Brookings Transportation System Plan
Final Technical Memorandum #4
Future Baseline Conditions

Prepared for
City of Brookings

June 2015

Prepared by
Parametrix

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Final Technical Memorandum #4
Future Baseline Conditions

Prepared for

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CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

ACRONYMS

APM	Analysis Procedures Manual
CIP	Capital Improvement Program
CPTI	Curry County Public Transit, Inc.
LOS	level of service
LTS	level of traffic stress
OHP	Oregon Highway Plan
PLOS	pedestrian level of service
STIP	State Transportation Improvement Program
TSP	Transportation System Plan
UGB	Urban Growth Boundary
v/c	volume-to-capacity

1. INTRODUCTION

This technical memorandum has been prepared to support development of the Transportation System Plan (TSP) update for the City of Brookings.

The Brookings TSP will guide the future development of transportation facilities within the City. The Plan will be developed over the next year with input from the community and agency staff. Its primary objective is to meet the community's goal of developing and maintaining a pleasant, safe, and convenient transportation network that can be used by everyone traveling in Brookings.

1.1 PURPOSE AND ORGANIZATION OF THIS REPORT

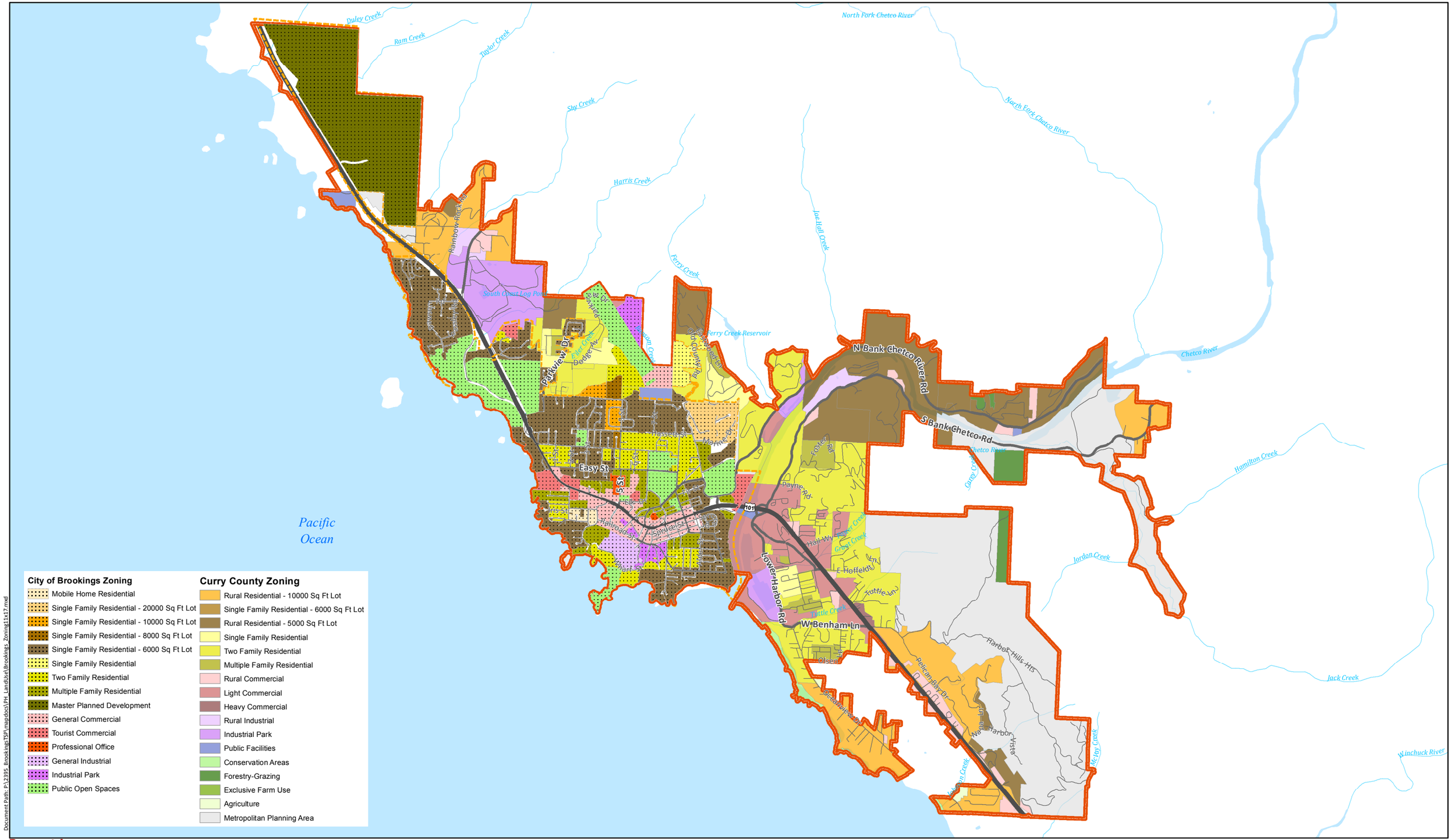
The purpose of this memorandum is to summarize the future baseline (no build) land use, future traffic volume forecasts, peak hour intersection operations, and a qualitative multimodal assessment for the year 2034.

This report is organized into four chapters, the first of which is this introduction. Chapter 2 provides a summary of the future zoning in the study area. Chapter 3 summarizes the future baseline transportation system operations analysis. Chapter 4 provides a qualitative multimodal level of service analysis.

2. FUTURE ZONING (2034)

The types and densities of zoning and land uses are major determinants of traffic demand and travel patterns. The City's 2012 Comprehensive Plan includes a zoning map (shown in **Figure 2-1**) which displays designations that refer to existing regulatory requirements for properties in the City. While the zoning map doesn't guide future land use, it gives an indication of the land uses that may exist in the future.

The main commercial areas within the city boundaries are located on the Highway 101 corridor in downtown Brookings. Within the Urban Growth Boundary (UGB), commercial areas are also located on the Highway 101 corridor just south of the Chetco River. In the future, commercial land uses are expected to continue to be concentrated in these two areas. The majority of Brookings and county land within the UGB is zoned for residential uses, and it's expected that Brookings will continue to remain mostly residential in the future. Most of the residential zones are single-family residential development with some two-family zoning directly adjacent to commercial areas. Connecting these residential areas to one another and to commercial, employment, recreational, and transit destinations is a key concern for building a more efficient transportation network that reduces trip distances.



City of Brookings Zoning

- Mobile Home Residential
- Single Family Residential - 20000 Sq Ft Lot
- Single Family Residential - 10000 Sq Ft Lot
- Single Family Residential - 8000 Sq Ft Lot
- Single Family Residential - 6000 Sq Ft Lot
- Single Family Residential
- Two Family Residential
- Multiple Family Residential
- Master Planned Development
- General Commercial
- Tourist Commercial
- Professional Office
- General Industrial
- Industrial Park
- Public Open Spaces

Curry County Zoning

- Rural Residential - 10000 Sq Ft Lot
- Single Family Residential - 6000 Sq Ft Lot
- Rural Residential - 5000 Sq Ft Lot
- Single Family Residential
- Two Family Residential
- Multiple Family Residential
- Rural Commercial
- Light Commercial
- Heavy Commercial
- Rural Industrial
- Industrial Park
- Public Facilities
- Conservation Areas
- Forestry-Grazing
- Exclusive Farm Use
- Agriculture
- Metropolitan Planning Area

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Parametrix Source: City of Brookings, Oregon

0 0.375 0.75 1.5 Miles

City Limit
Urban Growth Boundary

Roadways
Functional Classification
Principal Arterial
Collector
Local Road

FIGURE 2-1
CITY OF BROOKINGS ZONING DESIGNATIONS
Transportation System Plan
Brookings, Oregon

3. FUTURE TRANSPORTATION SYSTEM OPERATIONS

3.1 FUTURE TRANSPORTATION PROJECTS

To describe the known future conditions, planned improvements were added to the transportation system from the fiscally constrained projects listed in the Statewide Transportation System Improvement Program (STIP), the City of Brookings Capital Improvement Programs (CIP) and the Curry County CIP. Several projects are included in the 2014-2015 Brookings CIP, Curry County CIP, and Statewide STIP that will be constructed by the horizon year and are included in the no build analysis. **Table 3-1** summarizes future transportation projects included in the no build analysis.

