note: This new re-numbering will need to be carried through this subsection.]

Recommendation 15

Consider narrower paved widths standards, as compared to existing standards in Table 3-1 in CBMC 18.15.010(2).

18.15.010 City Streets.

…

(2) Vehicular Zone.

(a)(i) Vehicular Zone Cross-Section. The vehicular zone width is defined as the horizontal distance from face of curb to face of curb, measured perpendicular to the centerline. The vehicular zone includes paved travel lanes for motorized vehicles and bicycles, and may also include median spaces and paved areas for on-street parking. The width of the vehicular zone shall be sufficient to allow for the safe passage of normal multi-modal traffic and emergency vehicles.

Required lane widths and configuration are shown in the standard details. Streets should be centered within the right-of-way; however, design exceptions may be considered due to topography or other physical constraints. The city's design exception process in CBMC 18.10.060 will apply; including the Director's discretion to deviate from minimum Right – of – way width standards.

Table 3-1. Lane Widths and Configuration in the Vehicular Zone

	Minimum Paving Width Curb-to-Curb						**Max Grade**
Type of Street	**Min ROW Width**	**Vehicle Travel Lane**	**~~Median or~~ Center Turn Lane**	**On-Street Parking**	**Bike Lane (a)**	**Sidewalk Curb (b)**	
Arterial/Collector (c)							
5-lane ~~(c)~~(d)	100'	12'/11'	12'~~14'~~	-	2 @ 6'~~(g)~~(h)	2 @ 6'/5'	10%~~8%~~
3-lane ~~(c)~~(d)	76'	~~12'~~11'	12'~~14'~~ ~~(Optional)~~	-	2 @ 6'~~(g)~~(h)	2 @ 6'/5'	10%~~8%~~
2-lane	50'	~~12'~~11'	-	-	2 @ 6'~~(g)~~(h)	2 @ 6'/5'	10%~~8%~~

Local Roads							
20' Residential (no parking)	~~50'~~ 40'	10'		-		2 @ 5'	10%
~~28'~~ 28' ~~Standard~~ Residential (parking one side)	~~50'~~ 48'	10'		1 @ 8'		2 @ 5'	10%
~~36'~~ 34' ~~Neighborhood~~ Residential (parking both sides)	~~50'~~ 54'	10'	-	2 @ ~~8~~7'	-	2 @ 5'	10%~~16%~~
40' Standard Commercial~~/~~	60'	12'	-	2 @ 8'	-	2 @ 5'	10%~~16%~~
Dead End ~~(d)~~(e)	50'	10'	-	2 @ 8'	-	2 @ 5'	10%~~16%~~
Cul-de-Sac ~~(e)~~(f)	50'	10'	-	~~(d)~~(e)	-	1 @ 5' ~~(f)~~(g)	10%~~16%~~ ~~(d)~~(e)
Alley							
1-way	20'	12'	-	-	-	-	-
2-way	20'	16'	-	-	-	-	-

(a~~A~~) New construction: six feet; reconstruction: five feet.

(b~~B~~) Wider sidewalks may be required in commercial areas.

(c) On designated freight routes the minimum lane width is 12'.

(d~~C~~) The minimum right-of-way width includes the option of two six-foot-wide landscape strips for arterials or two four-foot-wide strips for local commercial/industrial.

(e~~D~~) A dead end must be less than 400 feet in length and terminate with a circular or hammerhead turnaround with a maximum grade of eight percent.

(f~~E~~) No parking is permitted at the end of a cul-de-sac which must have adequate space for emergency equipment turnaround, usually a 45-foot unobstructed radius.

(g~~F~~) At the end of the cul-de-sac, a five-foot sidewalk is required along the perimeter adjacent to the development.

(h~~G~~) Bike lanes allowed to be reduced to five feet in width if the project is reconstruction.

….

Table 3-6. Maximum Street Grades

Street Classification	Maximum Grade (%)
~~Residential~~ Local	~~12~~10

Arterial/Collector	10
~~Commercial/Industrial Local~~	~~10~~
~~Arterial~~	~~8~~

Recommendation 16

Ensure that requirements are consistent with spacing standards (updated, or existing 2004 TSP Tables 3-6 and 3-7). Add access spacing standards in the code.

18.15.010 City Streets.

…

(6) Roadway Intersections.

(a) Minimum Access spacing for City Streets. Minimum access spacing for city streets are found in Table 3-7.

Table 3-7. Minimum Access Spacing

Type of Street	**Minimum Access Spacing(a)**
Arterial Streets	Between new access points: 500 feet
Collector Streets	Between new access points: 300 feet
Arterial-arterial intersections	From the intersection: 300 feet
Arterial-Collector intersections	From the intersection: 300 feet
Collector-Collector intersections	From the intersection: 150 feet
State Highways or County Roads	ODOT or county standards supersede city standards
Local Roads	To be determined in the development review process.

