

**CITY OF NEWPORT**

**ORDINANCE NO. 2175**

**AN ORDINANCE AMENDING THE NEWPORT URBAN GROWTH BOUNDARY AND  
COMPREHENSIVE PLAN MAP TO FACILITATE A LAND EXCHANGE  
ADDING 43.4 ACRES AND REMOVING 71.4 ACRES  
(Newport File No. 1-UGB-20/1-CP-20)**

**WHEREAS**, Boston Timber Opportunities, LLC, Terrance M. Lettenmaier, and Laurie A. Weitkamp, owners, submitted an application to the City of Newport on May 29, 2020 to adjust the City of Newport Urban Growth Boundary (UGB) to include a 43.4 acre parcel ("Site A") in the UGB and to remove a 71.4 acre parcel ("Site B") from the UGB; and

**WHEREAS**, the application will further establish a Newport Comprehensive Plan Map designation of "High Density Residential" for the property being added to the UGB. The 71.4 acre parcel being removed from the UGB similarly carried a Comprehensive Plan Map designation of "High Density Residential;" and

**WHEREAS**, Site A to be brought into the UGB is identified as Tax Lot 101 of Assessor's Map 10-11-33, owned by the City of Newport, being 3.56 acres in size, and the southerly 39.84 acres of Tax Lot 100 of Assessor's Map 10-11-33, as described with County Survey Record No. 20889, being owned by Boston Timber Opportunities, LLC. The City property, identified as Parcel 1 in the deed recorded in Book 384, at Page 1283 of the Lincoln County Records, is developed as NE Harney Street. Property owned by Boston Timber Opportunities, LLC, identified as Parcel 181 in the deed recorded under Instrument No. 2004-6962 of the Lincoln County records is undeveloped forest land; and

**WHEREAS**, Site B to be removed from the UGB is 71.4 acres in size, is identified as Tax Lot 801 of Assessor's Map 12-11-05, and is described in a deed recorded under Instrument No. 2011-06639 as modified by property line adjustment conveyances in Instrument Nos. 2016-10536 and 2016-10537 of the Lincoln County Records. The property is owned by Terrance and Laurie Weitkamp, is forested, and is developed with a single-family residence; and

**WHEREAS**, the property being added to the UGB is readily serviceable and suitable for the construction of much needed, urban scale housing at price points affordable to Newport residents, whereas, the property being removed from the UGB cannot be readily served and is unlikely to ever be developed at urban densities; and

**WHEREAS**, Boston Timber Opportunities, LLC plans to construct up to 200 single-family detached and attached units on Site A, which is permissible under City zoning designations that fit within a "High Density Residential" Comprehensive Plan Map designation. City has sufficient tools at its disposal to address housing affordability objectives and to ensure that transportation related impacts attributed to future development are adequately mitigated at such time as the property is zoned and annexed; and

**WHEREAS**, the Lincoln County and City of Newport Planning Directors' evaluated the application and concur that it qualifies as a major UGB boundary line adjustment considering the acreage involved and development potential of the property being added to the UGB; and

**WHEREAS**, the submitted application, and a supplemental memorandum prepared by city staff, contain findings of compliance with the policies and standards set forth in the "Urbanization" and the "Administration of the Plan" elements of the Newport Comprehensive Plan and applicable elements of Chapter 660, Division 24 of the Oregon Administrative Rules for a UGB boundary line adjustment of this nature; and

**WHEREAS**, Newport Planning Commission held a quasi-judicial public hearing on December 14, 2020 for the purpose of reviewing the application for compliance with applicable state and local policies and standards and to provide a recommendation to the Newport City Council; and

**WHEREAS**, the Planning Commission's public hearing, above, was duly held in accordance with all applicable state and local laws; and, after due deliberation and consideration of the proposed changes, the Planning Commission did recommend that the application be approved; and

**WHEREAS**, the Newport City Council held a quasi-judicial public hearing on January 19, 2021 to consider the amendments to the Newport UGB and Comprehensive Plan Map proposed in the application and voted in favor of the changes, after considering the recommendation of the Planning Commission and evidence and argument in the record; and

**WHEREAS**, information in the record, including affidavits of mailing and publication, demonstrate that appropriate public notification was provided for both the Planning Commission and City Council public hearings; and

**WHEREAS**, The Newport Comprehensive Plan requires that any amendment to the Urban Growth Boundary approved by the City must also be adopted by Lincoln County before it becomes final, and the applicants have not yet obtained County approval.

## THE CITY OF NEWPORT ORDAINS AS FOLLOWS:

**Section 1.** The findings set forth above and in the attached Exhibits "A" and "B" are hereby adopted in support of the amendments to the Newport Urban Growth Boundary and Comprehensive Plan Map adopted by Sections 2, and 3 of this Ordinance.


**Section 2.** The Urban Growth Boundary as established on the Comprehensive Plan Map of the City of Newport is hereby amended to include the real property identified as Parcel 1 in the deed recorded in Book 384, at Page 1283 of the Lincoln County Records, and the southerly 39.84 acres of Parcel 181 in the deed recorded under Instrument No. 2004-16962 and further described with County Survey Record No. 20889. The subject properties, graphically depicted in Exhibit "C" to this Ordinance, are hereby given a "High Density Residential" designation on the Comprehensive Plan Map.

**Section 3.** The Urban Growth Boundary as established on the Comprehensive Plan Map of the City of Newport is hereby amended to remove the real property described in a deed recorded under Instrument No. 2011-06639, as modified by property line adjustment conveyances in Instrument Nos. 2016-10536 and 2016-10537 of the Lincoln County Records. The subject property is graphically depicted in Exhibit "D" to this Ordinance.

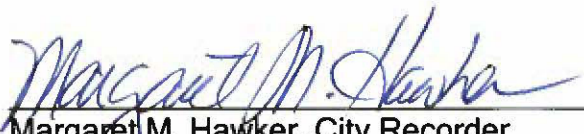
**Section 4.** This Ordinance shall take effect on the date the Lincoln County Board of Commissioners adopts corresponding amendments acknowledging this revision to the City of Newport's Urban Growth Boundary.

Date adopted and read by title only: January 19, 2021.

Signed by the Mayor on January 20, 2021.

  
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Dean H. Sawyer, Mayor

ATTEST:

  
\_\_\_\_\_  
Margaret M. Hawker, City Recorder

**Table of Contents**

GENERAL INFORMATION .....	3
SITE INFORMATION .....	3
INTRODUCTION .....	4
APPLICANT'S REQUEST .....	4
SITE DESCRIPTION/SURROUNDING LAND USE .....	4
APPLICABLE CRITERIA .....	5
OREGON STATEWIDE PLANNING GOALS .....	5
Goal 1: Citizen Involvement .....	5
Goal 2: Land Use Planning .....	5
Goal 3: Agricultural Lands and 4: Forest Lands.....	6
Goal 5: Open Spaces and Historic Areas & Natural Resources.....	6
Goal 6: Air, Water and Land Resources Quality .....	6
Goal 7: Areas Subject to Natural Disasters and Hazards .....	6
Goal 8: Recreational Needs.....	6
Goal 9: Economy of the State .....	7
Goal 10: Housing.....	7
Goal 11: Public Facilities and Services .....	8
Goal 12: Transportation .....	9
Goal 13: Energy .....	12
Goal 14: Urbanization .....	12
Goal 15: Willamette River Greenway.....	20
Goal 16: Estuarine Resources .....	20
Goal 17: Coastal Shorelands .....	21
Goal 18: Beaches and Dunes.....	21
Goal 19: Ocean Resources .....	21
STATE ADMINISTRATIVE RULES OAR CHAPTER 660 .....	21
Division 12 – Transportation Planning .....	21
Division 18 – Post-Acknowledgement Amendments.....	33
Division 24 – Urban Growth Boundaries.....	34
OREGON REVISED STATUES .....	45
NEWPORT COMPREHENSIVE PLAN.....	50

URBANIZATION GOALS, POLICIES, AND IMPLEMENTATION MEASURES.....	50
SUMMARY AND CONCLUSION.....	57

## **Attachments**

- Attachment A – Land Use Application
- Attachment B – County Assessor’s Tax Map
- Attachment C – County Assessor’s List of Surrounding Property Owners
- Attachment D – Traffic Impact Analysis
- Attachment E – Exhibit Maps

## GENERAL INFORMATION

Property Owner and Applicant: **Hancock Forest Management, Inc.**  
17700 SE Mill Plain Boulevard, Suite 180  
Vancouver, WA 98683  
Contact: Casey Fisher  
Phone: 360-260-4594  
Email: cfisher@hnrgr.com

Applicant's  
Planning Representative: **3J Consulting, Inc.**  
9600 SW Nimbus Ave, Suite 100  
Beaverton, OR 97008  
Contact: Andrew Tull  
Phone: 503-545-1907  
Email: andrew.tull@3j-consulting.com

Applicant's  
Legal Representative: **Schwabe, Williamson and Wyatt**  
1211 SW 5<sup>th</sup> Avenue Suite 1900  
Portland, OR 97204  
Contact: Mike Robinson  
Phone: 503-796-3756  
Email: mrobinson@schwabe.com

## SITE INFORMATION

### SITE A

Parcel Number: 10s11w33 100 and 10s11w33 101  
Size: 43.36 acres  
Current Zoning Designation: Lincoln County Timber Conservation (T-C)  
Existing Use: Vacant Timber Land

### SITE B

Parcel Number: 12s11w05 801  
Size: 71.39 acres  
Current Zoning Designation: Lincoln County Rural Residential (RR-10)  
Newport Comprehensive Plan High Density Residential  
Designation:  
Existing Use: Vacant

## **INTRODUCTION**

### **APPLICANT'S REQUEST**

Hancock Forest Management is requesting an adjustment to the urban growth boundary (UGB) map to include a 43.4-acre parcel (SITE A) in the UGB and to remove a 71.4-acre parcel (SITE B) from the UGB. Upon annexation into the City of Newport. The Applicant's intent for the subject site is to process subsequent applications for annexation along with requests to amend the City's Comprehensive Plan maps to show the site as High Density Residential and on the City zoning map as High Density Residential (R-4). The parcel to be removed from the UGB is intended to retain its zoning designation on the Lincoln County Comprehensive plan map as RR-10.

### **SITE DESCRIPTION/SURROUNDING LAND USE**

The 43.36-acre subject site (SITE A) is outside the UGB and is zoned Commercial-Timber (T-C) in the Lincoln County Comprehensive Plan. The TC zone is a forest resource zone compliant with the Statewide Planning Goal 4 (Forest Lands) and is reserved for forest operations or forest practices per Section 1.1375(1) of the Lincoln County Zoning Ordinance consistent with ORS 527.722.

The 71.4-acre parcel (SITE B) is located within the UGB and is designated as High-Density Residential (HDR) in the Newport Comprehensive Plan. The site has a Lincoln County zoning designation of Rural Residential (RR-10).

Under the Oregon land use system, the justification for a UGB adjustment is a two-step process: (1) demonstrate land need; and (2) analyze potential boundary locations. This proposal includes an amendment to the Newport Comprehensive Plan Map and Lincoln County Comprehensive Plan Map, which amends the Newport UGB, adding approximately 43.4-acre and removing approximately 71.4-acres. As proposed, the subject site (SITE A) would be retain its existing zoning designation. Site B would be removed from the UGB and retain its designation as Rural Residential (RR-10).

## APPLICABLE CRITERIA

The following sections of Newport's Zoning and Development Ordinance, the Newport Comprehensive Plan and the Statewide Planning Goals have been extracted as they have been deemed to be applicable to the proposal. Following each **bold** applicable criteria or design standard, the Applicant has provided a series of draft findings. The intent of providing code and detailed responses and findings is to document, with absolute certainty, that the proposed development has satisfied the approval criteria for an Urban Growth Boundary Adjustment and Comprehensive Plan Map Amendment.

### OREGON STATEWIDE PLANNING GOALS

#### Goal 1: Citizen Involvement

**Applicant's Finding:** The intent of Goal 1 is to ensure that citizens have meaningful opportunities to participate in land use planning decisions. The stated purpose of the goal is:

*To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.*

Goal 1 has five stated objectives that are applicable to the proposed UGB adjustment:

1. *Citizen Involvement – To provide for widespread citizen involvement.*
2. *Communication – To assure effective two-way communication with citizens.*
3. *Citizen Influence – To provide the opportunity for citizens to be involved in all phases of the planning process.*
4. *Technical Information – To assure that technical information is available in an understandable form.*
5. *Feedback Mechanisms – To assure that citizens will receive a response from policy-makers.*

This land use application is subject to a City of Newport Type IV land use review, which includes a significant citizen involvement component. This process has been established by the city and determined to be consistent with this goal. The mandatory public notice of the action and decision, and the hearing on this case before the Newport Planning Commission and City Council are all avenues of citizen participation satisfying the applicable objectives listed above.

#### Goal 2: Land Use Planning

**Applicant's Finding:** Goal 2 requires that all incorporated cities establish and maintain comprehensive land use plans and implementing ordinances and that land use decisions must be made in accordance with these plans and ordinances. It also requires cities to coordinate with other affected government entities in legislative land use processes. The stated purpose of the goal is:

*To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions.*

The review of this application will follow the process established in the Newport Comprehensive Plan and Zoning Ordinance. The findings presented in this application provide an adequate factual basis for decisions and actions by the Newport Planning Commission and City Council. In the process of developing the UGB adjustment proposal and findings, the City complied with Goal 2.

### **Goal 3: Agricultural Lands and 4: Forest Lands**

**Applicant's Finding:** As stated in 660-024-0020(b), Goals 3 and 4 are not applicable when establishing or amending an urban growth boundary.

### **Goal 5: Open Spaces and Historic Areas & Natural Resources.**

**Applicant's Finding:** Goal 5 requires local governments to inventory and protect natural resources. The subject site does not fall within any lands designated as open spaces, historic areas, or natural resource areas. A resource delineation will be provided at the time of the development of the property.

### **Goal 6: Air, Water and Land Resources Quality**

**Applicant's Finding:** Goal 6 requires local comprehensive plans and implementation measures to be consistent with state and federal regulations. By complying with applicable air, water and land resource quality policies in the Newport Comprehensive Plan, Goal 6 will be properly addressed.

### **Goal 7: Areas Subject to Natural Disasters and Hazards**

**Applicant's Finding:** Goal 7 requires that jurisdictions apply appropriate safeguards when planning development in areas that are subject to natural hazards such as flood hazards. The subject site does not fall within any identified natural hazard areas.

### **Goal 8: Recreational Needs**

**Applicant's Finding:** Goal 8 requires jurisdictions establish policies and procedures for the planning and zoning of state and local parks in order to address the needs of the citizens of the state. The City of Newport has addressed the Goal 8 requirements in the Newport Parks System Master Plan.

While the site is not located within the UGB and was not analyzed as part of the planning effort, it is identified as the location of a potential future trail connecting to Big Creek Reservoir Open Space. Big Creek Open Space is a 536-acre natural area adjacent to the subject site. The proposed trail connection can be incorporated in the future development of the site.

A Level of Service Analysis was provided in the Newport Parks System Master Plan. The existing park system was analyzed using seven park categories for the 2017

population as well as the 2035 projected population. Per the SCORP 2013-2017 suggested standards, the level of service of park acres per 1,000 residents within the City is met or exceeded for each park category.

The destination resort siting requirements are not applicable to the proposed development.

### **Goal 9: Economy of the State**

**Applicant's Finding:** The proposal does not involve employment lands; therefore, Goal 9 is not applicable.

### **Goal 10: Housing**

**Applicant's Finding:** The purpose of Goal 10 is to provide for housing needs for communities throughout the state. This goal requires jurisdictions to inventory developable lands to accommodate housing of a variety of types, densities, and prices commensurate with the financial capabilities of Oregon households. When there is a deficiency of buildable land to accommodate residential development within a city's UGB, that city is required to address the deficiency either through policy change within the UGB or through a UGB expansion.

According to the City's 2011 Housing Needs Analysis, the City has an adequate supply of high-density residential land. The proposed removal of approximately 70 acres of high-density residential land from the UGB will not result in a shortfall of high-density residential land, based on the City's 20-year projected growth. Additionally, much of the land proposed for removal has significant development constraints that would impact the total number of units the parcel could support. Attached to this application is a more detailed analysis of Site B with an estimate of the total number of units the parcel could support.

Site A is proposed for inclusion within the UGB with an assumption that upon annexation, it will receive a high density residential (R-4) designation. This would allow the development of the parcel at a net density of approximately 200 total homes (i.e. 1 unit per 5,000 SF for single-family homes).

Therefore, while there may be a change in the total gross acreage as a result of the UGB Adjustment, the overall outcome in terms of units produced will be substantially similar. Additionally, the inclusion of Site A into the UGB will result in development of needed housing in a much shorter timeframe than Site B due to the relative feasibility and economic efficiency of serving Site A with public facilities and services and its proximity to retail, employment opportunities, services, and transportation linkages.

The addition of 43.4-acre acres of high-density residential land into the UGB will provide an addition of land available for residential development within proximity to City services. Newport's Housing Needs Analysis identifies an increased need for workforce housing.

## Goal 11: Public Facilities and Services

**Applicant's Finding:** The purpose of Goal 11 is to plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development. The goal requires that public facilities and services in urban areas are provided at levels necessary and suitable for existing and future urban uses. It also requires jurisdictions to adopt public facilities plans in coordination with urbanization.

### *Transportation*

The City adopted a Transportation System Plan in 2012, which meets the requirements of Goal 11 and OAR 660-011. As detailed in the Site A transportation analyses of Goals 12 and 14 as well as the attached Transportation Impact Study (Attachment D), adequate transportation facilities can be made available to serve Site A with the provision of identified improvements.

### *Water*

The City adopted a Water System Master Plan in 2008, which meets the requirements of Goal 11 and OAR 660-011.

Site A falls within the City's main pressure zone (Main Storage Tanks) which can serve elevations up to 183 feet above sea level. Dwellings within the development above 183 feet will be served via a booster pump station. A pressure tank will be installed near the highest site elevation to serve homes including fire protection. As shown in the attached Boundary Location Analysis (Attachment E), adequate water system facilities exist adjacent to Site A and can be served with the provision of appropriate system development charges, facilities, and connections.

### *Sanitary Sewer*

The City recently adopted a Sanitary Sewer Master Plan (SSMP) in 2018, which meets the requirements of Goal 11 and OAR 660-011.

Wastewater is anticipated to be conveyed to the existing PVC gravity line located near the north west corner of Site A. Flow will then be conveyed through the gravity system, beneath Highway 101 and discharge into the Big Creek Pumpstation. The anticipated flow from the proposed development was determined to be approximately 32,000 gpd or 0.032 mgd. This calculation was adopted in accordance with an assumed 2.19 people per household in accordance with the SSMP – High Density Residential, Medium Density Residential and Low Density Residential, average calculation.

Table 5.1 of the SSMP identifies the existing peak flow of Big Creek PS to be 2.60 mgd with a maximum capacity of 3.50 mgd or a net capacity of 0.9 mgd.

Table 5.2 of the SSMP identifies the 20-year Conditions Planning Scenario and peak flow of Big Creek Pumpstation to be 3.00 mgd with a maximum capacity of 3.5 mgd or a net capacity of 0.5 mgd.

Adequate sanitary sewer system facilities exist to serve Site A with the provision of appropriate system development charges, facilities, and connections.

#### *Stormwater*

The City does not have an adopted Stormwater Master Plan, but the proposed inclusion of Site A into the UGB and future development will require the provision of a surface drainage and storm sewer system pursuant to Section 13.05.040 of the Newport Municipal Code. It is anticipated that stormwater runoff from Site A will be collected, detained and released to match the pre-developed site runoff condition using surface water ponds, weirs and flow control manholes.

### **Goal 12: Transportation**

**Applicant's Finding:** Goal 12 encourages the provision of a safe, convenient, and economic transportation system and implements provisions of other statewide planning goals related to transportation planning in order to plan and develop facilities in coordination with urban and rural development.

The Transportation Planning Rule (TPR), OAR 600-012-0060, requires that, where an amendment to a comprehensive plan would significantly affect an existing or planned transportation facility, the local government shall put in place measures that assure that allowed land uses are consistent with the function, capacity, and performance standards of the facility. This application is for an amendment to the comprehensive plan and urban growth boundary and, as such, the proposed changes must comply with the TPR.

This application includes a Transportation Impact Study (TIS) completed by Kittelson & Associates on October 18, 2019. The TIA measures impacts to the transportation system by estimating the change in vehicle trips, resulting from this proposed UGB and comprehensive plan designation change. The analysis compares the transportation system performance under the current comprehensive plan designation reasonable worst-case scenario to the performance under the proposed comprehensive plan designation reasonable worst-case scenario.

As detailed in the submitted Transportation Impact Study (TIS), the following table shows the requisite reasonable worst-case scenario analysis.

	Comprehensive Plan Designation	Zoning	Land Use (ITE Code)	Units	Daily Trips	PM Trips Entering	PM Trips Exiting
Existing	N/A	T-C	-	-	-	-	-
Proposed	Low Density Residential	R-2	210	200	1,968	125	73
<b>Change</b>				<b>+200</b>	<b>+1,968</b>	<b>+125</b>	<b>+73</b>

While the Applicant may or may not construct 200 dwelling units, this is the reasonable worst-case scenario and therefore must be analyzed as the comparison to the existing reasonable worst-case scenario. Based on the above table, 1,968 additional daily trips are forecast to be generated by the comprehensive plan change under reasonable worst-case scenario development assumptions. This number exceeds the threshold of 400 daily trips per the TPR to trigger a significant impact, and requires intersection operational analysis.

The following intersections were analyzed for impacts based on this proposed adjustment:

Study Intersections	V/C Mobility Target	Weekday AM Peak Hour		Weekday PM Peak Hour	
		V/C	Delay (sec)	V/C	Delay (sec)
US 101 / NE 36 <sup>th</sup> Street	0.80 major	0.01 (SBLT)	8.78 (SBLT)	0.03 (SBLT)	11.5 (SBLT)
	0.90 minor	0.59 (WB)	54.5 (WB)	0.72 (WB)	123.0 (WB)
US 101 / NE 31 <sup>st</sup> Street	0.80 major	0.02 (SBLT)	8.94 (SBLT)	0.06 (SBLT)	12.6 (SBLT)
	0.90 minor	0.61 (WB)	72.3 (WB)	0.79 (WB)	182.2 (WB)
US 101 / NE 25 <sup>th</sup> Street	0.80 intersection	0.62	14.2	0.92	48.5
US 101 / NE 20 <sup>th</sup> Street	0.90 intersection	0.55	18.3	0.92	63.2
NE Harney Street / NE 31 <sup>st</sup> Street	0.90 minor	0.04 (EB)	8.62 (EB)	0.07 (EB)	9.0 (EB)

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, LT = Left-turn, TH = Through, RT = Right-turn  
V/C= Critical volume-to-capacity ratio, Delay= Intersection delay (signalized) / Critical movement delay (unsignalized)

The analysis included in the submitted TIA concludes that based on the long-term traffic impact detailed in the report, the proposed land exchange will result in a significant impact on the surrounding transportation system that will require mitigation. The report recommends the following improvements:

*The US 101/NE 36th Street Intersection Improvements:*

- Capacity Enhancing Projects
  - Widen the westbound NE 36th Street approach to include a separate left and right-turn lane.
  - Install a traffic signal
- Additional Projects to meet the currently adopted 0.80 Mobility Target:
  - Widen US 101 to include a second northbound through lane
- Alternative to Meeting the 0.80 Mobility Target:
  - City of Newport and ODOT consider the adoption of an alternative mobility target (0.90 or higher) under the 30<sup>th</sup>

highest hour conditions or maintain the existing target under other than peak season conditions.

*US 101/NE 31st Street Intersection*

- Capacity Enhancing Projects:
  - Widen the westbound NE 31<sup>st</sup> Street approach to include a separate left and right-turn lane.
  - Install a traffic signal
- Additional projects to meet the currently adopted 0.80 Mobility Target:
  - Widen US 101 to include a second northbound through lane.
- Alternative to meeting the 0.80 Mobility Target:
  - City of Newport and ODOT consider the adoption of an alternative mobility target (0.95 or higher) under the 30<sup>th</sup> highest hour conditions or maintain the existing target under other than peak season conditions.

*US 101/NE 25<sup>th</sup> Street Intersection*

- Projects to Restore the Intersection to Background Conditions
  - Install right-turn overlap phasing on the eastbound approach

*US 101/NE 20th Street Intersection*

- Projects to Restore the Intersection to Background Traffic Conditions/Mobility Target:
  - Install right-turn overlap phasing on the eastbound approach.
  - Construct a separate westbound right-turn lane on the NE 20<sup>th</sup> Street approach.
- Alternative to Meeting the 0.90 Mobility Target:
  - City of Newport and ODOT consider the adoption of an alternative mobility target (0.95 or higher) under 30<sup>th</sup> highest hour conditions of maintain the existing target under other than peak season conditions.

While the Applicant has detailed a series of potential improvements to address capacity at the identified intersections, the preference would be for the City and ODOT to consider alternative mobility targets at the specified intersections as the City updates their Transportation System Plan.

The Application proposes to leave the existing zoning in place until the property is annexed to the City. Therefore, pursuant to OAR 660-024-0020(1)(d), the Application does not address OAR 660-012-0060, the TPR. The applicant will demonstrate compliance with the TPR when it proposes urban zoning on the property added to the UGB.

### Goal 13: Energy

**Applicant's Finding:** Goal 13 requires land and uses developed on the land to be managed and controlled so as to maximize the conservation of all forms of energy, based upon sound economic principles. Energy consequences of the proposed urban growth area adjustment have been considered in the Goal 14 alternatives analysis ESEE process.

### Goal 14: Urbanization

**Applicant's Finding:** Goal 14 requires cities to establish and maintain urban growth boundaries to provide land for urban development needs and separate urban and urbanizable land from rural land. The stated purpose of the goal is:

*To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.*

The goal provides two "Land Need" factors and four "Boundary Location" factors in evaluating changes to the urban growth boundary. Goal 14 and related statutes and administrative rules establish a specific method and hierarchy for boundary review. Findings for the proposed UGB adjustment are organized according to that hierarchy.

#### Land Need Criteria

Goal 14 requires that changes to the UGB shall be based on the following:

1. *Demonstrated need to accommodate long range urban population, consistent with a 20-year population forecast coordinated with affected local governments.*
2. *Demonstrated need for housing, employment opportunities, livability or uses such as public facilities, streets and roads, schools, parks or open space, or any combination of the need categories in this subsection. In determining need, local government may specify characteristics, such as parcel size, topography or proximity, necessary for land to be suitable for an identified need. Prior to expanding an urban growth boundary, local governments shall demonstrate that needs cannot reasonably be accommodated on land already inside the urban growth boundary.*

However, OAR 660-024-0070 (3) allows a local government considering an exchange of land to rely on the land needs analysis that provided a basis for its current acknowledged plan, rather than adopting a new need analysis, provided that the buildable land added to the UGB provides a specific type of residential need substantially equivalent to the amount of buildable land removed and that the land added to the UGB is designated for the same residential uses and housing density as the land removed from the UGB.

The proposed site for removal from the UGB (Site B) is approximately 71.4 acres, is currently zoned as RR-10 (Rural Residential), and designated as “High Density Residential” on the Newport Comprehensive Plan Map. The current zoning of Site B is inappropriate for the desired objectives of the Comprehensive Plan Designation.

If incorporated, the designation of Site B as a higher density district (i.e. R-3 or R-4) would be inconsistent with the stated intent of those districts, which contain siting requirements including land that is flat and free of constraints that would inhibit the development of apartments. City staff suggested the land would be zoned R-2 (Medium Density Single-Family Residential) if incorporated into the city, which is more consistent with the stated intent of that district to provide for smaller lot size residential development that serves as a transitional area between low density uses and higher density residential districts.

The applicant anticipates annexing Site A with a “High Density Residential” Comprehensive Plan designation and R-4 Zoning Designation. Site A is approximately 28 acres smaller than Site B, but the current Housing Element of the Newport Comprehensive Plan indicates that the city has a 730-acre surplus of High-Density Residential Land. Therefore, while the UGB Adjustment will result in a gross acreage loss of 28 acres, this will not significantly impact the overall supply of land. Furthermore, the inclusion of Site A into the UGB will go further towards providing needed housing to Newport residents by providing lands that are more easily served by public facilities, closer to existing residential development, and closer to existing employment centers. The applicant provides a more detailed analysis of Site B later in this narrative to confirm that the inclusion of Site A would meet a substantially equivalent need.

### **Boundary Location Criteria**

OAR 660-024-0040 requires conducting a boundary location analysis evaluating alternative boundary locations in order to determine any change to a city’s UGB. These analyses must be conducted in a manner consistent with ORS 197.298 and consider the following four factors:

1. *Efficient accommodation of identified land needs*
2. *Orderly and economic provision of public facilities and services*
3. *Comparative environmental, energy, economic and social consequences*
4. *Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside of the UGB.*

The section below describes boundary location analysis factors for the purpose of comparing the site proposed for inclusion to the UGB to other viable sites.

### **Site A**

#### **General Description**

Site A is a 43.4-acre site located east of the existing Newport UGB. The parcel is zoned Commercial-Timber (T-C) in the Lincoln County Comprehensive Plan. The TC zone is a forest resource zone compliant with the Statewide Planning Goal 4 (Forest Lands) and is reserved for forest operations or forest practices per Section 1.1375(1) of the Lincoln County Zoning Ordinance consistent with ORS 527.722. The parcel is largely wooded with young Douglas fir and two seasonal streams draining to the southwest corner of the site. The parcel is moderately sloped with approximately 12 acres of containing slopes that would prohibit development, whereas the remaining 28 acres have slopes that could accommodate development.

### **Efficient accommodation of identified land needs**

The anticipated inclusion of Site A into the UGB, designation as high density residential (R-4), and subsequent development of housing on this site provides an effective response to the regional issue of limited housing supply and increasing housing costs affecting the City of Newport and Lincoln County. According to the 2013-2017 American Community Survey, median monthly housing costs total \$869 and 37.5% of households pay 30 percent or more of their household income in housing costs. Among households with a mortgage, 33.4% have household costs exceeding 35 percent of their household income. Compounding this issue is the prevalence of housing units that are utilized as second homes or vacation homes. The vacancy rate of households in Newport is 21 percent, suggesting a large proportion of needed housing to serve Newport residents are owned by non-residents. This further constrains supply and exacerbates the affordability crisis Newport faces.

The inclusion of Site A would provide a large site that has minimal development constraints, is easily serviceable by existing public facilities and services, and is located near existing development and economic opportunities in Newport. Additionally, because the site is not currently parcelized, the associated return on investment for the development of the tract is much greater than alternative locations, making development significantly more likely in the near future than sites with high parcelization. The full development of Site A with housing, while not fully meeting the affordability need of the City, will provide critical housing supply that will ultimately reduce the average cost of homes in the region and provide more affordable options for Newport residents. Additionally, the provision of housing near existing transportation networks and development provide communities better access to employment and educational opportunities and more efficient provision of transportation facilities and utilities.

### **Orderly and economic provision of public facilities and services**

#### *Transportation*

Site A is currently adjacent to a developed collector, NE Harney Street, and it is located adjacent to existing development. According to the attached Transportation Impact Analysis (Attachment D), the proposed amendment to the City's UGB and

affiliated comprehensive plan/zone designation for the 43.4-acre site has the potential to create a significant effect on the surrounding transportation network. However, acceptable operational levels can be achieved at the study intersections in the planning horizon year 2039 with the implementation of mitigation measures identified in the TIA.

#### Capacity of existing facilities to serve areas already inside the UGB

Operational analyses outlined in the Traffic Impact Analysis (Attachment D) indicate that all of the study intersections currently operate at acceptable mobility targets with the exception of the US 101/NE 20th Avenue intersection. During the weekday PM peak hour, this intersection operates at a volume-to-capacity ratio of 0.84 which is above the 0.80 mobility target.

#### Capacity of existing facilities to serve areas proposed for addition to the UGB

The attached TIA estimates background traffic volumes for the 2039 planning horizon year using an 1% annual growth rate to reflect anticipated regional traffic growth along the US 101 corridor. With the proposed UGB adjustment, assuming that the 43.4-acre site is zoned under the City of Newport's R-2 Medium Density Single Family Residential zone, the TIA determined the site could support up to 200 single family homes in a reasonable worst case scenario. This has the potential to generate approximately 1,968 net new daily trips, 147 net new AM peak hour trips, and 198 net new PM peak hour trips

#### Impacts to existing facilities that serve nearby areas already inside the UGB

Operations of the study intersections under the 2039 R-2 Medium Density Single Family Residential zoning scenario found that all of the US 101 study intersections are forecast to exceed their respective mobility targets.

The eastbound approach to the unsignalized US 101/NE 36th Street intersection is forecast to operate over capacity during both the weekday AM and PM peak hours. This represents a significant impact to the operations of the intersection. Rather than addressing these impacts through this application, the applicant proposes to leave the existing zoning in place until the property is annexed to the City. Therefore, pursuant to OAR 660-024-0020(1)(d), the Application does not address OAR 660-012-0060, the TPR. The applicant will demonstrate compliance with the TPR when it proposes urban zoning on the property added to the UGB.

#### *Water*

According to a City map of existing water services in Newport, a 12-inch water main runs along NE Harney Street as well as two hydrants located along this main adjacent to Site A. This would allow for the extension of water service to the parcel once it develops.

## Capacity of existing facilities to serve areas already inside the UGB

Sections 5 and 6 of the 2008 Newport Water System Master Plan describe the existing water system and water demand. The City holds water rights allowing for a maximum of 19.24 cfs from six streams, but can only utilize 16.54 cfs from three due to location constraints. The City stores water from these streams in the Big Creek reservoir to draw from during the dry and high-water-demand summer months. The plan estimates that the average monthly water consumption for a typical dwelling ranges between 3,695 gallons in winter months to 6,270 gallons in summer months with an average demand of 4,600 gallons per month. During the summer months, the maximum daily demand (MDD) can reach a total 6.27 cfs, but the average daily demand (ADD) throughout the year is 3.33 cfs. In instances where the City's demand exceeded water available from streams, supply drew from the Big Creek reservoir to meet demand.

The plan projects this demand to increase to a MDD 8.99 cfs and an ADD of 4.72 cfs by 2030. Based on the capacity of the Big Creek reservoir during its driest year on record, it is possible to support the anticipated maximum demand in 2030 by diverting water from the Siletz River to recharge the reservoir, but following that, the City will need to consider alternatives to provide sufficient water supply. The Capital Improvement Plan (Section 9) identifies a \$12 million upgrade to the existing Big Creek Water Treatment Plant that will allow for the sufficient accommodation of water needs as development continues.

## Capacity of existing facilities to serve areas proposed for addition to the UGB

Assuming the average monthly water consumption outlined in the Newport Water System Master Plan, the inclusion of Site A into the UGB and development could result in a total increase in water demand of 1,254,000 gallons per month (0.06 cfs) during peak months and 920,000 gallons per month (0.05 cfs) on average. While significant, the capacity to serve Site A currently exists, and the Capital Improvement Plan identifies improvements that will ensure the adequate provision of water well into the future. Therefore, with the provision of appropriate system development charges and water line extension, the existing water system will be able to accommodate the full buildout of Site A.

## Impacts to existing facilities that serve nearby areas already inside the UGB

Linking to the existing 12-inch water main along NE Harney Street will result in additional water demand on the pipe and local distribution network however these impacts should be able to be accommodated without significant impacts upon the surrounding system.

## *Sanitary Sewer*

The City recently updated their Sanitary Sewer Master Plan (SSMP) in order to update wastewater elements of the Comprehensive Plan and develop a priority for

capital improvement projects. According to the SSMP dated February 9, 2018, there is a gravity sewer extending to the northwest corner of Site A, which would allow for the extension of sanitary sewer to Site A once it develops. The line was constructed circa 1990 and is composed of Polyvinyl Chloride (PVC). This gravity main connects to a Vance Avery Wastewater Treatment Facility located in South Beach.

#### Capacity of existing facilities to serve areas already inside the UGB

The City provides sanitary sewer collection system services to approximately 10,000 people spread across an area of approximately 11.2 square miles. The City oversees over 62 miles of gravity pipelines ranging in size from approximately 3 to 36 inches in diameter, 1,400 manholes, 9 major pump stations, 16 minor pump stations, and 12 miles of sanitary force mains. The plan identifies minor deficiencies in the sanitary sewer system, but provides a series of recommended improvements prioritized by assessed risk of overflow to ensure that there will be sufficient capacity to accommodate new development.