Table 3-1. Future Transportation Projects

Project Name	Description	Funding Years	Included In:
ADA Program	20% of street paving funds to be used for ADA compliance	2014-2017	2014-2015 Brookings CIP
ADA evaluation	ADA evaluation based on TSP update	2015-2017	2014-2015 Brookings CIP
Annual Street Improvement	Annual street paving project	2014-2017	2014-2015 Brookings CIP
Bike path to SOCC	Extend bike path along US 101 from Dawson Rd to Southwestern Oregon Community College	2016-2020	2016 Brookings CIP
Street Sweeper	Replace aged and used street sweeper	2014-2017	2014-2015 Brookings CIP
Retroreflectivity	Inventory, test and replace traffic signage that does not meet MUTCD requirements	2015-2017	2014-2015 Brookings CIP
Transportation System Plan	Update the City's Transportation System Plan	2014-2015	2014-2015 Brookings CIP
Bike Safety	Bike safety program contingent on receiving grant match	2014-2015	2014-2015 Brookings CIP
ODOT ROW maintenance	ODOT reimburses the City for street sweeping and weed abatement	2014-2015	2014-2015 Brookings CIP
Safe Routes To School Kalmiopsis Match	Install sidewalks at Kalmiopsis School	2014-2015	2014-2015 Brookings CIP
Marine Drive Slide	Repair damage from slide to street and sewer main	2016-2017	2014-2015 Brookings CIP
Grant Preparation – Bike/Ped	Grant preparation for bike/ped projects	2014-2015	2014-2015 Brookings CIP
Bike Kiosk Grant Match	Grant match for Bike Kiosk	2014-2015	2014-2015 Brookings CIP
Tanbark Overlook Pedestrian Beach Accessibility	Beach accessibility project	2015-2016	2014-2015 Brookings CIP
Annual debt service – Storm	Annual debt service	2014-2017	2014-2015 Brookings CIP

Table 3-1. Future Transportation Projects (continued)

Project Name	Description	Funding Years	Included In:
Hemlock Street Improvements	Construct sidewalks from Fern to Willow Street on Hemlock Street	2014-2015	2014-2015 Brookings CIP
Frontage Road RV parking traffic study and design	Traffic study	2014-2015	2014-2015 Brookings CIP
Railroad Street Improvements	Construct sidewalks, bike lanes, medians, illumination, signage, bus stops, and streetscaping.	2016-2017	2014-2015 Brookings CIP; 2015-2018 STIP
Thompson Road	Asphalt overlay	2017	2014-2015 Curry County CIP
Curry County Replacement Vehicles	Purchase new transit vehicles	2016	2015-2018 STIP

Source: 2015-2018 STIP, 2014-2015 STIP, 2014-2015 Curry County CIP, 2014-2015 Brookings CIP

3.2 VOLUMES AND INTERSECTION OPERATIONS

Traffic volumes for 2034 were developed by Parametrix using the Brookings travel demand model supplied by ODOT's Transportation Planning Analysis Unit (TPAU). **Figure 3-1** summarizes the year 2034, 30th highest hour volumes for the study area intersections.

3.2.1 State and Local Mobility Standards

State highway mobility targets were developed for the 1999 Oregon Highway Plan (OHP) as a method to gauge reasonable and consistent targets for traffic flow along state highways. Revised mobility targets were adopted in December 2011 as part of the OHP Policy 1F Amendments. These mobility targets consider the classification (e.g., freeway, district) and location (rural, urban) of each state highway. Mobility targets are based on volume-to-capacity (v/c) ratios. The mobility targets from this version of the OHP will be used in this study for the existing and future no build mobility targets. The future build mobility targets are from the Highway Design Manual and are considered guidelines, although there is a design exception process. ODOT uses v/c ratio standards to assess intersection operations. The ODOT controlled intersections within the study area are located along US 101. **Table 3-2** summarizes the mobility targets for intersections along US 101.

Level of service (LOS) is another metric that describes how well an intersection operates, and is commonly used as a standard. Intersections receive a LOS grade from "A" to "F", where LOS "A" represents the best conditions with minimal delay at the intersection and LOS "F" represents the worst conditions.

The City of Brookings and Curry County have not adopted LOS or v/c ratio standards for signalized or unsignalized intersections, but the City of Brookings 2002 Transportation System Plan, and the Curry County 2005 Transportation System Plan identify a goal of LOS C. The City of Brookings has indicated that it would like to adopt LOS C as its standards and therefore is using it as the standard for this TSP update. Given these goals, intersections that do not meet the following operational thresholds will be identified:

- LOS C or better at signalized, all-way stop controlled intersections, or for the poorest operating approach at two-way stop controlled intersections

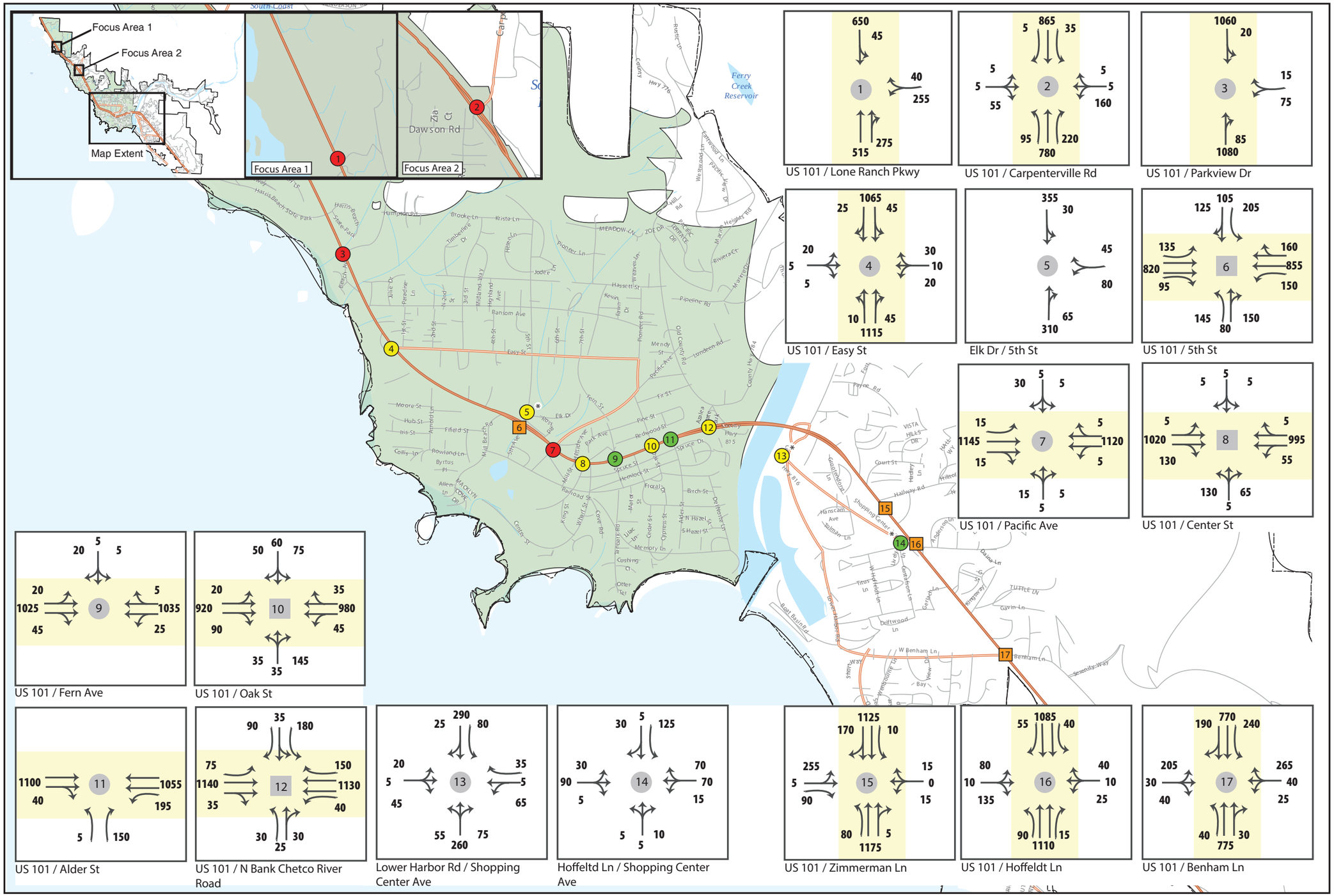


FIGURE 3-1
YEAR 2034 30TH HV, LANE CONFIGURATIONS, INTERSECTION CONTROL, AND LOS

Table 3-2. State Mobility Targets

US 101 Segment	ODOT Classification[1]	Jurisdiction	Existing or Future No Build Mobility Targets[2]	Future Build Mobility Standard[3]
North of Ransom Street	Statewide Non-Freight Route, UBA Non-MPO >=45 mph	ODOT	0.80	0.70
Between north of Ransom Street and north of Pacific Avenue	Statewide Non-Freight Route, UBA, Non-MPO <=35 mph	ODOT	0.90	0.75
Between north of Pacific Avenue and south of Alder Street	Statewide Non-Freight Route, UBA, STA	ODOT	0.95	0.90
Between south of Alder Street and south of Floral Hill Drive	Statewide Non-Freight Route, UBA Non-MPO <=35 mph	ODOT	0.90	0.75
South of Floral Hill Drive	Statewide Non-Freight Route, UBA Non-MPO >=45 mph	ODOT	0.80	0.70
All	Stopped Non-State Approach	ODOT	0.95	0.75-0.80

1. ODOT TransGIS. https://gis.odot.state.or.us/transgis/. US 101 is not designated as a freight route, but it is a Reduction Review Route subject to ORS 366.215.

2: ODOT OHP Policy 1F Amendments, December 2011

3: ODOT Highway Design Manual 2012

Level of service criteria for signalized and unsignalized intersections are different as shown in **Table 3-3**.