(a) For City facilities, existing developed or undeveloped lots or parcels cannot be denied access. The maximum access spacing possible should be provided unless it renders access to individual lots or parcels impractical.

~~(a)~~(b) Intersection Geometry.

[Note: Subsequent tables and subsections will need to be re-numbered accordingly.]

Recommendation 17

Add requirements for non-motorized connections from cul-de-sacs to CBMC 18.15.10(9).

18.15.010 City Streets.

… (9) Cul-de-Sacs. Dead-end streets over 150 feet in length shall terminate in an approved turnaround acceptable to the fire marshal and public works to provide adequate emergency vehicle access. The maximum length of a dead-end street shall be 400 feet unless approved through the design exception process (see CBMC 18.10.060). This length shall be measured from the centerline of the intersecting street along the centerline of the dead end street to the center of the turnaround.

No islands or other obstructions are allowed in the centers of cul-de-sacs.

The entire cul-de-sac or hammerhead must be contained within the public right-of-way and signed appropriately to restrict parking. Refer to subsection (2)(f) of this section for information regarding sign installation responsibilities.

<u>The cul-de-sac shall provide a location where pedestrian and bicycle access to adjacent areas can be achieved. This will be determined by the review authority as a part of the subdivision review in conformance with CBDC Section 17.335.090 (4).</u>

Recommendation 18

Resolve any conflicts between clear-vision area requirements and updated TSP standards. Add references to transportation standards requirements for subdivisions and planned unit development in Title 17.

Chapter 17.362 Planned Unit Development

17.362.040 PROPERTY DEVELOPMENT REQUIREMENTS.

(4) Access and Roads.

(a) The development shall provide vehicular and pedestrian access from a dedicated and improved street according to applicable zoning district standards and engineering requirements in 18.15.

(b) Private streets within the development shall meet the following minimum paving standards:

(i) Eighteen feet where no on-street parking is allowed.

(ii) Twenty-eight feet where on-street parking is allowed only on one side of the right-of-way.

(iii) Thirty-six feet where parking is permitted on both sides of the right-of-way.

(iv) All private streets within a PUD shall be designed and constructed to city standards.

(v) An additional three feet on each side of pavement shall be designated as right-of-way area in which no construction shall take place.

(vi) The review authority shall approve the names of all streets within the PUD. The owner or operator of the development shall furnish, install, and maintain street signs of a type approved by the review authority.

Chapter 17.367 Subdivisions

17.367.040 APPROVAL CRITERIA FOR A PRELIMINARY PLAT.

(1) The review authority shall approve a preliminary plat if he or she finds:

(a) The applicant has sustained the burden of proving that the application complies with the applicable provisions of this title and Title 18.15, Transportation Facilities;

(b) The application will comply with all applicable regulations by satisfying all adopted conditions of approval; or that necessary adjustments, exceptions, modifications or variations have been approved or are required to be approved before the final partition is approved; and

(c) The subdivision makes appropriate provision for potable water supplies and for disposal of sanitary wastes.

Recommendation 19

Add angled parking standards to existing parking dimensional standards.

Chapter 17.330 Off-Street Parking and Loading Requirements

17.330.030 PARKING DESIGN STANDARDS.

…

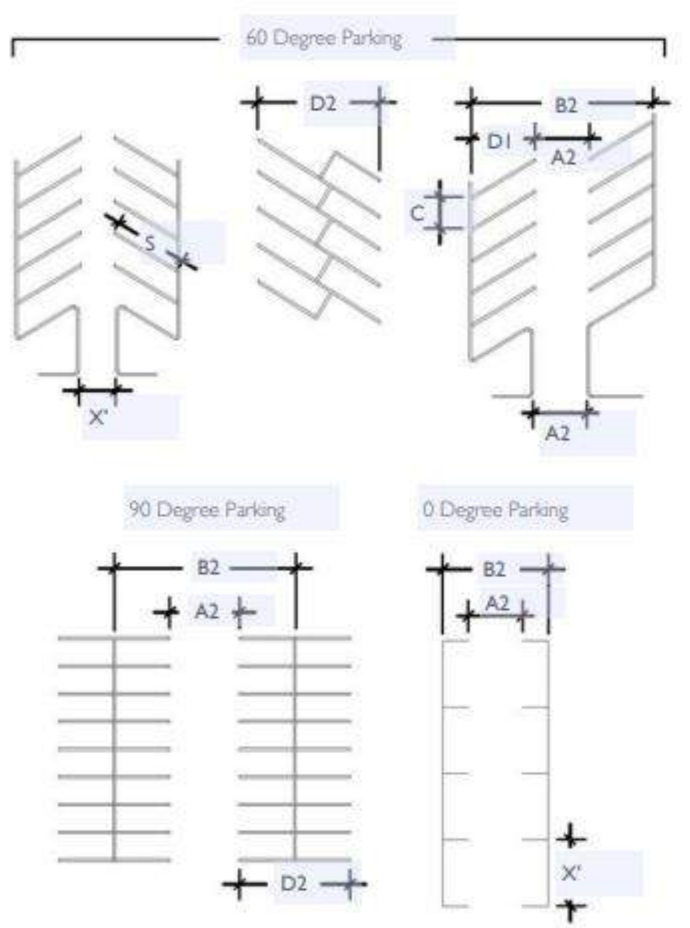
(1) Size of Parking Space. Each off-street parking space shall not be less than nine feet by 18 feet. Up to 25 percent of all required parking spaces can be used for compact vehicles. These compact spaces shall not be less than eight feet by 16 feet. Each space shall be provided with adequate ingress and egress.