#### Capacity of existing facilities to serve areas proposed for addition to the UGB

The Master Plan models buildout scenarios over a 20-year period to identify possible surcharging and flooding during large storm events (i.e. a 1-in-10 year storm). The plan uses these scenarios to provide recommended improvements to ensure the existing system will be able to accommodate new development as it occurs, prioritizing the most critical facilities for improvement. Therefore, with the provision of appropriate system development charges and sanitary sewer extension, the existing sanitary sewer system will be able to accommodate the full buildout of Site A.

#### Impacts to existing facilities that serve nearby areas already inside the UGB

Linking to the existing gravity sewer will result in an increase demand on the existing capacity of the pipe however the system is believed to be adequately sized to handle the demands associated with a new subdivision. These demands can be evaluated in detail and the system may be upsized in order to enable the development.

#### *Stormwater*

The Applicant has sufficient room on the property to treat and detain stormwater consistent with the City's applicable regulations. The impacts to stormwater management will be evaluated and managed at the time of development of the property.

### **Comparative environmental, energy, economic and social consequences**

#### *Economic*

As discussed earlier in this analysis, the full development of Site A with housing will provide critical housing supply that will ultimately reduce the average cost of homes in the region and provide more affordable options for Newport residents. Additionally, the provision of housing near existing transportation networks and development provide communities better access to employment and educational opportunities and more efficient provision of transportation facilities and utilities.

While a T-C designation on Site A will result in the preservation of resource land, the R-4 land use provides a greater economic benefit to the community through increased housing options. The proposed adjustment and future use promote more efficient and coordinated use of land and minimizes urban sprawl.

### *Social*

There are developed neighborhoods to the north and the west of Site A, and the development of housing on what was originally resource land would result in a change of character for existing residents, most notably a loss of rural lifestyle or low-density residential development. Additionally, forest and natural areas can provide people with access to nature and stress relief, though the anticipated loss would be minimal in this case as this land is managed forest with no public access.

There is the potential to dedicate future park space and scenic areas as development occurs. Specifically, in areas that have topographical constraints that make development infeasible, dedicated natural open space and scenic vistas can be provided to serve as an essential resource to Newport communities. Additionally, the provision of trails connecting to the existing Ocean to Bay Trail network to the southwest could mitigate loss of forested area by providing access to nature and other recreational amenities to Newport residents.

### *Environmental*

There are no identified wetlands on Site A. However, just south of the parcel is a City designated wetland that extends from the property line to NE Harney Street. The development of Site A could impact this wetland as the increase in impervious surface increases runoff and flow rates downstream.

The development of Site A will require the clearing of trees, which will have associated erosion, air quality, and greenhouse gas impacts. These impacts can be mitigated through the careful provision of open space in areas that are not suitable for development. These areas could be planted with native vegetation and trees that would provide better environmental services than the current timber plantation. This would offset some of the environmental impact associated with the clearing of trees to accommodate development.

Additionally, the exclusion of Site B and will offset the development of Site A by precluding development on Site B and preserving the area for forest land uses. Site B is currently included in the UGB and zoned for rural residential development,

which would result in much larger development footprints and disturbance to the surrounding area should they be developed. Therefore, the proposed adjustment provides the opportunity to limit the future clearing of trees and sprawling patterns of development on Site B and provide more compact residential development with a lower environmental footprint per unit through the development of Site A.

### *Energy*

The inclusion of Site A into the UGB is expected to result in new housing replacing areas currently used as timber resource land except where topography constrains development. There is a power transmission line and transformer to the north of Site A, but it is unlikely to be impacted by residential development. Within the site, redevelopment could support as many as 200 dwelling units, which would have an increased energy impact in the form of construction, dwelling unit energy use, and transportation.

There is a bus stop along Hwy 101 that is approximately a ten minute walk from the western periphery of Site A, and an existing Ocean to Bay Trail network that can provide options for non-automobile travel, reducing some of the energy impacts associated with transportation.

### **Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB**

The proximity of single-family dwellings to adjacent forest lands creates the potential for conflict between the two uses in the form of noise, pollution from logging equipment, truck and automobile traffic, and hazards associated with forest lands such as falling or windthrown trees and wildfire. Additionally, the proximity of new housing may present challenges to active forest management if those activities are a nuisance to adjacent uses. The key towards mitigating these conflicts is separation and buffering. The power transmission line located north of Site A provides an excellent buffer area in which felling is less likely to occur to avoid damage to the lines. This allows trees to grow in this buffer, providing additional shielding and impacts associated with forest activity to the north of the power line. In addition to this, Chapter 14.18 requires buffering between residential and non-residential uses, providing an opportunity to increase the separation between residential and forest uses and mitigate potential conflicts.

### **Alternative UGB Expansion Areas**

ORS 197.298 establishes a priority of land to be included within an urban growth boundary that Boundary Location Analyses must consider:

- 1) Designated urban reserve land
  - \* Note: Areas around Newport do not contain Urban Reserves as defined in OAR 660-021
- 2) Acknowledged exception area or nonresource land

- 3) Marginal land
  - \* Note: Areas around Newport do not contain Marginal land as defined in ORS 197.247
- 4) Designated agriculture or forestry land

This section also permits the inclusion of lower priority land in the following circumstance:

- 3) *Land of lower priority under subsection (1) of this section may be included in an urban growth boundary if land of higher priority is found to be inadequate to accommodate the amount of land estimated in subsection (1) of this section for one or more of the following reasons:*
  - a) *Specific types of identified land needs cannot be reasonably accommodated on higher priority lands;*
  - b) *Future urban services could not reasonably be provided to the higher priority lands due to topographical or other physical constraints; or*
  - c) *Maximum efficiency of land uses within a proposed urban growth boundary requires inclusion of lower priority lands in order to include or to provide services to higher priority lands*

Policy 15 under Goal 14: Urbanization of the Comprehensive Plan encourages land use patterns and development plans which take advantage of density and location to reduce the need for travel and dependency on the private automobile, facilitate energy-efficient public transit systems, and permit building configurations which increases the efficiency of energy use. The subject property to be brought into the UGB is located directly adjacent to the City Limits and developed residential land. The subject property to be removed from the Urban Growth Boundary is not located near existing services or major transportation facilities.

Site B is located at the southeastern periphery of the Newport UGB. It is far from existing development and features several constraints that limit the provision of public services including wetlands, a creek at the southern area of the parcel, and fairly steep slopes. These factors result in lands that would be prohibitively expensive to develop at higher densities in the near future.

#### **Goal 15: Willamette River Greenway**

**Applicant's Finding:** Goals 15 is related to the Willamette Greenway. The subject site is not located along the Willamette Greenway; therefore, this goal is not applicable and no further analysis is required.

#### **Goal 16: Estuarine Resources**

**Applicant's Finding:** Goal 16 is related to estuaries. The subject site is located inland and is not located near any identified estuaries; therefore, this goal does not apply to the subject site and no further analysis is required.

### **Goal 17: Coastal Shorelands**

**Applicant's Finding:** Goal 17 is related to lands bordering estuaries, ocean shores and coastal lakes. The Newport Comprehensive Plan Ocean Shorelands Map identifies areas within the City that are within the Ocean Shorelands boundary. The subject site is not located within the area identified by the City as Ocean Shorelands. This goal does not apply to the subject site and no further analysis is required.

### **Goal 18: Beaches and Dunes**

**Applicant's Finding:** Goal 18 is related to the beaches and dune resources. The Newport Comprehensive Plan identifies ocean beaches and dunes within the City. The subject site is located inland and is not located near any identified beaches or dunes; therefore, this goal does not apply to the subject site and no further analysis is required.

### **Goal 19: Ocean Resources**

**Applicant's Finding:** Goal 19 addresses issues related to open ocean resources. The subject site is located inland and is not located near open ocean resources; therefore, this goal does not apply to the subject site and no further analysis is required.

## **STATE ADMINISTRATIVE RULES OAR CHAPTER 660**

### **660-006-0020**

#### **Plan Designation Within an Urban Growth Boundary**

**Goal 4 does not apply within urban growth boundaries and therefore, the designation of forest lands is not required.**

**Applicant's Finding:** The proposed site for inclusion into the UGB (Site A) would be redesignated by the City of Newport as "High Density Residential" in the Comprehensive Plan and zoned "High Density Residential" (R-4) upon annexation into the City.

## **Division 12 – Transportation Planning**

### **660-012-0060**

#### **Plan and Land Use Regulation Amendments**

**(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. A plan or land use regulation amendment significantly affects a transportation facility if it would:**

**(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);**

**Applicant's Finding:** The Application proposes to leave the existing zoning in place until the property is annexed to the City. Therefore, pursuant to OAR 660-024-0020(1)(d), the Application

does not address OAR 660-012-0060, the TPR. The applicant will demonstrate compliance with the TPR when it proposes urban zoning on the property added to the UGB.

**(b) Change standards implementing a functional classification system; or**

**Applicant's Finding:** The proposed land exchange will not result in any changes to the standards that implement the functional classification system.

**(c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.**

**(A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;**

**Applicant's Finding:** The proposed land exchange of the 43.4-acre site would result in future traffic volumes that are consistent with the functional classifications of the roadways in the study area.

**(B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or**

**Applicant's Finding:** The proposed land exchange of the 43.4-acre site would not result in the degradation of any of the operations of the US 101/NE 36th Street and US 101/NE 31st Street intersections below their respective mobility targets. The Application proposes to leave the existing zoning in place until the property is annexed to the City. Therefore, pursuant to OAR 660-024-0020(1)(d), the Application does not address OAR 660-012-0060, the TPR. The applicant will demonstrate compliance with the TPR when it proposes urban zoning on the property added to the UGB.

**(C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.**

**Applicant's Finding:** Without any mitigation measures in place, the proposed land exchange would result in further degradation of failing operations at the US 101/NE 31<sup>st</sup> Street intersection, the US 101/NE 25th Street intersection and US 101/NE 20th Street intersection. As the City is updating their TSP, the Applicant has suggested that the City consider the adoption of alternative mobility standards which would potentially remedy this issue prior to the rezoning of the subject property. The Application proposes to leave the existing zoning in place until the property is annexed to the City. Therefore, pursuant to OAR 660-024-0020(1)(d), the Application does not address OAR 660-

012-0060, the TPR. The applicant will demonstrate compliance with the TPR when it proposes urban zoning on the property added to the UGB.

- (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 test in subsection (2)(e) of this section or qualifies for partial mitigation in section (11) of this rule. A local government using subsection (2)(e), section (3), section (10) or section (11) to approve an amendment recognizes that additional motor vehicle traffic congestion may result and that other facility providers would not be expected to provide additional capacity for motor vehicles in response to this congestion.**
- (a) Adopting measures that demonstrate allowed land uses are consistent with the planned function, capacity, and performance standards of the transportation facility.**
  - (b) Amending the TSP or comprehensive plan to provide transportation facilities, improvements or services adequate to support the proposed land uses consistent with the requirements of this division; such amendments shall include a funding plan or mechanism consistent with section (4) or include an amendment to the transportation finance plan so that the facility, improvement, or service will be provided by the end of the planning period.**
  - (c) Amending the TSP to modify the planned function, capacity or performance standards of the transportation facility.**
  - (d) Providing other measures as a condition of development or through a development agreement or similar funding method, including, but not limited to, transportation system management measures or minor transportation improvements. Local governments shall, as part of the amendment, specify when measures or improvements provided pursuant to this subsection will be provided.**
  - (e) Providing improvements that would benefit modes other than the significantly affected mode, improvements to facilities other than the significantly affected facility, or improvements at other locations, if:**
    - (A) The provider of the significantly affected facility provides a written statement that the system-wide benefits are sufficient to balance the significant effect, even though the improvements would not result in consistency for all performance standards;**
    - (B) The providers of facilities being improved at other locations provide written statements of approval; and**
    - (C) The local jurisdictions where facilities are being improved provide written statements of approval.**

**Applicant's Finding:** The Application proposes to leave the existing zoning in place until the property is annexed to the City. Therefore, pursuant to OAR 660-024-0020(1)(d), the Application does not address OAR 660-012-0060, the TPR. The applicant will demonstrate compliance with the TPR when it proposes urban zoning on the property added to the UGB.

The applicant acknowledges the responsibility of the City for amending the current adopted TSP to reflect the proposed improvements in accordance with the provisions listed above.

- (3) Notwithstanding sections (1) and (2) of this rule, a local government may approve an amendment that would significantly affect an existing transportation facility without assuring that the allowed land uses are consistent with the function, capacity and performance standards of the facility where:**
- (a) In the absence of the amendment, planned transportation facilities, improvements and services as set forth in section (4) of this rule would not be adequate to achieve consistency with the identified function, capacity or performance standard for that facility by the end of the planning period identified in the adopted TSP;**
  - (b) Development resulting from the amendment will, at a minimum, mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility by the time of the development through one or a combination of transportation improvements or measures;**
  - (c) The amendment does not involve property located in an interchange area as defined in paragraph (4)(d)(C); and**
  - (d) For affected state highways, ODOT provides a written statement that the proposed funding and timing for the identified mitigation improvements or measures are, at a minimum, sufficient to avoid further degradation to the performance of the affected state highway. However, if a local government provides the appropriate ODOT regional office with written notice of a proposed amendment in a manner that provides ODOT reasonable opportunity to submit a written statement into the record of the local government proceeding, and ODOT does not provide a written statement, then the local government may proceed with applying subsections (a) through (c) of this section.**

**Applicant's Finding:** The proposed land exchange of the 43.4-acre site would result in future traffic volumes that are consistent with the function, capacity and performance standards of the roadways in the study area. The Application proposes to leave the existing zoning in place until the property is annexed to the City. Therefore, pursuant to OAR 660-024-0020(1)(d), the Application does not address OAR 660-012-0060, the TPR. The applicant will demonstrate compliance with the TPR when it proposes urban zoning on the property added to the UGB. Therefore, the requirements of this section do not apply.

- (4) Determinations under sections (1)–(3) of this rule shall be coordinated with affected transportation facility and service providers and other affected local governments.
- (a) In determining whether an amendment has a significant effect on an existing or planned transportation facility under subsection (1)(c) of this rule, local governments shall rely on existing transportation facilities and services and on the planned transportation facilities, improvements and services set forth in subsections (b) and (c) below.
- (b) Outside of interstate interchange areas, the following are considered planned facilities, improvements and services:
- (A) Transportation facilities, improvements or services that are funded for construction or implementation in the Statewide Transportation Improvement Program or a locally or regionally adopted transportation improvement program or capital improvement plan or program of a transportation service provider.
- (B) Transportation facilities, improvements or services that are authorized in a local transportation system plan and for which a funding plan or mechanism is in place or approved. These include, but are not limited to, transportation facilities, improvements or services for which: transportation systems development charge revenues are being collected; a local improvement district or reimbursement district has been established or will be established prior to development; a development agreement has been adopted; or conditions of approval to fund the improvement have been adopted.
- (C) Transportation facilities, improvements or services in a metropolitan planning organization (MPO) area that are part of the area's federally-approved, financially constrained regional transportation system plan.
- (D) Improvements to state highways that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when ODOT provides a written statement that the improvements are reasonably likely to be provided by the end of the planning period.
- (E) Improvements to regional and local roads, streets or other transportation facilities or services that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when the local government(s) or transportation service provider(s) responsible for the facility, improvement or service provides a written statement that the facility, improvement or service is reasonably likely to be provided by the end of the planning period.
- (c) Within interstate interchange areas, the improvements included in (b)(A)–(C) are considered planned facilities, improvements and services, except where:
- (A) ODOT provides a written statement that the proposed funding and timing of mitigation measures are sufficient to avoid a significant adverse impact on the

Interstate Highway system, then local governments may also rely on the improvements identified in paragraphs (b)(D) and (E) of this section; or

(B) There is an adopted interchange area management plan, then local governments may also rely on the improvements identified in that plan and which are also identified in paragraphs (b)(D) and (E) of this section.

(d) As used in this section and section (3):

(A) Planned interchange means new interchanges and relocation of existing interchanges that are authorized in an adopted transportation system plan or comprehensive plan;

(B) Interstate highway means Interstates 5, 82, 84, 105, 205 and 405; and

(C) Interstate interchange area means:

(i) Property within one-quarter mile of the ramp terminal intersection of an existing or planned interchange on an Interstate Highway; or

(ii) The interchange area as defined in the Interchange Area Management Plan adopted as an amendment to the Oregon Highway Plan.

(e) For purposes of this section, a written statement provided pursuant to paragraphs (b)(D), (b)(E) or (c)(A) provided by ODOT, a local government or transportation facility provider, as appropriate, shall be conclusive in determining whether a transportation facility, improvement or service is a planned transportation facility, improvement or service. In the absence of a written statement, a local government can only rely upon planned transportation facilities, improvements and services identified in paragraphs (b)(A)–(C) to determine whether there is a significant effect that requires application of the remedies in section (2).

**Applicant's Finding:** The applicant acknowledges the authority of the City of Newport to render a determination regarding the anticipated effect of the proposed UGB amendment on the transportation network.

(5) The presence of a transportation facility or improvement shall not be a basis for an exception to allow residential, commercial, institutional or industrial development on rural lands under this division or OAR 660-004-0022 and 660-004-0028.

**Applicant's Finding:** The applicant does not propose an exception to allow development on rural lands under this division.

(6) In determining whether proposed land uses would affect or be consistent with planned transportation facilities as provided in sections (1) and (2), local governments shall give full credit for potential reduction in vehicle trips for uses located in mixed-use, pedestrian-friendly centers, and neighborhoods as provided in subsections (a)–(d) below;

(a) Absent adopted local standards or detailed information about the vehicle trip reduction benefits of mixed-use, pedestrian-friendly development, local governments shall assume that uses located within a mixed-use, pedestrian-

friendly center, or neighborhood, will generate 10% fewer daily and peak hour trips than are specified in available published estimates, such as those provided by the Institute of Transportation Engineers (ITE) Trip Generation Manual that do not specifically account for the effects of mixed-use, pedestrian-friendly development. The 10% reduction allowed for by this section shall be available only if uses which rely solely on auto trips, such as gas stations, car washes, storage facilities, and motels are prohibited;

- (b) Local governments shall use detailed or local information about the trip reduction benefits of mixed-use, pedestrian-friendly development where such information is available and presented to the local government. Local governments may, based on such information, allow reductions greater than the 10% reduction required in subsection (a) above;
- (c) Where a local government assumes or estimates lower vehicle trip generation as provided in subsection (a) or (b) above, it shall assure through conditions of approval, site plans, or approval standards that subsequent development approvals support the development of a mixed-use, pedestrian-friendly center or neighborhood and provide for on-site bike and pedestrian connectivity and access to transit as provided for in OAR 660-012-0045(3) and (4). The provision of on-site bike and pedestrian connectivity and access to transit may be accomplished through application of acknowledged ordinance provisions which comply with 660-012-0045(3) and (4) or through conditions of approval or findings adopted with the plan amendment that assure compliance with these rule requirements at the time of development approval; and
- (d) The purpose of this section is to provide an incentive for the designation and implementation of pedestrian-friendly, mixed-use centers and neighborhoods by lowering the regulatory barriers to plan amendments which accomplish this type of development. The actual trip reduction benefits of mixed-use, pedestrian-friendly development will vary from case to case and may be somewhat higher or lower than presumed pursuant to subsection (a) above. The Commission concludes that this assumption is warranted given general information about the expected effects of mixed-use, pedestrian-friendly development and its intent to encourage changes to plans and development patterns. Nothing in this section is intended to affect the application of provisions in local plans or ordinances which provide for the calculation or assessment of systems development charges or in preparing conformity determinations required under the federal Clean Air Act.

**Applicant's Finding:** The applicant does not propose a mixed-use development. Therefore, the requirements of this section do not apply.

- (7) Amendments to acknowledged comprehensive plans and land use regulations which meet all of the criteria listed in subsections (a)–(c) below shall include an amendment to the comprehensive plan, transportation system plan the adoption of a local street

plan, access management plan, future street plan or other binding local transportation plan to provide for on-site alignment of streets or accessways with existing and planned arterial, collector, and local streets surrounding the site as necessary to implement the requirements in OAR 660-012-0020(2)(b) and 660-012-0045(3):

- (a) The plan or land use regulation amendment results in designation of two or more acres of land for commercial use;
- (b) The local government has not adopted a TSP or local street plan which complies with OAR 660-012-0020(2)(b) or, in the Portland Metropolitan Area, has not complied with Metro's requirement for street connectivity as contained in Title 6, Section 3 of the Urban Growth Management Functional Plan; and
- (c) The proposed amendment would significantly affect a transportation facility as provided in section (1).

**Applicant's Finding:** The site, at the time of development, would only propose the creation of a local street network. No update to the City's TSP or future streets plan is required as part of this application.

(8) A "mixed-use, pedestrian-friendly center or neighborhood" for the purposes of this rule, means:

- (a) Any one of the following:
  - (A) An existing central business district or downtown;
  - (B) An area designated as a central city, regional center, town center or main street in the Portland Metro 2040 Regional Growth Concept;
  - (C) An area designated in an acknowledged comprehensive plan as a transit oriented development or a pedestrian district; or
  - (D) An area designated as a special transportation area as provided for in the Oregon Highway Plan.
- (b) An area other than those listed in subsection (a) above which includes or is planned to include the following characteristics:
  - (A) A concentration of a variety of land uses in a well-defined area, including the following:
    - (i) Medium to high density residential development (12 or more units per acre);
    - (ii) Offices or office buildings;
    - (iii) Retail stores and services;
    - (iv) Restaurants; and
    - (v) Public open space or private open space which is available for public use, such as a park or plaza.
  - (B) Generally include civic or cultural uses;
  - (C) A core commercial area where multi-story buildings are permitted;
  - (D) Buildings and building entrances oriented to streets;
  - (E) Street connections and crossings that make the center safe and conveniently accessible from adjacent areas;

- (F) A network of streets and, where appropriate, accessways and major driveways that make it attractive and highly convenient for people to walk between uses within the center or neighborhood, including streets and major driveways within the center with wide sidewalks and other features, including pedestrian-oriented street crossings, street trees, pedestrian-scale lighting and on-street parking;
- (G) One or more transit stops (in urban areas with fixed route transit service); and
- (H) Limit or do not allow low-intensity or land extensive uses, such as most industrial uses, automobile sales and services, and drive-through services.

**Applicant's Finding:** The applicant does not propose a mixed-use development. Therefore, the requirements of this section do not apply.

- (9) Notwithstanding section (1) of this rule, a local government may find that an amendment to a zoning map does not significantly affect an existing or planned transportation facility if all of the following requirements are met.
- (a) The proposed zoning is consistent with the existing comprehensive plan map designation and the amendment does not change the comprehensive plan map;
  - (b) The local government has an acknowledged TSP and the proposed zoning is consistent with the TSP; and
  - (c) The area subject to the zoning map amendment was not exempted from this rule at the time of an urban growth boundary amendment as permitted in OAR 660-024-0020(1)(d), or the area was exempted from this rule but the local government has a subsequently acknowledged TSP amendment that accounted for urbanization of the area.

**Applicant's Finding:** The applicant acknowledges that the proposed land exchange would not significantly affect the existing transportation network. Therefore, the requirements of this section do not apply.

- (10) Notwithstanding sections (1) and (2) of this rule, a local government may amend a functional plan, a comprehensive plan or a land use regulation without applying performance standards related to motor vehicle traffic congestion (e.g. volume to capacity ratio or V/C), delay or travel time if the amendment meets the requirements of subsection (a) of this section. This section does not exempt a proposed amendment from other transportation performance standards or policies that may apply including, but not limited to, safety for all modes, network connectivity for all modes (e.g. sidewalks, bicycle lanes) and accessibility for freight vehicles of a size and frequency required by the development.
- (a) A proposed amendment qualifies for this section if it:
    - (A) Is a map or text amendment affecting only land entirely within a multimodal mixed-use area (MMA); and

- (B) Is consistent with the definition of an MMA and consistent with the function of the MMA as described in the findings designating the MMA.
- (b) For the purpose of this rule, “multimodal mixed-use area” or “MMA” means an area:
  - (A) With a boundary adopted by a local government as provided in subsection (d) or (e) of this section and that has been acknowledged;
  - (B) Entirely within an urban growth boundary;
  - (C) With adopted plans and development regulations that allow the uses listed in paragraphs (8)(b)(A) through (C) of this rule and that require new development to be consistent with the characteristics listed in paragraphs (8)(b)(D) through (H) of this rule;
  - (D) With land use regulations that do not require the provision of off-street parking, or regulations that require lower levels of off-street parking than required in other areas and allow flexibility to meet the parking requirements (e.g. count on-street parking, allow long-term leases, allow shared parking); and
  - (E) Located in one or more of the categories below:
    - (i) At least one-quarter mile from any ramp terminal intersection of existing or planned interchanges;
    - (ii) Within the area of an adopted Interchange Area Management Plan (IAMP) and consistent with the IAMP; or
    - (iii) Within one-quarter mile of a ramp terminal intersection of an existing or planned interchange if the mainline facility provider has provided written concurrence with the MMA designation as provided in subsection (c) of this section.
- (c) When a mainline facility provider reviews an MMA designation as provided in subparagraph (b)(E)(iii) of this section, the provider must consider the factors listed in paragraph (A) of this subsection.
  - (A) The potential for operational or safety effects to the interchange area and the mainline highway, specifically considering:
    - (i) Whether the interchange area has a crash rate that is higher than the statewide crash rate for similar facilities;
    - (ii) Whether the interchange area is in the top ten percent of locations identified by the safety priority index system (SPIS) developed by ODOT; and
    - (iii) Whether existing or potential future traffic queues on the interchange exit ramps extend onto the mainline highway or the portion of the ramp needed to safely accommodate deceleration.
  - (B) If there are operational or safety effects as described in paragraph (A) of this subsection, the effects may be addressed by an agreement between the local government and the facility provider regarding traffic management plans favoring traffic movements away from the interchange, particularly those facilitating clearing traffic queues on the interchange exit ramps.

- (d) A local government may designate an MMA by adopting an amendment to the comprehensive plan or land use regulations to delineate the boundary following an existing zone, multiple existing zones, an urban renewal area, other existing boundary, or establishing a new boundary. The designation must be accompanied by findings showing how the area meets the definition of an MMA. Designation of an MMA is not subject to the requirements in sections (1) and (2) of this rule.
- (e) A local government may designate an MMA on an area where comprehensive plan map designations or land use regulations do not meet the definition, if all of the other elements meet the definition, by concurrently adopting comprehensive plan or land use regulation amendments necessary to meet the definition. Such amendments are not subject to performance standards related to motor vehicle traffic congestion, delay or travel time.

**Applicant's Finding:** The applicant does not propose an exemption to the provision of performance standards related to motor vehicle traffic congestion within this application. Therefore, the requirements of this section do not apply.

- (11) A local government may approve an amendment with partial mitigation as provided in section (2) of this rule if the amendment complies with subsection (a) of this section, the amendment meets the balancing test in subsection (b) of this section, and the local government coordinates as provided in subsection (c) of this section.
  - (a) The amendment must meet paragraphs (A) and (B) of this subsection or meet paragraph (D) of this subsection.
    - (A) Create direct benefits in terms of industrial or traded-sector jobs created or retained by limiting uses to industrial or traded-sector industries.
    - (B) Not allow retail uses, except limited retail incidental to industrial or traded sector development, not to exceed five percent of the net developable area.
    - (C) For the purpose of this section:
      - (i) "Industrial" means employment activities generating income from the production, handling or distribution of goods including, but not limited to, manufacturing, assembly, fabrication, processing, storage, logistics, warehousing, importation, distribution and transshipment and research and development.
      - (ii) "Traded-sector" means industries in which member firms sell their goods or services into markets for which national or international competition exists.
    - (D) Notwithstanding paragraphs (A) and (B) of this subsection, an amendment complies with subsection (a) if all of the following conditions are met:
      - (i) The amendment is within a city with a population less than 10,000 and outside of a Metropolitan Planning Organization.
      - (ii) The amendment would provide land for "Other Employment Use" or "Prime Industrial Land" as those terms are defined in OAR 660-009-0005.

(iii) The amendment is located outside of the Willamette Valley as defined in ORS 215.010.

(E) The provisions of paragraph (D) of this subsection are repealed on January 1, 2017.

(b) A local government may accept partial mitigation only if the local government determines that the benefits outweigh the negative effects on local transportation facilities and the local government receives from the provider of any transportation facility that would be significantly affected written concurrence that the benefits outweigh the negative effects on their transportation facilities. If the amendment significantly affects a state highway, then ODOT must coordinate with the Oregon Business Development Department regarding the economic and job creation benefits of the proposed amendment as defined in subsection (a) of this section. The requirement to obtain concurrence from a provider is satisfied if the local government provides notice as required by subsection (c) of this section and the provider does not respond in writing (either concurring or non-concurring) within forty-five days.

(c) A local government that proposes to use this section must coordinate with Oregon Business Development Department, Department of Land Conservation and Development, area commission on transportation, metropolitan planning organization, and transportation providers and local governments directly impacted by the proposal to allow opportunities for comments on whether the proposed amendment meets the definition of economic development, how it would affect transportation facilities and the adequacy of proposed mitigation. Informal consultation is encouraged throughout the process starting with pre-application meetings. Coordination has the meaning given in ORS 197.015 and Goal 2 and must include notice at least 45 days before the first evidentiary hearing. Notice must include the following:

(A) Proposed amendment.

(B) Proposed mitigating actions from section (2) of this rule.

(C) Analysis and projections of the extent to which the proposed amendment in combination with proposed mitigating actions would fall short of being consistent with the function, capacity, and performance standards of transportation facilities.

(D) Findings showing how the proposed amendment meets the requirements of subsection (a) of this section.

(E) Findings showing that the benefits of the proposed amendment outweigh the negative effects on transportation facilities.

**Applicant's Finding:** The applicant does not propose a partial mitigation of anticipated transportation impacts. Therefore, the requirements of this section do not apply.

## **Division 18 – Post-Acknowledgement Amendments**

**660-018-0020**

### **Notice of a Proposed Change to a Comprehensive Plan or Land Use Regulation**

- (1) Before a local government adopts a change to an acknowledged comprehensive plan or a land use regulation, unless circumstances described in OAR 660-018-0022 apply, the local government shall submit the proposed change to the department, including the information described in section (2) of this rule. The local government must submit the proposed change to the director at the department’s Salem office at least 35 days before holding the first evidentiary hearing on adoption of the proposed change.**
- (2) The submittal must include applicable forms provided by the department, be in a format acceptable to the department, and include all of the following materials:**
  - (a) The text of the proposed change to the comprehensive plan or land use regulation implementing the plan, as provided in section (3) of this rule;**
  - (b) If a comprehensive plan map or zoning map is created or altered by the proposed change, a copy of the relevant portion of the map that is created or altered**
  - (c) A brief narrative summary of the proposed change and any supplemental information that the local government believes may be useful to inform the director and members of the public of the effect of the proposed change;**
  - (d) The date set for the first evidentiary hearing;**
  - (e) The notice or a draft of the notice required under ORS 197.763 regarding a quasi-judicial land use hearing, if applicable; and**
  - (f) Any staff report on the proposed change or information that describes when the staff report will be available and how a copy may be obtained.**
- (3) The proposed text submitted to comply with subsection (2)(a) of this rule must include all of the proposed wording to be added to or deleted from the acknowledged plan or land use regulations. A general description of the proposal or its purpose, by itself, is not sufficient. For map changes, the material submitted to comply with Subsection (2)(b) must include a graphic depiction of the change; a legal description, tax account number, address or similar general description, by itself, is not sufficient. If a goal exception is proposed, the submittal must include the proposed wording of the exception.**
- (4) If a local government proposes a change to an acknowledged comprehensive plan or a land use regulation solely for the purpose of conforming the plan and regulations to new requirements in a land use statute, statewide land use planning goal, or a rule implementing the statutes or goals, the local government may adopt such a change without holding a public hearing, notwithstanding contrary provisions of state and local law, provided:**
  - (a) The local government provides notice to the department of the proposed change identifying it as a change described under this section, and includes the materials described in section (2) of this rule, 35 days before the proposed change is adopted by the local government, and**

(b) The department confirms in writing prior to the adoption of the change that the only effect of the proposed change is to conform the comprehensive plan or the land use regulations to the new requirements.

(5) For purposes of computation of time for the 35-day notice under this rule and OAR 660-018-0035(1)(c), the proposed change is considered to have been “submitted” on the day that paper copies or an electronic file of the applicable notice forms and other documents required by section (2) this rule are received or, if mailed, on the date of mailing. The materials must be mailed to or received by the department at its Salem office.

**Applicant’s Finding:** For the Post Acknowledgement Plan Amendment associated with the UGB Adjustment, the City of Newport and Lincoln County shall jointly submit all of the required elements listed above within the specified timeframe.

#### **660-018-0021**

##### **Joint Submittal of Notices and Changes**

(1) Where two or more local governments are required by plan provisions, coordination agreements, statutes or goals to agree on and mutually adopt a change to a comprehensive plan or land use regulation, the local governments shall jointly submit the notice required in OAR 660-018-0020 and, if the change is adopted, the decision and materials required by OAR 660-018-0040. Notice of such proposed changes must be jointly submitted at least 35 days prior to the first evidentiary hearing. For purposes of notice and appeal, the date of the decision is the date of the last local government’s adoption of the change.

(2) For purposes of this rule, a change to a comprehensive plan or land use regulation that requires two or more local governments to agree on and mutually adopt the change includes, but is not limited to, the establishment or amendment of an urban growth boundary or urban reserve by a city and county in the manner specified in Goal 14.

**Applicant’s Finding:** For the Post Acknowledgement Plan Amendment associated with the UGB Adjustment, the City of Newport and Lincoln County shall jointly submit all of the required elements listed above within the specified timeframe.

#### **Division 24 – Urban Growth Boundaries**

##### **660-024-0020**

##### **Adoption or Amendment of a UGB**

(1) All statewide goals and related administrative rules are applicable when establishing or amending a UGB, except as follows:

(a) The exceptions process in Goal 2 and OAR chapter 660, division 4, is not applicable unless a local government chooses to take an exception to a particular goal requirement, for example, as provided in OAR 660-004-0010(1);

(b) Goals 3 and 4 are not applicable;

- (c) Goal 5 and related rules under OAR chapter 660, division 23, apply only in areas added to the UGB, except as required under OAR 660-023-0070 and 660-023-0250;
  - (d) The transportation planning rule requirements under OAR 660-012-0060 need not be applied to a UGB amendment if the land added to the UGB is zoned as urbanizable land, either by retaining the zoning that was assigned prior to inclusion in the boundary or by assigning interim zoning that does not allow development that would generate more vehicle trips than development allowed by the zoning assigned prior to inclusion in the boundary;
  - (e) Goal 15 is not applicable to land added to the UGB unless the land is within the Willamette River Greenway Boundary;
  - (f) Goals 16 to 18 are not applicable to land added to the UGB unless the land is within a coastal shorelands boundary;
  - (g) Goal 19 is not applicable to a UGB amendment.
- (2) The UGB and amendments to the UGB must be shown on the city and county plan and zone maps at a scale sufficient to determine which particular lots or parcels are included in the UGB. Where a UGB does not follow lot or parcel lines, the map must provide sufficient information to determine the precise UGB location.

**Applicant's Finding:** The applicant acknowledges the applicability of goals and administrative rules as listed above. Attached to this application are proposed revised maps showing the existing and proposed UGB in detail.