Table 3-3. Level of Service Criteria

	Control Delay (seconds/vehicle)	
Level of Service	**Signalized Intersection**	**Unsignalized Intersection**
A	<10	<10
B	>10 and < 20	>10 and < 15
C	>20 and <35	>15 and <25
D	>35 and <55	>25 and <35
E	>55 and <80	>35 and <50
F	>80	>50

Note: The LOS criteria are based on control delay, which includes initial deceleration delay, queue move-up time, stopped delay, and final deceleration delay.

Source: Transportation Research Board, Highway Capacity Manual.

Note that the LOS criteria for unsignalized intersections are somewhat different than criteria used for signalized intersections. Reasons for this include that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes. In addition, there are a number of driver behavior considerations that combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, while drivers on the minor street approaches at unsignalized intersections must remain attentive to the task of identifying

acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections than signalized intersections. For these reasons, it is considered that the total delay threshold for any given LOS is less for an unsignalized intersection than for a signalized intersection.

3.2.2 Traffic Operations Analysis Results

Mobility standards including LOS and v/c ratios were calculated for each study intersection for the baseline year (2034). Traffic analysis was conducted for the 14 study intersections in the City of Brookings using the Synchro software (Version 8, Build 805). According to the Analysis Procedures Manual (APM), the reported results for the v/c ratios at signalized intersections used the HCM 2000 Report and results for unsignalized intersection used the HCM 2010 Report. Traffic analysis results from the US 101 Corridor Study are included for the three intersections on US 101 south of the Chetco River. At stop-controlled intersections, critical side street operations and mainline left-turns v/c ratios and LOS are reported. Intersections that exceed the jurisdictional v/c ratio or LOS standard are shown in bold and shaded. **Table 3-4** summarizes the v/c ratio and LOS (see **Appendix A** for Synchro output files).

Table 3-4. Baseline (2034) Intersection LOS and v/c Ratio

	Study Intersection	Jurisdiction	Intersection Control	Overall for Signal Side Street for No Signal		Mainline for No Signal		Exceeds Jurisdictional Standard
				v/c	LOS	v/c	LOS	
1	**US 101/Lone Ranch Parkway**	**ODOT**	**Stop Sign**	**1.54**	**F**	**0.46**	**A**	**Yes**
2	**US 101/Carpenterville Road**	**ODOT**	**Stop Sign**	**>2.00**	**F**	**0.13**	**B**	**Yes**
3	**US 101/Parkview Drive**	**ODOT**	**Stop Sign**	**1.07**	**F**	**0.70**	**B**	**Yes**
4	US 101/Easy Street	ODOT	Stop Sign	0.61	F	0.43	B	No
5	5th Street/Elk Drive	Brookings	Stop Sign	0.38	C	0.25	A	No
6	US 101/5th Street	ODOT	Signal	0.79	C	-	-	No
7	**US 101/Pacific Avenue**	**ODOT**	**Stop Sign**	**0.98**	**F**	**0.36**	**B**	**Yes**
8	US 101/Center Street	ODOT	Signal	0.67	B	-	-	No
9	US 101/Fern Avenue	ODOT	Stop Sign	0.10	C	0.35	B	No
10	US 101/Oak Street	ODOT	Signal	0.67	B	-	-	No
11	US 101/Alder Street	ODOT	Stop Sign	0.31	D	0.38	C	No
12	US 101/N Bank Chetco River Road	ODOT	Signal	0.63	C	-	-	No
13	Lower Harbor Road/ Shopping Center Avenue	Curry	Stop Sign	0.34	C	0.28	A	No
14	Hoffeldt Lane/Shopping Center Avenue	Curry	Stop Sign	0.26	B	0.11	A	No
15	**US 101/Zimmerman Lane***	**ODOT**	**Signal**	**0.84**	**C**	**-**	**-**	**Yes**
16	US 101/Hoffeldt Lane*	ODOT	Signal	0.70	B	-	-	No
17	**US 101/Benham Lane***	**ODOT**	**Signal**	**0.89**	**D**	**-**	**-**	**Yes**

*Results from US 101 Corridor Plan

Bold and shade = Intersections that exceed the jurisdictional v/c ratio or LOS standard.

As illustrated in **Figure 3-1** and **Table 3-4** six study intersections under ODOT's jurisdiction would not meet ODOT's mobility standards in the baseline year 2034.

4. FUTURE MULTIMODAL ASSESSMENT

The assessment of the no build conditions for future multimodal transportation systems operations uses the same methodology as for the existing conditions, described in Technical Memorandum #3. This analysis builds on the existing conditions as discussed in Technical Memorandum #2 by considering how currently-planned improvements and baseline future conditions are likely to impact future transportation system operations.

4.1 PEDESTRIAN FUTURE LEVEL OF SERVICE

The pedestrian level of service (PLOS) methodology is based on ODOT's Qualitative MMLOS Supplement Addendum G. Described in Technical Memorandum #3, the methodology considers sidewalk completion (one or both sides of the street), physical separation from motor vehicles (via a bike lane and/or on-street parking), and adjacent motor vehicle travel speeds. Posted speeds are assumed to be the same in the future analysis as for the existing conditions. Note that the ODOT method is targeted toward a more urban setting, as it does not consider roadway shoulders as potential pedestrian areas. Therefore a revised method for the 'urban fringe' (defined as major streets with 30 mph speed limit or higher) is used for assessing those areas within Brooking's Urban Growth Boundary that are not, and are not likely to become, urbanized.

4.1.1 Future Pedestrian Facilities

Sidewalks are planned to be completed in 2017 on Railroad Street from Wharf Street to Oak Street and in 2014-15 on Hemlock Street from Fern Avenue to Willow Street. A multi-use path was recently completed north of Harris Beach Park, connecting to Dawson Road.

Most sidewalks on residential streets in Brookings are constructed as part of development, so other sidewalk projects are likely to occur but are not documented and are therefore not included in this analysis.

4.1.2 Results

The PLOS analysis results in a score of 1 to 5. PLOS 1 represents a comfortable pedestrian environment for all types of users such as a complete sidewalk network on both sides of a 2 lane or narrower street. Higher scores represent conditions with higher posted traffic speeds, lack of sidewalks, and lack of buffer space adjacent to the walking area. On all streets, a score of PLOS 5 can be considered deficient for pedestrians. In areas with vulnerable pedestrians, including students and aging adults, a PLOS 1-2 target is appropriate.

Most existing city streets in Brookings continue to score well in this future no build analysis with PLOS 1 or 2, shown in **Figure 4-1**. North of town as well as just south of the Chetco River bridge, Hwy 101 speeds and lack of sidewalks result in a substandard (PLOS 4) pedestrian environment by the Southwestern Oregon Community College and through the Harbor unincorporated urban area. Lower Harbor Road and Oceanview Drive also continue to be deficient (PLOS 3 and 4), due to higher vehicular speeds and lack of dedicated pedestrian space. Vulnerable pedestrians will not feel safe or comfortable on these facilities. The multi-use trail through Harris Beach Park provides an alternative route to Hwy 101 from Parkview Drive to Shy Creek, resulting in a PLOS of 1.

Several additional factors impact the quality of the pedestrian environment but were not considered in this analysis; presence of curb ramps, crossing treatments, lighting, and barriers blocking the pedestrian area can significantly detract from the environment. Technical Memorandum #5 will discuss these additional factors in greater detail and identify specific deficiency locations. **Table 4-1** lists the identified substandard facilities, which include corridors within the UGB that received PLOS scores of 4 or 5, as well as locations in the focus area (within a quarter-mile of schools or downtown) that received PLOS scores of 3. No segments in the focus area received scores of 3 or below.

Due to the complexities of the pedestrian environment at crossings and lack of data, this analysis focuses on corridors, rather than intersections. Deficient intersections will be identified in Technical Memorandum #5, based on feedback from the City staff and community. Note that **Table 4-1** identifies substandard corridors per the planning-level analysis for the entire UGB area, and does not account for data such as shoulder width, which may result in an existing facility being substandard per the ODOT Highway Design Manual.

Deficient intersections will be selected manually in Technical Memorandum #5.