(a) Parking Stall Design and Minimum Dimensions. Where a new off-street parking area is proposed, or an existing off-street parking area is proposed for expansion, the entire parking area shall be improved in conformance with the CBDC. At a minimum the parking spaces and drive aisles shall be paved with asphalt, concrete, or other City-approved materials, provided the Americans with Disabilities Act requirements are met, and shall conform to the minimum dimensions in Table 17.330.030(A) and Figure 17.330.030. All off-street parking areas shall contain wheel stops, perimeter curbing, bollards, or other edging as required to prevent vehicles from damaging buildings or encroaching into walkways, landscapes, or the public right-of-way.

Table 17.330.030(A) - Parking Area Minimum Dimensions

Parking Angle < °	**Curb Length**	**Stall Depth**		**Aisle Width**		**Bay Width**		**Stripe Length**
		Single (D1)	**Double D2**	**One Way A1**	**Two Way A2**	**One Way B1**	**Two Way B2**	
90°	8'-6"	18'	36'	23'	23'	59'	59'	18'
60°	10'	20'	40'	17'	18'	57'	58'	23'
45°	12'	18'-6"	37'	13'	18'	50'	55'	26'-6"
30°	17'	16'-6"	33'	12'	18'	45'	51'	32'-8"
0°	22'	8'-6"	17'	12'	18'	29'	35'	8'-6"

Figure 17.330.030 - Parking Stall Design and Minimum Dimensions



Recommendation 20

Include requirements for easement dedication for access along Front Street.

Chapter 17.235 INDUSTRIAL-COMMERCIAL DISTRICT (I-C)

17.235.040 INDUSTRIAL-COMMERCIAL DEVELOPMENT STANDARDS.

(7) Pedestrian Access Plan. An on-site pedestrian circulation system must be provided, which connects the street to the public entrances of the structure(s) on site.

(a) The circulation system shall be hard-surfaced and be at least five feet wide.

(b) Where the system crosses driveways, parking, and/or loading areas, the system must be clearly identifiable through the use of elevation changes, speed bumps, varied paving materials or other similar methods approved by the reviewing authority and in compliance with the Americans with Disabilities Act (ADA).

(c) The on-site pedestrian circulation system and parking areas must be lighted to a level which provides adequate lighting so that parking areas can be used safely when natural light is not present.

(d) The pedestrian system must connect the site to adjacent streets and transit stops. The pedestrian system must also connect on-site public open space or parks, commercial, office and institutional developments to adjacent like uses and developments for all buildings set back 45 feet or farther from the street lot line, when existing development does not preclude such connection. Development patterns must not preclude eventual site-to-site connections, even if an adjoining site is not planned for development at the time of the applicant's development.

<u>(e) Land to accommodate the planned Coos Waterfront Walkway alignment, as shown in Figure 12 of the TSP and described in the Tier 2 TSP Project list, shall be provided through either existing right-of-way, right-of-way that is created and dedicated to the City, or easements dedicated through development approval. Minimum boardwalk right-of-way width shall be 14 feet.</u>

Chapter 17.240 WATERFRONT HERITAGE DISTRICT (WH)

17.240.070 PROPERTY DEVELOPMENT REQUIREMENTS.

<u>(18) Land to accommodate the planned Coos Waterfront Walkway alignment, as shown in Figure 12 of the TSP and described in the Tier 2 TSP Project list, shall be provided through either existing right-of-way, right-of-way that is created and dedicated to the City, or easements dedicated through development approval. Minimum boardwalk right-of-way width shall be 14 feet.</u>

CITY OF COOS BAY