#### **660-024-0040**

##### **Land Need**

- (1) The UGB must be based on the appropriate 20-year population forecast for the urban area as determined under rules in OAR chapter 660, division 32, and must provide for needed housing, employment and other urban uses such as public facilities, streets and roads, schools, parks and open space over the 20-year planning period consistent with the land need requirements of Goal 14 and this rule. The 20-year need determinations are estimates which, although based on the best available information and methodologies, should not be held to an unreasonably high level of precision. Local governments in Crook, Deschutes or Jefferson Counties may determine the need for Regional Large-Lot Industrial Land by following the provisions of OAR 660-024-0045 for areas subject to that rule.
- (2) If the UGB analysis or amendment is conducted as part of a periodic review work program, the 20-year planning period must commence on the date initially scheduled for completion of the appropriate work task. If the UGB analysis or amendment is conducted as part of a sequential UGB approval, the 20-year planning period will be established in the work program issued pursuant to OAR 660-025-0185. If the UGB analysis or amendment is conducted as a post-acknowledgement plan amendment under ORS 197.610 to 197.625, the 20-year planning period must commence either:

- (a) On the date initially scheduled for final adoption of the amendment specified by the local government in the initial notice of the amendment required by OAR 660-018-0020; or
  - (b) If more recent than the date determined in subsection (a), at the beginning of the 20-year period specified in the appropriate coordinated population forecast for the urban area as determined under rules in OAR chapter 660, division 32, unless ORS 197.296 requires a different date for local governments subject to that statute.
- (3) A local government may review and amend the UGB in consideration of one category of land need (for example, housing need) without a simultaneous review and amendment in consideration of other categories of land need (for example, employment need).
- (4) The determination of 20-year residential land needs for an urban area must be consistent with the appropriate 20-year coordinated population forecast for the urban area determined under rules in OAR chapter 660, division 32, and with the requirements for determining housing needs in Goals 10 and 14, OAR chapter 660, division 7 or 8, and applicable provisions of ORS 197.295 to 197.314 and 197.475 to 197.490.

**Applicant's Finding:** OAR 660-024-0070(3) allows a local government considering an exchange of land to rely on the land needs analysis that provided a basis for its current acknowledged plan, rather than adopting a new need analysis, provided that the buildable land added to the UGB provides a specific type of residential need substantially equivalent to the amount of buildable land removed and that the land added to the UGB is designated for the same residential uses and housing density as the land removed from the UGB.

As detailed later in this narrative, the inclusion of Site A meets these requirements; therefore, the City may utilize its current 20-year population forecast and housing needs analysis for the purposes of this UGB Adjustment.

- (5) Except for a metropolitan service district described in ORS 197.015(13), the determination of 20-year employment land need for an urban area must comply with applicable requirements of Goal 9 and OAR chapter 660, division 9, and must include a determination of the need for a short-term supply of land for employment uses consistent with OAR 660-009-0025. Employment land need may be based on an estimate of job growth over the planning period; local government must provide a reasonable justification for the job growth estimate but Goal 14 does not require that job growth estimates necessarily be proportional to population growth. Local governments in Crook, Deschutes or Jefferson Counties may determine the need for Regional Large-Lot Industrial Land by following the provisions of OAR 660-024-0045 for areas subject to that rule.
- (6) Cities and counties may jointly conduct a coordinated regional EOA for more than one city in the county or for a defined region within one or more counties, in conformance with Goal 9, OAR chapter 660, division 9, and applicable provisions of ORS 195.025. A

defined region may include incorporated and unincorporated areas of one or more counties.

- (7) The determination of 20-year land needs for transportation and public facilities for an urban area must comply with applicable requirements of Goals 11 and 12, rules in OAR chapter 660, divisions 11 and 12, and public facilities requirements in ORS 197.712 and 197.768. The determination of school facility needs must also comply with 195.110 and 197.296 for local governments specified in those statutes.

**Applicant's Finding:** The proposed UGB Adjustment does not propose a change to the amount of employment land or land for transportation and public facilities. Therefore, the requirements of this section do not apply.

- (8) The following safe harbors may be applied by a local government to determine housing need under this division:

- (a) A local government may estimate persons per household for the 20-year planning period using the persons per household for the urban area indicated in the most current data for the urban area published by the U.S. Census Bureau.
- (b) If a local government does not regulate government-assisted housing differently than other housing types, it is not required to estimate the need for government-assisted housing as a separate housing type.
- (c) If a local government allows manufactured homes on individual lots as a permitted use in all residential zones that allow 10 or fewer dwelling units per net buildable acre, it is not necessary to provide an estimate of the need for manufactured dwellings on individual lots.
- (d) If a local government allows manufactured dwelling parks required by ORS 197.475 to 197.490 in all areas planned and zoned for a residential density of six to 12 units per acre, a separate estimate of the need for manufactured dwelling parks is not required.
- (e) A local government outside of the Metro boundary may estimate its housing vacancy rate for the 20-year planning period using the vacancy rate in the most current data published by the U.S. Census Bureau for that urban area that includes the local government.
- (f) A local government outside of the Metro boundary may determine housing needs for purposes of a UGB amendment using the combined Housing Density and Housing Mix safe harbors described in this subsection and in Table 1, or in combination with the Alternative Density safe harbor described under subsection (g) of this section and in Table 2. To meet the Housing Density safe harbor in this subsection, the local government may Assume For UGB Analysis that all buildable land in the urban area, including land added to the UGB, will develop at the applicable average overall density specified in column B of Table 1. Buildable land in the UGB, including land added to the UGB, must also be Zoned to Allow at least the average overall maximum density specified as Zone To Allow in column B of Table 1. Finally, the local

- government must adopt zoning that ensures buildable land in the urban area, including land added to the UGB, cannot develop at an average overall density less than the applicable Required Overall Minimum density specified in column B of Table 1. To meet the Housing Mix safe harbor in this subsection, the local government must Zone to Allow the applicable percentages of low, medium and high density residential specified in column C of Table 1.
- (g) When using the safe harbor in subsection (f), a local government may choose to also use the applicable Alternative Density safe harbors for Small Exception Parcels and High Value Farm Land specified in Table 2. If a local government chooses to use the Alternative Density safe harbors described in Table 2, it must:
- (A) Apply the applicable Small Exception Parcel density assumption and the High Value Farm Land density assumption measures specified in the table to all buildable land that is within these categories, and
  - (B) Apply the Housing Density and Mix safe harbors specified in subsection (f) of this section and specified in Table 1 to all buildable land in the urban area that does not consist of Small Exception Parcels or High Value Farm Land.
- (h) As an alternative to the density safe harbors in subsection (f) and, if applicable, subsection (g), of this section, a local government outside of the Metro boundary may assume that the average overall density of buildable residential land in the urban area for the 20-year planning period will increase by 25 percent over the average overall density of developed residential land in the urban area at the time the local government initiated the evaluation or amendment of the UGB. If a local government uses this Incremental Housing Density safe harbor, it must also meet the applicable Zoned to Allow density and Required Overall Minimum density requirements in Column B of Table 1 and, if applicable, Table 2, and must use the Housing Mix safe harbor in Column C of Table 1.
- (i) As an alternative to the Housing Mix safe harbor required in subsection (f) of this section and in Column C of Table 1, a local government outside the Metro boundary that uses the housing density safe harbor in subsection (f), (g) or (h) of this section may estimate housing mix using the Incremental Housing Mix safe harbor described in paragraphs (A) to (C) of this subsection, as illustrated in Table 3:
- (A) Determine the existing percentages of low density, medium density, and high density housing on developed land (not “buildable land”) in the urban area at the time the local government initiated the evaluation or amendment of the UGB;
  - (B) Increase the percentage of medium density housing estimated in paragraph (A) of this subsection by 10 percent, increase the percentage of high density housing estimated in paragraph (A) of this subsection by five percent, as illustrated in Table 3, and decrease the percentage of low density single family housing by a proportionate amount so that the overall mix total is 100 percent, and

- (C) Zone to Allow the resultant housing mix determined under subparagraphs (A) and (B) of this subsection.
- (j) Tables 1, 2 and 3 are adopted as part of this rule, and the following definitions apply to terms used in the tables:
- (A) “Assume For UGB Analysis” means the local government may assume that the UGB will develop over the 20-year planning period at the applicable overall density specified in Column B of Tables 1 and 2.
- (B) “Attached housing” means housing where each unit shares a common wall, ceiling or floor with at least one other unit. “Attached housing” includes, but is not limited to, apartments, condominiums, and common-wall dwellings or row houses where each dwelling unit occupies a separate lot.
- (C) “Average Overall Density” means the average density of all buildable land in the UGB, including buildable land already inside the UGB and buildable land added to the UGB, including land zoned for residential use that is presumed to be needed for schools, parks and other institutional uses.
- (D) “Coordinated 20-year Population Forecast” and “20-year Population Forecast” under Column A of the Tables refers to the appropriate population forecast for the urban area determined under rules in OAR chapter 660, division 32.
- (E) “Density” means the number of dwelling units per net buildable acre.
- (F) “High Value Farm Land” has the same meaning as the term defined in ORS 195.300(10).
- (G) “Required Overall Minimum” means a minimum allowed overall average density, or a “density floor,” that must be ensured in the applicable residential zones with respect to the overall supply of buildable land for that zone in the urban area for the 20-year planning period.
- (H) “Single Family Detached Housing” means a housing unit that is free standing and separate from other housing units, including mobile homes and manufactured dwellings under ORS 197.475 to 197.492.
- (I) “Small Exception Parcel” means a residentially zoned parcel five acres or less with a house on it, located on land that is outside a UGB prior to a proposed UGB expansion, subject to an acknowledged exception to Goal 3 or 4 or both.
- (J) “Zone To Allow” or “Zoned to Allow” means that the comprehensive plan and implementing zoning shall allow the specified housing types and densities under clear and objective standards and other requirements specified in ORS 197.307(4) and (6).

**Applicant’s Finding:** The applicant acknowledges the permitted safe harbors listed above.

- (9) The following safe harbors may be applied by a local government to determine its employment needs for purposes of a UGB amendment under this rule, Goal 9, OAR chapter 660, division 9, Goal 14 and, if applicable, ORS 197.296.

- (a) A local government may estimate that the current number of jobs in the urban area will grow during the 20-year planning period at a rate equal to either:
  - (A) The county or regional job growth rate provided in the most recent forecast published by the Oregon Employment Department; or
  - (B) The population growth rate for the urban area in the appropriate 20-year coordinated population forecast determined under rules in OAR chapter 660, division 32.
- (b) A local government with a population of 10,000 or less may assume that retail and service commercial land needs will grow in direct proportion to the forecasted urban area population growth over the 20-year planning period. This safe harbor may not be used to determine employment land needs for sectors other than retail and service commercial.
- (10) As a safe harbor during periodic review or other legislative review of the UGB, a local government may estimate that the 20-year land needs for streets and roads, parks and school facilities will together require an additional amount of land equal to 25 percent of the net buildable acres determined for residential land needs under section (4) of this rule, and in conformance with the definition of “Net Buildable Acre” as defined in OAR 660-024-0010(6).

**Applicant’s Finding:** The proposed UGB Adjustment does not propose a change to the amount of employment land or land for transportation and public facilities. Therefore, the requirements of this section do not apply.

#### **660-024-0050**

##### **Land Inventory and Response to Deficiency**

- (1) When evaluating or amending a UGB, a local government must inventory land inside the UGB to determine whether there is adequate development capacity to accommodate 20-year needs determined in OAR 660-024-0040. For residential land, the buildable land inventory must include vacant and redevelopable land, and be conducted in accordance with OAR 660-007-0045 or 660-008-0010, whichever is applicable, and ORS 197.296 for local governments subject to that statute. For employment land, the inventory must include suitable vacant and developed land designated for industrial or other employment use, and must be conducted in accordance with OAR 660-009-0015.
- (2) As safe harbors, a local government, except a city with a population over 25,000 or a metropolitan service district described in ORS 197.015(13), may use the following assumptions to inventory the capacity of buildable lands to accommodate housing needs:
  - (a) The infill potential of developed residential lots or parcels of one-half acre or more may be determined by subtracting one-quarter acre (10,890 square feet) for the existing dwelling and assuming that the remainder is buildable land;

- (b) Existing lots of less than one-half acre that are currently occupied by a residence may be assumed to be fully developed.
- (3) As safe harbors when inventorying land to accommodate industrial and other employment needs, a local government may assume that a lot or parcel is vacant if it is:
  - (a) Equal to or larger than one-half acre, if the lot or parcel does not contain a permanent building; or
  - (b) Equal to or larger than five acres, if less than one-half acre of the lot or parcel is occupied by a permanent building.
- (4) If the inventory demonstrates that the development capacity of land inside the UGB is inadequate to accommodate the estimated 20-year needs determined under OAR 660-024-0040, the local government must amend the plan to satisfy the need deficiency, either by increasing the development capacity of land already inside the city or by expanding the UGB, or both, and in accordance with ORS 197.296 where applicable. Prior to expanding the UGB, a local government must demonstrate that the estimated needs cannot reasonably be accommodated on land already inside the UGB. If the local government determines there is a need to expand the UGB, changes to the UGB must be determined by evaluating alternative boundary locations consistent with Goal 14 and applicable rules at OAR 660-024-0060 or 660-024-0065 and 660-024-0067.
- (5) In evaluating an amendment of a UGB submitted under ORS 197.626, the director or the commission may determine that a difference between the estimated 20-year needs determined under OAR 660-024-0040 and the amount of land and development capacity added to the UGB by the submitted amendment is unlikely to significantly affect land supply or resource land protection, and as a result, may determine that the proposed amendment complies with section (4) of this rule.

**Applicant's Finding:** The proposed UGB Adjustment would result in the inclusion of Site A, a 43.4-acre parcel of vacant timber land zoned Timber Conservation (T-C) and the exclusion of Site B, a 71.4 acre parcel of unincorporated lands within the UGB. Site B is zoned for Rural Residential (RR-10) and designated as High Density Residential in the Newport Comprehensive Plan. As the County has no deficiencies of land identified for Timber Conservation, the conversion of these lands to an urban designation will have no net negative impacts.

- (6) When land is added to the UGB, the local government must assign appropriate urban plan designations to the added land, consistent with the need determination and the requirements of section (7) of this rule, if applicable. The local government must also apply appropriate zoning to the added land consistent with the plan designation or may maintain the land as urbanizable land until the land is rezoned for the planned urban uses, either by retaining the zoning that was assigned prior to inclusion in the boundary or by applying other interim zoning that maintains the land's potential for planned urban development. The requirements of ORS 197.296 regarding planning and zoning also apply when local governments specified in that statute add land to the UGB.

- (7) Lands included within a UGB pursuant to OAR 660-024-0065(3) to provide for a particular industrial use, or a particular public facility, must be planned and zoned for the intended use and must remain planned and zoned for that use unless the city removes the land from the UGB.**
- (8) As a safe harbor regarding requirements concerning “efficiency,” a local government that chooses to use the density and mix safe harbors in OAR 660-024-0040(8) is deemed to have met the Goal 14 efficiency requirements under:**
  - (a) Sections (1) and (4) of this rule regarding evaluation of the development capacity of residential land inside the UGB to accommodate the estimated 20-year needs; and**
  - (b) Goal 14 regarding a demonstration that residential needs cannot be reasonably accommodated on residential land already inside the UGB, but not with respect to:**
    - (A) A demonstration that residential needs cannot be reasonably accommodated by rezoning non-residential land, and**
    - (B) Compliance with Goal 14 Boundary Location factors.**

#### **660-024-0070**

##### **UGB Adjustments**

- (1) A local government may adjust the UGB at any time to better achieve the purposes of Goal 14 and this division. Such adjustment may occur by adding or removing land from the UGB, or by exchanging land inside the UGB for land outside the UGB. The requirements of section (2) of this rule apply when removing land from the UGB. The requirements of Goal 14 and this division [and ORS 197.298] apply when land is added to the UGB, including land added in exchange for land removed. The requirements of ORS 197.296 may also apply when land is added to a UGB, as specified in that statute. If a local government exchanges land inside the UGB for land outside the UGB, the applicable local government must adopt appropriate rural zoning designations for the land removed from the UGB prior to or at the time of adoption of the UGB amendment and must apply applicable location and priority provisions of OAR 660-024-0060 through 660-020-0067.**
- (2) A local government may remove land from a UGB following the procedures and requirements of ORS 197.764. Alternatively, a local government may remove land from the UGB following the procedures and requirements of 197.610 to 197.650, provided it determines:**
  - (a) The removal of land would not violate applicable statewide planning goals and rules;**
  - (b) The UGB would provide a 20-year supply of land for estimated needs after the land is removed, or would provide roughly the same supply of buildable land as prior to the removal, taking into consideration land added to the UGB at the same time;**

- (c) **Public facilities agreements adopted under ORS 195.020 do not intend to provide for urban services on the subject land unless the public facilities provider agrees to removal of the land from the UGB and concurrent modification of the agreement;**
- (d) **Removal of the land does not preclude the efficient provision of urban services to any other buildable land that remains inside the UGB; and**
- (e) **The land removed from the UGB is planned and zoned for rural use consistent with all applicable laws.**

**Applicant's Finding:** The applicant proposes a UGB adjustment by exchanging land inside the UGB for land outside the UGB. The proposed exchange would result in the inclusion of a 43.4-acre parcel currently zoned Timber Conservation (Site A) and the exclusion of a 71.4-acre parcel currently zoned Rural Residential (Site B). The removal of Site B follows the procedures and requirements of ORS 197.764 as detailed in this narrative.

Site B is proposed for removal from the UGB. It is currently zoned for rural residential use (RR-10).

The lands proposed for removal from the UGB are located on the southeastern perimeter of the Newport UGB near other undeveloped lands designated for high-density residential use. Due to the parcel's location on the periphery of the UGB and north of a stream and wetland, it is unlikely that the removal of Site B from the UGB will significantly impact the provision of urban services to other buildable lands inside the UGB.

- (3) **Notwithstanding sections (1) and (2) of this rule, a local government considering an exchange of land may rely on the land needs analysis that provided a basis for its current acknowledged plan, rather than adopting a new need analysis, provided:**
  - (a) **The amount of buildable land added to the UGB to meet:**
    - (A) **A specific type of residential need is substantially equivalent to the amount of buildable residential land removed, or**
    - (B) **The amount of employment land added to the UGB to meet an employment need is substantially equivalent to the amount of employment land removed, and**
  - (b) **The local government must apply comprehensive plan designations and, if applicable, urban zoning to the land added to the UGB, such that the land added is designated:**
    - (A) **For the same residential uses and at the same housing density as the land removed from the UGB, or**
    - (B) **For the same employment uses as allowed on the land removed from the UGB, or**
    - (C) **If the land exchange is intended to provide for a particular industrial use that requires specific site characteristics, only land zoned for commercial or industrial use may be removed, and the land added must be zoned for the**

**particular industrial use and meet other applicable requirements of ORS 197A.320(6).**

**Applicant's Finding:**

The proposed site for removal from the UGB (Site B) is approximately 71.4 acres, is currently zoned as RR-10 (Rural Residential) and designated as "High Density Residential" on the Newport Comprehensive Plan Map. The current zoning of Site B is inappropriate for the desired objectives of the Comprehensive Plan Designation.

If incorporated, the designation of Site B as a higher density district (i.e. R-3 or R-4) would be inconsistent with the stated intent of those districts, which contain siting requirements including land that is flat and free of constraints that would inhibit the development of apartments. City staff suggested the land would be zoned R-2 (Medium Density Single-Family Residential) if incorporated into the city, which is more consistent with the stated intent of that district to provide for smaller lot size residential development that serves as a transitional area between low density uses and higher density residential districts.

The applicant anticipates the eventual designation for Site A with a "High Density Residential" Comprehensive Plan designation and R-4 Zoning Designation. Site A is approximately 28-acres smaller than Site B, but the current Housing Element of the Newport Comprehensive Plan indicates that the city has a 730-acre surplus of High-Density Residential Land. Therefore, while the UGB Adjustment will result in a gross acreage loss of 28-acres, this will not significantly impact the overall supply of land. Furthermore, the inclusion of Site A into the UGB will go further towards providing needed housing to Newport residents by providing lands that are more easily served by public facilities, closer to existing residential development, and closer to existing employment centers.

To confirm that the proposed UGB Adjustment will not result in a substantial change in developable acreage, the applicant conducted an analysis of buildable lands (Attachment E) on Site B. In order to accurately determine the buildable acreage of Site B, the applicant excluded the following lands from the total buildable acreage:

- Wetlands identified on local or national wetland inventories
- Slopes exceeding twenty five percent
  - Slopes between ten and twenty five percent are considered "partially constrained" and are assumed at full buildout in these calculations.
- Areas within fifty feet of an identified stream
- Otherwise developable areas that are surrounded by constrained areas which prevent the adequate provision of public facilities and services

Through this analysis, the applicant determined that approximately 23.2 acres are developable with minimal constraints, 33.0 acres are constrained via the exclusion criteria listed above, and the remaining 15.2 acres are partially constrained by moderate slopes.

The R-4 zone permits the development of single-family detached dwellings at a net density of 5,000 sq. ft. per unit. Assuming net developable acreage equal to 80% of gross acreage, Site B could accommodate a total of 162 unit on the unconstrained portion of the site. Assuming the full buildout of areas with partial constraints due to slopes between ten and twenty five percent, Site B could accommodate an additional 105 units, for a grand total of 267 units.

As shown on the attached Site Plan for Site A (Attachment E), the applicant proposes the construction approximately 200 single family homes, which is substantially equivalent to the estimated buildout of Site B.

#### **660-024-0080**

##### **LCDC Review Required for UGB Amendments**

**A metropolitan service district that amends its UGB to include more than 100 acres, or a city with a population of 2,500 or more within its UGB that amends the UGB to include more than 50 acres shall submit the amendment to the Commission in the manner provided for periodic review under ORS 197.628 to 197.650 and OAR 660-025-0175.**

**Applicant's Finding:** The proposed UGB adjustment will include an additional 43.4-acres to the UGB. Therefore, the requirements for this section do not apply, and the reviewing body will be the Department of Land Conservation and Development (LCDC).

#### **OREGON REVISED STATUTES**

##### **197.298 Priority of land to be included within urban growth boundary.**

- (1) In addition to any requirements established by rule addressing urbanization, land may not be included within an urban growth boundary of Metro except under the following priorities:**
  - (a) First priority is land that is designated urban reserve land under ORS 195.145, rule or metropolitan service district action plan.**
  - (b) If land under paragraph (a) of this subsection is inadequate to accommodate the amount of land needed, second priority is land adjacent to an urban growth boundary that is identified in an acknowledged comprehensive plan as an exception area or nonresource land. Second priority may include resource land that is completely surrounded by exception areas unless such resource land is high-value farmland as described in ORS 215.710.**
  - (c) If land under paragraphs (a) and (b) of this subsection is inadequate to accommodate the amount of land needed, third priority is land designated as marginal land pursuant to ORS 197.247 (1991 Edition).**
  - (d) If land under paragraphs (a) to (c) of this subsection is inadequate to accommodate the amount of land needed, fourth priority is land designated in an acknowledged comprehensive plan for agriculture or forestry, or both.**
- (2) Higher priority shall be given to land of lower capability as measured by the capability classification system or by cubic foot site class, whichever is appropriate for the current use.**

- (3) Land of lower priority under subsection (1) of this section may be included in an urban growth boundary if land of higher priority is found to be inadequate to accommodate the amount of land estimated in subsection (1) of this section for one or more of the following reasons:
- (a) Specific types of identified land needs cannot be reasonably accommodated on higher priority lands;
  - (b) Future urban services could not reasonably be provided to the higher priority lands due to topographical or other physical constraints; or
  - (c) Maximum efficiency of land uses within a proposed urban growth boundary requires inclusion of lower priority lands in order to include or to provide services to higher priority lands.
- (4) When a city includes land within the urban growth boundary of the city pursuant to ORS 197.295 to 197.314, the city shall prioritize lands for inclusion as provided in ORS 197A.320.

**Applicant's Finding:** UGB adjustments must comply with applicable local criteria as outlined in the City of Newport Comprehensive Plan and Development Code.

The process for expanding the UGB has been described under Policy 4 (Urbanization) of the Newport Comprehensive Plan. Newport categorizes UGB Amendments as minor or major. The City and County Planning Director are responsible for assigning a designation to the proposed application. The City and County have categorized the proposed adjustment as a minor UGB Amendment.

The proposed UGB adjustment and comprehensive plan map amendment has been initiated by the property owners of each parcel. Consistent with Statewide Planning Goal 14 and Policy 4.4 of the Newport Comprehensive Plan, both the city and county governing bodies are required to hold public hearings, and both must agree for an amendment to become final.

Chapter 8 of the Newport Comprehensive Plan specifies three types of procedures for map amendments. The proposed amendment is considered a "minor" amendment. Findings related to local policy are similar to those required for Goal 14 and are addressed in this land use narrative.

The Urbanization Element requires that changes to the Comprehensive Plan map shall be considered by Planning Commission and City Council at public hearings. Notices and other procedural requirements shall be made in accordance with Section 2-6-1 of the Newport Zoning Ordinance. The Urbanization Element also requires findings of fact be developed in support of the decision and outlines the requirements for findings.

**197.626 Submission of land use decisions that expand urban growth boundary or designate urban or rural reserves.**

- (1) A local government shall submit for review and the Land Conservation and Development Commission shall review the following final land use decisions in the

manner provided for review of a work task under ORS 197.633 and subject to subsection (3) of this section:

- (a) An amendment of an urban growth boundary by a metropolitan service district that adds more than 100 acres to the area within its urban growth boundary;
- (b) An amendment of an urban growth boundary by a city with a population of 2,500 or more within its urban growth boundary that adds more than 50 acres to the area within the urban growth boundary;
- (c) A designation of an area as an urban reserve under ORS 195.137 to 195.145 by a metropolitan service district or by a city with a population of 2,500 or more within its urban growth boundary;
- (d) An amendment of the boundary of an urban reserve by a metropolitan service district;
- (e) An amendment of the boundary of an urban reserve to add more than 50 acres to the urban reserve by a city with a population of 2,500 or more within its urban growth boundary; and
- (f) A designation or an amendment to the designation of a rural reserve under ORS 195.137 to 195.145 by a county, in coordination with a metropolitan service district, and the amendment of the designation.

**Applicant's Finding:** The proposed UGB amendment will not result in an addition to the UGB exceeding 100 acres. Therefore, the requirements of this section do not apply.

#### **197.764 Application to remove property from within urban growth boundary**

1) A local government may approve an application to remove a lot or parcel from within an urban growth boundary if:

a) The application is submitted by the owner of the lot or parcel;

**Applicant's Finding:** The proposed UGB Adjustment application has been initiated by both property owners of Sites A and B. The requirements of this section are met.

b)

A) The lot or parcel is adjacent to the edge of the urban growth boundary; or

B) The lot or parcel is adjacent to another lot or parcel that is removed under this section;

**Applicant's Finding:** Site B, the parcel proposed for removal from the urban growth boundary, is located at the edge of the existing urban growth boundary. The requirements of this section are met.

c) The lot or parcel is assessed under ORS 308A.050 (Legislative intent) to 308A.128 (Certain district assessments inapplicable to exclusive farm use zone farmland) for its value for farm use;

**Applicant's Finding:** Neither parcel has been assessed under ORS 308A.050 to 308A.128.

**d) The lot or parcel is not within the boundaries of a city; and**

**Applicant's Finding:** The parcel proposed for removal is not located within the Newport City Limits. The requirements of this section are met.

**e) The lot or parcel is not included in an area identified for urban services under ORS 197.754 (Land identified for urban services).**

**Applicant's Finding:** The parcel proposed for removal is not included in an area identified for urban services. The requirements of this section are met.

**2) A local government, in deciding whether to approve an application under subsection (1) of this section, shall consider:**

**a) The projected costs and other consequences of extending urban services to the affected lot or parcel;**

**Applicant's Finding:** Site B is located at the southeastern periphery of the Newport UGB in the area identified as the "Wolf Tree Destination Resort". While this parcel and much of the surrounding area was designated for High Density Residential use in the Newport Comprehensive Plan, the area remains largely undeveloped and without public facilities and services.

The site has several features that would make the extension of urban services infeasible. Because the site is on the periphery of the UGB and far from developed urban areas, the costs associated with extending these services from the nearest development to the north would be infeasible. Additionally, the site has several geographic constraints to the installation of public facilities, including varying slope and the presence of wetlands and a creek that would greatly increase the costs to serve the parcel.

**b) The potential value in the investment of providing urban services to the affected lot or parcel;**

**Applicant's Finding:** The southern portion of the UGB designated for High Density Residential use remains largely undeveloped today due to the costs associated with providing urban services to the area as well as the area's location far from services, retail, and transportation linkages. This issue is identified in the Housing element of the Newport Comprehensive Plan.

**c) Any requirement for expanding the urban growth boundary in other areas to compensate for any loss in buildable lands; and**

**Applicant's Finding:** To confirm that the proposed UGB Adjustment will not result in a substantial change in developable acreage, the applicant conducted an analysis of buildable lands (Attachment E) on Site B. In order to accurately determine the buildable acreage of Site B, the applicant excluded the following lands from the total buildable acreage:

- Wetlands identified on local or national wetland inventories
- Slopes exceeding twenty five percent

- Slopes between ten and twenty five percent are considered “partially constrained” and are assumed at full buildout in these calculations.
- Areas within fifty feet of an identified stream
- Otherwise developable areas that are surrounded by constrained areas which prevent the adequate provision of public facilities and services

Through this analysis, the applicant determined that approximately 23.2 acres are developable with minimal constraints, 33.0 acres are constrained via the exclusion criteria listed above, and the remaining 15.2 acres are partially constrained by moderate slopes.

The R-4 zone permits the development of single-family detached dwellings at a net density of 5,000 sq. ft. per unit. Assuming net developable acreage equal to 80% of gross acreage, Site B could accommodate a total of 162 unit on the unconstrained portion of the site. Assuming the full buildout of areas with partial constraints due to slopes between ten and twenty five percent, Site B could accommodate an additional 105 units, for a grand total of 267 units.

As shown on the attached Site Plan for Site A (Attachment E), the applicant proposes the construction of 200 units, which is substantially equivalent to the estimated buildout of Site B.

**d) The projected costs and other consequences of providing urban services to other areas brought in under an expanded urban growth boundary.**

**Applicant's Finding:** The costs associated with the development of both properties is likely to be extremely similar. Both properties will require the extension of urban services, new roadways, and franchise utilities to be delivered.

3)

**a) Land that is removed from within an urban growth boundary pursuant to an application approved under this section shall be removed from any inventory of buildable lands maintained by the local government.**

**Applicant's Finding:** The inventory of buildable lands maintained by the City of Newport will be revised to reflect the changes associated with the proposed UGB Adjustment. The requirements of this section are met.

**b) A local government that approves an application under this section shall either expand the urban growth boundary to compensate for any resulting reduction in available buildable lands or increase the development capacity of the remaining supply of buildable lands. [1999 c.503 §1; 2001 c.104 §70]**

**Applicant's Finding:** The reduction in buildable lands from the removal of Site B from the UGB will be offset by the buildable land brought into the UGB via the inclusion of Site A. While these two lands share different acreages and Comprehensive Plan designations, they would produce a similar type and quantity of residential dwellings.

Site B is currently zoned for rural residential use (RR-10), but designated for High Density Residential Use in the Newport Comprehensive Plan. If incorporated, it is unlikely that the site would be assigned either a Medium Density Multi-Family Residential (R-3) or High Density Multi-Family Residential (R-4) zoning designation due to their siting criteria. Specifically, the stated intent of these zones outline the following:

*R-3/"Medium Density Multi-Family Residential." This district is intended for medium density multi-family residential development. It is planned for areas that are able to accommodate the development of apartments. New R-3 zones should be near major streets, on relatively flat land, and near community or neighborhood activity centers.*

*R-4/"High Density Multi-Family Residential." This district is intended to provide for high density multi-family residential and some limited commercial development. New R-4 zones should be on major streets, on relatively flat land, and near commercial centers.*

Multifamily development would face significant challenges on Site B due to the steep slopes and topography of the site. City staff has suggested the land would be zoned High Density Single-Family Residential (R-4) with a stated intent to serve as a transitional area between low density and higher density residential districts. Based on the 2011 housing needs assessment ECONorthwest completed for the City in 2011, R-4 would be the appropriate zoning for Site B.

Therefore, the anticipated zone of Site B would be identical to the anticipated zoning for Site A and the anticipated scopes of development would be the similar in yield and impact.

Another potential concern is regarding the imbalance of acreage between the two sites. The applicant has provided an analysis in this narrative comparing the expected net density of each site confirming that each parcel would produce a substantially similar number of dwellings.

## **NEWPORT COMPREHENSIVE PLAN**

### **URBANIZATION GOALS, POLICIES, AND IMPLEMENTATION MEASURES**

**Goal: To promote the orderly and efficient expansion of Newport's city limits.**

**Policy 4: The development of land in the urban area shall conform to the plans, policies, and ordinances of the City of Newport.**

**Implementation Measure 4b: Amendments to UGB Boundaries or Policies. This subsection delineates the procedure for joint city and county review of amendments to the urban growth boundary or urbanization policies as the need arises.**

#### **1) Major Amendments:**

- a) Any UGB change that has widespread and significant influence beyond the immediate area. Examples include:**

- (1) Quantitative changes that allow for substantial changes in the population or development density.
- (2) Qualitative changes in the land use, such as residential to commercial or industrial.
- (3) Changes that affect large areas or many different ownerships.
- b) A change in any urbanization policy.
- 2) **Minor Boundary Line Adjustments:** The city and county may consider minor adjustments to the UGB using procedures similar to a zone change. Minor adjustments focus on specific, small properties not having significant impact beyond the immediate area.

**Applicant's Finding:** The proposed amendment is considered a "minor" amendment. Findings related to local policy are similar to those required for Goal 14 and are addressed in this section.

- 3) **Determination of Major and Minor Amendments:** The planning directors for the city and county shall determine whether or not a change is a minor or major amendment. If they cannot agree, the planning commissions for the city and county shall rule on the matter. The request shall be considered a major amendment if the planning commissions cannot agree.

**Applicant's Finding:** The applicant acknowledges the authority of the city and county planning directors and commissions to determine whether a change is a minor or major amendment.

- 4) **Initiation, Application, and Procedure:** Individual or groups of property owners, agencies that are affected, the planning commissions, or the city or county governing bodies may initiate amendments. Applicants for changes are responsible for completing the necessary application and preparing and Submitting the applicable findings with the application. The planning commissions for the city and county shall review the request and forward recommendations to the Newport City Council and the Lincoln County Board of Commissioners. The city and county governing bodies shall hold public hearings on the request. Amendments become final only if both bodies approve the request.

**Applicant's Finding:** The purpose of this application is to provide all necessary information and findings for the approval of the proposed UGB Adjustment. The requirement of this section is met.

- 5) **Findings shall address the following:**
  - a) **Land Need:** Establishment and change of urban growth boundaries shall be based on the following:
    - (1) **Demonstrated need to accommodate long range urban population, consistent with a 20-year population forecast coordinated with affected local governments; and**

**Applicant's Finding:** As discussed in greater detail under Goal 14 of this narrative, the proposed UGB Adjustment will serve an estimated population over the planning period specified in the City's housing element of the Comprehensive Plan by providing needed housing.

**(2) Demonstrated need for housing, employment opportunities, livability or uses such as public facilities, streets and roads, schools, parks and open space, or any combination of the need categories in this subsection;**

**Applicant's Finding:** The proposed inclusion of Site A into the UGB, eventual designation as high density residential (R-4), and subsequent development of housing on this site provides an effective response to the regional issue of limited housing supply and increasing housing costs affecting the City of Newport and Lincoln County. According to the 2013-2017 American Community Survey, median monthly housing costs total \$869 and 37.5% of households pay 30 percent or more of their household income in housing costs. Among households with a mortgage, 33.4% have household costs exceeding 35 percent of their household income. Compounding this issue is the prevalence of housing units that are utilized as second homes or vacation homes. The vacancy rate of households in Newport is 21 percent, suggesting a large proportion of needed housing to serve Newport residents are owned by non-residents. This further constrains supply and exacerbates the affordability crisis Newport faces.

The full development of Site A with housing, while not fully meeting the affordability need of the City, will provide critical housing supply that will ultimately reduce the average cost of homes in the region and provide more affordable options for Newport residents.

**b) Boundary Location: The location of the urban growth boundary and changes to the boundary shall be determined by evaluating alternative boundary locations consistent with ORS 197.298 and with consideration of the following factors:**

**(1) Efficient accommodation of identified land needs;**

**Applicant's Finding:** The inclusion of Site A would provide a large site that has minimal development constraints, is easily serviceable by existing public facilities and services, and is located near existing development and economic opportunities in Newport. Additionally, because the site is not currently parcelized, the associated return on investment for the development of the tract is much greater than alternative locations, making development significantly more likely in the near future than sites with high parcelization. The full development of Site A with housing, while not fully meeting the affordability need of the City, will provide critical housing supply that will ultimately reduce the average cost of homes in the region and provide more affordable options for Newport residents. Additionally, the provision of housing near existing transportation networks and development provide communities better access to employment and educational opportunities and more efficient provision of transportation facilities and utilities.