Table 4-1**. Substandard Pedestrian Facilities (PLOS 4 and 5)**

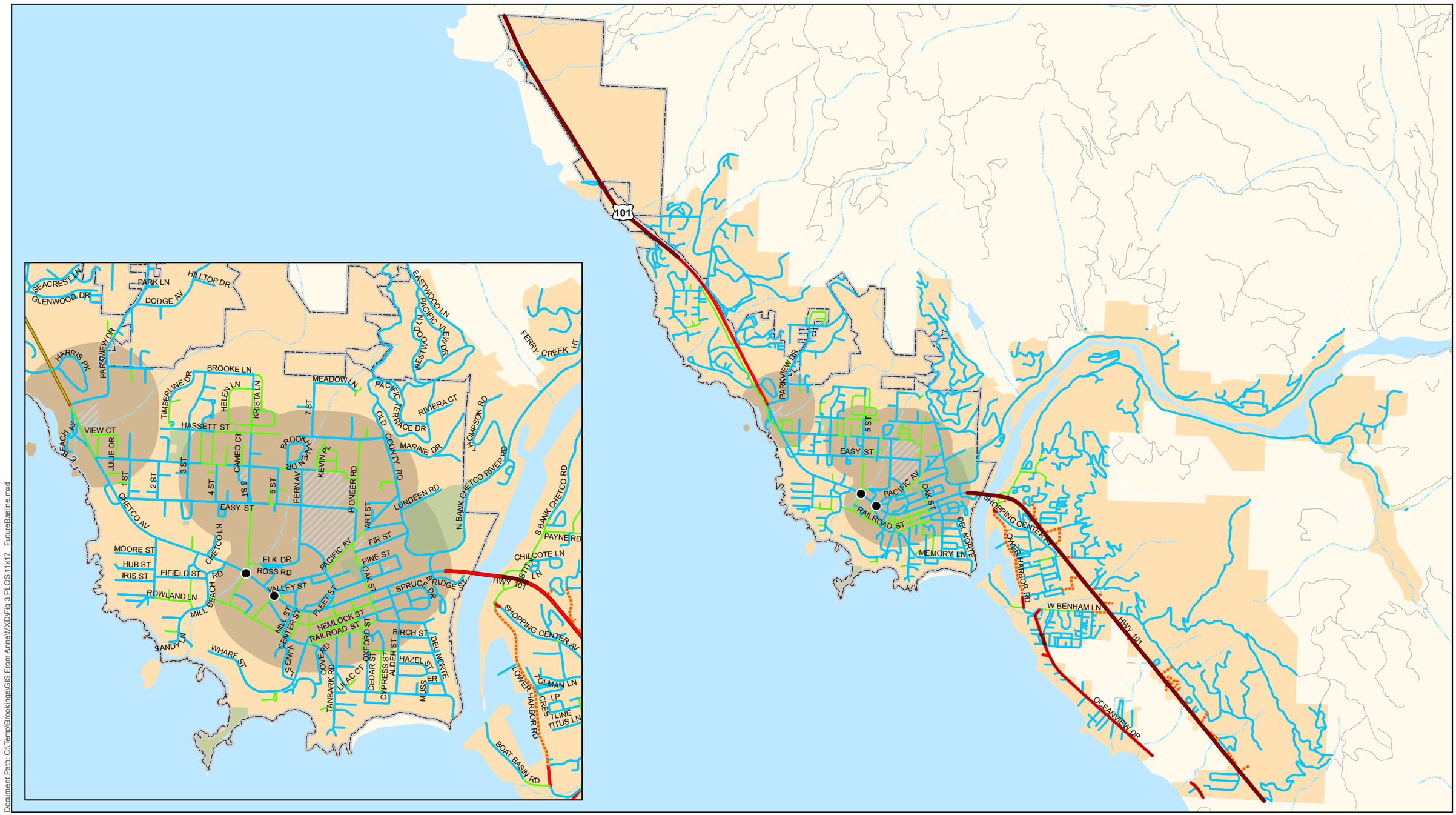
Street	Extent	Length (miles)	PLOS Score	In Focus Area
Highway 101	UGB to Carpenterville Rd	8.57	5	No
Highway 101	Bridge Street to Underpass	0.78	5	No
Highway 101	Underpass to Lower Harbor Road	0.38	5	No
Highway 101	Lower Harbor Rd to McVay Ln	9.92	5	No
Lower Harbor Rd	Driftwood Ln to Boat Basin Rd	0.27	4	No
Oceanview Dr	300' N of Max Ln to Seagull Ln	0.50	4	No
Oceanview Dr	Oceanview Dr to Max Ln	3.66	4	No
Oceanview Dr	Marks Ln to Oceanview Dr	0.30	4	No
Oceanview Dr	Lower Harbor Rd to Bathiany Ln	0.68	4	No
Oceanview Dr	Bathiany Ln to Marks Ln	0.27	5	No
Shopping Center Rd	Lower Harbor Rd to Shopping Center	0.09	4	No

4.2 BICYCLE LEVEL OF STRESS

The methods used for the Bicycle Level of Traffic Stress Analysis (LTS) were adapted from the ODOT method described in the APM, Addendum G: Multimodal Analysis. Refer to Technical Memorandum #3 Existing Transportation System Options for a detailed description of the methodology. Input variables predicting levels of traffic stress include the existing bikeway network from Technical Memorandum #2 Existing Conditions Inventory, future planned bikeway network, posted speeds, number of lanes per direction, shoulder width, and traffic volumes.

The section of Highway 101/Chetco Avenue through the downtown area (Mill Street to Alder Street) was again downgraded into a lower LTS score due to heavy congestion and other factors that render the roadway challenging for people on bicycles.

Because the methodology was developed primarily for urban areas, a separate rural methodology was created for rural highways with posted or operating speeds over 45 mph. The rural LTS considers daily volumes and paved shoulder widths. The rural methodology was used for Hwy 101/Chetco Avenue south of Benham Lane and north of Carpenterville Road/Dawson Road).



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Parametrix and Alta Planning + Design

Source: (Curry County, City of Brookings, US Census, Alta Planning + Design)

0 5,000

Scale in Feet

N

Pedestrian Level of Service

- 1 (Good)
- 2
- 3
- 4
- 5 (Poor)

Pedestrian Collision

Existing Trail

Focus Area (within 1/4 mi. downtown or school)

Parks

Schools

Rivers

Water

City Limits

Urban Growth Boundary

FIGURE 4-1
Pedestrian Level of Service (PLOS) Analysis - Future Baseline
Transportation System Plan
Brookings, Oregon

4.2.1 Future Bicycle Facilities

Bike lanes are planned for Railroad Street from Wharf Street to Oak Street.

4.2.2 Results

Bicycle LTS results are presented on a scale of 1 to 4, with LTS 1 representing streets that have low traffic stress and are suitable for all users, including youth of around 10 years old or in 5th grade. Confident and enthused riders are expected to feel safe and comfortable on a facility with LTS of 1 or 2. LTS 3 represents moderate stress and may be uncomfortable for many adults. Finally, LTS 4 represents high stress environments, suitable only for experienced and skilled cyclists. Note that the roadway link shows the lower LTS score between the corridor and intersection analysis; several roads along Hwy 101 are shown as LTS 3 or 4 due to poor intersection conditions (for example, the Harris Beach Park driveway is shown as LTS 4 due to the intersection).

The future planned roadway projects did not impact the LTS analysis as the portion of Railroad Street with new bike lanes was previously assessed a LTS 1. Shown in **Figure 4-2**, Hwy 101/Chetco Avenue continues to provide a deficient bicycle environment in sections through downtown Brookings, north of Parkview Drive, and through unincorporated Harbor. In the downtown area, a LTS score of 2 is desired to serve neighborhood and pedestrian-oriented commercial land uses. In addition, several intersections of Hwy 101 show as LTS 3 or 4.

Another notable deficiency is the Oregon Coast Bike Route on Oceanview Drive and Lower Harbor Road, which have bike lanes but high posted speeds that result in a score of LTS 4 and 3, respectively.

Streets near the schools generally score well (LTS 1 or 2), but the key school routes of Easy Street and Pacific Avenue are challenging for students. Crossing Hwy 101/Chetco Avenue presents significant challenges for students and other bicyclists. ODOT recommends establishing a target of LTS 1 for the bikeway network within a quarter-mile of an elementary school, while middle and high school students can make use of LTS 2 roadways without difficulty. As key elementary school routes with LTS 2, Easy Street, 5th Street, and Pacific Avenue could be considered deficient.

Table 4-2 shows the bicycle corridors within the UGB with bicycle LTS 3 or 4 as well as corridors in focus areas (within a quarter-mile of schools or the downtown) that received a LTS score of 2, according to the analysis. Note that this table identifies substandard corridors per the planning-level analysis for the entire UGB area, and does not account for data such as shoulder width, which may result in an existing facility being substandard per the ODOT Highway Design Manual.