## **(2) Orderly and economic provision of public facilities and services;**

**Applicant's Finding:** The proposed UGB Adjustment would provide for a more orderly and economic provision of public facilities and services in comparison to existing conditions. Site A is located at the periphery of the Newport UGB and City Limits. The site is currently adjacent to a developed collector, NE Harney Street, and it is located to adjacent development.

### *Transportation*

Site A is currently adjacent to a developed collector, NE Harney Street, and it is located adjacent to existing development. According to the attached Transportation Impact Analysis (Attachment D), the proposed amendment to the City's UGB and affiliated comprehensive plan/zone designation for the 43.4-acre site has the potential to create a significant effect on the surrounding transportation network. However, acceptable operational levels can be achieved at the study intersections in the planning horizon year 2039 with the implementation of improvements identified in the TIA.

#### Capacity of existing facilities to serve areas already inside the UGB

Operational analyses outlined in the Traffic Impact Analysis (Attachment D) indicate that all of the study intersections currently operate at acceptable mobility targets with the exception of the US 101/NE 20th Avenue intersection. During the weekday PM peak hour, this intersection operates at a volume-to-capacity ratio of 0.84 which is above the 0.80 mobility target.

#### Capacity of existing facilities to serve areas proposed for addition to the UGB

The attached TIA estimates background traffic volumes for the 2039 planning horizon year using an 1% annual growth rate to reflect anticipated regional traffic growth along the US 101 corridor. With the proposed UGB adjustment, assuming that the 43.4-acre site is zoned under the City of Newport's R-4 High Density Single Family Residential zone, the TIA determined the site could support up to 200 single family homes in a reasonable worst-case scenario. This has the potential to generate approximately 1,968 net new daily trips, 147 net new AM peak hour trips, and 198 net new PM peak hour trips.

#### Impacts to existing facilities that serve nearby areas already inside the UGB

Operations of the study intersections under the 2039 R-4 High Density Single Family Residential zoning scenario found that all of the US 101 study intersections are forecast to exceed their respective mobility targets. The Application proposes to leave the existing zoning in place until the property is annexed to the City. Therefore, pursuant to OAR 660-024-0020(1)(d), the Application does not address OAR 660-012-0060, the TPR. The applicant will demonstrate compliance with the TPR when it proposes urban zoning on the property added to the UGB.

## *Water*

According to a City map of existing water services in Newport, a 12-inch water main runs along NE Harney Street as well as two hydrants located along this main adjacent to Site A. This would allow for the extension of water service to the parcel once it develops.

### Capacity of existing facilities to serve areas already inside the UGB

Sections 5 and 6 of the 2008 Newport Water System Master Plan describe the existing water system and water demand. The City holds water rights allowing for a maximum of 19.24 cfs from six streams, but can only utilize 16.54 cfs from three due to location constraints. The City stores water from these streams in the Big Creek reservoir to draw from during the dry and high-water-demand summer months. The plan estimates that the average monthly water consumption for a typical dwelling ranges between 3,695 gallons in winter months to 6,270 gallons in summer months with an average demand of 4,600 gallons per month. During the summer months, the maximum daily demand (MDD) can reach a total 6.27 cfs, but the average daily demand (ADD) throughout the year is 3.33 cfs. In instances where the City's demand exceeded water available from streams, supply drew from the Big Creek reservoir to meet demand.

The plan projects this demand to increase to a MDD 8.99 cfs and an ADD of 4.72 cfs by 2030. Based on the capacity of the Big Creek reservoir during its driest year on record, it is possible to support the anticipated maximum demand in 2030 by diverting water from the Siletz River to recharge the reservoir, but following that, the City will need to consider alternatives to provide sufficient water supply. The Capital Improvement Plan (Section 9) identifies a \$12 million upgrade to the existing Big Creek Water Treatment Plant that will allow for the sufficient accommodation of water needs as development continues.

### Capacity of existing facilities to serve areas proposed for addition to the UGB

Assuming the average monthly water consumption outlined in the Newport Water System Master Plan, the inclusion of Site A into the UGB and development could result in a total increase in water demand of 1,254,000 gallons per month (0.06 cfs) during peak months and 920,000 gallons per month (0.05 cfs) on average. While significant, the capacity to serve Site A currently exists, and the Capital Improvement Plan identifies improvements that will ensure the adequate provision of water well into the future. Therefore, with the provision of appropriate system development charges and water line extension, the existing water system will be able to accommodate the full buildout of Site A.

### Impacts to existing facilities that serve nearby areas already inside the UGB

Linking to the existing 12-inch water main along NE Harney Street will result in additional water demand on the pipe and local distribution network. Any significant

demands upon the City's existing water network can be addressed by the developer at the time of development.

#### *Sanitary Sewer*

The City recently updated their Sanitary Sewer Master Plan (SSMP) in order to update wastewater elements of the Comprehensive Plan and develop a priority for capital improvement projects. According to the SSMP dated February 9, 2018, there is a gravity sewer extending to the northwest corner of Site A, which would allow for the extension of sanitary sewer to Site A once it develops. The line was constructed circa 1990 and is composed of Polyvinyl Chloride (PVC). This gravity main connects to a Vance Avery Wastewater Treatment Facility located in South Beach.

#### Capacity of existing facilities to serve areas already inside the UGB

The City provides sanitary sewer collection system services to approximately 10,000 people spread across an area of approximately 11.2 square miles. The City oversees over 62 miles of gravity pipelines ranging in size from approximately 3 to 36 inches in diameter, 1,400 manholes, 9 major pump stations, 16 minor pump stations, and 12 miles of sanitary force mains. The plan identifies minor deficiencies in the sanitary sewer system, but provides a series of recommended improvements prioritized by assessed risk of overflow to ensure that there will be sufficient capacity to accommodate new development.

#### Capacity of existing facilities to serve areas proposed for addition to the UGB

The Master Plan models buildout scenarios over a 20-year period to identify possible surcharging and flooding during large storm events (i.e. a 1-in-10 year storm). The plan uses these scenarios to provide recommended improvements to ensure the existing system will be able to accommodate new development as it occurs, prioritizing the most critical facilities for improvement. Therefore, with the provision of appropriate system development charges and sanitary sewer extension, the existing sanitary sewer system will be able to accommodate the full buildout of Site A.

#### Impacts to existing facilities that serve nearby areas already inside the UGB

### **(3) Comparative environmental, energy, economic, and social consequences; and** **Applicant's Finding:**

#### *Economic*

As discussed earlier in this analysis, the full development of Site A with housing will provide critical housing supply that will ultimately reduce the average cost of homes in the region and provide more affordable options for Newport residents. Additionally, the provision of housing near existing transportation networks and development provide communities better access to employment and educational opportunities and more efficient provision of transportation facilities and utilities.

While a T-C designation on Site A will result in the preservation of resource land, the R-4 land use provides a greater economic benefit to the community through increased housing options, and the loss of resource land will be offset through the movement of Site B out of the urban growth boundary. The proposed adjustment and future use promote more efficient and coordinated use of land and minimizes urban sprawl.

### *Social*

There are developed neighborhoods to the north and the west of Site A, and the development of housing on what was originally resource land would result in a change of character for existing residents, most notably a loss of rural lifestyle or low-density residential development. Additionally, forest and natural areas can provide people with access to nature and stress relief, though the anticipated loss would be minimal in this case as this land is managed forest with no public access.

There is the potential to dedicate future park space and scenic areas as development occurs. Specifically, in areas that have topographical constraints that make development infeasible, dedicated natural open space and scenic vistas can be provided to serve as an essential resource to Newport communities. Additionally, the provision of trails connecting to the existing Ocean to Bay Trail network to the southwest could mitigate loss of forested area by providing access to nature and other recreational amenities to Newport residents.

### *Environmental*

There are no identified wetlands on Site A. However, just south of the parcel is a City designated wetland that extends from the property line to NE Harney Street. The development of Site A could impact this wetland as the increase in impervious surface increases runoff and flow rates downstream.

The development of Site A will require the clearing of trees, which will have associated erosion, air quality, and greenhouse gas impacts. These impacts can be mitigated through the careful provision of open space in areas that are not suitable for development. These areas could be planted with native vegetation and trees that would provide better environmental services than the current timber plantation. This would offset some of the environmental impact associated with the clearing of trees to accommodate development.

Additionally, the exclusion of Site B will offset the development of Site A by precluding development on Site B and preserving the area for forest land uses. Site B is currently included in the UGB and zoned for rural residential development, which would result in much larger development footprints and disturbance to the surrounding area should they be developed. Therefore, the proposed adjustment provides the opportunity to limit the future clearing of trees and sprawling patterns

of development on Site B and provide more compact residential development with a lower environmental footprint per unit through the development of Site A.

### *Energy*

The inclusion of Site A into the UGB is expected to result in new housing replacing areas currently used as timber resource land except where topography constrains development. There is a power transmission line and transformer to the north of Site A, but it is unlikely to be impacted by residential development. Within the site, redevelopment could support as many as 200 dwelling units, which would have an increased energy impact in the form of construction, dwelling unit energy use, and transportation.

There is a bus stop along Hwy 101 that is approximately a ten minute walk from the western periphery of Site A, and an existing Ocean to Bay Trail network that can provide options for non-automobile travel, reducing some of the energy impacts associated with transportation.

#### **(4) Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.**

**Applicant's Finding:** The proximity of single-family dwellings to adjacent forest lands creates the potential for conflict between the two uses in the form of noise, pollution from logging equipment, truck and automobile traffic, and hazards associated with forest lands such as falling or windthrown trees and wildfire. Additionally, the proximity of new housing may present challenges to active forest management if those activities are a nuisance to adjacent uses. The key towards mitigating these conflicts is separation and buffering. The power transmission line located north of Site A provides an excellent buffer area in which felling is less likely to occur to avoid damage to the lines. This allows trees to grow in this buffer, providing additional shielding and impacts associated with forest activity to the north of the power line. In addition to this, Chapter 14.18 requires buffering between residential and non-residential uses, providing an opportunity to increase the separation between residential and forest uses and mitigate potential conflicts.

#### **c) Compliance with applicable Statewide Planning Goals, unless an exception is taken to a particular goal requirement.**

**Applicant's Finding:** As detailed earlier in this narrative, the proposed UGB Adjustment demonstrates substantial compliance with applicable Statewide Planning Goals. The requirement of this section is met.

### **SUMMARY AND CONCLUSION**

Based upon the materials submitted herein, the Applicant respectfully requests approval from the City's Planning Department of this application for an Urban Growth Boundary Adjustment.



## City of Newport Land Use Application

Applicant Name(s):	Property Owner Name(s) <i>if other than applicant</i>
Boston Timber Opportunities, LLC	Contact: Casey Fisher
Applicant Mailing Address:	Property Owner Mailing Address:
17700 SE Mill Plain Blvd, Suite 180	Vancouver, WA 98683
Applicant Phone No.	Property Owner Phone No.
360-260-4594	
Applicant Email	Property Owner Email
cfisher@hnr.org	
Authorized Representative(s): <i>Person authorized to submit and act on this application on applicant's behalf</i>	
3J Consulting, Inc. Contact: Andrew Tull	
Authorized Representative Mailing Address:	
9600 SW Nimbus Ave, Suite 100	
Authorized Representative Telephone No.	
503-545-1907	
Authorized Representative Email. andrew.tull@3j-consulting.com	

### Project Information

Property Location: <i>Street name if address # not assigned</i>	
NE Harney St	
Tax Assessor's Map No.: 10s11w33	Tax Lot(s): 100
Zone Designation: Timber Conservation (T-C)	Legal Description: <i>Add additional sheets if necessary</i>
Comp. Plan Designation: Timber Conservation	Lincoln County
Brief description of Land Use Request(s):	
<i>Examples:</i> 1. Move north property line 5 feet south 2. Variance of 2 feet from the required 15-foot front yard setback	
UGB Amendment to incorporate the subject property (Site A) to the UGB. A currently rural residential parcel (Site B - 12s11w05 801) will be exchanged.	
Existing Structures: if any	
N/A	
Topography and Vegetation:	
Forested	

#### Application Type (please check all that apply)

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Annexation<br><input type="checkbox"/> Appeal<br><input type="checkbox"/> Comp Plan/Map Amendment<br><input type="checkbox"/> Conditional Use Permit<br><input type="checkbox"/> PC<br><input type="checkbox"/> Staff<br><input type="checkbox"/> Design Review<br><input type="checkbox"/> Geologic Permit | <input type="checkbox"/> Interpretation<br><input type="checkbox"/> Minor Replat<br><input type="checkbox"/> Partition<br><input type="checkbox"/> Planned Development<br><input type="checkbox"/> Property Line Adjustment<br><input type="checkbox"/> Shoreland Impact<br><input type="checkbox"/> Subdivision<br><input type="checkbox"/> Temporary Use Permit | <input checked="" type="checkbox"/> UGB Amendment<br><input type="checkbox"/> Vacation<br><input type="checkbox"/> Variance/Adjustment<br><input type="checkbox"/> PC<br><input type="checkbox"/> Staff<br><input type="checkbox"/> Zone Ord/Map<br><input type="checkbox"/> Amendment<br><input type="checkbox"/> Other |
|--|---|--|

#### FOR OFFICE USE ONLY

File No. Assigned:		
Date Received:	Fee Amount:	Date Accepted as Complete:
Received By:	Receipt No.	Accepted By:
City Hall 169, SW Coast Hwy Newport, OR 97365 541.574.0629		



## City of Newport Land Use Application

I understand that I am responsible for addressing the legal criteria relevant to my application and that the burden of proof justifying an approval of my application is with me. I also understand that this responsibility is independent of any opinions expressed in the Community Development and Planning Department Staff Report concerning the applicable criteria.

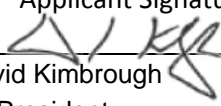
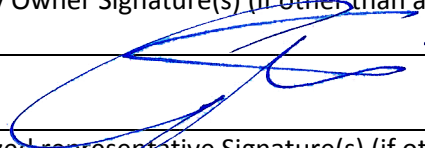
I certify that, to the best of my knowledge, all information provided in this application is accurate.

Boston Timber Opportunities, LLC

By Hancock Natural Resource Group, Inc.

Its Manager

March 20, 2020

Applicant Signature(s)	Date
By: 	
Name: David Kimbrough	
Title: Vice President	
Property Owner Signature(s) (if other than applicant)	Date
	
	3/27/2020
Authorized representative Signature(s) (if other than applicant)	Date

**Please note application will not be accepted without all applicable signatures.**

**Please ask staff for a list of application submittal requirements for your specific type of request.**



# City of Newport Land Use Application

Applicant Name(s):	Property Owner Name(s) <i>if other than applicant</i>
Terrance Lettenmaier	Terrance Lettenmaier
Applicant Mailing Address:	Property Owner Mailing Address:
PO Box 550 South Beach, OR 97366	853 SE 98th St. South Beach, OR 97366
Applicant Phone No.	Property Owner Phone No.
541-961-5833	541-961-5833
Applicant Email	Property Owner Email
lett@peak.org	lett@peak.org
Authorized Representative(s): <i>Person authorized to submit and act on this application on applicant's behalf</i>	
3J Consulting, Inc. Contact: Andrew Tull	
Authorized Representative Mailing Address:	
9600 SW Nimbus Ave, Suite 100	
Authorized Representative Telephone No.	
503-545-1907	
Authorized Representative Email. andrew.tull@3j-consulting.com	

## Project Information

Property Location: <i>Street name if address # not assigned</i>	
853 SE 98th Street	
Tax Assessor's Map No.: 12s11w05	Tax Lot(s): 801
Zone Designation: RR-10	Legal Description: <i>Add additional sheets if necessary</i>
Comp. Plan Designation: High Density Res.	Lincoln County
Brief description of Land Use Request(s):	
<i>Examples:</i> 1. Move north property line 5 feet south 2. Variance of 2 feet from the required 15-foot front yard setback	
UGB Amendment to remove the subject property from the UGB	

Existing Structures: if any

One existing dwelling

Topography and Vegetation:

Forested

## Application Type (please check all that apply)

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Annexation              | <input type="checkbox"/> Interpretation           | <input checked="" type="checkbox"/> UGB Amendment |
| <input type="checkbox"/> Appeal                  | <input type="checkbox"/> Minor Replat             | <input type="checkbox"/> Vacation                 |
| <input type="checkbox"/> Comp Plan/Map Amendment | <input type="checkbox"/> Partition                | <input type="checkbox"/> Variance/Adjustment      |
| <input type="checkbox"/> Conditional Use Permit  | <input type="checkbox"/> Planned Development      | <input type="checkbox"/> PC                       |
| <input type="checkbox"/> PC                      | <input type="checkbox"/> Property Line Adjustment | <input type="checkbox"/> Staff                    |
| <input type="checkbox"/> Staff                   | <input type="checkbox"/> Shoreland Impact         | <input type="checkbox"/> Zone Ord/Map             |
| <input type="checkbox"/> Design Review           | <input type="checkbox"/> Subdivision              | <input type="checkbox"/> Amendment                |
| <input type="checkbox"/> Geologic Permit         | <input type="checkbox"/> Temporary Use Permit     | <input type="checkbox"/> Other                    |

FOR OFFICE USE ONLY

File No. Assigned:

Date Received:	Fee Amount:	Date Accepted as Complete:
Received By:	Receipt No.	Accepted By:

City Hall  
169, SW Coast Hwy  
Newport, OR 97365  
541.574.0629



## City of Newport Land Use Application

I understand that I am responsible for addressing the legal criteria relevant to my application and that the burden of proof justifying an approval of my application is with me. I also understand that this responsibility is independent of any opinions expressed in the Community Development and Planning Department Staff Report concerning the applicable criteria.

I certify that, to the best of my knowledge, all information provided in this application is accurate.



Applicant Signature(s)

March 16, 2020

Date

Property Owner Signature(s) (if other than applicant)

Date



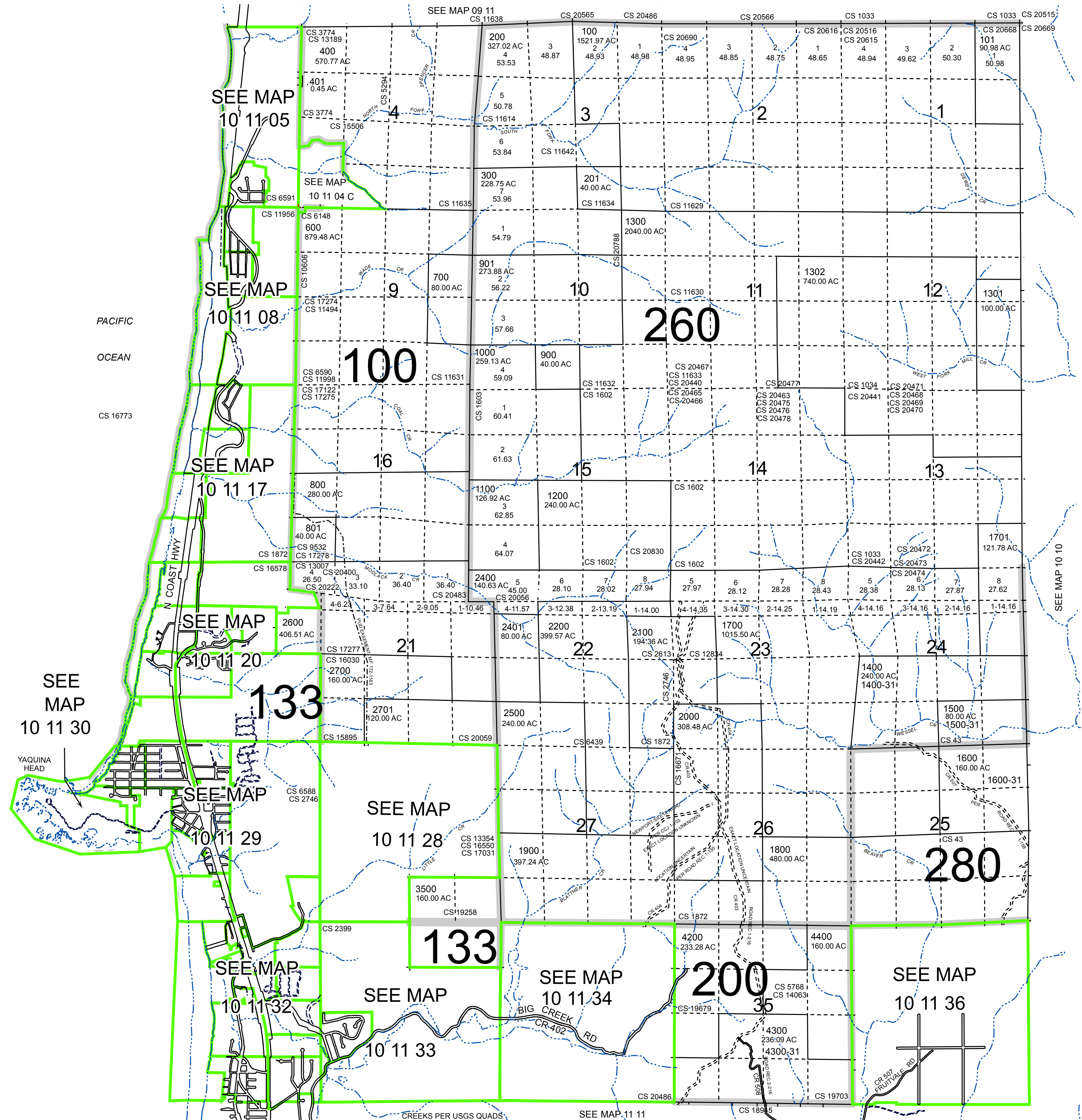
3/27/2020

Authorized representative Signature(s) (if other than applicant)

Date

**Please note application will not be accepted without all applicable signatures.**

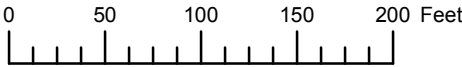
**Please ask staff for a list of application submittal requirements for your specific type of request.**



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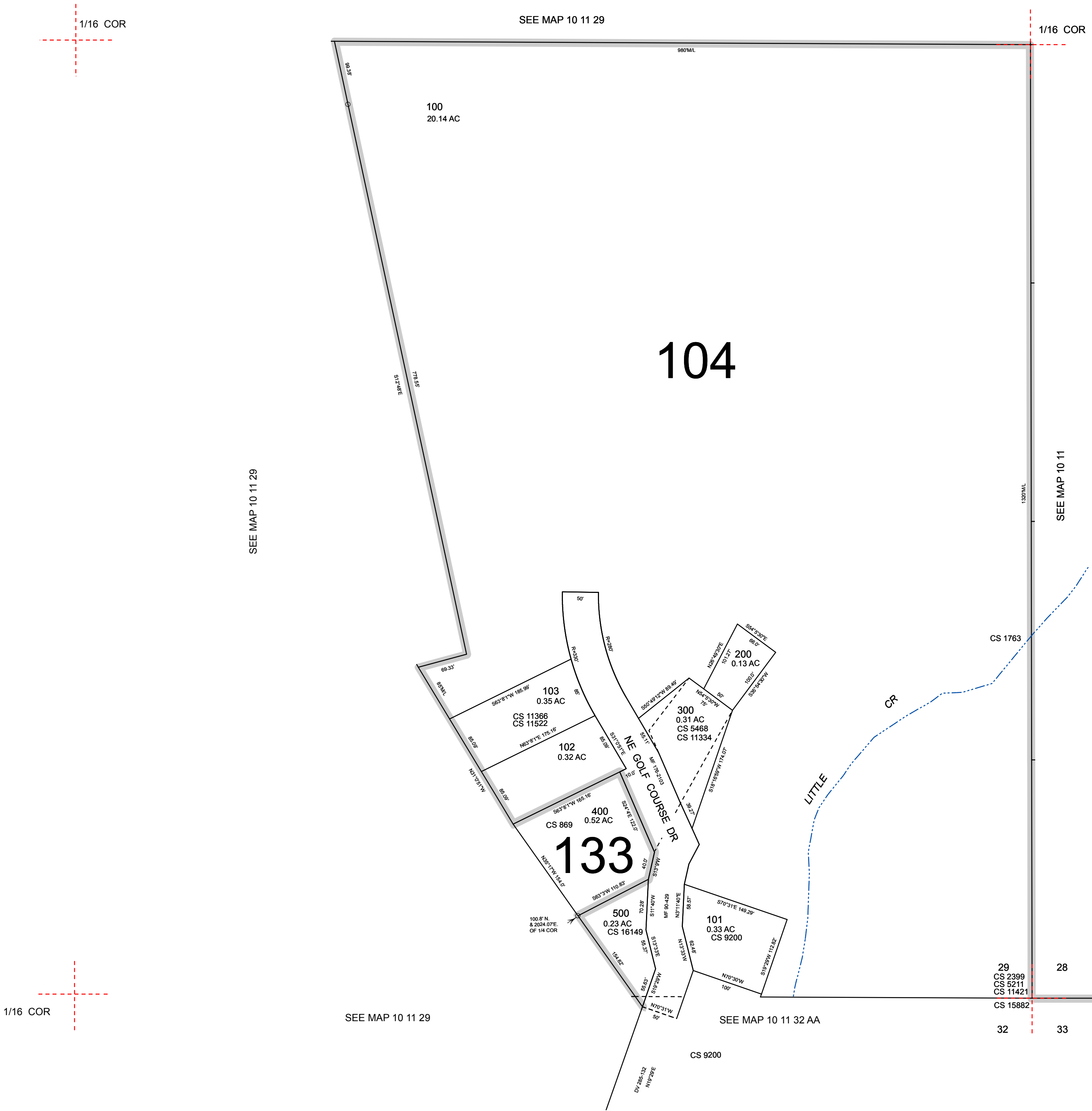
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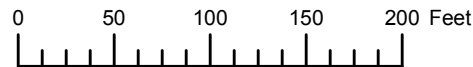


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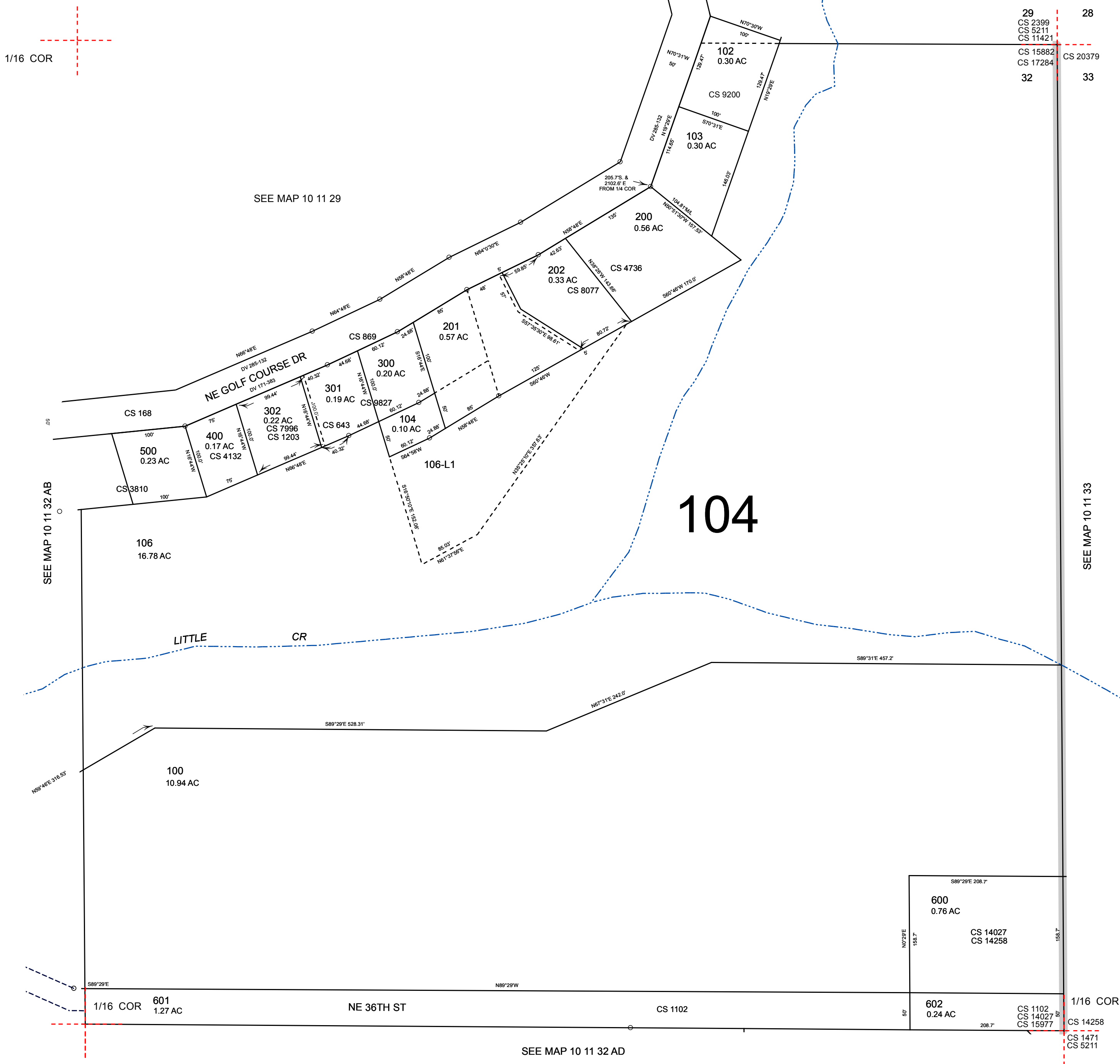
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Revised: SEB  
09/06/2018

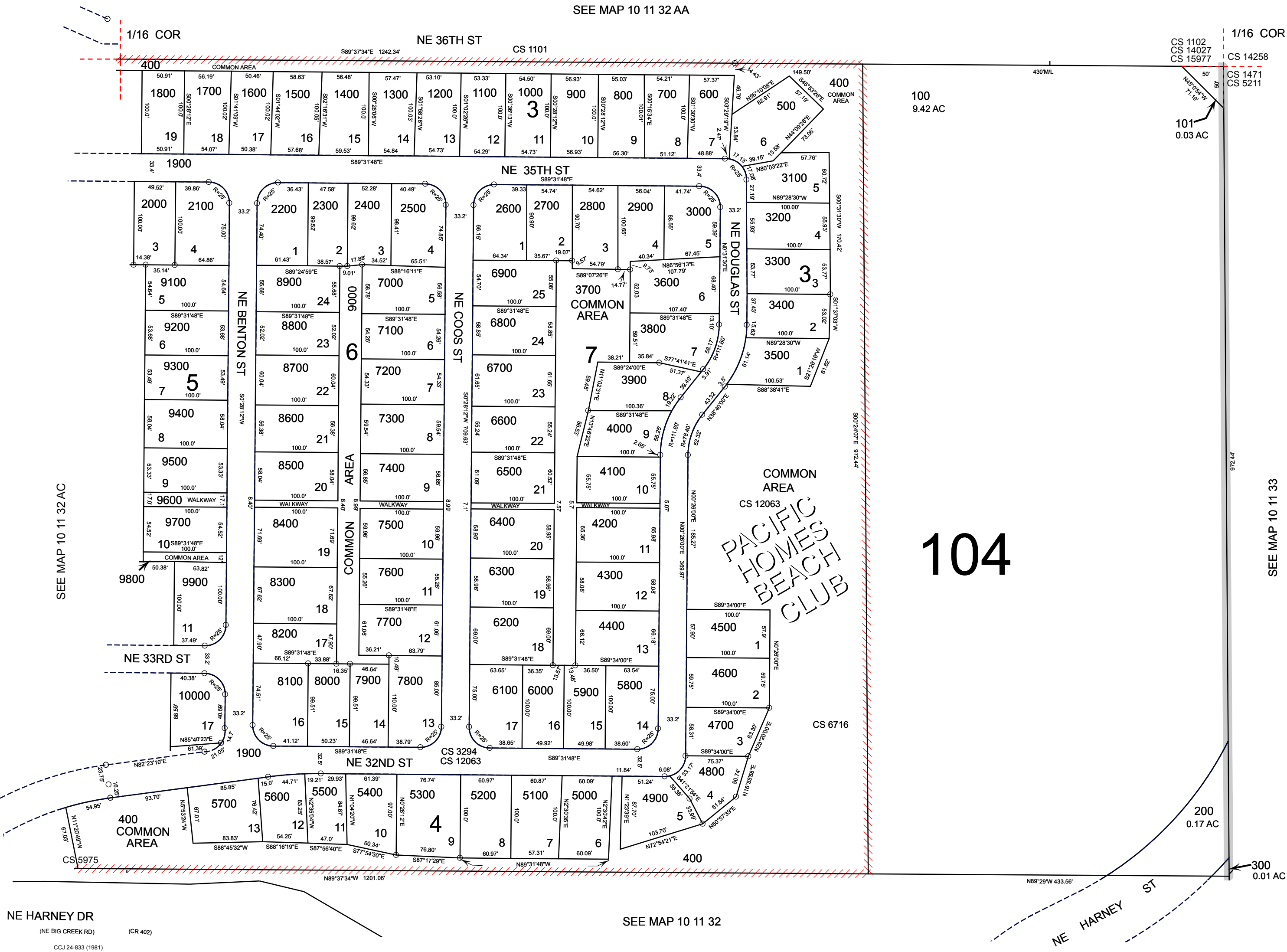
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THIS MAP WAS PREPARED FOR  
ASSESSMENT PURPOSE ONLY

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LINCOLN COUNTY  
1" = 100'