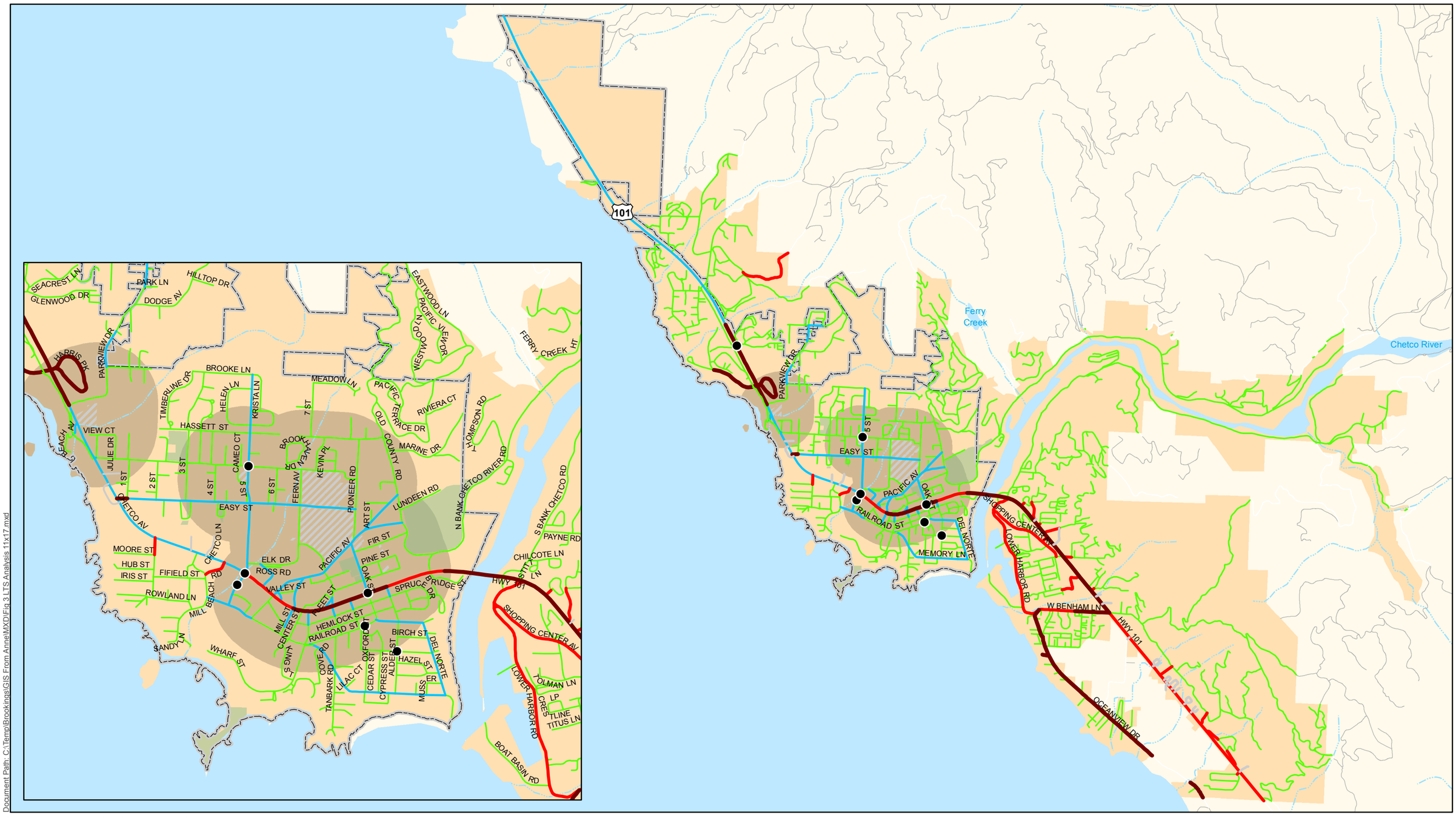
Table 4-2. Substandard Bicycle Corridors (LTS 3 or 4)

Street	Extent	Length (miles)	LTS Score	Focus Area
Benham Ln	Oceanview Dr to Mary's Ln	0.91	4	No
Chetco Ave	Mill St to Alder St	1.32	4	Yes
Easy St	Chetco Ave to 1st St	0.14	4	No
Harris Park	Harris Park to Harris Park	1.34	4	Partial
Harris Park	Harris Park to Highway 101	1.28	4	No
Highway 101	Bridge St to Benham Ln	4.92	4	No
Highway 101	Harris Park to Parkview Dr	2.27	4	Partial
Oceanview Dr	150' S OF Seagull Ln to Seagull Ln	0.50	4	No
Oceanview Dr	Lower Harbor Rd to Oceanview Dr	1.25	4	No
Benham Ln	Mary's Ln to Hwy 101	0.86	3	No
Chetco Ave	Alder St to Bridge St	0.81	3	Yes
Chetco Ave	5th St to Mill St	0.81	3	Yes
Crissey Ln	Chetco Ave to Chetco Ave	0.43	3	No
Henderson Rd	Carpenterville Rd to UGB	1.73	3	No
Highway 101	Benham Ln to McVay Ln	6.15	3	No
Lower Harbor Rd	Chetco Ave to Oceanview Dr	3.55	3	No
Lower Harbor Rd	Lower Harbor Rd to Highway 101	0.13	3	No
Shopping Center Ave	Lower Harbor Rd to Hoffeldt Ln	2.02	3	No
Shopping Center Ave	Lower Harbor Rd to Shopping Center	0.09	3	No
5th St	Jodee Ln to Chetco Av	0.82	2	Yes
Alder St	Chetco Av to Spruce St	0.01	2	Yes
Azalea Park Rd	Old Country Rd to Pacific Av	0.16	2	Yes
Beach Av	Chetco Av to Existing Trail	0.05	2	Yes
Chetco Av	Parkview Dr to Crissey Pl	0.36	2	Yes
Easy St	Pioneer Rd to Easy Manor Dr	0.72	2	Yes
Fern Av	Fleet St to Spruce St	0.08	2	Yes
Fleet St	Center St to Chetco Av	0.05	2	Yes
Frontage Rd	Elk Dr to Chetco Av	0.13	2	Yes
Hillside Dr	Pacific Av to Chetco Av	0.14	2	Yes
Memory Ln	Railroad St to Tanbark Rd	0.16	2	Yes
Mill St	Chetco Av to Cottage St	0.08	2	Yes
Oak St	Pacific Av to Chetco Av	0.22	2	Yes
Pacific Av	Old Country Rd to Chetco Av	0.67	2	Yes
Parkview Dr	West Park Ct to Hampton Rd	0.14	2	Yes
Railroad St	Millbeach Rd to Pacific Av	0.58	2	Yes
Railroad St	Oak St to Del Norte	0.02	2	Yes
Ransom Av	Homesteaed Rd to Chetco Av	0.01	2	Yes
Wharf St	Chetco Av to Spruce St	0.06	2	Yes
Willow St	Chetco Av to Spruce St	0.04	2	Yes

The LTS analysis identifies substandard intersections as being those with LTS scores of 3 or 4, which are typically along multi-lane roadways with high posted travel speeds and are usually unprotected. These crossings would be considered challenging for both bicyclists and pedestrians, but as previously discussed, the PLOS analysis does not evaluate pedestrian specific infrastructure such as presence of sidewalks and curb ramps at intersections.

In addition, substandard intersections of concern include:

1. Highway 101 and Camelia Dr
2. Highway 101 and Museum Rd
3. Highway 101 and Pelican Bay Dr
4. Highway 101 and Raymond Ln
5. Highway 101 and Benham Ln
6. Highway 101 and Floral Hill Dr
7. Highway 101 and Gerlach Ln
8. Highway 101 and Hoffeldt Ln
9. Highway 101 and Zimmeran Rd
10. Highway 101 and Hall Wy
11. Highway 101 and Court St
12. Highway 101 and Sunshine Cove Ln
13. Highway 101 and Bishop Creek
14. Highway 101 and S Bank Chetco
15. Highway 101 and Lower Harbor Road
16. Chetco Ave and Mill Beach Rd
17. Chetco Ave and Arnold Ln
18. Highway 101 and Glenwood Dr
19. Lower Harbor Rd and Ocean View Dr
20. Lower Harbor Rd and Shopping Center Ave



Document Path: C:\Temp\Brookings\GIS From Anne\MXD\Fig 3 LTS Analysis 11x17.mxd

Parametrix and Alta Planning + Design

Source: (Curry County, City of Brookings, US Census, Alta Planning + Design)

Level of Traffic Stress
- 1 - Good
- 2
- 3
- 4 - Poor
- Excluded from Analysis
- Bicyclist Collision
- Focus Area (within 1/4 mi. downtown or school)
- Parks
- Schools
- Rivers
- Water
- City Limits
- Urban Growth Boundary

0 5,000
Scale in Feet

N

FIGURE 4-2
Bicycle Level of Stress Analysis (LTS) -Future Baseline
Transportation System Plan
Brookings, Oregon

4.3 TRANSIT LEVEL OF SERVICE

The future no build transit facilities would be similar to existing services with the addition of new buses purchased through the STIP and bus stops to be constructed on Railroad Street as part of an urban renewal project.

Curry County Public Transit, Inc. (CPTI) developed a strategic action plan for the fiscal years 2014-2019 that includes targets for Brookings. As reported in their Strategic Transportation Plan, CPTI will achieve the following targets by June 30, 2019:

- Place shelters and appropriate signage showing current bus stops along Highway 101 in Brookings;
- Conduct feasibility studies to expand current Dial-a-Ride and Coastal Express service to include evening, holiday, and weekends, and expand Dial-a-Ride boundaries;
- Identify and pursue grant funding for special projects, bus rehabilitations, and replacement and other projects.

With the addition of new buses, bus stops, additional wayfinding and shelters at existing stops, transit rider comfort would improve in the horizon year. Additional transit service on weekends and holidays in Brookings would also improve transit LOS in the horizon year by providing Brookings residents with additional transit options.

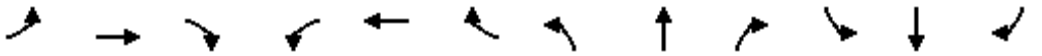
A similar methodology for assessing transit level of service used in Technical Memo #3 was used to assess the future no build transit level of service. A qualitative assessment of the horizon year transit level of service was completed based on a subjective ranking of “Excellent/Good/Fair/Poor”. Based on the frequency, schedule, speed/travel time, transit stop amenities, and connections to pedestrian/bicycle network the horizon year transit service in and throughout Brookings would be “Fair”.

APPENDIX A

Synchro Worksheets

Synchro Worksheets

2034 No Build – Signalized Intersections

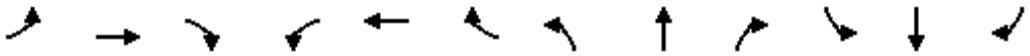


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	820	95	150	855	160	145	80	150	205	105	125
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-1%			0%			3%			-4%	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.99		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	0.98		1.00	0.90		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1638	3182	1364	1629	3068		1572	1524		1676	1588	
Flt Permitted	0.12	1.00	1.00	0.20	1.00		0.35	1.00		0.32	1.00	
Satd. Flow (perm)	215	3182	1364	348	3068		585	1524		572	1588	
Peak-hour factor, PHF	0.95	0.95	0.91	0.91	0.95	0.95	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	142	863	104	165	900	168	159	88	165	225	115	137
RTOR Reduction (vph)	0	0	62	0	15	0	0	81	0	0	51	0
Lane Group Flow (vph)	142	863	42	165	1053	0	159	172	0	225	201	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5						
Heavy Vehicles (%)	2%	5%	5%	2%	6%	1%	4%	0%	1%	1%	1%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	40.4	32.1	32.1	40.2	32.0		23.7	15.1		24.5	15.5	
Effective Green, g (s)	40.4	32.6	32.6	40.2	32.5		23.7	15.1		24.5	15.5	
Actuated g/C Ratio	0.50	0.40	0.40	0.50	0.40		0.29	0.19		0.30	0.19	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.5	4.0	4.0	2.5	4.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	253	1282	549	302	1232		276	284		296	304	
v/s Ratio Prot	c0.06	0.27		0.06	c0.34		0.06	0.11		c0.08	0.13	
v/s Ratio Perm	0.22		0.03	0.22			0.11			c0.15		
v/c Ratio	0.56	0.67	0.08	0.55	0.85		0.58	0.61		0.76	0.66	
Uniform Delay, d1	13.9	19.8	14.9	12.7	22.0		22.8	30.2		23.1	30.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	1.5	0.1	1.6	6.2		2.4	3.1		10.5	4.8	
Delay (s)	16.2	21.3	15.0	14.3	28.3		25.2	33.3		33.6	35.1	
Level of Service	B	C	B	B	C		C	C		C	D	
Approach Delay (s)		20.1			26.4			30.1			34.4	
Approach LOS		C			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.79				
Actuated Cycle Length (s)	80.9	Sum of lost time (s)	16.0		
Intersection Capacity Utilization	82.2%	ICU Level of Service	E		
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	1020	130	55	995	5	130	5	65	5	5	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		1%			-1%			3%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		0.98			1.00			0.96			0.95	
Flt Protected		1.00			1.00			0.97			0.98	
Satd. Flow (prot)		3118			3204			1502			1617	
Flt Permitted		0.95			0.84			0.79			0.91	
Satd. Flow (perm)		2966			2698			1232			1503	
Peak-hour factor, PHF	0.94	0.95	0.95	0.95	0.95	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	5	1074	137	58	1047	5	138	5	69	5	5	5
RTOR Reduction (vph)	0	15	0	0	0	0	0	33	0	0	4	0
Lane Group Flow (vph)	0	1201	0	0	1110	0	0	179	0	0	11	0
Confl. Peds. (#/hr)	20		18	18		20	32		38	38		32
Confl. Bikes (#/hr)			5			5			1			
Heavy Vehicles (%)	0%	4%	2%	3%	4%	0%	3%	0%	5%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		26.1			26.1			13.3			13.3	
Effective Green, g (s)		26.1			26.1			13.3			13.3	
Actuated g/C Ratio		0.55			0.55			0.28			0.28	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		4.0			4.0			2.5			2.5	
Lane Grp Cap (vph)		1633			1485			345			421	
v/s Ratio Prot												
v/s Ratio Perm		0.40			c0.41			c0.15			0.01	
v/c Ratio		0.74			0.75			0.52			0.03	
Uniform Delay, d1		8.0			8.1			14.4			12.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.9			2.2			1.0			0.0	
Delay (s)		9.9			10.4			15.3			12.4	
Level of Service		A			B			B			B	
Approach Delay (s)		9.9			10.4			15.3			12.4	
Approach LOS		A			B			B			B	

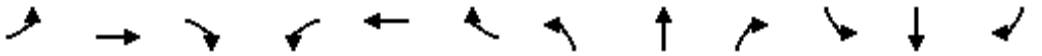
Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	47.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	920	90	45	980	35	35	35	145	75	60	50
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-1%			2%			5%			-4%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.91			0.96	
Flt Protected		1.00			1.00			0.99			0.98	
Satd. Flow (prot)		2970			3111			1316			1474	
Flt Permitted		0.93			0.88			0.93			0.83	
Satd. Flow (perm)		2755			2746			1230			1253	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	21	948	93	46	1010	36	36	36	149	77	62	52
RTOR Reduction (vph)	0	10	0	0	3	0	0	38	0	0	27	0
Lane Group Flow (vph)	0	1052	0	0	1089	0	0	183	0	0	164	0
Confl. Peds. (#/hr)	14		36	36		14	16		16	16		16
Confl. Bikes (#/hr)			5			5						
Heavy Vehicles (%)	2%	5%	3%	4%	5%	3%	3%	3%	4%	2%	3%	1%
Parking (#/hr)		0						0			0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		23.6			23.6			12.2			12.2	
Effective Green, g (s)		23.6			23.6			12.2			12.2	
Actuated g/C Ratio		0.54			0.54			0.28			0.28	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		4.0			4.0			2.5			2.5	
Lane Grp Cap (vph)		1484			1479			342			349	
v/s Ratio Prot												
v/s Ratio Perm		0.38			c0.40			c0.15			0.13	
v/c Ratio		0.71			0.74			0.54			0.47	
Uniform Delay, d1		7.5			7.7			13.4			13.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.7			2.1			1.3			0.7	
Delay (s)		9.2			9.8			14.7			13.8	
Level of Service		A			A			B			B	
Approach Delay (s)		9.2			9.8			14.7			13.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	1140	35	40	1130	150	30	25	30	180	35	90
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-3%			2%			9%			-5%	
Total Lost time (s)	4.0	4.0		4.0	4.0	3.5	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		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1638	3191		1567	3165	1405	1443	1457		1572	1600	1432
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	1638	3191		1567	3165	1405	1443	1457		1572	1600	1432
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	78	1188	36	42	1177	156	31	26	31	188	36	94
RTOR Reduction (vph)	0	1	0	0	0	0	0	28	0	0	0	81
Lane Group Flow (vph)	78	1223	0	42	1177	156	31	29	0	111	113	13
Confl. Peds. (#/hr)	10		10	10		10	12		10	10		12
Confl. Bikes (#/hr)			5			5						
Heavy Vehicles (%)	3%	5%	11%	5%	4%	2%	10%	3%	5%	3%	3%	4%
Turn Type	Prot	NA		Prot	NA	Free	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						Free						4
Actuated Green, G (s)	6.7	52.4		4.5	50.2	95.2	8.4	8.4		13.4	13.4	13.4
Effective Green, g (s)	6.7	52.9		4.5	50.7	95.2	8.4	8.4		13.4	13.4	13.4
Actuated g/C Ratio	0.07	0.56		0.05	0.53	1.00	0.09	0.09		0.14	0.14	0.14
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.5	4.0		2.5	4.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	115	1773		74	1685	1405	127	128		221	225	201
v/s Ratio Prot	c0.05	c0.38		0.03	0.37		c0.02	0.02		0.07	c0.07	
v/s Ratio Perm						c0.11						0.01
v/c Ratio	0.68	0.69		0.57	0.70	0.11	0.24	0.22		0.50	0.50	0.07
Uniform Delay, d1	43.2	15.2		44.4	16.6	0.0	40.4	40.4		37.8	37.8	35.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.5	1.2		7.9	1.4	0.2	0.7	0.7		1.3	1.3	0.1
Delay (s)	56.7	16.5		52.3	17.9	0.2	41.2	41.0		39.1	39.1	35.6
Level of Service	E	B		D	B	A	D	D		D	D	D
Approach Delay (s)		18.9			17.0			41.1			38.1	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	95.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Synchro Worksheets

2034 No Build –Unsignalized Intersections

Intersection	
Int Delay, s/veh	46.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	255	40	515	275	45	650
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-4	-	3	-	-	-3
Peak Hour Factor	93	93	95	95	95	95
Heavy Vehicles, %	0	0	8	0	0	10
Mvmt Flow	274	43	542	289	47	684