10 11 32 AD  
NEWPORT



Revised: SEB  
09/20/2012

NEWPORT  
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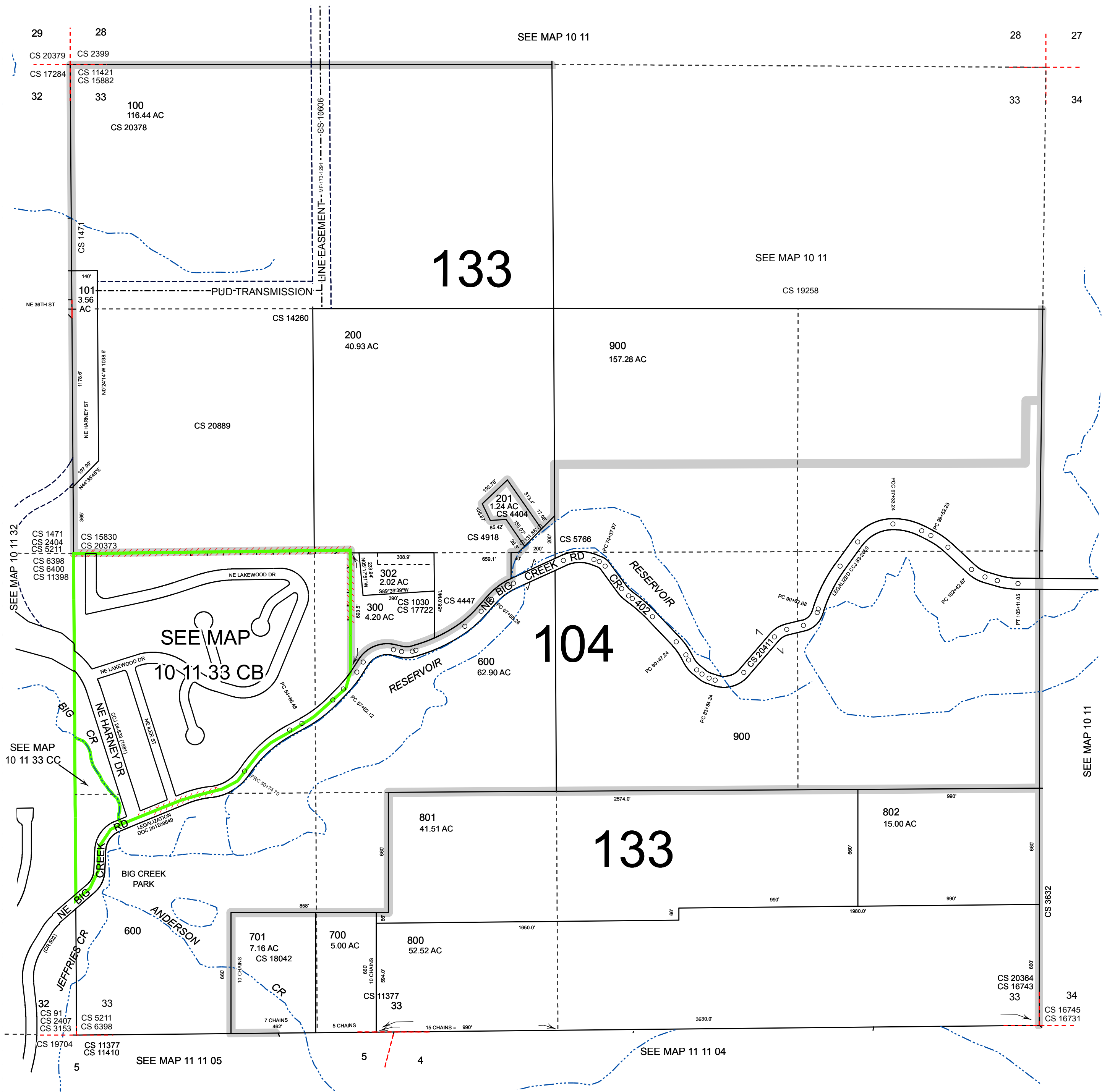
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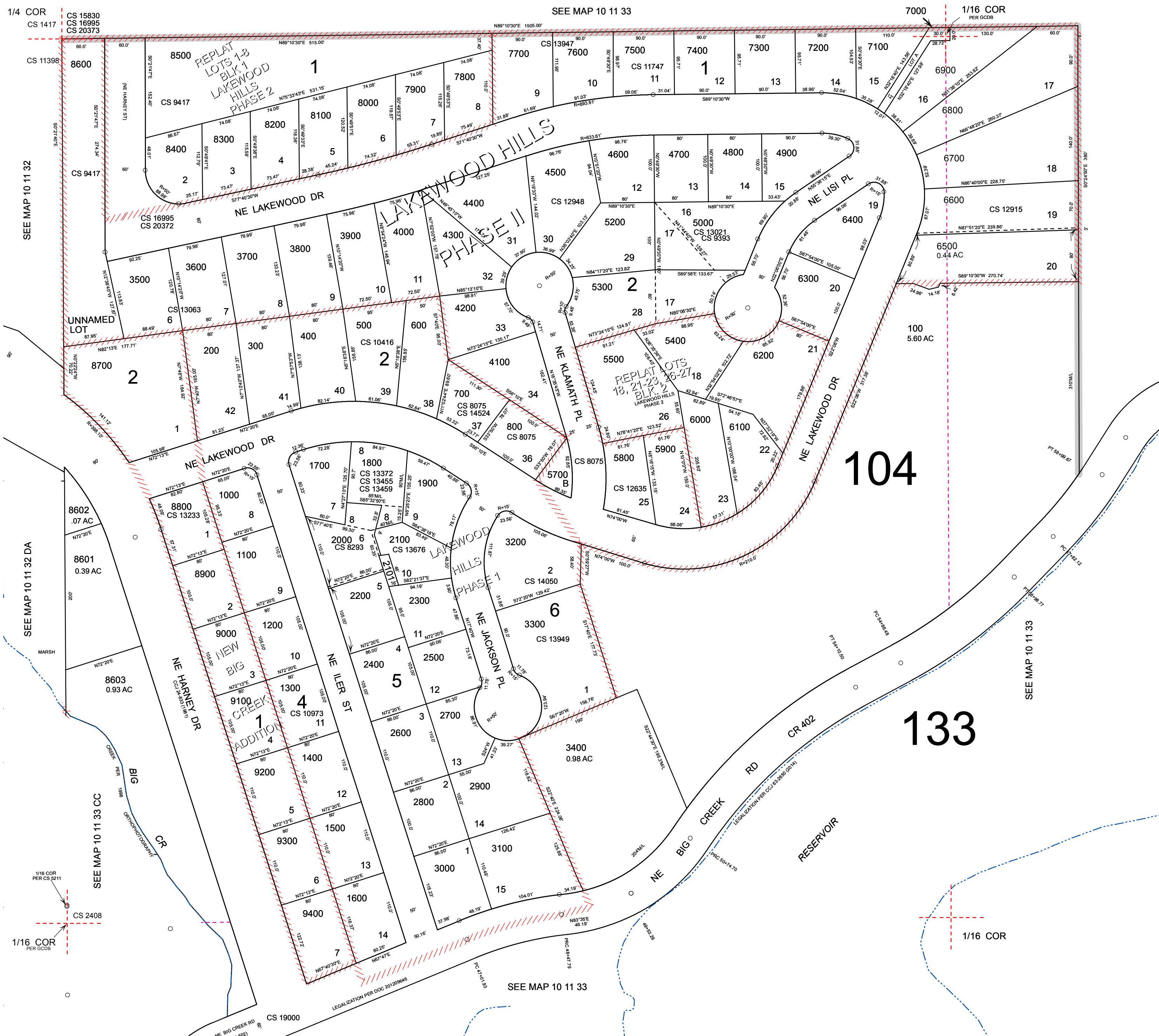
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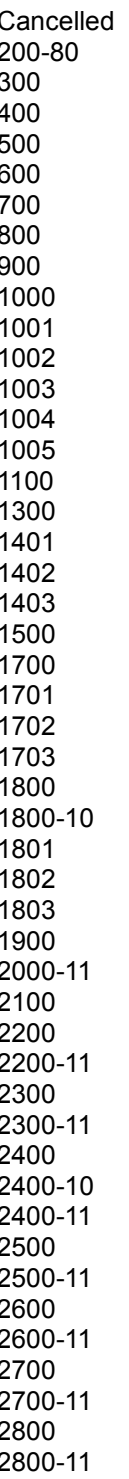
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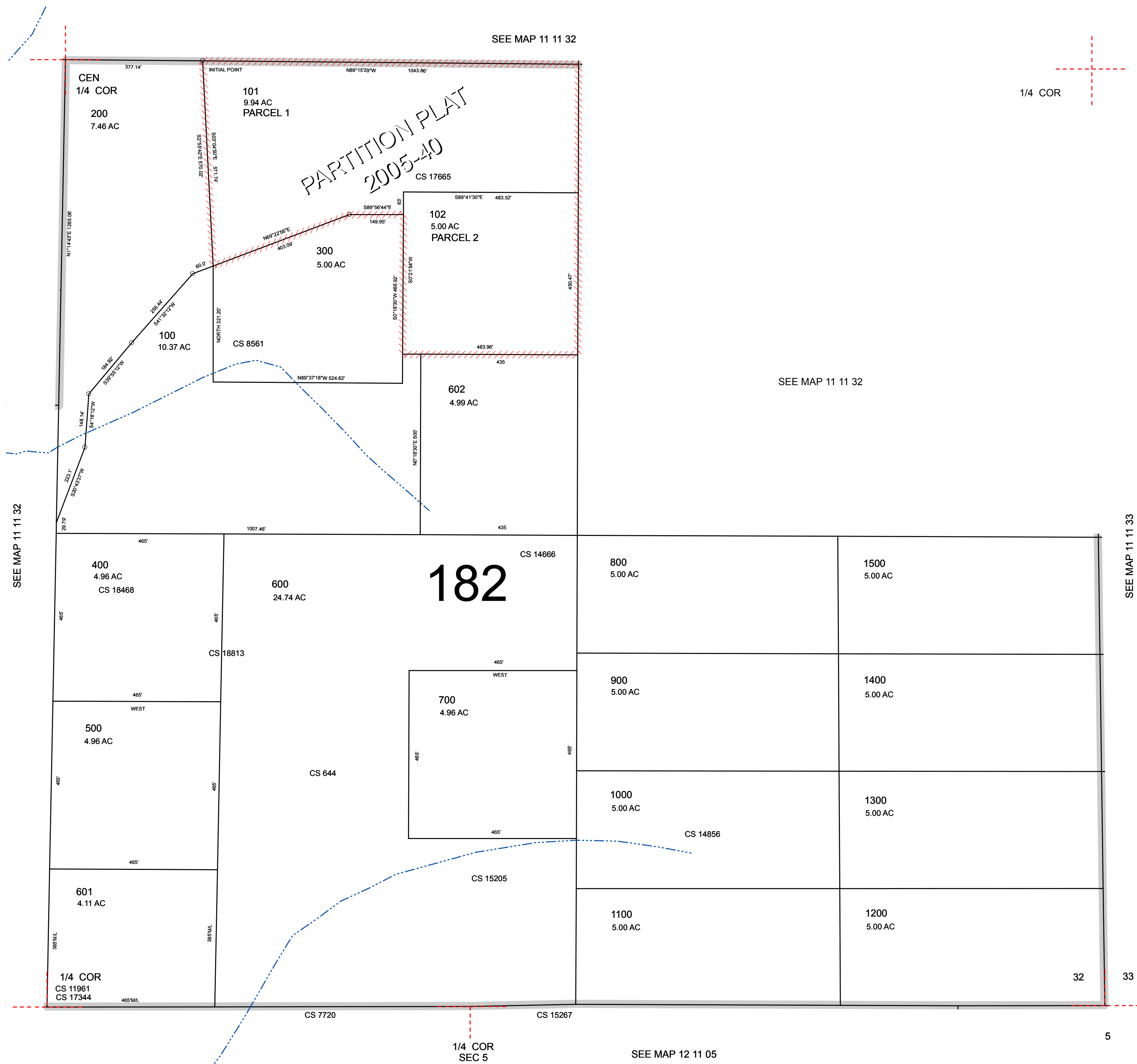
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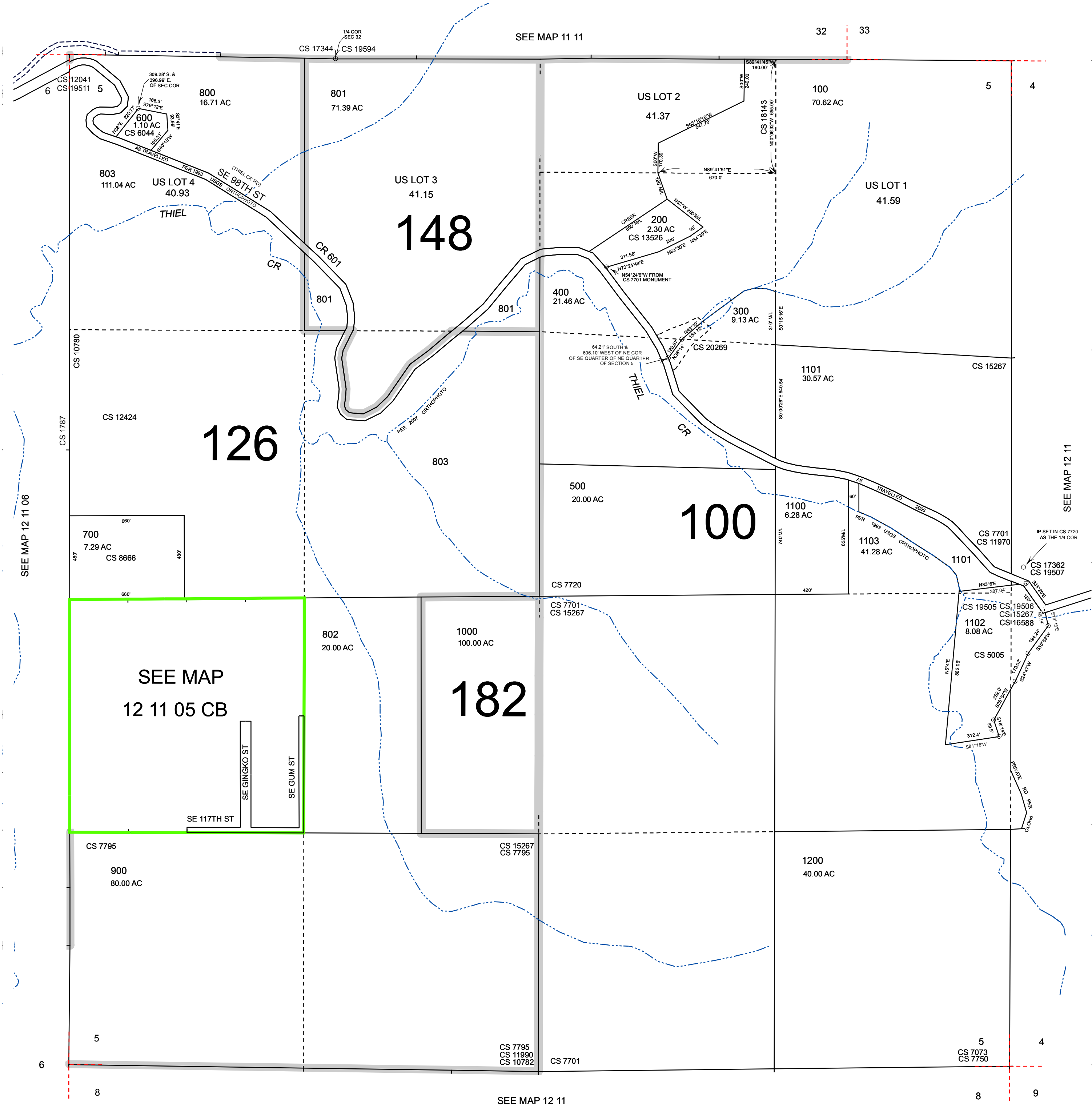
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10-11-29-DD-00100-00		DUNSCOMB KATHRYN M TRUSTEE &	MARTIN TERENCE R TRUSTEE	ATTN RAMONA MARTIN	4100 N COAST HWY	NEWPORT, OR 97365
10-11-32-00-00309-00		WYNDHAVEN RIDGE LLC	PO BOX 247			STAYTON, OR 97383
10-11-32-00-00324-00		CITY OF NEWPORT	CITY MANAGER	169 SW COAST HWY		NEWPORT, OR 97365
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10-11-32-AA-00106-00		CITY OF NEWPORT	ATTN MINOR J CHRISTOPHER	236 W OLIVE ST		NEWPORT, OR 97365
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10-11-32-AD-00300-00		SLAYDEN CONSTRUCTION GROUP INC	PO BOX 247			STAYTON, OR 97383
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10-11-33-00-00302-00	3249 NE BIG CREEK RD	ETHERINGTON ROBERT CHRIS &	ETHERINGTON LINDA ANN	3249 NE BIG CREEK RD		NEWPORT, OR 97365
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10-11-33-CB-07400-00	1150 NE LAKEWOOD DR	BRUNELLE LAWRENCE W &	BRUNELLE CLAUDIA J	1150 NE LAKEWOOD DR		NEWPORT, OR 97365

ParcelID	Situs Address	Owner	Address1	Address2	Address3	CityStateZip
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10-11-33-CB-07700-00		WEATHERS KAREN A	876 CHURCH ST			WOODBURN, OR 97071
10-11-33-CB-07800-00		SAVARA VIKRAM C TSTEE &	SAVARA NALINI V TSTEE	772 SW BROADWAY DR #2		PORTLAND, OR 97201
10-11-33-CB-07900-00	1200 NE LAKEWOOD DR	BURTON LYNSEY	1200 NE LAKEWOOD DR			NEWPORT, OR 97365
10-11-33-CB-08000-00	1210 NE LAKEWOOD DR	SHAMAS RICHARD A &	SHAMAS IRIS T	6821 SYLVIA DR		HUNTINGTON BEACH, CA 92647
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10-11-33-CB-08300-00	1240 NE LAKEWOOD DR	SMITH ROBERT &	SMITH LEA	1240 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-08400-00	1250 NE LAKEWOOD DR	BOYS DAVID A II &	BOYS LEILA M	1250 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-08500-00		CITY OF NEWPORT	CITY MANAGER	169 SW COAST HWY		NEWPORT, OR 97365
10-11-33-CB-08600-00		LAKESWOOD HILLS INC	810 SE 5TH ST			NEWPORT, OR 97365
10-11-33-CB-0ROAD-00						

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ParcelID	Situs Address	Owner	Address1	Address2	Address3	CityStateZip
11-11-32-00-01601-00		SENN JAMES A &	SENN JONG SOON	8450 SW MARINE VIEW ST		SOUTH BEACH, OR 97366
11-11-32-D0-00600-00		GOODPASTURE KATHERINE E	415 SE 98TH CT			SOUTH BEACH, OR 97366
11-11-32-D0-00601-00		FERRIS WILLARD STUART &	FERRIS PETER K &	FERRIS KATHERINE	415 SE 98TH CT	SOUTH BEACH, OR 97366
11-11-32-D0-01100-00	857 SE 98TH ST	PEDERSON JOEL W	16151 SHELLCRACKER RD			JACKSONVILLE, FL 32226
11-11-32-D0-01200-00		KLAY JONATHAN MARK &	KLAY FREDRIKA	20143 47TH AVE NE		LK FOREST PK, WA 98155
12-11-05-00-00100-00		LETTENMAIER TERRANCE M &	WEITKAMP LAURIE A	PO BOX 550		SOUTH BEACH, OR 97366
12-11-05-00-00200-00	1489 SE 98TH ST	SELICH JACK M &	SELICH JUDITH N	PO BOX 358		SOUTH BEACH, OR 97366
12-11-05-00-00400-00	1604 SE 98TH ST	ZEISER STEVEN K &	ZEISER KATHERINE K	3511 E 3RD ST		LONG BEACH, CA 90814
12-11-05-00-00800-00		STEEL STRING INC	2712 SE 20TH AVE			PORTLAND, OR 97202
12-11-05-00-00801-00		LETTENMAIER TERRANCE M &	WEITKAMP LAURIE A	PO BOX 550		SOUTH BEACH, OR 97366
12-11-05-00-00803-00	760 SE 98TH ST	STEEL STRING INC	2712 SE 20TH AVE			PORTLAND, OR 97202
12-11-05-00-0ROAD-00						

ParcelID	Situs Address	Owner	Address1	Address2	Address3	CityStateZip
10-11-00-00-03500-00		JOHN HANCOCK LIFE INSUR CO	ATTN HANCOCK FOREST MGMT	17700 SE MILL PLAIN BLVD	STE 180	VANCOUVER, WA 98683
10-11-28-00-00900-00		NELSON NICKOLAS R	466 WASKOW DR			SAN JOSE, CA 95123
10-11-28-00-01000-00		BOSTON TIMBER OPPORTUN LLC	ATTN HANCOCK FOREST MGMT	17700 SE MILL PLAIN BLVD	STE 180	VANCOUVER, WA 98683
10-11-29-DD-00100-00		DUNSCOMB KATHRYN M TRUSTEE &	MARTIN TERENCE R TRUSTEE	ATTN RAMONA MARTIN	4100 N COAST HWY	NEWPORT, OR 97365
10-11-32-00-00309-00		WYNDHAVEN RIDGE LLC	PO BOX 247			STAYTON, OR 97383
10-11-32-00-00324-00		CITY OF NEWPORT	CITY MANAGER	169 SW COAST HWY		NEWPORT, OR 97365
10-11-32-00-00327-00	1345 NE LAKEWOOD DR	WYNDHAVEN RIDGE LLC	PO BOX 247			STAYTON, OR 97383
10-11-32-AA-00100-00	405 NE 36TH ST	LC APARTMENTS LLC	1231B STATE ST			SANTA BARBARA, CA 93101
10-11-32-AA-00106-00		CITY OF NEWPORT	ATTN MINOR J CHRISTOPHER	236 W OLIVE ST		NEWPORT, OR 97365
10-11-32-AA-00600-00	575 NE 36TH ST	CENTRAL LINCOLN PUD	ATTN BRIAN BARTH	MGR ACCT & FINANCE	PO BOX 1126	NEWPORT, OR 97365
10-11-32-AA-00601-00		CITY OF NEWPORT	CITY MANAGER	169 SW COAST HWY		NEWPORT, OR 97365
10-11-32-AA-00602-00		CITY OF NEWPORT	CITY MANAGER	169 SW COAST HWY		NEWPORT, OR 97365
10-11-32-AD-00100-00		WYNDHAVEN RIDGE LLC	PO BOX 247			STAYTON, OR 97383
10-11-32-AD-00101-00		CITY OF NEWPORT	CITY MANAGER	169 SW COAST HWY		NEWPORT, OR 97365
10-11-32-AD-00200-00		CITY OF NEWPORT	CITY MANAGER	169 SW COAST HWY		NEWPORT, OR 97365
10-11-32-AD-00300-00		SLAYDEN CONSTRUCTION GROUP INC	PO BOX 247			STAYTON, OR 97383
10-11-33-00-00100-00		BOSTON TIMBER OPPORTUN LLC	ATTN HANCOCK FOREST MGMT	17700 SE MILL PLAIN BLVD	STE 180	VANCOUVER, WA 98683
10-11-33-00-00101-00		CITY OF NEWPORT	CITY MANAGER	169 SW COAST HWY		NEWPORT, OR 97365
10-11-33-00-00200-00		BRAXLING ARTHUR &	BRAXBACH LLC	PO BOX 240		NEWPORT, OR 97365
10-11-33-00-00300-00	3245 NE BIG CREEK RD	ETHERINGTON ROBERT C &	ETHERINGTON LINDA A	3249 NE BIG CREEK RD		NEWPORT, OR 97365
10-11-33-00-00302-00	3249 NE BIG CREEK RD	ETHERINGTON ROBERT CHRIS &	ETHERINGTON LINDA ANN	3249 NE BIG CREEK RD		NEWPORT, OR 97365
10-11-33-00-00900-00		CITY OF NEWPORT	CITY MANAGER	169 SW COAST HWY		NEWPORT, OR 97365
10-11-33-CB-03600-00	1255 NE LAKEWOOD DR	WOODARD LISA A	1255 NE LAKEWOOD DR			NEWPORT, OR 97365
10-11-33-CB-03700-00	1245 NE LAKEWOOD DR	YUILLE KRISTIN H &	GREEN NATHAN R	1245 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-03800-00	1235 NE LAKEWOOD DR	INGALLS DONNE J &	INGALLS KELSEY A	1235 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-03900-00	1225 NE LAKEWOOD DR	WALKER STEPHEN D TSTEE &	WALKER CHRISTIE H TSTEE	1225 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-04000-00	1215 NE LAKEWOOD DR	HESLEN AMIE L &	MARSHALL HEATH	1215 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-04300-00		CITY OF NEWPORT	CITY MANAGER	169 SW COAST HWY		NEWPORT, OR 97365
10-11-33-CB-04400-00	1185 NE LAKEWOOD DR	STUDLEY DAVID J &	STUDLEY PAULETTE L	1185 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-04500-00	1175 NE LAKEWOOD DR	KEPLER RICHARD ALLEN	1175 NE LAKEWOOD DR			NEWPORT, OR 97365
10-11-33-CB-04600-00		RYAN REATHA L TSTEE	1155 NE LAKEWOOD DR			NEWPORT, OR 97365
10-11-33-CB-04700-00	1155 NE LAKEWOOD DR	RYAN REATHA L TSTEE	1155 NE LAKEWOOD DR			NEWPORT, OR 97365
10-11-33-CB-04800-00	1145 NE LAKEWOOD DR	WENELL GARY W TSTEE &	WENELL PAULA C TSTEE	1145 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-04900-00	1135 NE LAKEWOOD DR	MERWIN PAMELA D COTTEE &	ROEBBER SUSAN COTTEE &	VANGORP ALISON COTSTEE	1135 NE LAKEWOOD DR	NEWPORT, OR 97365
10-11-33-CB-05000-00	2935 NE LISI PL	BAKER CARL F &	BAKER DIAN G	2935 NE LISI PL		NEWPORT, OR 97365
10-11-33-CB-05200-00	2930 NE KLAMATH PL	ROLL JOHN R &	ROLL NINA R	2930 NE KLAMATH PL		NEWPORT, OR 97365
10-11-33-CB-06400-00	2930 NE LISI PL	BARBER JERRY LEE &	BARBER SANDRA LEE	2930 NE LISI PL		NEWPORT, OR 97365
10-11-33-CB-06600-00	1080 NE LAKEWOOD DR	PETTETT JAMES W &	PETTETT MICHELLE R	1080 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-06700-00	1090 NE LAKEWOOD DR	CAUDURO RAYMOND &	CAUDURO PATRICIA A	1090 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-06800-00	1100 NE LAKEWOOD DR	PORCH ROBERT R	1100 NE LAKEWOOD DR			NEWPORT, OR 97365
10-11-33-CB-06900-00	1110 NE LAKEWOOD DR	RANDALL MARGARET J	840 S RANCHO DR	#4-409		LAS VEGAS, NV 89106
10-11-33-CB-07000-00		CITY OF NEWPORT	CITY MANAGER	169 SW COAST HWY		NEWPORT, OR 97365
10-11-33-CB-07100-00		RANDALL MARGARET J	840 S RANCHO DR	#4-409		LAS VEGAS, NV 89106
10-11-33-CB-07200-00	1130 NE LAKEWOOD DR	LEE DAVID J &	LEE ROSALINE H	PO BOX 2226		NEWPORT, OR 97365
10-11-33-CB-07300-00		TODD EDWARD L &	TODD SYDNEY E	337 NE SAN-BAY-O CIR		NEWPORT, OR 97365
10-11-33-CB-07400-00	1150 NE LAKEWOOD DR	BRUNELLE LAWRENCE W &	BRUNELLE CLAUDIA J	1150 NE LAKEWOOD DR		NEWPORT, OR 97365

ParcelID	Situs Address	Owner	Address1	Address2	Address3	CityStateZip
10-11-33-CB-07500-00	1160 NE LAKEWOOD DR	WOODLEY MICHAEL H &	WOODLEY WINNIFRED J	PO BOX 664		PRINEVILLE, OR 97754
10-11-33-CB-07600-00		WOODLEY MICHAEL H &	WOODLEY WINNIFRED J	PO BOX 664		PRINEVILLE, OR 97754
10-11-33-CB-07700-00		WEATHERS KAREN A	876 CHURCH ST			WOODBURN, OR 97071
10-11-33-CB-07800-00		SAVARA VIKRAM C TSTEE &	SAVARA NALINI V TSTEE	772 SW BROADWAY DR #2		PORTLAND, OR 97201
10-11-33-CB-07900-00	1200 NE LAKEWOOD DR	BURTON LYNSEY	1200 NE LAKEWOOD DR			NEWPORT, OR 97365
10-11-33-CB-08000-00	1210 NE LAKEWOOD DR	SHAMAS RICHARD A &	SHAMAS IRIS T	6821 SYLVIA DR		HUNTINGTON BEACH, CA 92647
10-11-33-CB-08100-00	1220 NE LAKEWOOD DR	ARNSDORF JOSEPH A &	ARNSDORF JESSICA L	1220 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-08200-00	1230 NE LAKEWOOD DR	BODENSTAB MARK R &	BODENSTAB DORIS	7836 E BRALTON DR		NAMPA, ID 83686
10-11-33-CB-08300-00	1240 NE LAKEWOOD DR	SMITH ROBERT &	SMITH LEA	1240 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-08400-00	1250 NE LAKEWOOD DR	BOYS DAVID A II &	BOYS LEILA M	1250 NE LAKEWOOD DR		NEWPORT, OR 97365
10-11-33-CB-08500-00		CITY OF NEWPORT	CITY MANAGER	169 SW COAST HWY		NEWPORT, OR 97365
10-11-33-CB-08600-00		LAKESWOOD HILLS INC	810 SE 5TH ST			NEWPORT, OR 97365
10-11-33-CB-0ROAD-00						

ParcelID	Situs Address	Owner	Address1	Address2	Address3	CityStateZip
11-11-32-00-01601-00		SENN JAMES A &	SENN JONG SOON	8450 SW MARINE VIEW ST		SOUTH BEACH, OR 97366
11-11-32-D0-00600-00		GOODPASTURE KATHERINE E	415 SE 98TH CT			SOUTH BEACH, OR 97366
11-11-32-D0-00601-00		FERRIS WILLARD STUART &	FERRIS PETER K &	FERRIS KATHERINE	415 SE 98TH CT	SOUTH BEACH, OR 97366
11-11-32-D0-01100-00	857 SE 98TH ST	PEDERSON JOEL W	16151 SHELLCRACKER RD			JACKSONVILLE, FL 32226
11-11-32-D0-01200-00		KLAY JONATHAN MARK &	KLAY FREDRIKA	20143 47TH AVE NE		LK FOREST PK, WA 98155
12-11-05-00-00100-00		LETTENMAIER TERRANCE M &	WEITKAMP LAURIE A	PO BOX 550		SOUTH BEACH, OR 97366
12-11-05-00-00200-00	1489 SE 98TH ST	SELICH JACK M &	SELICH JUDITH N	PO BOX 358		SOUTH BEACH, OR 97366
12-11-05-00-00400-00	1604 SE 98TH ST	ZEISER STEVEN K &	ZEISER KATHERINE K	3511 E 3RD ST		LONG BEACH, CA 90814
12-11-05-00-00800-00		STEEL STRING INC	2712 SE 20TH AVE			PORTLAND, OR 97202
12-11-05-00-00801-00		LETTENMAIER TERRANCE M &	WEITKAMP LAURIE A	PO BOX 550		SOUTH BEACH, OR 97366
12-11-05-00-00803-00	760 SE 98TH ST	STEEL STRING INC	2712 SE 20TH AVE			PORTLAND, OR 97202
12-11-05-00-0ROAD-00						



851 SW 6th AVENUE, SUITE 600  
PORTLAND, OR 97204  
P 503.228.5230 F 503.273.8169

April 1, 2020

Project #: 23915

Keith Blair  
ODOT Region 2  
455 Airport Road SE, Bldg. A  
Salem, OR 97301

Derrick Tokos  
City of Newport  
169 SW Coast Highway  
Newport, OR 97365

***RE: Newport UGB Lane Exchange***

Dear Keith and Derrick,

This letter presents a Traffic Impact Analysis supporting the proposed land exchange that would remove 71.39 acres of undeveloped residential zoned land in the southern portion of Newport's urban growth boundary (UGB) and bring in approximately 40 acres of rural land located adjacent to the northeast quadrant of the City's UGB.

Based on the results of the transportation analysis outlined in this report, the proposed amendment to the City's UGB and affiliated comprehensive plan/zone designation for the 40-acre site has the potential to create a significant effect on the surrounding transportation network if no mitigations are proposed. However, acceptable operational levels can be achieved at the study intersections in the planning horizon year 2040 with potential mitigation measures in place as described in the report.

## FINDINGS

### Existing Transportation Conditions

- Traffic counts were collected in June 2019 at all of the study intersections during the critical weekday AM and PM peak travel periods. ODOT procedures were used to identify the 30<sup>th</sup> Highest Hour Volumes along the US 101 corridor which resulted in a 17% increase to the existing weekday AM and PM peak hour traffic volumes.
- Operational analyses indicate that all of the study intersections currently operate acceptably based on the existing mobility targets with the exception of the US 101/NE 20<sup>th</sup> Avenue intersection. During the weekday PM peak hour, this intersection operates at a volume-to-capacity ratio of 0.84 which is above the 0.80 mobility target.

## Future Year 2040 Traffic Conditions

- The proposed land use action is a unique case that would involve the exchange of 71.36 acres of undeveloped UGB land in southern Newport for 40 acres on the northern border of the Newport UGB. Since the existing 71.36 acres is proposed to be removed from the UGB, it would have no significant future development potential outside of its current Lincoln County RR-10 zone designation. Accordingly, the focus of this analysis is on the proposed urbanization of the 40-acre site.
- Background traffic volumes for the 2040 planning horizon year were estimated using a 1% annual growth rate to reflect anticipated regional traffic growth along the US 101 corridor. Trips associated with anticipated developments near the 40-acre site were applied to the study intersections to account for local traffic growth on the system.
- The existing 40-acre site is currently zoned Timber Conservation by Lincoln County. As a resource land designation, it essentially has no measurable trip generation potential. Therefore, the 2040 Background Conditions represent the future traffic conditions that can be expected under the existing Timber Conservation zone scenario.
- Operations of the study intersections under 2040 Background conditions (assumed regional and local traffic growth but no land use action on the 40-acre site) found that all of the study intersections are forecast to continue to operate acceptably during both the weekday AM and PM peak hours with the exception of the US 101/NE 25<sup>th</sup> Street and US 101/NE 20<sup>th</sup> Street intersections. During the weekday PM Peak hour, both of these intersections are forecast to operate with a volume-to-capacity ratio of 0.92 which exceeds their respective 0.80 and 0.90 mobility targets.
- With a potential UGB amendment, it was conservatively assumed that the 40-acre site could be zoned under the City of Newport's R-2 Medium Density Single Family Residential zone which allows a mix of duplexes and single-family homes. Based on a preliminary site assessment taking into consideration topography, non-buildable lands, and wetlands, it was determined that the site could conservatively support up to 200 single family homes.
- Comparing the existing Timber Conservation zoning to a potential R-2 Medium Density Single Family Residential zone, the later has the potential to generate approximately 1,968 net new daily trips, 147 net new AM peak hour trips, and 198 net new PM peak hour trips.
- Operations of the study intersections under the 2040 R-2 Medium Density Single Family Residential zoning scenario found that all of the US 101 study intersections are forecast to exceed their respective mobility targets. Specifically:
  - The eastbound approach to the unsignalized US 101/NE 36<sup>th</sup> Street intersection is forecast to operate over capacity during both the weekday AM and PM peak hours. This represents a significant impact to the operations of the intersection. To address TPR requirements, mitigation and potential revised mobility targets would

be needed to restore capacity to the intersection and show it can meet operating standards.

- The eastbound approach to the unsignalized US 101/NE 31<sup>st</sup> Street intersection is forecast to operate over capacity during both the weekday AM and PM peak hours. To address TPR requirements, mitigation and potential revised mobility targets would be needed to restore capacity to the intersection and show it can meet operating standards.
- The signalized US 101/NE 25<sup>th</sup> Street intersection is forecast to operate at a volume-to-capacity ratio of 0.94 during the weekday PM peak hour. Compared to forecast volume-to-capacity ratio of 0.92 under 2040 Background conditions, this represents a further degradation to the intersection. To address TPR requirements, mitigation would need to be proposed that would restore the intersection operations back to a volume-to-capacity ratio of 0.92 or better.
- The signalized US 101/NE 20<sup>th</sup> Street intersection is forecast to operate at a volume-to-capacity ratio of 0.95 during the weekday PM peak hour. Compared to forecast volume-to-capacity ratio of 0.92 under 2040 Background conditions, this represents a further degradation to the intersection. To address TPR requirements, mitigation and potential revised mobility targets would be needed to show it can meet operating standards.

## Conclusions

The following intersection mitigation measures would ensure the proposed land exchange and urbanization (R-2 Medium Density Single Family Residential zoning scenario) of the 40-acre parcel complies with the Oregon TPR:

### *The US 101/NE 36<sup>th</sup> Street Intersection Improvements:*

- Capacity Enhancing Projects:
  - Widen the westbound NE 36<sup>th</sup> Street approach to include a separate left- and right-turn lane.
  - Install a traffic signal
- Additional Projects to Meet the Currently Adopted 0.80 Mobility Target:
  - Widen US 101 to include a second northbound through lane
- Alternative to Meeting the 0.80 Mobility Target:
  - City of Newport and ODOT consider the adoption of an alternative mobility target (0.90 or higher) under 30<sup>th</sup> highest hour conditions or maintain the existing target under other than peak season conditions.

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### *US 101/NE 31<sup>st</sup> Street Intersection*

- Capacity Enhancing Projects:
  - Widen the westbound NE 31<sup>st</sup> Street approach to include a separate left- and right-turn lane.
  - Install a traffic signal
- Additional Projects to Meet the Currently Adopted 0.80 Mobility Target:
  - Widen US 101 to include a second northbound through lane
- Alternative to Meeting the 0.80 Mobility Target:
  - City of Newport and ODOT consider the adoption of an alternative mobility target (0.95 or higher) under 30<sup>th</sup> highest hour conditions or maintain the existing target under other than peak season conditions.

### *US 101/NE 25<sup>th</sup> Street Intersection*

- Projects to Restore the Intersection to Background Traffic Conditions:
  - Install right-turn overlap phasing on the eastbound approach

### *US 101/NE 20<sup>th</sup> Street Intersection*

- Projects to Restore the Intersection to Background Traffic Conditions/Mobility Target:
  - Install right-turn overlap phasing on the eastbound approach.
  - Construct a separate westbound right-turn lane on the NE 20th Street approach.
- Alternative to Meeting the 0.90 Mobility Target:
  - City of Newport and ODOT consider the adoption of an alternative mobility target (0.95 or higher) under 30<sup>th</sup> highest hour conditions or maintain the existing target under other than peak season conditions.

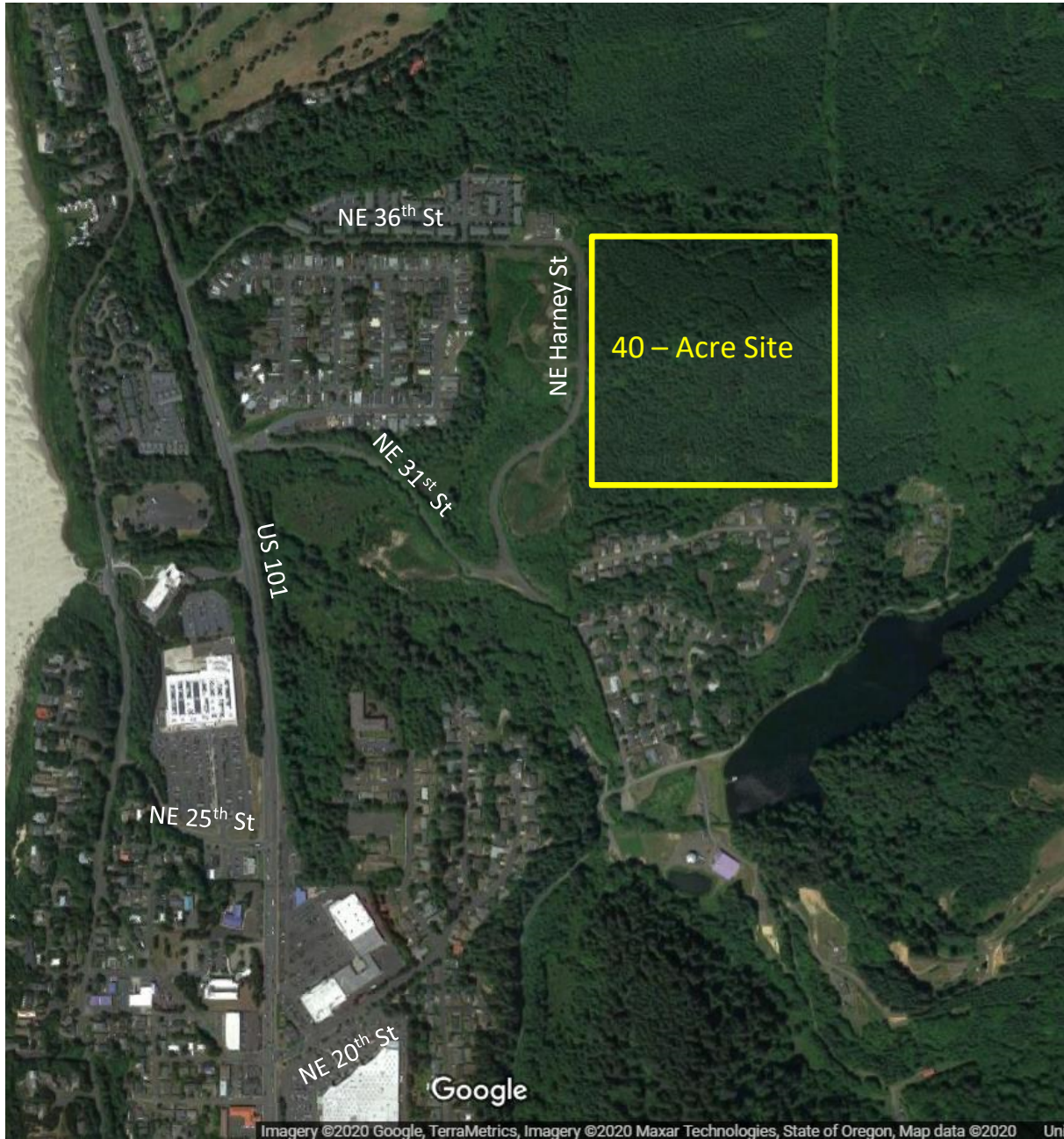
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## PROJECT BACKGROUND

The proposed land exchange involves two separate land parcels. The first parcel is 71.36 acres of privately-owned property in southern Newport that is accessed from SE 98<sup>th</sup> Street. This land is located within the City of Newport's UGB, but it has not been annexed into the city limits. Currently zoned Rural Residential (RR-10) by Lincoln County, the property is steeply sloped, not currently served by established infrastructure, and not a currently desirable location for future urban development given its somewhat isolated location. The second parcel is a 40-acre site that is currently outside the City of Newport's UGB as shown in Figure 1. The land is currently zoned Timber-Conservation (T-C) by Lincoln County. The proposed land use action would remove the 71.36-acre property from the Newport UGB and bring in the 40-acre property where it would then be eligible for potential future annexation and residential development.

Per Oregon Administrative Rule 660-012-0060, also known as the Transportation Planning Rule (TPR), land use actions such as these need to determine if there will be a significant effect on an existing or planned transportation facility. Under these types of land use actions, a significant effect to a transportation facility typically is anything that could involve the degradation of the performance of an existing or planned transportation facility such that it would not meet adopted local performance standards. The following report addresses the TPR requirements.

Figure 1 – Site Vicinity Map



## STUDY SCOPE & ANALYSIS METHODOLOGY

The proposed land use action is a unique case that would involve the exchange of 71.36 acres of undeveloped UGB land in southern Newport for 40 acres on the northern border of the Newport UGB. Since the existing 71.36 acres would be removed from the UGB, it would have no significant future development potential outside of its current Lincoln County RR-10 zone designation. Accordingly, the focus of this analysis is on the proposed 40-acre site and its applicable study area.

### Study Scope

This analysis identifies the transportation-related impacts associated with the proposed land exchange. The study was prepared in accordance with the ODOT *Analysis Procedures Manual* (APM, Reference 1), the City of Newport's traffic impact study requirements, and supplemental direction provided by ODOT development review staff. The study scope and overall study area for this project were selected based on an analysis of current and future traffic volumes at study intersections and discussions with both City and ODOT staff. As required by the City of Newport's Municipal Code Chapter 14.45 and the TPR requirements, the analysis was prepared to address the following transportation issues:

- Existing land use and transportation system conditions within the site vicinity;
- Review of regional traffic growth and seasonal traffic patterns, in-process developments, planned transportation improvements, and related transportation impact studies for other developments in the study area;
- Site trip generation and distribution estimates for reasonable worst-case development scenarios for current Timber Conservation and proposed residential zoning;
- Planning horizon year 2040 traffic operations and vehicle queuing conditions under existing Timber Conservation and proposed residential zoning development scenarios;
- Identification of traffic system deficiencies and potential mitigation measures;
- Assessment of zone change compliance with the TPR (OAR Section 660-12-060); and,
- Conclusions and recommendations.

### Study Intersections

The study intersections were identified in collaboration with City and ODOT staff. Figure 1 illustrates the location of the study intersections that are listed below. For ease of review, each intersection is referenced within this report using a numerical ID.

1. US 101 / NE 36<sup>th</sup> Street
2. US 101 / NE 31<sup>st</sup> Street
3. US 101 / NE 25<sup>th</sup> Street
4. US 101 / NE 20<sup>th</sup> Street

## 5. NE Harney Street / NE 31<sup>st</sup> Street

### Traffic Analysis Time Periods

Study intersection operations were analyzed during the weekday morning (intersection peak hour between 7:00-9:00 AM) and evening peak hour (intersection peak hour between 4:00-6:00 PM).

### Analysis Methodology

The unsignalized and signalized intersection operational analyses presented in this report were prepared following Highway Capacity Manual 6<sup>th</sup> edition (Reference 2) analysis procedures using VISTRO software.

### Performance Measures & Operating Standards

Intersection performance measures reported in this study include volume-to-capacity ratio (V/C), and delay. Intersection operating standards adopted by the City and ODOT are summarized in this section.

#### *ODOT Operating Standards (Mobility Targets)*

ODOT uses volume-to-capacity (V/C) ratios to assess intersection operations. Table 6 of the *Oregon Highway Plan* (OHP) provides maximum volume-to-capacity ratio targets for all signalized and unsignalized intersections located outside the Portland metropolitan area. The ODOT controlled intersections within the study area are located along US 101. Table 1 summarizes the v/c ratios that will be used to identify the existing and potential future operational issues at the ODOT study intersections.

**Table 1 – ODOT Mobility Targets**

Intersection	OHP Mobility Target
US 101 / NE 36 <sup>th</sup> Street (unsignalized)	0.80 major approach / 0.90 minor approach
US 101 / NE 31 <sup>st</sup> Street (unsignalized)	0.80 major approach / 0.90 minor approach
US 101 / NE 25 <sup>th</sup> Street (signalized)	0.80
US 101 / NE 20 <sup>th</sup> Street (signalized)	0.90

Note: US 101 is a Statewide Highway (not a Freight Route). The posted speed along US 101 is 35 mph through the US 101/NE 20<sup>th</sup> Street intersection and transitions to a 45 mph facility from the NE 25<sup>th</sup> Street intersection through the NE 36<sup>th</sup> Street intersection.

#### *City of Newport Operating Standards*

The City of Newport has not adopted intersection operating standards and, per City staff, generally relies on consideration of queuing as well as ODOT standards. For the NE Harney Street / NE 31<sup>st</sup> Street intersection, a 0.80 major street approach/0.90 minor street approach volume-to-capacity standard will be utilized.

## EXISTING CONDITIONS TRAFFIC ANALYSIS

The existing conditions analysis identifies field conditions and the current operational, traffic control, and geometric characteristics of the roadways and other transportation facilities within the vicinity of the 40-acre study area. These conditions will be compared with future year conditions later in this report. Kittelson staff visited the study area and inventoried the existing transportation system to identify lane configurations, traffic control devices, bicycle and pedestrian facilities, transit stops, geometric features, and sight distances at the study intersections during the summer of 2019.

### Site Conditions and Adjacent Land Uses

The proposed 40-acre land exchange site is currently undeveloped and heavily forested. It is generally bordered by SW Harney Street to the west, existing single-family development to the south, and undeveloped forest land to the north and east.

### Transportation Facilities

This section provides a multi-modal overview of transportation facilities in the site vicinity.

#### *Roadway Facilities*

Figure 2 summarizes the existing lane configurations and traffic control devices at the study intersections. Table 2 summarizes roadways in the site vicinity that are assessed as part of the traffic impact study.

**Table 2 – Existing Transportation Facilities**

Roadway	Jurisdictional Authority	Functional Classification <sup>1</sup>	Number of Auto Lanes	Posted Speed (MPH)	Sidewalks Present	Bicycle Lanes Present	On-Street Parking Allowed?
US 101	ODOT	Statewide Highway – <i>ODOT Oregon Highway Plan</i> Principal Arterial - <i>Newport</i>	3-5	45 <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>4</sup>	No
NE 36 <sup>th</sup> Street	City of Newport	Collector	2	25	No	Yes	No
NE 31 <sup>st</sup> Street	City of Newport	Minor Arterial	2	Not Posted	No	No	No
NW 25 <sup>th</sup> Street	City of Newport	Local	2	Not Posted	Yes	No	No
NW 20 <sup>th</sup> Street	City of Newport	Collector	2	Not Posted	No	No	No
NW Harney St	City of Newport	Collector	2	Not Posted	No	No	No

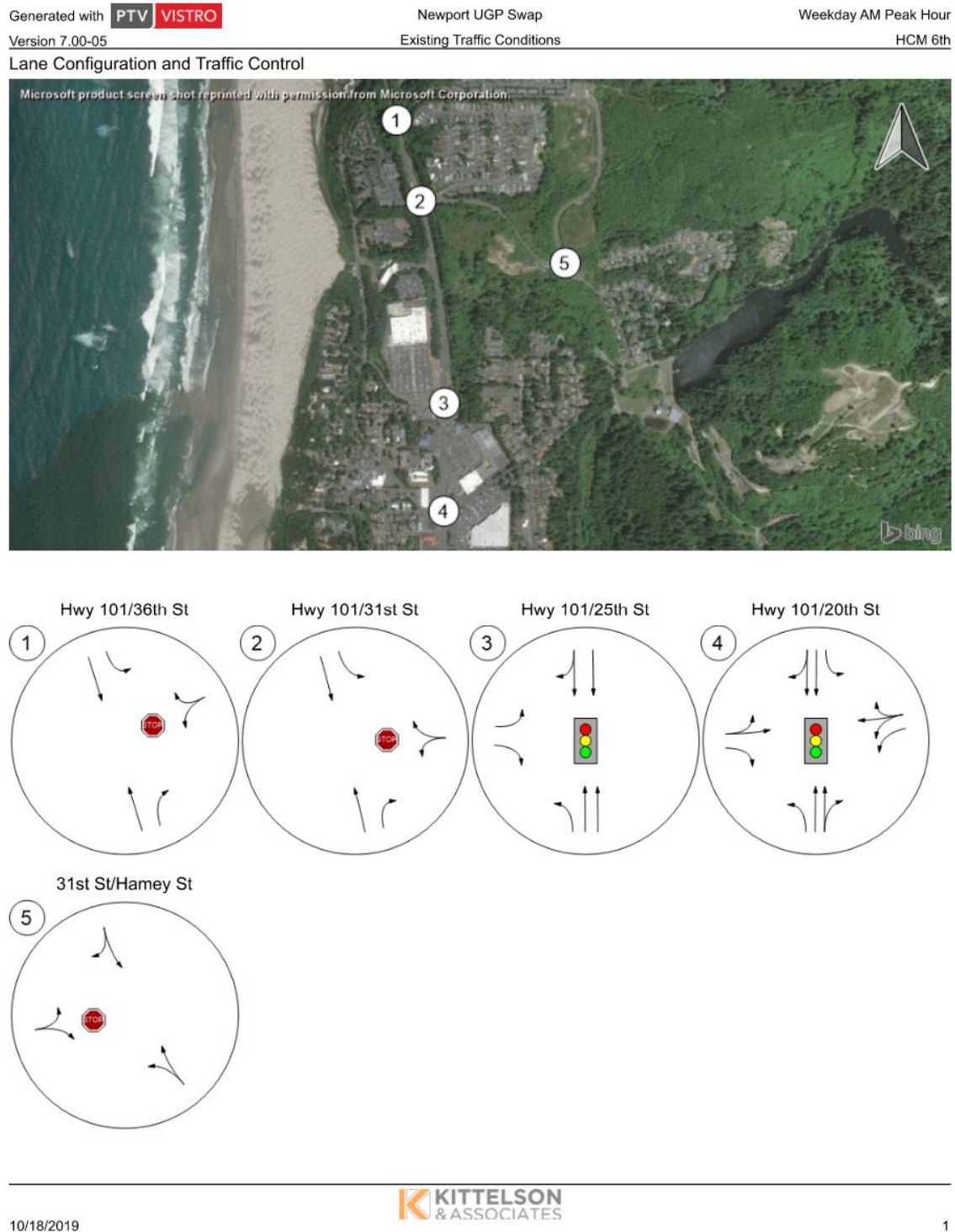
<sup>1</sup> Source: City of Newport Transportation System Plan

<sup>2</sup> The posted speed of US 101 lowers to 35 mph in the vicinity of NW 20<sup>th</sup> Street

<sup>3</sup> There are no sidewalks on US 101 in the vicinity of NW 31<sup>st</sup> Street and NW 36<sup>th</sup> Street

<sup>4</sup> US 101 has a striped bicycle lane or wide shoulder north of NW 25<sup>th</sup> Street

Figure 2 - Existing Study Intersection Lane Configurations and Traffic Control Devices



## Transit Facilities

Lincoln County operates the Newport City Loop Bus within the City. The bus operates between 7:23 AM and 5:11 PM seven days a week except on Thanksgiving and Christmas. The bus route loops between Newport Business Center on the south side of the community and the NW 73rd & Avery intersection on the north side of the community with study area stops at Fred Meyer, Walmart, and the Little Creek Apartments. Intercity bus connections are also provided between Newport and Siletz, Lincoln City/Rose Lodge, and Yachats. The intercity service schedules vary by destination but generally operate Monday through Saturday with service to Newport occurring at a stop at City Hall.

## Existing Traffic Volumes

Turning movement counts were conducted at the study intersections on a typical mid-weekday in early June 2019 while local schools were still in session. Peak traffic volumes were observed at the intersections between 7:20 - 8:20 AM and 4:05 – 5:05 PM. The traffic counts were seasonally adjusted to 30<sup>th</sup> highest hour design volumes before use in the operational analysis in accordance with procedures presented in ODOT's APM. *Appendix "A" provides the detailed methodology and calculations for the 30<sup>th</sup> highest hour adjustment.* Figures 3 and 4 show the resulting turning movement counts at the study intersections during the weekday AM and PM peak hours. *Appendix "B" contains the intersection turning movement count sheets.*

## Existing Intersection Operations

Operations of the study intersections were assessed using the previously described methodology and were compared to the respective mobility targets. Table 3 summarizes the operational analyses for the weekday AM and PM peak hour reflective of the seasonal adjustment factor. As shown, all of the study intersections currently operate acceptably during both the weekday AM and PM peak hours with the exception of the US 101/NE 25<sup>th</sup> Street intersection. During the weekday PM Peak hour, the intersection currently operates with a volume-to-capacity ratio of 0.84 which exceeds the 0.80 mobility target. *Appendix "C" includes the existing conditions intersection operations analysis worksheets.*

**Table 3 – Existing Traffic Conditions**

Study Intersections	V/C Mobility Target	Weekday AM Peak Hour		Weekday PM Peak Hour	
		V/C	Delay (sec)	V/C	Delay (sec)
US 101 / NE 36 <sup>th</sup> Street	0.80 major approach / 0.90 minor approach	0.01 (SBLT) 0.37 (WB)	8.57 (SBLT) 34.1 (WB)	0.01 (SBLT) 0.15 (WB)	10.2 (SBLT) 33.5 (WB)
US 101 / NE 31 <sup>st</sup> Street	0.80 major approach / 0.90 minor approach	0.02 (SBLT) 0.43 (WB)	8.69 (SBLT) 46.1 (WB)	0.03 (SBLT) 0.37 (WB)	10.8 (SBLT) 58.6 (WB)
US 101 / NE 25 <sup>th</sup> Street	0.80 for intersection	0.54	12.8	0.84	41.8
US 101 / NE 20 <sup>th</sup> Street	0.90 for intersection	0.48	16.6	0.74	35.9
NE Harney Street / NE 31 <sup>st</sup> Street	0.90 minor approach	0.04 (EB)	8.7 (EB)	0.07 (EB)	8.6 (EB)

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, LT = Left-turn, TH = Through, RT = Right-turn  
V/C= Critical volume-to-capacity ratio, Delay= Intersection delay (signalized) / Critical movement delay (unsignalized)  
Shaded values indicate the intersection volume-to-capacity ratio exceeds the respective mobility target

Figure 3 – Existing Traffic Volumes, Weekday AM Peak Hour

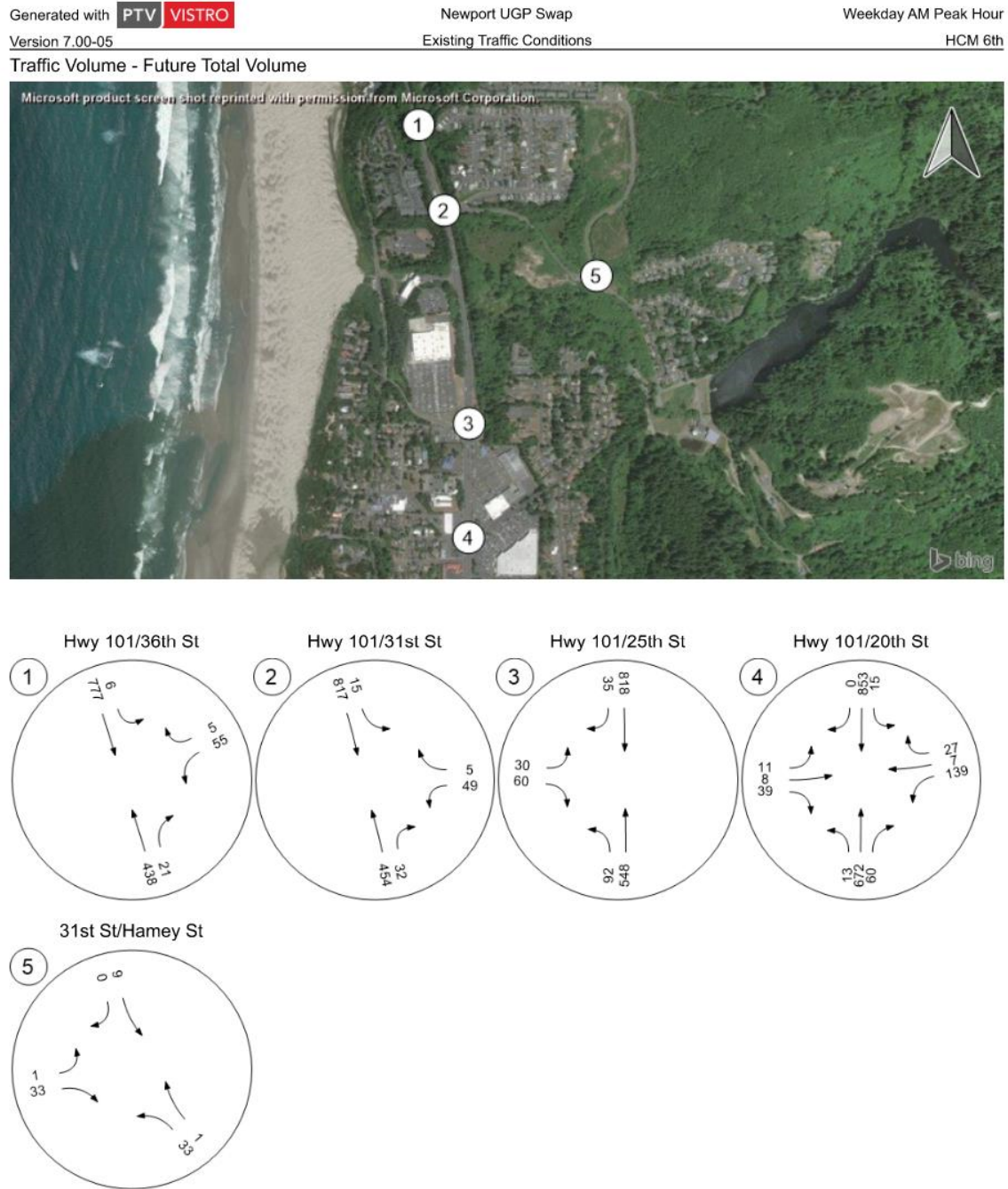
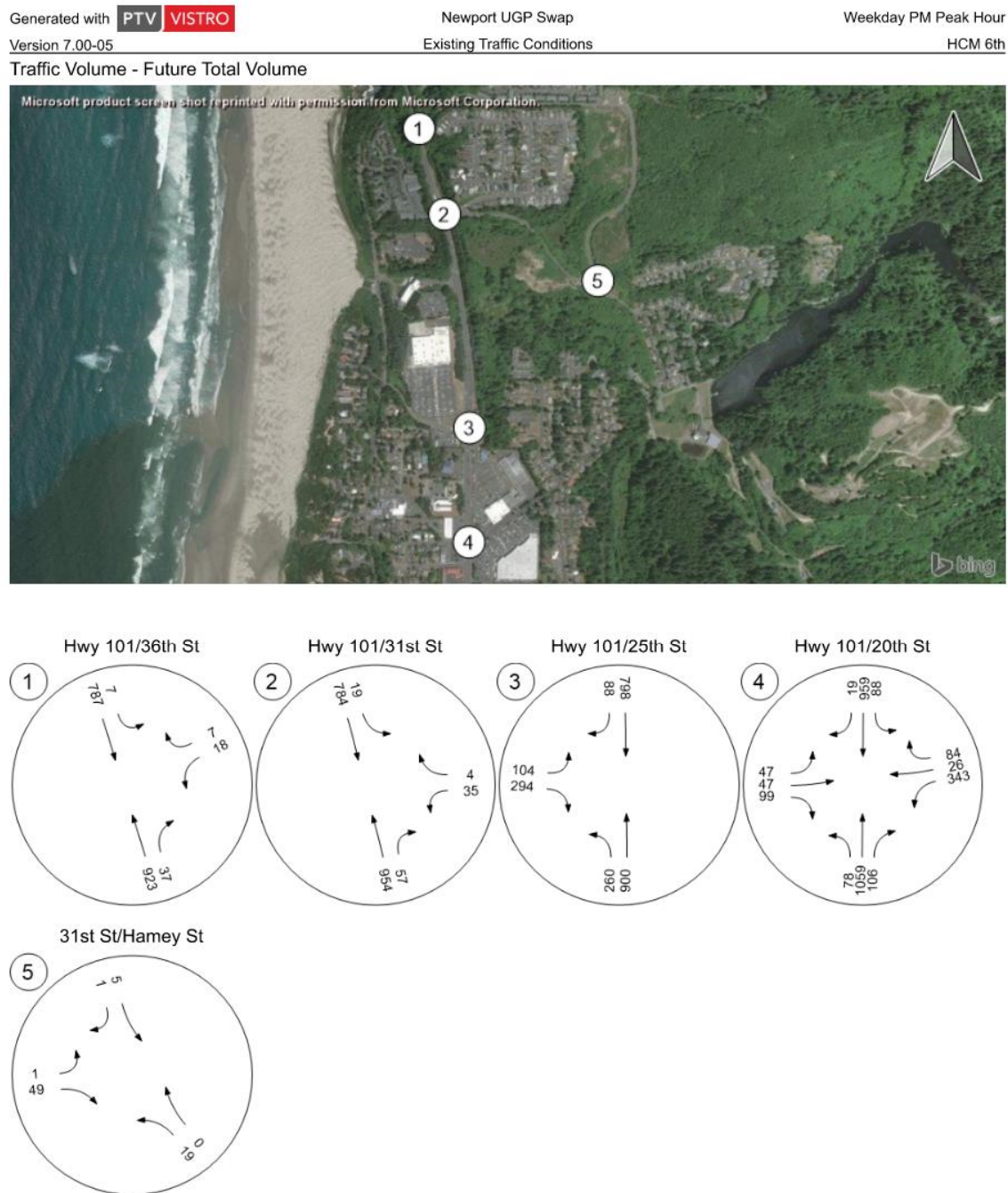


Figure 4 – Existing Traffic Volumes, Weekday PM Peak Hour



## Intersection Crash History

The crash histories at the individual study intersections were obtained and reviewed in an effort to identify potential safety issues. ODOT provided crash records for the study intersections for the five-year period from January 1, 2013 through December 31, 2017. Table 4 summarizes the ODOT crash data.

**Table 4 – Study Intersection Crash Summary (January 2013 to December 2017)**

Study Intersections	Collision Type					Severity			Total
	Rear-End	Turning	Angle	Fixed Object	Other	PDO	Injury	Fatal	
US 101 / NE 36 <sup>th</sup> Street	1	6	0	0	0	1	5	1	7
US 101 / NE 31 <sup>st</sup> Street	2	3	0	0	0	4	1	0	5
US 101 / NE 25 <sup>th</sup> Street	5	2	0	1	0	6	2	0	8
US 101 / NE 20 <sup>th</sup> Street	9	5	3	0	2	7	12	0	19
NE Harney Street / NE 31 <sup>st</sup> Street	0	0	0	0	0	0	0	0	0

A review of Table 4 revealed the following:

- One fatality occurred at the US 101/NE 36<sup>th</sup> Street intersection that involved a westbound vehicle making a left-turn onto US 101 and colliding with a northbound US 101 vehicle. Six of the 7 recorded collisions also involved this same set of movements.
- The US 101/NE 20<sup>th</sup> Street intersection, a four legged higher volume intersection had the highest number of crashes. Of these crashes, six involved northbound rear-end collisions. There were no other discernable patterns amongst the other crash types.

## Critical Crash Rate

Critical crash rates were calculated for each of the study intersections following the analysis methodology presented in ODOT's SPR 667 Assessment of Statewide Intersection Safety Performance (Reference 5). SPR 667 provided average crash rates at a variety of intersection configurations in Oregon based on the number of approaches and traffic control types. The average crash rate represents the approximate number of crashes that are "expected" at a study intersection. This average crash rate is used to calculate the critical crash rate for each study intersection, based on the Highway Safety Manual methodology (Reference 6). The critical crash rate shown in Table 5 serves as a threshold for further analysis.

**Table 5 – Intersection Critical Crash Rate Assessment**

Intersection	Total Crashes	Critical Crash Rate by Intersection	Critical Crash Rate by Volume	Observed Crash Rate at Intersection	Observed Crash Rate > Critical Crash Rate?
US 101 / NE 36 <sup>th</sup> Street	7	0.47	0.48	0.29	No
US 101 / NE 31 <sup>st</sup> Street	5	0.47	0.63	0.20	No
US 101 / NE 25 <sup>th</sup> Street	8	0.71	0.46	0.28	No
US 101 / NE 20 <sup>th</sup> Street	19	0.25	0.35	0.56	Yes
NE Harney Street / NE 31 <sup>st</sup> Street	0	1.01	1.04	0.00	No

As shown in Table 5, the observed crash rate at the US 101/NE 20<sup>th</sup> Street intersection exceeds the critical crash rate by intersection type and volume. Further, this intersection is on ODOT's 2017 Safety Priority Index List (SPIS). *Appendix "D" contains the crash data summary sheets.*

## YEAR 2040 TRAFFIC CONDITIONS

This section of the report contains a detailed assessment of the long-term traffic impacts associated with the proposed land exchange. More specifically, it evaluates the impacts of urbanizing the 40-acre parcel on the north side of the Newport UGB<sup>1</sup>. The analysis of long-term traffic conditions is mandated by the State's Transportation Planning Rule (TPR, OAR Section 660-12-0060), given that the proposed UGB amendment for the 40-acre parcel would require an amendment to an acknowledged land use regulation and may have the potential to significantly affect a transportation facility.

To test for significant effect, an analysis of traffic conditions was conducted under reasonable worst-case site development scenarios for the subject site under the current Lincoln County Timber Conservation zone and a proposed scenario where the UGB is amended and the land is zoned and annexed for future residential development.

Based on the required analysis, the impacts of traffic generated by the potential urbanization of the 40-acres site were examined in the following manner:

- Anticipated background traffic growth patterns and in-process development trips were identified for the weekday AM and PM peak hour of the 2040 planning horizon year.
- Planned transportation improvements in the site vicinity were identified and reviewed.
- Reasonable worst-case land development scenarios were developed under the current Timber Conservation zone and for a potential future residential zoning designation, including basic assumptions on site accessibility.
- Estimates of average daily, weekday AM, and weekday PM peak hour site trips were prepared for the current Timber Conservation zone and for a potential future residential zoning designation.
- A site trip distribution pattern was derived through a review of existing traffic volumes, surrounding transportation facilities, and conversations with ODOT and City of Newport staff.
- Weekday AM and PM peak hour site-generated trips were assigned to the surrounding street network for both zoning scenarios.

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<sup>1</sup> As previously stated, the proposed land use action is a unique case that would involve the exchange of 71.36 acres of undeveloped UGB land in southern Newport for 40 acres on the northern border of the Newport UGB. Since the existing 71.36 acres would be removed from the UGB, it would have no significant future development potential outside of what is currently allowed under the Lincoln County RR-10 zone. Accordingly, the focus of this analysis is on the potential urbanization of 40-acre site and its surrounding study area.

- Planning horizon year 2040 traffic volumes, operations, and vehicle queuing conditions were analyzed for the weekday AM and PM peak hour under the existing Timber Conservation zone and for a potential future residential zoning designation.
- Operational deficiencies were identified and appropriate mitigation measures were evaluated.

## Year 2040 Background Traffic Forecast

To achieve a reasonable estimate of background traffic levels during the 2040 planning horizon year, current weekday AM and PM peak hour volumes shown in Figure 3 were increased by a 1% linear annual growth rate to account for regional traffic growth in the area over the 20-year forecast window. This growth factor was determined through consultation with City of Newport staff.

Additional trips were added to the background traffic growth adjustments to account for development that is not specifically approved but highly anticipated to be built within the 2040 analysis period. Through discussions with city staff, three development projects are anticipated in the immediate vicinity of the 40-acre site. These developments<sup>2</sup> are defined below:

- A 66-unit multi-family apartment complex is anticipated on the undeveloped parcel of land east of the NE Harney Street/NE 31<sup>st</sup> Street intersection. This project would likely include an extension of NE Lakewood Drive to NE Harney Street.
- A 96-unit multi-family apartment complex is anticipated on the undeveloped parcel of land located south of NE 36<sup>th</sup> Street, west of NE Harney Street and east of the Pacific Homes Beach Club.
- An 84-unit multi-family apartment complex is anticipated on the undeveloped parcel of land located south of NE 31<sup>st</sup> Street and west of NE Harney Street.

Year 2040 background traffic volumes forecast for the weekday AM and PM peak hour are illustrated in Figures 5 and 6 for all study intersections. These figures reflect background traffic levels without any development on the subject site.

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<sup>2</sup> Through conversations with City staff, none of these developments are formally approved. However, City staff feels they are all reasonably likely to be approved and built within the 20-year planning period of this study. For these reasons, representative stand in projects have been assumed to more conservatively account for this long-term traffic growth potential and its operational impacts at the NE 36<sup>th</sup> Street and NE 31<sup>st</sup> Street intersections.