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1466	687	0	0	832	0
Stage 1	687	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Critical Hdwy	5.6	5.8	-	-	4.1	-
Critical Hdwy Stg 1	4.6	-	-	-	-	-
Critical Hdwy Stg 2	4.6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 197	486	-	-	809	-
Stage 1	586	-	-	-	-	-
Stage 2	542	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 178	486	-	-	809	-
Mov Cap-2 Maneuver	~ 178	-	-	-	-	-
Stage 1	586	-	-	-	-	-
Stage 2	491	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	275.4	0	0.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	178	486	809	-
HCM Lane V/C Ratio	-	-	1.54	0.088	0.059	-
HCM Control Delay (s)	-	-	$ 316.5	13.1	9.7	0
HCM Lane LOS	-	-	F	B	A	A
HCM 95th %tile Q(veh)	-	-	17.8	0.3	0.2	-

Notes

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

Intersection	
Int Delay, s/veh	131.9

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Vol, veh/h	35	865	5	95	780	220	5	5	55	160	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	150	250	-	150	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	3	-	-	-3	-	-	-3	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	11	7	9	2	10	18	8	14	1	6	8	9
Mvmt Flow	37	911	5	100	821	232	5	5	58	168	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	821	0	0	911	0	0	2010	2005	911	2037	2005	821
Stage 1	-	-	-	-	-	-	984	984	-	1021	1021	-
Stage 2	-	-	-	-	-	-	1026	1021	-	1016	984	-
Critical Hdwy	4.21	-	-	4.12	-	-	6.58	6.04	5.91	6.56	5.98	5.99
Critical Hdwy Stg 1	-	-	-	-	-	-	5.58	5.04	-	5.56	4.98	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.58	5.04	-	5.56	4.98	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	3.572	4.126	3.309	3.554	4.072	3.381
Pot Cap-1 Maneuver	770	-	-	748	-	-	59	77	360	~ 57	80	390
Stage 1	-	-	-	-	-	-	343	367	-	332	363	-
Stage 2	-	-	-	-	-	-	327	354	-	334	376	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	770	-	-	748	-	-	47	64	360	~ 39	66	390
Mov Cap-2 Maneuver	-	-	-	-	-	-	47	64	-	~ 39	66	-
Stage 1	-	-	-	-	-	-	327	349	-	316	314	-
Stage 2	-	-	-	-	-	-	275	307	-	263	358	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	0.4	0.9	33.6	$ 1713.3
HCM LOS			D	F

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SERSWLn1
Capacity (veh/h)	193	748	-	-	770	-	- 41
HCM Lane V/C Ratio	0.355	0.134	-	-	0.048	-	- 4.365
HCM Control Delay (s)	33.6	10.6	-	-	9.9	-	$ 1713.3
HCM Lane LOS	D	B	-	-	A	-	- F
HCM 95th %tile Q(veh)	1.5	0.5	-	-	0.2	-	- 20.5

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

Intersection	
Int Delay, s/veh	8.2

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Vol, veh/h	1080	85	20	1060	75	15
Conflicting Peds, #/hr	0	0	0	0	0	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	-3	-7	-
Peak Hour Factor	95	95	95	95	85	85
Heavy Vehicles, %	8	3	8	8	2	7
Mvmt Flow	1137	89	21	1116	88	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1236	0	2350	1192
Stage 1	-	-	-	-	1192	-
Stage 2	-	-	-	-	1158	-
Critical Hdwy	-	-	4.18	-	5.02	5.57
Critical Hdwy Stg 1	-	-	-	-	4.02	-
Critical Hdwy Stg 2	-	-	-	-	4.02	-
Follow-up Hdwy	-	-	2.272	-	3.518	3.363
Pot Cap-1 Maneuver	-	-	543	-	99	281
Stage 1	-	-	-	-	458	-
Stage 2	-	-	-	-	469	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	543	-	~ 88	279
Mov Cap-2 Maneuver	-	-	-	-	~ 88	-
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	421	-

Approach	NB	SB	SW
HCM Control Delay, s	0	0.2	190.2
HCM LOS			F

Minor Lane/Major Mvmt	NBT	NBR	SBL	SBT	SWLn1
Capacity (veh/h)	-	-	543	-	99
HCM Lane V/C Ratio	-	-	0.039	-	1.07
HCM Control Delay (s)	-	-	11.9	0	190.2
HCM Lane LOS	-	-	B	A	F
HCM 95th %tile Q(veh)	-	-	0.1	-	6.7

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

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	30	1135	50	45	1090
Conflicting Peds, #/hr	0	10	0	10	10	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, %	-8	-	-2	-	-	1
Peak Hour Factor	94	94	95	95	95	95
Heavy Vehicles, %	1	2	6	2	5	8
Mvmt Flow	32	32	1195	53	47	1147

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1899	644	0	0	1257	0
Stage 1	1231	-	-	-	-	-
Stage 2	668	-	-	-	-	-
Critical Hdwy	5.22	6.14	-	-	4.2	-
Critical Hdwy Stg 1	4.22	-	-	-	-	-
Critical Hdwy Stg 2	4.22	-	-	-	-	-
Follow-up Hdwy	3.51	3.32	-	-	2.25	-
Pot Cap-1 Maneuver	143	479	-	-	533	-
Stage 1	416	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	106	471	-	-	529	-
Mov Cap-2 Maneuver	106	-	-	-	-	-
Stage 1	413	-	-	-	-	-
Stage 2	478	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	37.5	0	1.8
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	173	529	-
HCM Lane V/C Ratio	-	-	0.369	0.09	-
HCM Control Delay (s)	-	-	37.5	12.5	1.4
HCM Lane LOS	-	-	E	B	A
HCM 95th %tile Q(veh)	-	-	1.6	0.3	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	25	5	10	1160	1085	35
Conflicting Peds, #/hr	0	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	4	-	-	-2	2	-
Peak Hour Factor	94	94	94	95	95	95
Heavy Vehicles, %	0	0	10	6	8	10
Mvmt Flow	27	5	11	1221	1142	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1803	609	1189	0	-	0
Stage 1	1171	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Critical Hdwy	7.6	7.3	4.3	-	-	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	6.6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.3	-	-	-
Pot Cap-1 Maneuver	48	414	540	-	-	-
Stage 1	201	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	44	407	536	-	-	-
Mov Cap-2 Maneuver	44	-	-	-	-	-
Stage 1	199	-	-	-	-	-
Stage 2	401	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	150.6	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	536	-	52	-	-
HCM Lane V/C Ratio	0.02	-	0.614	-	-
HCM Control Delay (s)	11.9	0.4	150.6	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0.1	-	2.4	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	80	45	310	65	30	355
Conflicting Peds, #/hr	48	10	0	24	24	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	-	4	-	-	-4
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	3	2
Mvmt Flow	86	48	333	70	32	382

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	862	440	0	0	451	0
Stage 1	416	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.13	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.227	-
Pot Cap-1 Maneuver	325	617	-	-	1104	-
Stage 1	666	-	-	-	-	-
Stage 2	645	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	294	580	-	-	1082	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	608	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	357	1082	-
HCM Lane V/C Ratio	-	-	0.376	0.03	-
HCM Control Delay (s)	-	-	21	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.7	0.1	-

Intersection	
Int Delay, s/veh	4.7

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Vol, veh/h	15	1145	15	5	1120	5	15	5	5	5	5	30
Conflicting Peds, #/hr	22	0	10	10	0	22	24	0	50	50	0	24
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-1	-	-	2	-	-	-10	-
Peak Hour Factor	91	95	91	91	95	91	91	91	91	91	91	91
Heavy Vehicles, %	0	4	3	3	4	0	2	0	2	3	4	4
Mvmt Flow	16	1205	16	5	1179	5	16	5	5	5	5	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1234	0	0	1272	0	0	1949	2541	683	1931	2548	664
Stage 1	-	-	-	-	-	-	1296	1296	-	1243	1243	-
Stage 2	-	-	-	-	-	-	653	1245	-	688	1305	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.94	6.9	7.14	5.56	4.58	5.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.94	5.9	-	4.56	3.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.94	5.9	-	4.56	3.58	-
Follow-up Hdwy	2.2	-	-	2.23	-	-	3.52	4	3.32	3.53	4.04	3.34
Pot Cap-1 Maneuver	572	-	-	536	-	-	31	21	377	115	106	479
Stage 1	-	-	-	-	-	-	148	203	-	365	480	-
Stage 2	-	-	-	-	-	-	393	216	-	587	464	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	562	-	-	526	-	-	25	18	355	78	92	451
Mov Cap-2 Maneuver	-	-	-	-	-	-	25	18	-	78	92	-
Stage 1	-	-	-	-	-	-	138	189	-	340	447	-
Stage 2	-	-	-	-	-	-	343	201	-	535	432	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	0.2	0.3	$ 367.6	25.9
HCM LOS			F	D

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SERSWLn1
Capacity (veh/h)	28	526	-	-	562	-	- 216
HCM Lane V/C Ratio	0.981	0.01	-	-	0.029	-	- 0.204
HCM Control Delay (s)	$ 367.6	11.9	0.2	-	11.6	-	- 25.9
HCM Lane LOS	F	B	A	-	B	-	- D
HCM 95th %tile Q(veh)	3.2	0	-	-	0.1	-	- 0.7