Figure 5 – 2040 Background Traffic Volumes, Weekday AM Peak Hour

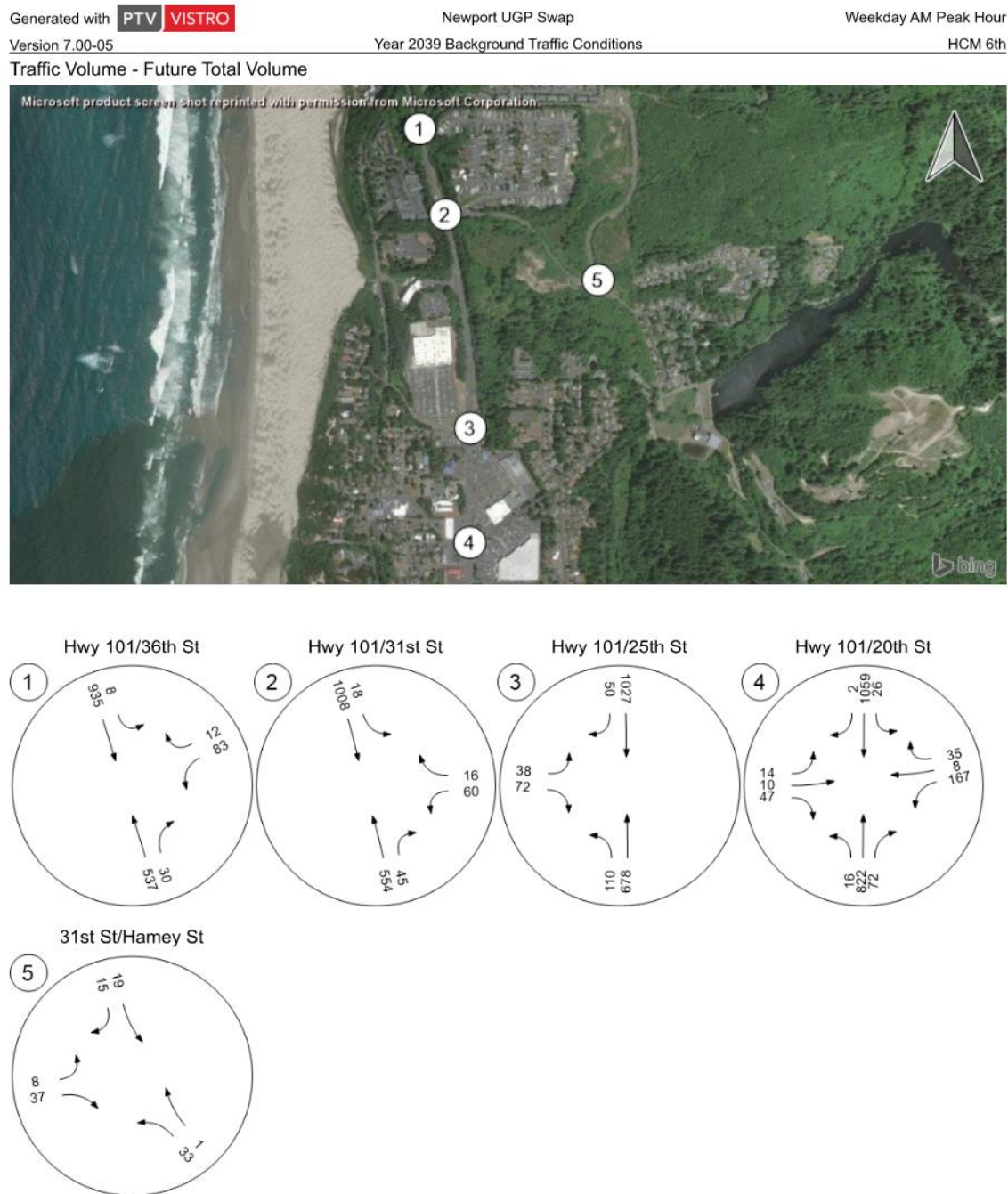
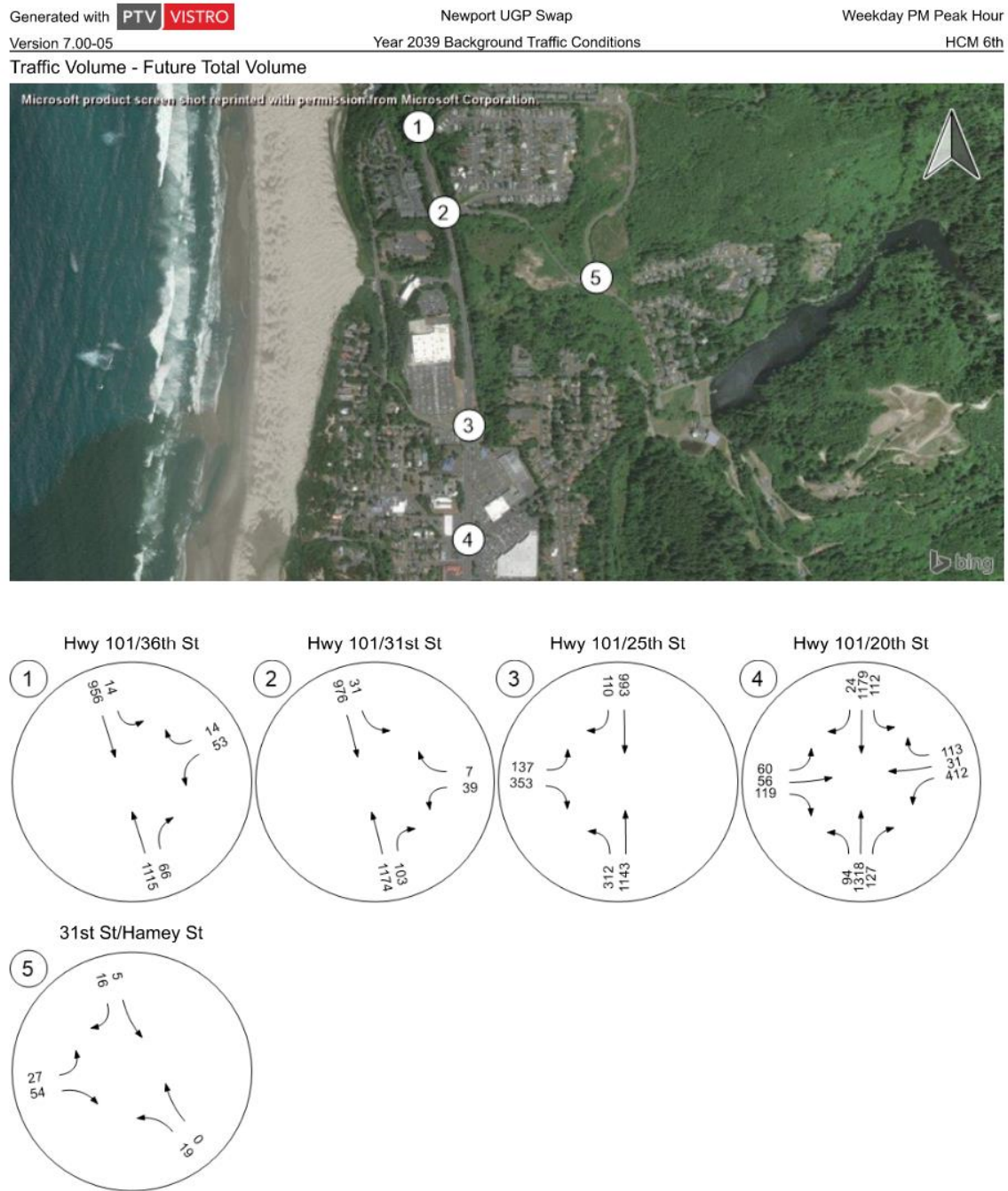


Figure 6 – 2040 Background Traffic Volumes, Weekday PM Peak Hour



## Year 2040 Planned Transportation Improvements

The Transportation Planning Rule provides specific language and direction on how planned transportation improvements can be included in the long-range transportation impact analyses for proposed comprehensive plan and zone changes. Specifically, the TPR allows roadway or intersection improvement projects to be included in the analysis if they are in a Capital Improvement Plan with secured funding, are on a “financially constrained” project list in the adopted TSP, or alternatively, are deemed by the local agency to be “reasonably likely to occur” within the planning horizon. Within the study area, the Newport TSP has identified the need for signalization of the US 101/NE 36<sup>th</sup> Street intersection. However, the TSP identifies this infrastructure improvement as a development-based project that would be constructed when warranted. As such, it is not currently funded or included on the City’s CIP as has therefore not been assumed within the 2040 planning period.

## Year 2040 Background Intersection Operations

Operations of the study intersections under 2040 Background conditions were assessed using the previously described methodology and were compared to the respective mobility targets. Table 6 summarizes the operational analyses for the weekday AM and PM peak hour reflective of anticipated regional and local traffic volume growth. As shown, all of the study intersections are forecast to continue to operate acceptably during both the weekday AM and PM peak hours with the exception of the US 101/NE 25<sup>th</sup> Street and US 101/NE 20<sup>th</sup> Street intersection. During the weekday PM Peak hour, both of these intersections are forecast to operate with a volume-to-capacity ratio of 0.92<sup>3</sup> which exceeds their respective 0.80 and 0.90 mobility targets. *Appendix “E” includes the 2040 background conditions intersection operations analysis worksheets.*

**Table 6 – 2040 Background Traffic Conditions**

Study Intersections	V/C Mobility Target	Weekday AM Peak Hour		Weekday PM Peak Hour	
		V/C	Delay (sec)	V/C	Delay (sec)
US 101 / NE 36 <sup>th</sup> Street	0.80 major approach / 0.90 minor approach	0.01 (SBLT) 0.59 (WB)	8.78 (SBLT) 54.5 (WB)	0.03 (SBLT) 0.72 (WB)	11.5 (SBLT) 123.0 (WB)
US 101 / NE 31 <sup>st</sup> Street	0.80 major approach / 0.90 minor approach	0.02 (SBLT) 0.61 (WB)	8.94 (SBLT) 72.3 (WB)	0.06 (SBLT) 0.79 (WB)	12.6 (SBLT) 182.2 (WB)
US 101 / NE 25 <sup>th</sup> Street	0.80 for intersection	0.62	14.2	0.92	48.5
US 101 / NE 20 <sup>th</sup> Street	0.90 for intersection	0.55	18.3	0.92	63.2
NE Harney Street / NE 31 <sup>st</sup> Street	0.90 minor approach	0.04 (EB)	8.62 (EB)	0.07 (EB)	9.0 (EB)

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, LT = Left-turn, TH = Through, RT = Right-turn  
V/C= Critical volume-to-capacity ratio, Delay= Intersection delay (signalized) / Critical movement delay (unsignalized)  
Shaded values indicate the intersection volume-to-capacity ratio is forecast to exceed the respective mobility target

<sup>3</sup> The 20-year operations are reflective of signal timing optimization while maintaining the existing overall cycle length.

## Site Zoning and Development Scenarios

For the purposes of this analysis, two reasonable worst-case development scenarios were identified for the 40-acre site to compare the traffic impacts between development under the existing Timber Conservation zone and for a potential future residential zoning designation.

### *Existing Timber Conservation Zoning vs. Potential Residential Zoning*

The existing Timber Conservation zone is essentially a resource land zone designation. As such, it has conservatively been assumed that it has no significant or measurable trip generation potential. Under a potential residential zoning designation, it was conservatively assumed that the 40-acres site could be zoned under the City of Newport's R-2 Medium Density Single Family Residential zone which allows a mix of duplexes and single-family homes. Based on a preliminary site assessment taking into consideration topography, non-buildable lands, and wetlands, it was determined that the site could conservatively support up to 200 single family homes. This land use was assumed to represent a reasonable worst-case development scenario for the subject property.

Table 6 shows the estimated trip generation comparison between the two land use scenarios as summarized in the *ITE Trip Generation Manual, 10<sup>th</sup> Edition*. As shown, the proposed urbanization of the 40-acre site under R-2 development scenario would generate approximately 1,968 net new daily trips, 147 net new AM peak hour trips, and 198 net new PM peak hour trips.

**Table 7 – Estimated Trip Generation (Current Timber Conservation Zone vs. Proposed Residential Zone)**

Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Existing Lincoln County Timber Conservation Zone									
Rural Resource Land	-	40 acres	-	-	-	-	-	-	-
Assumed City of Newport R-2 Medium Density Single Family Zoning									
Single-Family Detached Housing	210	200 homes	1,968	147	37	110	198	125	73
Net New Trips			+1,968	+147	+37	+110	+198	+125	+73

### *Site Trip Distribution and Assignment*

Under the existing Timber Conservation Zone, there is no measurable trip profile that can be forecast from this land use. Under the assumed R-2 Medium Density Single Family Residential development scenario, vehicular access to the 40-acre site was assumed to occur via multiple driveways along the property's NE Harney Street frontage. From these points of access, the distribution of site-generated trips onto the study area roadway system was estimated based on an examination of major transportation facilities within the site vicinity and travel characteristics observed from the existing weekday AM and PM traffic counts.

The assumed trip distribution pattern for the R-2 Medium Density Single Family Residential development scenario are illustrated in Figures 7 and 8 along with the total weekday AM and PM peak hour site trip assignments.

## Year 2040 Total Traffic Intersection Operations Analysis (40-Acres Converted to Residential Zoning)

The 2040 traffic conditions analysis forecasts how the study area's transportation system will operate by the planning horizon year if the subject site were to remain under the current Timber Conservation zone or reasonably developed under the R-2 Medium Density Single Family Residential zone. As noted, there is no measurable development potential under the Timber Conservation zone. Accordingly, the previously summarized 2040 Background traffic conditions effectively represent the operations under this scenario. To produce the analysis under the R-2 Medium Density Single Family Residential development scenario, the weekday AM and PM peak hour site generated traffic volumes shown in Figures 7 and 8 were added to the background traffic volumes shown in Figures 5 and 6 to arrive at year 2040 traffic volumes shown in Figures 9 and 10.

### Year 2040 Total Traffic Operations Results (40-Acres Converted to Residential Zoning)

Operations of the study intersections under 2040 Total conditions (with the 40 acres converted to residential zoning) were assessed using the previously described methodology and were compared to the respective mobility targets. Table 8 summarizes the operational analyses for the weekday AM and PM peak hour reflective of anticipated regional/local traffic volume growth and the traffic generated by the R-2 Medium Density Single Family Residential zone. As shown, all of the study intersections are forecast to experience operational issues. Specifically, the US 101/NE 25th Street and US 101/NE 20th Street intersections are forecast to continue to operate above their respective mobility targets while the critical westbound approaches at the US 101/NE 36th Street and US 101/NE 20th Street intersections are forecast to operate over capacity. *Appendix "F" includes the 2040 total traffic conditions intersection operations analysis worksheets.*

**Table 8 - 2040 Total Traffic Conditions (40 Acres Converted to Residential Zoning)**

Study Intersections	V/C Mobility Target	Weekday AM Peak Hour		Weekday PM Peak Hour	
		V/C	Delay (sec)	V/C	Delay (sec)
US 101 / NE 36 <sup>th</sup> Street	0.80 major approach / 0.90 minor approach	0.02 (SBLT) 0.91 (WB)	8.87 (SBLT) 113.9 (WB)	0.07 (SBLT) 1.75 (WB)	12.2 (SBLT) 584.9 (WB)
US 101 / NE 31 <sup>st</sup> Street	0.80 major approach / 0.90 minor approach	0.02 (SBLT) 1.11 (WB)	9.06 (SBLT) 205.6 (WB)	0.07 (SBLT) 1.69 (WB)	13.4 (SBLT) 526.6 (WB)
US 101 / NE 25 <sup>th</sup> Street	0.80 for intersection	0.59	13.0	0.94	48.8
US 101 / NE 20 <sup>th</sup> Street	0.90 for intersection	0.58	18.8	0.95	73.3
NE Harney Street / NE 31 <sup>st</sup> Street	0.90 minor approach	0.04 (EB)	9.17 (EB)	0.17 (EB)	11.1 (EB)

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, LT = Left-turn, TH = Through, RT = Right-turn  
V/C= Critical volume-to-capacity ratio, Delay= Intersection delay (signalized) / Critical movement delay (unsignalized)  
Shaded values indicate the intersection volume-to-capacity ratio is forecast to exceed the respective mobility target

Figure 7 – Site Trip Distribution and Site Generated Trips (Proposed Residential Zoning), Weekday AM Peak Hour

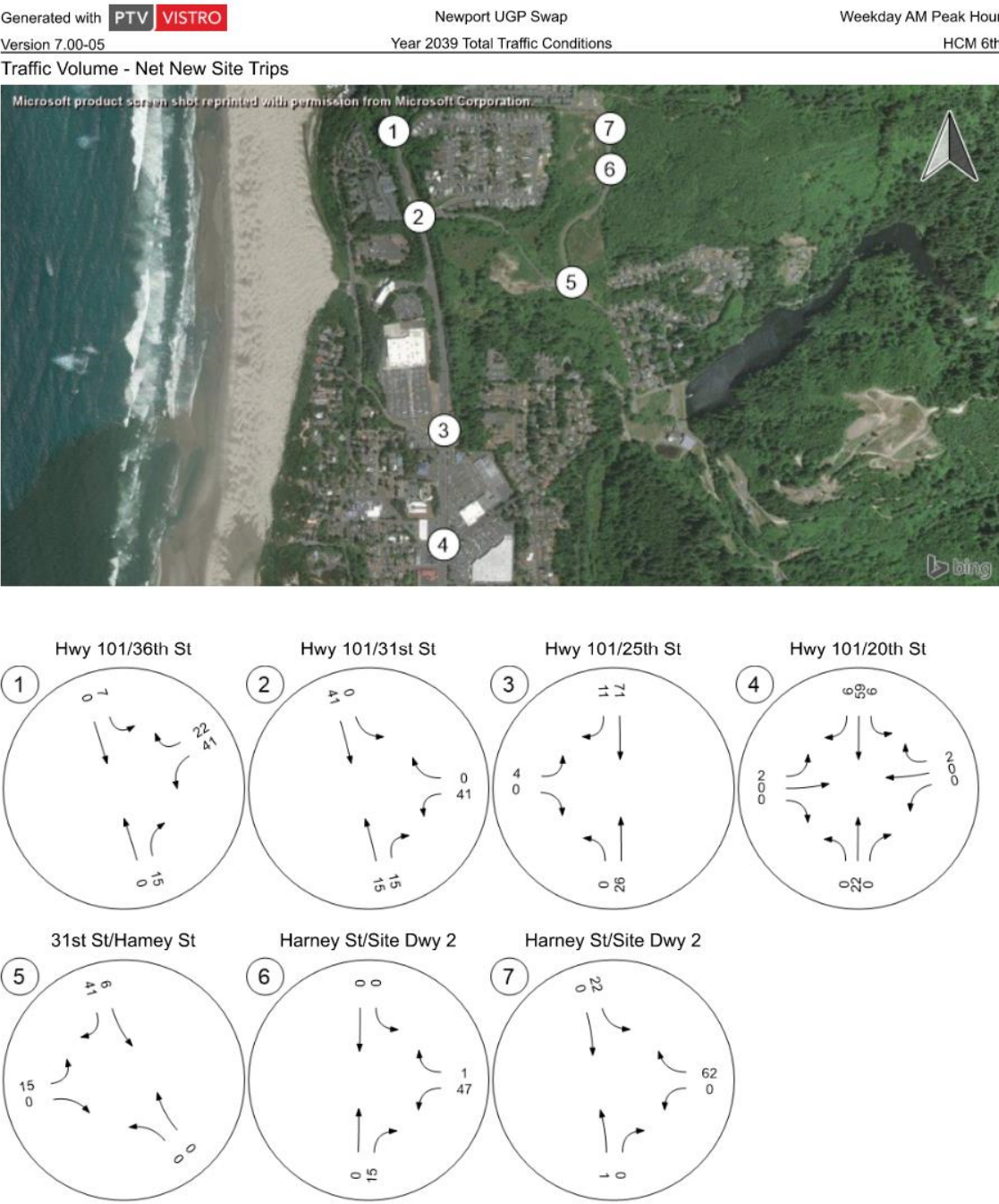


Figure 8 – Site Trip Distribution and Site Generated Trips (Proposed Residential Zoning), Weekday PM Peak Hour

Generated with **PTV VISTRO** Newport UGP Swap Weekday PM Peak Hour  
Version 7.00-05 Year 2039 Total Traffic Conditions HCM 6th

Traffic Volume - Net New Site Trips

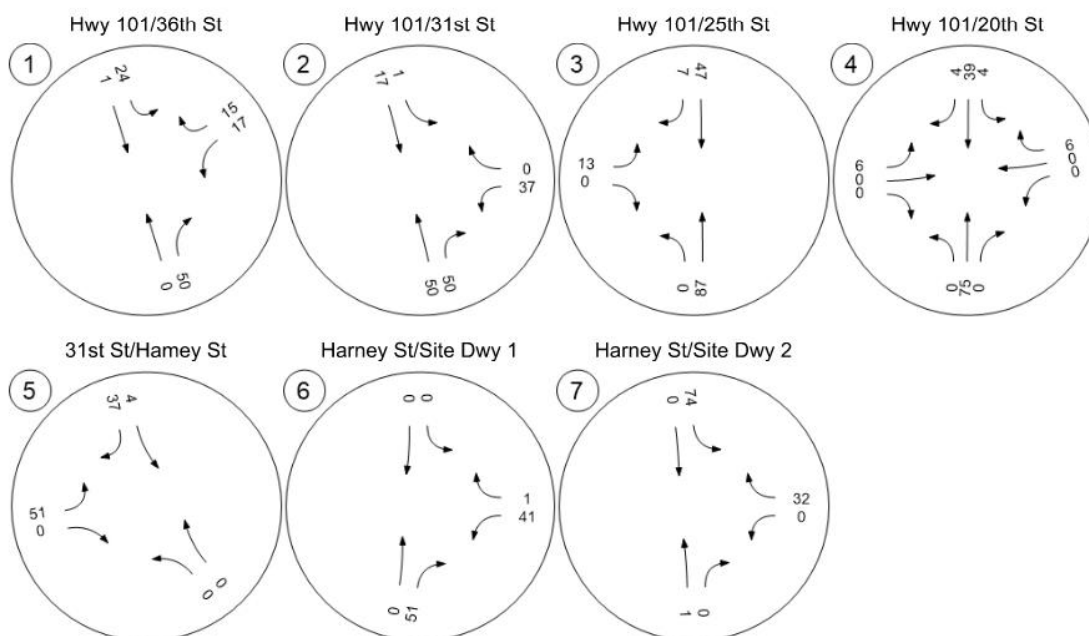


Figure 9 – 2040 Traffic Volumes (w/ Proposed Residential Zoning), Weekday AM Peak Hour

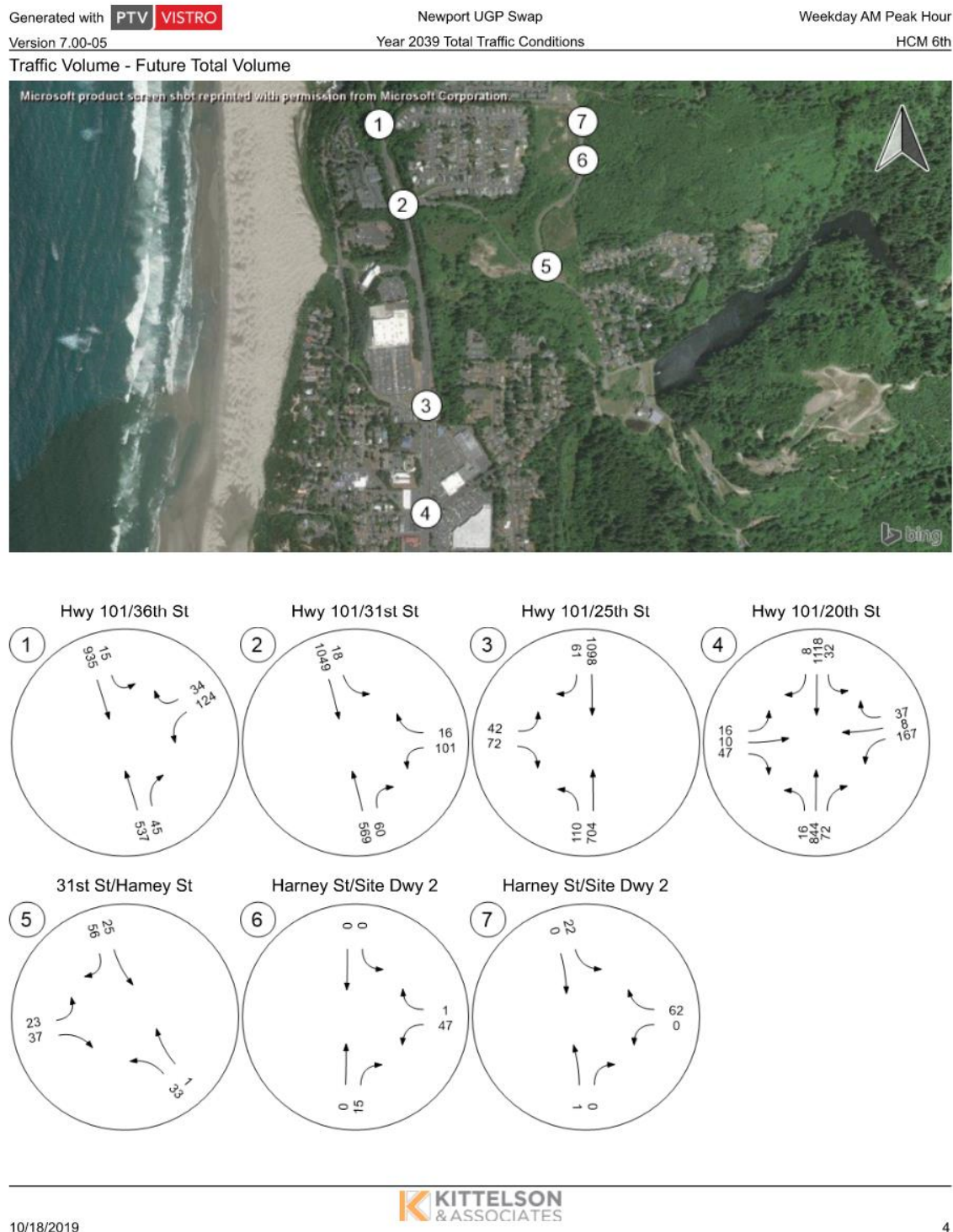
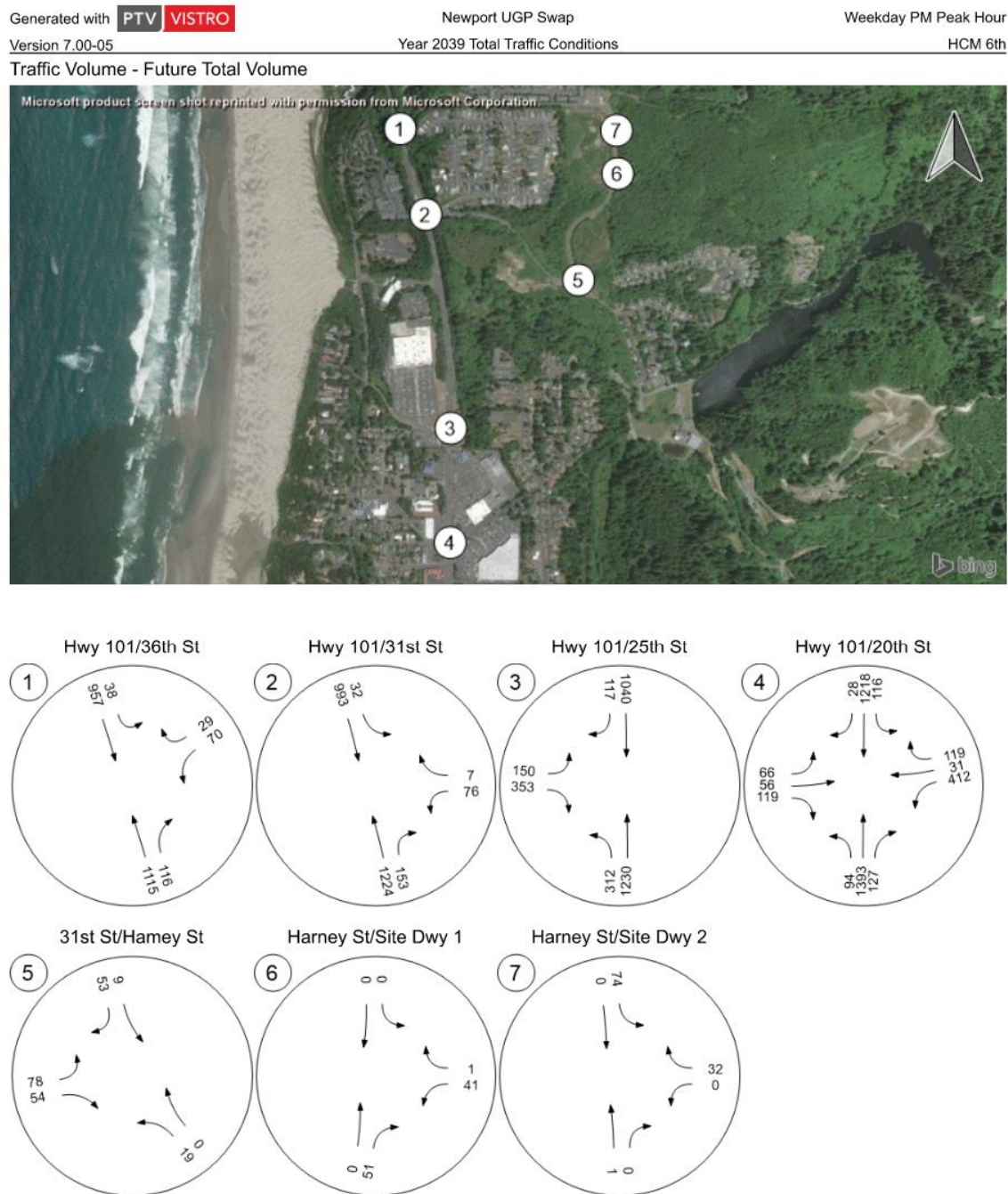


Figure 10 – 2040 Traffic Volumes (w/ Proposed Residential Zoning), Weekday PM Peak Hour



10/18/2019

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& ASSOCIATES

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## Year 2040 Intersection Operation Deficiencies and Mitigation Measures

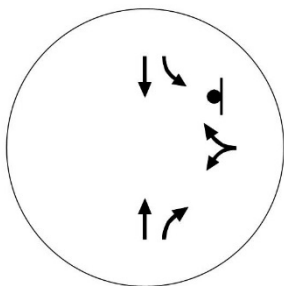
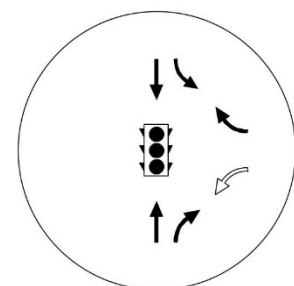
As noted in Table 8, the inclusion of R-2 Medium Density Single Family Residential zoning on the 40 acres is forecast to result in a measurable degradation of the four US 101 study intersections when compared to the 2040 Background Conditions analysis. Therefore, per the TPR, the proposed land exchange has the potential to create a significant effect on the supporting transportation infrastructure. The following sections identify potential mitigation measures that could be considered to address forecast operations.

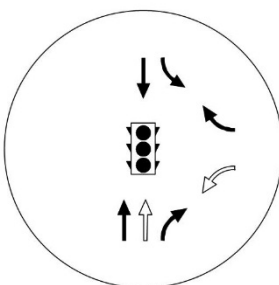
### US 101/NE 36<sup>th</sup> Street Intersection

The westbound approach at the unsignalized US 101/NE 36<sup>th</sup> Street intersection is projected to exceed the mobility target during the weekday AM peak hour and operate well over capacity during the weekday PM peak hour. In recognition of these findings, the following investigation was performed:

- A signal warrant analysis found that the intersection is forecast to meet the volume-based planning warrants for a traffic signal.
- Given that signalization of the intersection is already identified in the Newport TSP, mitigation scenarios were limited to signalization and potential roadway widening options as summarized in Table 9 below.

**Table 9 – US 101/NE 36<sup>th</sup> Street Intersection Mitigation Summary, 2040 Total Traffic Conditions**

US 101/NE 36 <sup>th</sup> Street Intersection	Weekday AM Peak Hour			Weekday PM Peak Hour				
Under Existing Unsignalized Intersection Configurations								
	Critical Westbound Approach V/C = 0.91			Critical Westbound Approach V/C = 1.75				
Mitigation Option #1 – Signalization w/separate left- and right-turn lanes on NE 36 <sup>th</sup> Street								
	V/C = 0.73	Approach	Lane	95 <sup>th</sup> Queue	V/C = 0.88	Approach	Lane	95 <sup>th</sup> Queue
WB		LT	75	WB		LT	50	
		RT	25			RT	25	
SB		TH	200	SB		TH	100	
		LT	25			LT	25	
NB		TH	100	NB		TH	900	
	RT	25	RT		25			

US 101/NE 36 <sup>th</sup> Street Intersection		Weekday AM Peak Hour			Weekday PM Peak Hour			
Mitigation Option #2 – Signalization w/separate left- and right-turn lanes on NE 36th Street and a second northbound lane on US 101								
	V/C = 0.73	Approach	Lane	95 <sup>th</sup> Queue	V/C = 0.78	Approach	Lane	95 <sup>th</sup> Queue
		WB	LT	75		WB	LT	25
			RT	25			RT	25
		SB	TH	250		SB	TH	75
			LT	25			LT	25
		NB	TH	50		NB	TH	100
	RT		50	RT	100			

Note: Hollow arrows represent assumed lane configurations

As shown in Table 9, Mitigation Scenario #1 involves the signalization of the intersection along with widening for separate left- and right-turn lanes on the NE 36<sup>th</sup> Street approach. While this scenario would restore working capacity to the intersection (0.88), it would still operate above the 0.80 mobility target during the weekday PM peak hour. As such, Mitigation Scenario #2 assessed a widening of the critical northbound US 101 approach to include a second northbound through lane. This additional US 101 widening coupled with all the improvements under Mitigation Scenario #1 would provide sufficient capacity (0.78) to meet the 0.80 mobility target. *Appendix "G" includes the 2040 total traffic mitigation operations analysis worksheets.*

### *Summary of US 101/NE 36<sup>th</sup> Street Intersection Mitigation and Potential Alternative Mobility Targets*

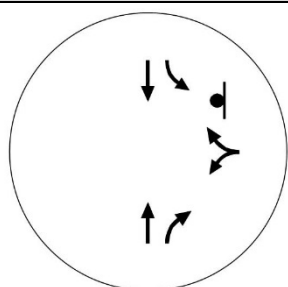
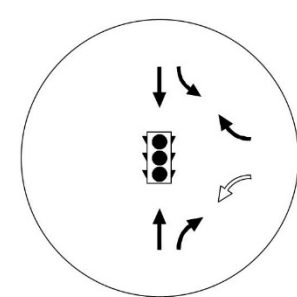
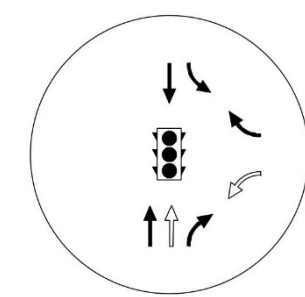
The analysis in Table 9 shows that without traffic control and widening improvements, the US 101/NE 36<sup>th</sup> Street intersection will operate over capacity. With the first level of intersection improvements in place (i.e. signalization w/separate left- and right-turn lanes on NE 36<sup>th</sup> Street), working capacity will be restored to the intersection, but it would still operate above the ODOT mobility target during the weekday PM peak hour. Given that the intersection will require a significant additional enhancement (a second northbound lane on US 101) to fully meet the 0.80 mobility target, the City of Newport may want to consider adoption of alternative mobility targets along this segment of US 101 as part of its ongoing Transportation System Plan (TSP) update. For example, adoption of an alternative 0.90 or higher mobility target during 30<sup>th</sup> highest hour conditions or using an analysis period other than peak season for this segment of US 101 would result in the intersection meeting mobility targets under the more realistic and achievable Mitigation Scenario #1.

### US 101/NE 31<sup>st</sup> Street Intersection

The westbound approach at the unsignalized US 101/NE 31<sup>st</sup> Street intersection is projected to operate over capacity during the weekday AM and PM peak hours. In recognition of these findings, the following investigation was performed:

- A signal warrant analysis found that the intersection is forecast to meet the volume-based planning warrants for a traffic signal.
- Given the context and constraints of the study area, mitigation scenarios were limited to signalization and potential roadway widening options as summarized in Table 10 below.

**Table 10 – US 101/NE 31<sup>st</sup> Street Intersection Mitigation Summary, 2040 Total Traffic Conditions**

US 101/NE 31 <sup>st</sup> Street Intersection		Weekday AM Peak Hour			Weekday PM Peak Hour			
Under Existing Unsignalized Intersection Configurations								
	Critical Westbound Approach V/C = 1.11				Critical Westbound Approach V/C = 1.69			
Mitigation Option #1 – Signalization w/separate left- and right-turn lanes on NE 31 <sup>st</sup> Street								
	V/C = 0.79	Approach	Lane	95 <sup>th</sup> Queue	V/C = 0.95	Approach	Lane	95 <sup>th</sup> Queue
WB		LT	75	WB		LT	50	
		RT	25			RT	25	
SB		TH	400	SB		TH	125	
		LT	25			LT	25	
NB		TH	100	NB		TH	1,300	
		RT	25			RT	25	
Mitigation Option #2 – Signalization w/separate left- and right-turn lanes on NE 31 <sup>st</sup> Street and a second northbound lane on US 101								
	V/C = 0.79	Approach	Lane	95 <sup>th</sup> Queue	V/C = 0.79	Approach	Lane	95 <sup>th</sup> Queue
WB		LT	75	WB		LT	50	
		RT	25			RT	25	
SB		TH	400	SB		TH	100	
		LT	25			LT	25	
NB		TH	50	NB		TH	125	
		RT	50			RT	25	

Note: Hollow arrows represent assumed lane configurations

As shown in Table 10, Mitigation Scenario #1 involves the signalization of the intersection along with widening for separate left- and right-turn lanes on the NE 31<sup>st</sup> Street approach. While this scenario would restore some capacity to the intersection (0.95), it would still operate well above the 0.80 mobility target during the weekday PM peak hour. As such, Mitigation Scenario #2 assessed a widening of the critical northbound US 101 approach to include a second northbound through lane. This additional widening coupled with all the improvements under Mitigation Scenario #1 would provide sufficient capacity (0.79) to meet the 0.80 mobility target. *Appendix "G" includes the 2040 total traffic mitigation operations analysis worksheets.*

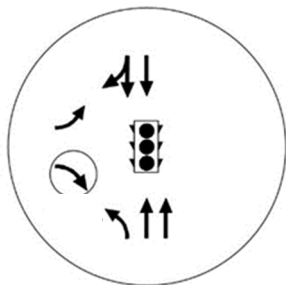
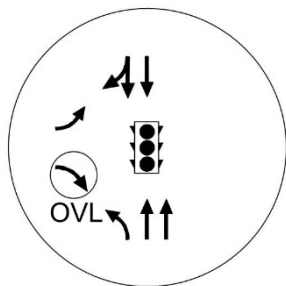
#### *Summary of US 101/NE 31<sup>st</sup> Street Intersection Mitigation and Potential Alternative Mobility Targets*

The analysis in Table 10 shows that without traffic control and physical improvements, the US 101/NE 31<sup>st</sup> Street intersection will operate over capacity. With the first level of intersection improvements in place (i.e. signalization w/separate left- and right-turn lanes on NE 31<sup>st</sup> Street), some capacity will be restored to the intersection, but it would still operate well above the ODOT mobility target during the weekday PM peak hour. Given that the intersection will require a significant additional enhancement (a second northbound lane on US 101) to fully meet the 0.80 mobility target, the City of Newport may want to consider adoption of alternative mobility targets along this segment of US 101 as part of its ongoing Transportation System Plan (TSP) update. For example, adoption of an alternative 0.95 or higher mobility target during 30<sup>th</sup> highest hour conditions, or using an analysis period other than peak season for this segment of US 101 would result in the intersection meeting mobility targets under the more realistic and achievable Mitigation Scenario #1.