Notes

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

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	20	1025	45	25	1035	5	0	0	0	5	5	20
Conflicting Peds, #/hr	12	0	10	10	0	12	34	0	14	14	0	34
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, %	-	1	-	-	1	-	-	4	-	-	-6	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	5	2	2	5	3	0	0	0	1	1	1
Mvmt Flow	20	1046	46	26	1056	5	0	0	0	5	5	20

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	1095	0	0	1092	0	0	1708	2277	577
Stage 1	-	-	-	-	-	-	1144	1144	-
Stage 2	-	-	-	-	-	-	564	1133	-
Critical Hdwy	4.14	-	-	4.14	-	-	5.62	5.32	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	4.62	4.32	-
Critical Hdwy Stg 2	-	-	-	-	-	-	4.62	4.32	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.51	4.01	3.31
Pot Cap-1 Maneuver	633	-	-	635	-	-	146	85	509
Stage 1	-	-	-	-	-	-	392	402	-
Stage 2	-	-	-	-	-	-	647	406	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	627	-	-	629	-	-	114	0	490
Mov Cap-2 Maneuver	-	-	-	-	-	-	114	0	-
Stage 1	-	-	-	-	-	-	342	0	-
Stage 2	-	-	-	-	-	-	577	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0.7	18.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	627	-	-	629	-	-	295
HCM Lane V/C Ratio	0.033	-	-	0.041	-	-	0.104
HCM Control Delay (s)	10.9	0.4	-	11	0.5	-	18.6
HCM Lane LOS	B	A	-	B	A	-	C
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1100	40	195	1055	5	150
Conflicting Peds, #/hr	0	10	10	0	10	50
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	3	2	-
Peak Hour Factor	95	91	95	95	91	91
Heavy Vehicles, %	5	3	1	5	3	2
Mvmt Flow	1158	44	205	1111	5	165

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1252	0	2196	661
Stage 1	-	-	-	-	1230	-
Stage 2	-	-	-	-	966	-
Critical Hdwy	-	-	4.12	-	7.26	7.14
Critical Hdwy Stg 1	-	-	-	-	6.26	-
Critical Hdwy Stg 2	-	-	-	-	6.26	-
Follow-up Hdwy	-	-	2.21	-	3.53	3.32
Pot Cap-1 Maneuver	-	-	557	-	30	390
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	294	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	552	-	18	371
Mov Cap-2 Maneuver	-	-	-	-	18	-
Stage 1	-	-	-	-	198	-
Stage 2	-	-	-	-	183	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	30.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	18	371	-	-	552	-
HCM Lane V/C Ratio	0.305	0.444	-	-	0.372	-
HCM Control Delay (s)	276.5	22.2	-	-	15.3	-
HCM Lane LOS	F	C	-	-	C	-
HCM 95th %tile Q(veh)	0.9	2.2	-	-	1.7	-

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	20	5	45	65	5	35	55	260	75	80	290	25
Conflicting Peds, #/hr	1	0	1	1	0	1	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	-	-	-	-	-	100	-	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-6	-	-	0	-	-	-7	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	8	2	1	9	2	2	2	2	7	2	3
Mvmt Flow	23	6	52	76	6	41	64	302	87	93	337	29

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1017	1057	353	1043	1028	347	367	0	0	391	0	0
Stage 1	539	539	-	475	475	-	-	-	-	-	-	-
Stage 2	478	518	-	568	553	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.58	6.22	5.91	5.39	5.62	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.13	5.58	-	4.91	4.39	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.58	-	4.91	4.39	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.072	3.318	3.509	4.081	3.318	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	215	220	691	295	321	738	1192	-	-	1141	-	-
Stage 1	525	512	-	671	639	-	-	-	-	-	-	-
Stage 2	566	523	-	616	605	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	178	188	690	237	274	737	1192	-	-	1141	-	-
Mov Cap-2 Maneuver	178	188	-	237	274	-	-	-	-	-	-	-
Stage 1	488	470	-	624	594	-	-	-	-	-	-	-
Stage 2	493	487	-	516	555	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.7	21.8	1.2	1.7
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1192	-	-	343	239	737	1141	-	-
HCM Lane V/C Ratio	0.054	-	-	0.237	0.341	0.055	0.082	-	-
HCM Control Delay (s)	8.2	0	-	18.7	27.6	10.2	8.4	-	-
HCM Lane LOS	A	A	-	C	D	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.9	1.4	0.2	0.3	-	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	30	90	5	15	70	70	5	5	10	125	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	-4	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	3	4	0	0	3	5	0	0	0	8	0	3
Mvmt Flow	35	106	6	18	82	82	6	6	12	147	6	35

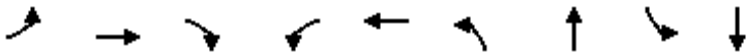
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	166	0	0	113	0	0	360	381	110	349	343	125
Stage 1	-	-	-	-	-	-	180	180	-	160	160	-
Stage 2	-	-	-	-	-	-	180	201	-	189	183	-
Critical Hdwy	4.13	-	-	4.1	-	-	7.1	6.5	6.2	7.18	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.18	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.18	5.5	-
Follow-up Hdwy	2.227	-	-	2.2	-	-	3.5	4	3.3	3.572	4	3.327
Pot Cap-1 Maneuver	1406	-	-	1489	-	-	599	555	949	594	583	923
Stage 1	-	-	-	-	-	-	826	754	-	828	769	-
Stage 2	-	-	-	-	-	-	826	739	-	799	752	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1406	-	-	1489	-	-	554	532	948	564	559	922
Mov Cap-2 Maneuver	-	-	-	-	-	-	554	532	-	564	559	-
Stage 1	-	-	-	-	-	-	803	733	-	805	758	-
Stage 2	-	-	-	-	-	-	778	729	-	762	731	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0.7	10.4	12.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	690	1406	-	-	1489	-	-	564	844
HCM Lane V/C Ratio	0.034	0.025	-	-	0.012	-	-	0.261	0.049
HCM Control Delay (s)	10.4	7.6	0	-	7.4	0	-	13.6	9.5
HCM Lane LOS	B	A	A	-	A	A	-	B	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	1	0.2

Synchro Worksheets

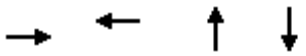
2034 No Build – Queuing Report



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	142	863	104	165	1068	159	253	225	252
v/c Ratio	0.56	0.68	0.17	0.54	0.86	0.58	0.70	0.76	0.71
Control Delay	21.7	24.4	5.1	17.9	31.7	28.8	29.2	39.3	34.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	24.4	5.1	17.9	31.7	28.8	29.2	39.3	34.7
Queue Length 50th (ft)	32	185	0	38	250	60	75	89	94
Queue Length 95th (ft)	#98	312	33	93	#464	105	151	#158	171
Internal Link Dist (ft)		1976			711		332		151
Turn Bay Length (ft)	200		200	250		200		100	
Base Capacity (vph)	271	1359	640	323	1322	285	581	298	579
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.64	0.16	0.51	0.81	0.56	0.44	0.76	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	1216	1110	212	15
v/c Ratio	0.75	0.75	0.57	0.04
Control Delay	13.4	14.5	17.5	10.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.4	14.5	17.5	10.6
Queue Length 50th (ft)	98	93	34	2
Queue Length 95th (ft)	257	#264	95	12
Internal Link Dist (ft)	636	571	186	58
Turn Bay Length (ft)				
Base Capacity (vph)	1961	1775	615	725
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.63	0.34	0.02

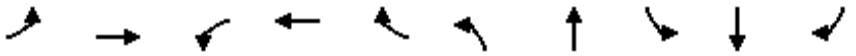
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	1062	1092	221	191
v/c Ratio	0.72	0.74	0.59	0.51
Control Delay	13.3	14.2	17.2	15.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.3	14.2	17.2	15.9
Queue Length 50th (ft)	81	86	34	30
Queue Length 95th (ft)	#286	#305	88	78
Internal Link Dist (ft)	744	355	139	213
Turn Bay Length (ft)				
Base Capacity (vph)	1764	1755	746	754
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.60	0.62	0.30	0.25

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	78	1224	42	1177	156	31	57	111	113	94
v/c Ratio	0.51	0.67	0.34	0.69	0.11	0.20	0.31	0.49	0.49	0.33
Control Delay	59.7	22.1	56.2	24.0	0.2	44.7	27.8	47.9	47.7	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	22.1	56.2	24.0	0.2	44.7	27.8	47.9	47.7	12.0
Queue Length 50th (ft)	43	260	23	256	0	17	14	64	65	0
Queue Length 95th (ft)	#152	#734	77	#692	0	51	57	147	149	46
Internal Link Dist (ft)		913		493			218		281	
Turn Bay Length (ft)	250		200		250	100		100		150
Base Capacity (vph)	170	1907	162	1862	1405	482	506	544	553	554
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.64	0.26	0.63	0.11	0.06	0.11	0.20	0.20	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.