### US 101/NE 25<sup>th</sup> Street Intersection

The US 101/NE 25<sup>th</sup> Street intersection is forecast to operate at volume-to-capacity ratio of 0.94 during the weekday PM peak hour which exceeds the critical 0.92 volume-to-capacity ratio under background conditions. In recognition of this finding, a mitigation scenario was evaluated that involves the addition of right-turn overlap phasing to the eastbound right-turn lane. As summarized in Table 11, this relatively simple and inexpensive signal modification will significantly improve the intersection to an acceptable 0.76 volume-to-capacity ratio. *Appendix "G" includes the 2040 total traffic mitigation operations analysis worksheets.*

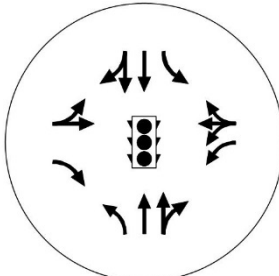
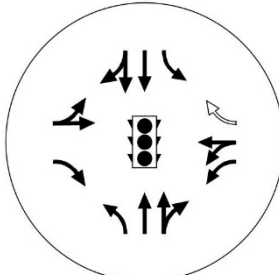
**Table 11 - US 101/NE 25<sup>th</sup> Street Intersection Mitigation Summary, 2040 Total Traffic Conditions**

US 101/NE 25 <sup>th</sup> Street Intersection		Weekday AM Peak Hour			Weekday PM Peak Hour				
Under Existing Intersection Configurations									
		V/C = 0.59			V/C = 0.94				
Mitigation – Add overlap phasing to the eastbound right-turn movement									
		V/C = 0.56	Approach	Lane	95 <sup>th</sup> Queue	V/C = 0.76	Approach	Lane	95 <sup>th</sup> Queue
EB	LT		75	EB	LT		200		
	RT		50		RT		350		
SB	TH		275	SB	TH		675		
NB	TH		175	NB	TH		350		
	LT	50	LT		475				

### US 101/NE 20<sup>th</sup> Street Intersection

The US 101/NE 20<sup>th</sup> Street intersection is forecast to operate at volume-to-capacity ratio of 0.95 during the weekday PM peak hour which exceeds the critical 0.92 volume-to-capacity ratio under background conditions. In recognition of this finding, a mitigation scenario was evaluated that involves the addition of right-turn overlap phasing to the eastbound right-turn lane and the addition of a separate westbound right-turn lane. As summarized in Table 12, this signal and signal timing modification will improve the intersection to an acceptable 0.89 volume-to-capacity ratio. *Appendix "G" includes the 2040 total traffic mitigation operations analysis worksheets.*

**Table 12 - US 101/NE 20<sup>th</sup> Street Intersection Mitigation Summary, 2040 Total Traffic Conditions**

US 101/NE 31 <sup>st</sup> Street Intersection	Weekday AM Peak Hour	Weekday PM Peak Hour						
Under Existing Intersection Configurations								
	V/C = 0.58	V/C = 0.95						
Mitigation Option #1 – Add overlap phasing to the eastbound right-turn movement and add a separate westbound right-turn lane								
	V/C = 0.58	Approach	Lane	95 <sup>th</sup> Queue	V/C = 0.89	Approach	Lane	95 <sup>th</sup> Queue
		EB	LT/TH	50		EB	LT/TH	200
			RT	25			RT	150
		WB	LT	125		WB	LT	300
			LT/TH	150			LT/TH	300
			RT	50			RT	175
		SB	TH/RT	350		SB	TH/RT	625
			LT	75			LT	250
		NB	LT	50		NB	LT	175
			TH/RT	275			TH/RT	950

Note: Hollow arrows represent assumed lane configurations

### Summary of US 101/NE 20<sup>th</sup> Street Intersection Mitigation and Potential Alternative Mobility Targets

The analysis in Table 12 shows that without traffic control and physical improvements, the US 101/NE 20<sup>th</sup> Street intersection will operate over the 0.92 background volume-to-capacity ratio and over the 0.90 mobility target. With the identified intersection improvements in place (i.e. eastbound right-turn

overlap phasing and a separate westbound right-turn lane on NE 20<sup>th</sup> Street), some capacity will be restored to the intersection. However, given that the westbound right-turn lane will likely involve right-of-way impacts to the adjacent parcel, the City of Newport may consider adoption of alternative mobility targets along this segment of US 101 as part of its ongoing Transportation System Plan (TSP) update. For example, adoption of an alternative 0.95 or higher mobility target during 30<sup>th</sup> highest hour conditions, or using an analysis period other than peak season for this segment of US 101 would result in the intersection meeting mobility targets without the costly and impactful right-turn lane improvement.

### Alternative Trip Routing Scenario Using Big Creek Road

At the request of the City of Newport, an alternative operations scenario was performed that assumes significant upgrades to Big Creek Road (widened to bi-directional travel and modernized to accommodate multi-modal use) and an associated higher percentage of local trips using this facility as an alternative to US 101. To address this request, a reasonable portion of the localized background growth and the new trips generated by urbanization of the 40 acres was reassigned to Big Creek Road. In summary, each of the study intersections that was previously identified as either operating over capacity or over their respective mobility targets would continue to operate over capacity or over their respective mobility targets. While Big Creek Road would provide some parallel benefit (particularly for trips to/from the local public schools), that benefit has its limitations given the roadways circuitous alignment through established residential neighborhoods and its lack of connections to major retail centers along the US 101 corridor.

## TRANSPORTATION PLANNING RULE COMPLIANCE

This section addresses the Oregon Administrative Rule Section 660-12-0060 of the Oregon Transportation Planning Rule (TPR) requirements for the proposed zone change.

### TRANSPORTATION PLAN RULE

OAR Section 660-12-0060 Plan and Land Use Regulation Amendments of the TPR sets forth the criteria for evaluating plan and land use regulation amendments. The criteria establish the determination of significant effect on a transportation system resulting from a land use action; where a significant effect is identified, the criteria establish the means for achieving compliance. The relevant portion of this section of the TPR is reproduced below in italics followed by the response for this project in standard text.

#### ***660-12-0060 Plan and Land Use Regulation Amendments***

*(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. A plan or land use regulation amendment significantly affects a transportation facility if it would:*

*(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);*

**Response: The proposed land exchange and residential zoning of the 40-acre site will not require or result in any changes to the functional classification of any transportation facility in the vicinity of the site.**

*(b) Change standards implementing a functional classification system; or*

**Response: The proposed land exchange and residential zoning of the 40-acre site will not outright require changes to the standards that implement the functional classification system. However, if desired by the City of Newport and ODOT, alternative mobility targets could potentially be adopted to address the operational impacts of the proposed land exchange. See subsequent responses to the (c) below.**

*(c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to,*

*transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.*

*(A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;*

**Response:** The proposed land exchange and residential zoning of the 40-acre site would result in future traffic volumes that are consistent with the functional classifications of the roadways in the study area.

*(B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or*

**Response:** The proposed land exchange and residential zoning of the 40-acre site would degrade operations of the US 101/NE 36<sup>th</sup> Street and US 101/NE 31<sup>st</sup> Street intersections below their respective mobility targets. Signalization and the addition of travel lanes on US 101, NE 36<sup>th</sup> Street, and NE 31<sup>st</sup> Street would improve forecast intersection operations back to acceptable levels. Alternatively, signalization, widening to the NE 36<sup>th</sup> Street and NE 31<sup>st</sup> Street approaches, and potential adoption of alternative mobility targets would allow operations to be measured at acceptable levels without the significant and costly widening of US 101.

*(C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.*

**Response:** Without any mitigation measures in place, the proposed land exchange and residential zoning of the 40-acre site would result in further degradation of failing operations at the US 101/NE 25<sup>th</sup> Street and US 101/NE 20<sup>th</sup> Street intersections. Modification of current signal phasing would restore the US 101/NE 25<sup>th</sup> Street intersection to a v/c ratio that is better than the respective mobility target. Modification of current signal phasing and the installation of a separate westbound right-turn lane would restore the US 101/NE 20<sup>th</sup> Street intersection to a v/c ratio that is better than the respective mobility target. Alternatively, potential adoption of alternative mobility targets would allow operations to be measured at acceptable levels without the significant and costly widening of the westbound NE 20<sup>th</sup> Street approach.

## CONCLUSIONS

Based on the long-term traffic impact analyses detailed in this report, the proposed land exchange and residential zoning of the 40-acre site has the potential to significantly affect the surrounding transportation system. As mitigation for this potential significant effect and to comply with the TPR (OAR Section 660-12-0060), the following intersection improvements can be considered:

### *The US 101/NE 36<sup>th</sup> Street Intersection Improvements:*

- Capacity Enhancing Projects:
  - Widen the westbound NE 36<sup>th</sup> Street approach to include a separate left- and right-turn lane.
  - Install a traffic signal
- Additional Projects to Meet the Currently Adopted 0.80 Mobility Target:
  - Widen US 101 to include a second northbound through lane
- Alternative to Meeting the 0.80 Mobility Target:
  - City of Newport and ODOT consider the adoption of an alternative mobility target (0.90 or higher) under 30<sup>th</sup> highest hour conditions or maintain the existing target under other than peak season conditions.

### *US 101/NE 31<sup>st</sup> Street Intersection*

- Capacity Enhancing Projects:
  - Widen the westbound NE 31<sup>st</sup> Street approach to include a separate left- and right-turn lane.
  - Install a traffic signal
- Additional Projects to Meet the Currently Adopted 0.80 Mobility Target:
  - Widen US 101 to include a second northbound through lane
- Alternative to Meeting the 0.80 Mobility Target:
  - City of Newport and ODOT consider the adoption of an alternative mobility target (0.95 or higher) under 30<sup>th</sup> highest hour conditions or maintain the existing target under other than peak season conditions.

### *US 101/NE 25<sup>th</sup> Street Intersection*

- Projects to Restore the Intersection to Background Traffic Conditions:
  - Install right-turn overlap phasing on the eastbound approach

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*US 101/NE 20<sup>th</sup> Street Intersection*

- Projects to Restore the Intersection to Background Traffic Conditions/Mobility Target:
  - Install right-turn overlap phasing on the eastbound approach.
  - Construct a separate westbound right-turn lane on the NE 20th Street approach.
- Alternative to Meeting the 0.90 Mobility Target:
  - City of Newport and ODOT consider the adoption of an alternative mobility target (0.95 or higher) under 30th highest hour conditions or maintain the existing target under other than peak season conditions.

Sincerely,  
KITTELSON & ASSOCIATES, INC.



Matt Hughart, AICP  
Principal Planner



Susan Wright, P.E.  
Principal Engineer



Ali Razmpa  
Transportation Analyst

## Appendix A   Season Adjustment Calculations

## SEASONAL ADJUSTMENT CALCULATIONS

Version 2 of the APM identifies three methods for identifying seasonal adjustment factors for highway traffic volumes. All three methods utilize information provided by Automatic Traffic Recorders (ATR) located in select locations throughout the State Highway System that collect traffic data 24-hours a day/365 days a year. Within the study area, ATR #21-009 is located on US 101 at NW 25th Street. Given this location is within the study area, the On-Site ATR Method was used to adjust the intersection turning movement counts to 30<sup>th</sup> highest hour conditions. Since the traffic counts were taken in early June, an average of May and June data was used. The proposed seasonal adjustment factor calculations for ATR #21-009 is summarized in the Table below.

	2013	2014	2015	2016	2017	Avg
Peak Month (August)	127%	129%	122%	124%	123%	125%
Count Month (June)	108%	110%	113%	113%	113%	112%
Count Month (May)	101	100	100	104	104	102%

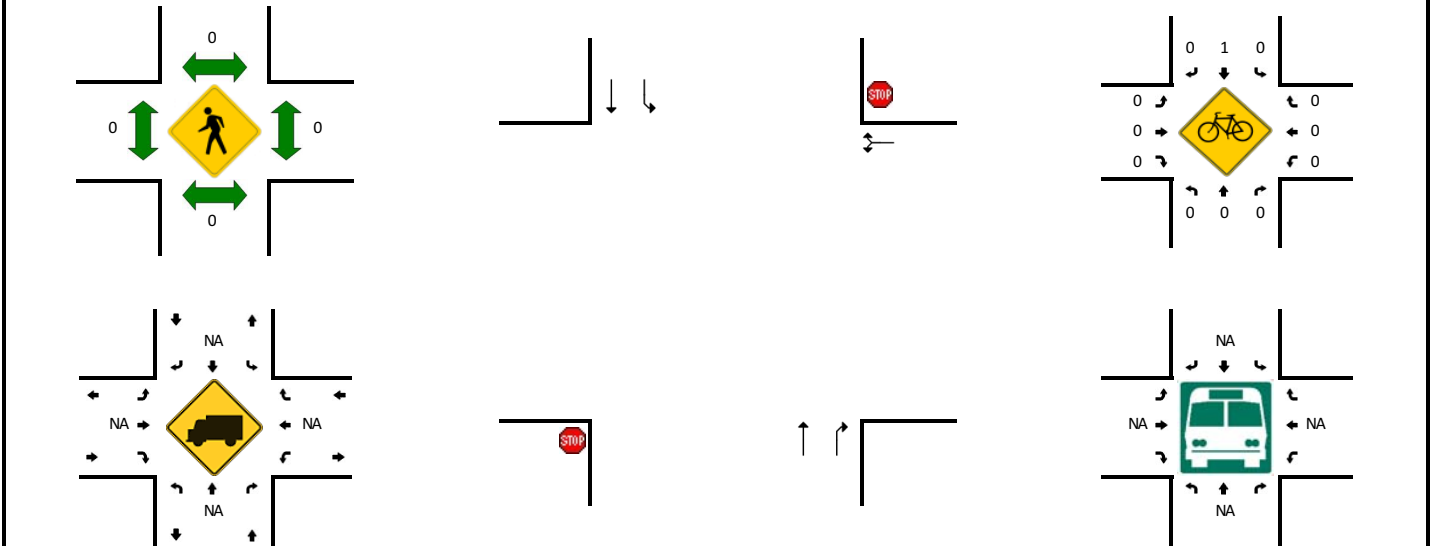
- The average peak month (August) is:  $(127\% + 124\% + 123\%) / 3 = 125\%$
- The average count month (June) is:  $(110\% + 113\% + 113\%) / 3 = 112\%$
- The average count month (May) is:  $(101\% + 100\% + 104\%) / 3 = 102\%$
- The average of June and May is:  $(112\% + 102\%) / 2 = 107\%$
- The season adjustment factor is  $125\% / 107\% = \mathbf{1.17}$

## Appendix B Traffic Counts

**LOCATION:** Hwy 101 -- NE 36th St  
**CITY/STATE:** Lincoln, OR

**QC JOB #:** 15004601  
**DATE:** Wed, Jun 5 2019

Peak-Hour: 7:20 AM -- 8:20 AM  
 Peak 15-Min: 7:45 AM -- 8:00 AM



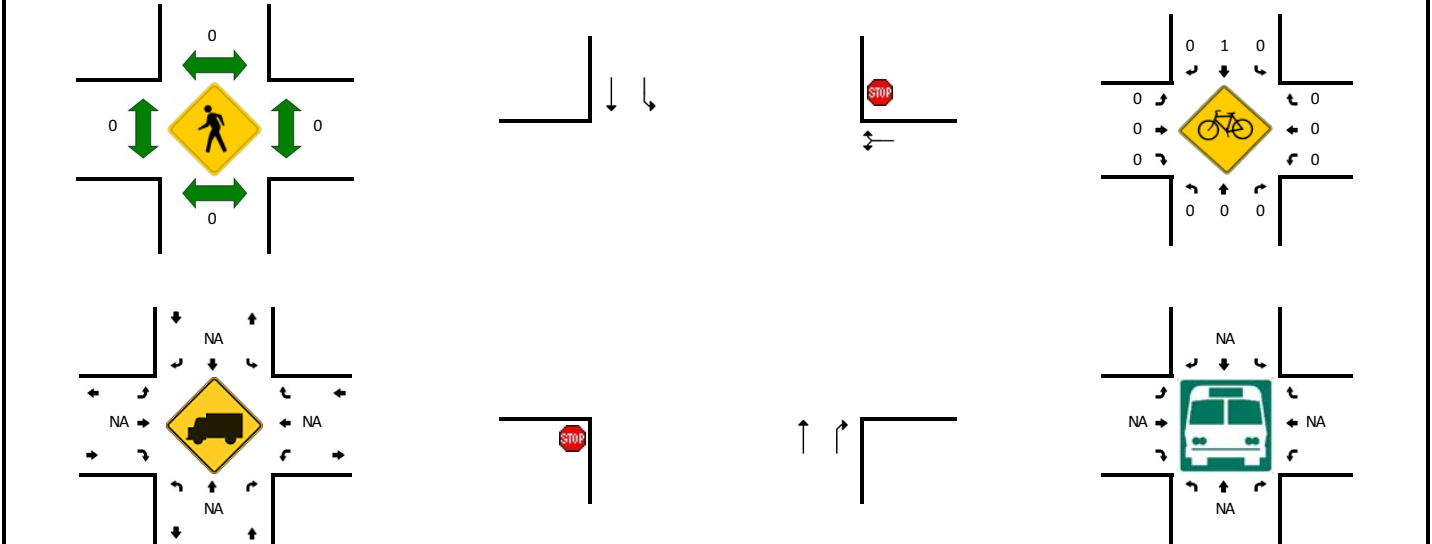
5-Min Count Period Beginning At	Hwy 101 (Northbound)				Hwy 101 (Southbound)				NE 36th St (Eastbound)				NE 36th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	29	0	0	0	33	0	0	0	0	0	0	3	0	2	0	67	
7:05 AM	0	24	1	0	0	23	0	0	0	0	0	0	1	0	0	0	49	
7:10 AM	0	17	0	0	0	26	0	0	0	0	0	0	0	0	0	0	43	
7:15 AM	0	31	1	0	0	42	0	0	0	0	0	0	4	0	0	0	78	
7:20 AM	0	33	3	0	1	53	0	0	0	0	0	0	5	0	1	0	96	
7:25 AM	0	27	0	0	0	45	0	0	0	0	0	0	6	0	0	0	78	
7:30 AM	0	28	0	0	1	59	0	0	0	0	0	0	5	0	0	0	93	
7:35 AM	0	27	2	0	0	57	0	0	0	0	0	0	4	0	2	0	92	
7:40 AM	0	19	2	0	0	67	0	0	0	0	0	0	5	0	0	0	93	
7:45 AM	0	37	1	0	2	88	0	0	0	0	0	0	4	0	0	0	132	
7:50 AM	0	27	0	0	0	67	0	0	0	0	0	0	1	0	0	0	95	
7:55 AM	0	33	4	0	0	69	0	0	0	0	0	0	8	0	1	0	115	1031
8:00 AM	0	30	1	0	0	40	0	0	0	0	0	0	3	0	0	0	74	1038
8:05 AM	0	39	3	0	1	41	0	0	0	0	0	0	2	0	0	0	86	1075
8:10 AM	0	35	1	0	0	46	0	0	0	0	0	0	2	0	0	0	84	1116
8:15 AM	0	39	1	0	0	32	0	0	0	0	0	0	2	0	0	0	74	1112
8:20 AM	0	35	1	0	0	31	0	0	0	0	0	0	5	0	0	0	72	1088
8:25 AM	0	40	4	0	1	27	0	0	0	0	0	0	2	0	0	0	74	1084
8:30 AM	0	32	1	0	1	48	0	0	0	0	0	0	6	0	1	0	89	1080
8:35 AM	0	38	0	0	1	61	0	0	0	0	0	0	0	0	0	0	100	1088
8:40 AM	0	25	3	0	1	49	0	0	0	0	0	0	3	0	0	0	81	1076
8:45 AM	0	39	0	0	0	36	0	0	0	0	0	0	3	0	1	0	79	1023
8:50 AM	0	34	1	0	0	43	0	0	0	0	0	0	0	0	1	0	79	1007
8:55 AM	0	27	0	0	0	32	0	0	0	0	0	0	4	0	1	0	64	956
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	388	20	0	8	896	0	0	0	0	0	0	52	0	4	0	1368	
Heavy Trucks	0	20	0	0	0	60	0	0	0	0	0	0	0	0	0	0	80	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

Comments:

**LOCATION:** Hwy 101 -- NE 31st St  
**CITY/STATE:** Lincoln, OR

**QC JOB #:** 15004603  
**DATE:** Wed, Jun 5 2019

**Peak-Hour:** 7:20 AM -- 8:20 AM  
**Peak 15-Min:** 7:45 AM -- 8:00 AM

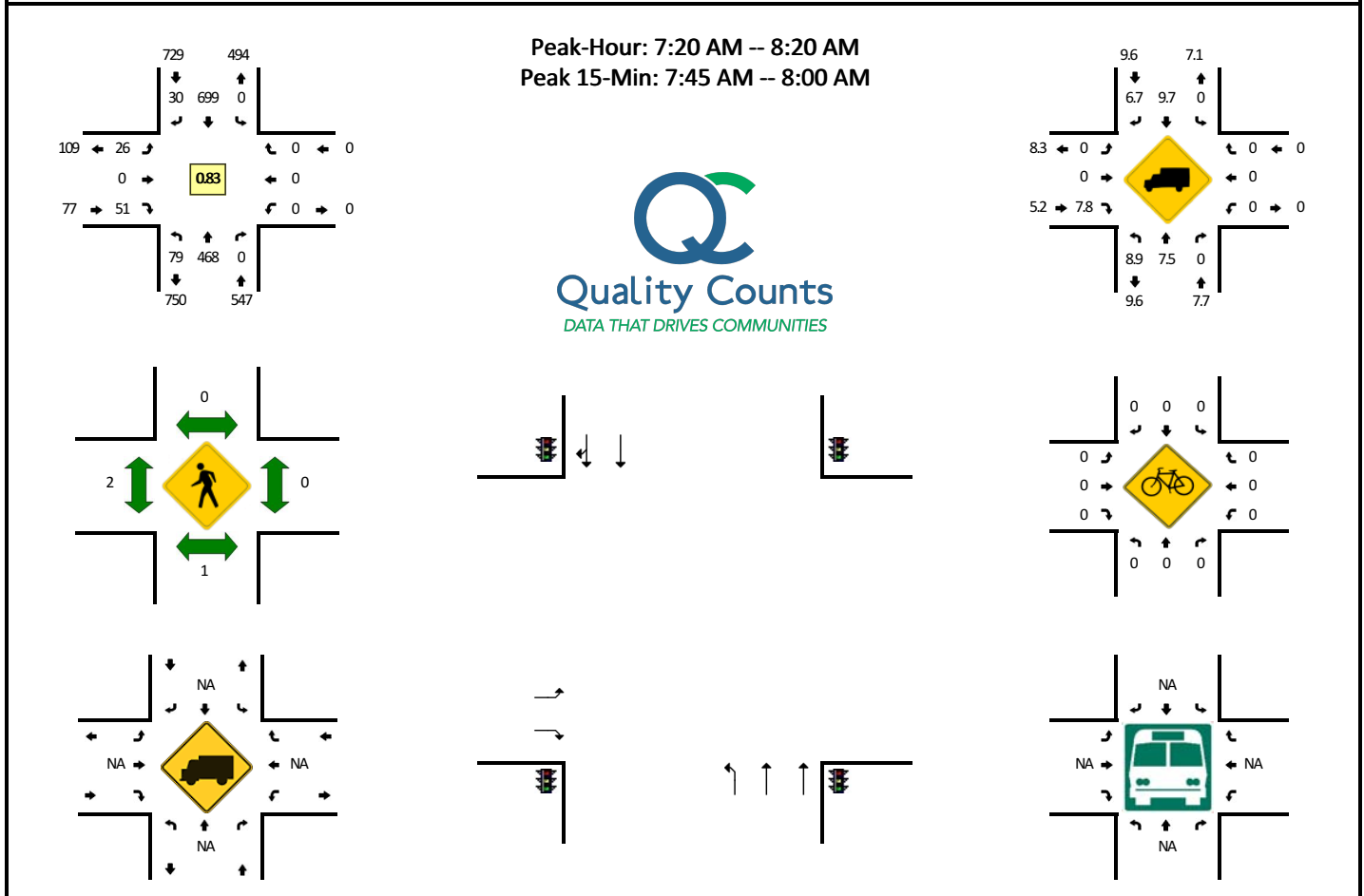


5-Min Count Period Beginning At	Hwy 101 (Northbound)				Hwy 101 (Southbound)				NE 31st St (Eastbound)				NE 31st St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	32	0	0	0	35	0	0	0	0	0	0	2	0	1	0	70	
7:05 AM	0	22	2	0	0	24	0	0	0	0	0	0	1	0	0	0	49	
7:10 AM	0	16	2	0	1	26	0	0	0	0	0	0	2	0	0	0	47	
7:15 AM	0	35	1	0	0	46	0	0	0	0	0	0	2	0	0	0	84	
7:20 AM	0	33	0	0	0	57	0	0	0	0	0	0	2	0	0	0	92	
7:25 AM	0	30	2	0	0	52	0	0	0	0	0	0	4	0	0	0	88	
7:30 AM	0	27	0	0	0	64	0	0	0	0	0	0	3	0	1	0	95	
7:35 AM	0	27	2	0	3	58	0	0	0	0	0	0	5	0	0	0	95	
7:40 AM	0	25	3	0	1	71	0	0	0	0	0	0	5	0	0	0	105	
7:45 AM	0	34	0	0	0	92	0	0	0	0	0	0	5	0	1	0	132	
7:50 AM	0	25	7	0	0	67	0	0	0	0	0	0	4	0	0	0	103	
7:55 AM	0	37	4	0	4	74	0	0	0	0	0	0	3	0	1	0	123	1083
8:00 AM	0	32	2	0	1	42	0	0	0	0	0	0	2	0	1	0	80	1093
8:05 AM	0	38	4	0	0	43	0	0	0	0	0	0	6	0	0	0	91	1135
8:10 AM	0	41	1	0	1	47	0	0	0	0	0	0	0	0	0	0	90	1178
8:15 AM	0	38	2	0	3	31	0	0	0	0	0	0	3	0	0	0	77	1171
8:20 AM	0	34	3	0	2	33	0	0	0	0	0	0	0	0	0	0	72	1151
8:25 AM	0	44	0	0	1	29	0	0	0	0	0	0	3	0	0	0	77	1140
8:30 AM	0	36	0	0	1	53	0	0	0	0	0	0	2	0	0	0	92	1137
8:35 AM	0	37	3	0	1	60	0	0	0	0	0	0	3	0	0	0	104	1146
8:40 AM	0	25	2	0	1	51	0	0	0	0	0	0	1	0	0	0	80	1121
8:45 AM	0	40	0	1	0	39	0	0	0	0	0	0	5	0	0	0	85	1074
8:50 AM	0	37	1	0	0	43	0	0	0	0	0	0	2	0	0	0	83	1054
8:55 AM	0	28	3	0	1	35	0	0	0	0	0	0	4	0	0	0	71	1002
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	384	44	0	16	932	0	0	0	0	0	0	48	0	8	0	1432	
Heavy Trucks	0	20	0	0	0	60	0	0	0	0	0	0	0	0	0	0	80	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

**Comments:**

**LOCATION:** Hwy 101 -- NW 25th St  
**CITY/STATE:** Lincoln, OR

**QC JOB #:** 15004605  
**DATE:** Wed, Jun 5 2019



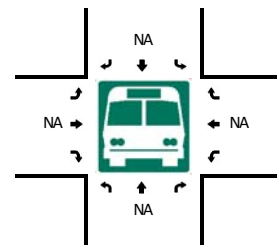
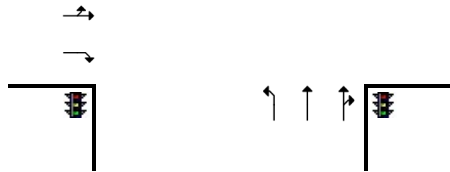
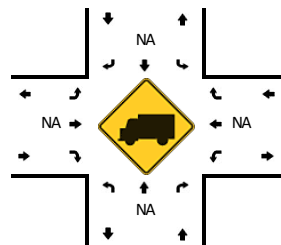
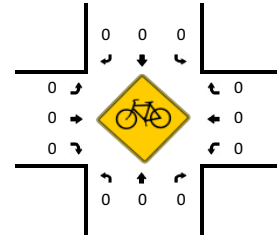
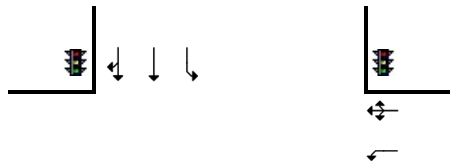
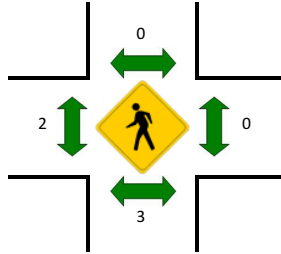
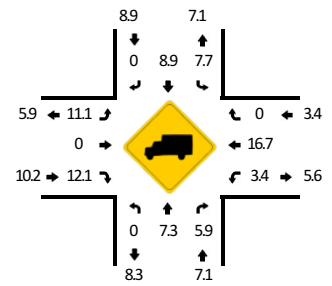
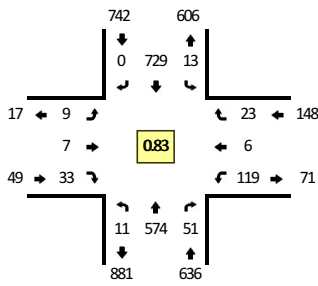
5-Min Count Period Beginning At	Hwy 101 (Northbound)				Hwy 101 (Southbound)				NW 25th St (Eastbound)				NW 25th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	29	0	0	0	34	3	0	1	0	3	0	0	0	0	0	72	
7:05 AM	4	23	0	0	0	25	0	0	3	0	0	0	0	0	0	0	55	
7:10 AM	2	20	0	0	0	24	1	0	0	0	7	0	0	0	0	0	54	
7:15 AM	1	35	0	0	0	45	3	0	1	0	4	0	0	0	0	0	89	
7:20 AM	4	37	0	0	0	59	1	0	4	0	2	0	0	0	0	0	107	
7:25 AM	5	22	0	0	0	47	2	0	2	0	8	0	0	0	0	0	86	
7:30 AM	5	31	0	0	0	67	4	0	0	0	3	0	0	0	0	0	110	
7:35 AM	6	29	0	0	0	54	2	0	4	0	6	0	0	0	0	0	101	
7:40 AM	6	41	0	0	0	78	4	0	0	0	6	0	0	0	0	0	135	
7:45 AM	7	42	0	0	0	85	2	0	2	0	7	0	0	0	0	0	145	
7:50 AM	7	33	0	0	0	72	2	0	2	0	1	0	0	0	0	0	117	
7:55 AM	6	51	0	0	0	74	2	0	7	0	4	0	0	0	0	0	144	1215
8:00 AM	5	38	0	0	0	37	2	0	2	0	5	0	0	0	0	0	89	1232
8:05 AM	9	57	0	0	0	46	5	0	1	0	3	0	0	0	0	0	121	1298
8:10 AM	3	41	0	0	0	47	2	0	1	0	2	0	0	0	0	0	96	1340
8:15 AM	16	46	0	0	0	33	2	0	1	0	4	0	0	0	0	0	102	1353
8:20 AM	2	33	0	0	0	28	2	0	2	0	3	0	0	0	0	0	70	1316
8:25 AM	7	39	0	0	0	32	3	0	2	0	4	0	0	0	0	0	87	1317
8:30 AM	3	40	0	0	0	54	2	0	3	0	7	0	0	0	0	0	109	1316
8:35 AM	12	33	0	0	0	53	6	0	3	0	9	0	0	0	0	0	116	1331
8:40 AM	8	26	0	0	0	50	8	0	2	0	7	0	0	0	0	0	101	1297
8:45 AM	8	40	0	0	0	41	3	0	2	0	12	0	0	0	0	0	106	1258
8:50 AM	12	34	0	0	0	44	3	0	2	0	5	0	0	0	0	0	100	1241
8:55 AM	6	40	0	0	0	34	3	0	0	0	10	0	0	0	0	0	93	1190
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	80	504	0	0	0	924	24	0	44	0	48	0	0	0	0	0	1624	
Heavy Trucks	4	20	0	0	0	64	0	0	0	0	4	0	0	0	0	0	92	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

Comments:

**LOCATION:** Hwy 101 -- NE 20th St  
**CITY/STATE:** Lincoln, OR

**QC JOB #:** 15004607  
**DATE:** Wed, Jun 5 2019

**Peak-Hour: 7:20 AM -- 8:20 AM**  
**Peak 15-Min: 7:45 AM -- 8:00 AM**



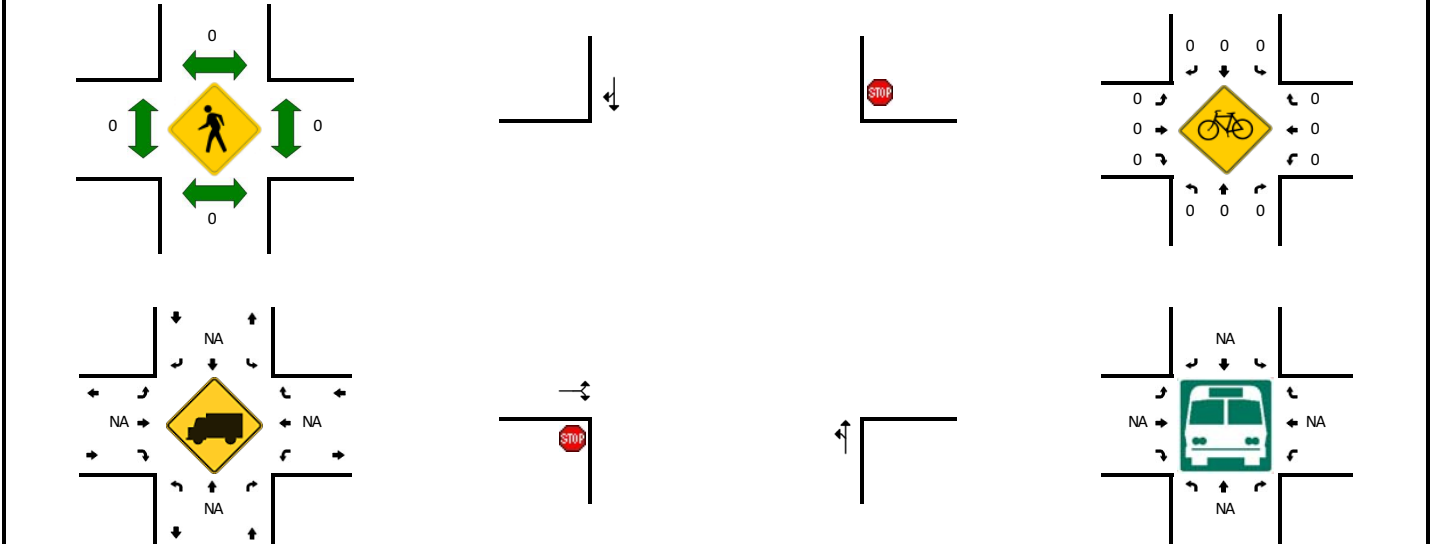
5-Min Count Period Beginning At	Hwy 101 (Northbound)				Hwy 101 (Southbound)				NE 20th St (Eastbound)				NE 20th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	31	4	0	2	35	0	0	1	0	2	0	3	0	0	0	78	
7:05 AM	2	28	2	0	0	28	0	0	1	2	0	0	4	0	1	0	68	
7:10 AM	1	22	0	0	2	30	1	0	0	0	3	0	6	0	1	0	66	
7:15 AM	2	37	2	0	0	46	0	0	0	0	1	0	8	1	0	0	97	
7:20 AM	1	44	4	0	0	46	0	0	0	1	4	0	13	0	2	0	115	
7:25 AM	1	22	3	0	1	63	0	0	1	0	1	0	15	1	1	0	109	
7:30 AM	1	42	5	0	3	65	0	0	1	0	2	0	9	0	2	0	130	
7:35 AM	0	32	2	0	2	61	0	0	1	0	2	0	11	1	1	0	113	
7:40 AM	1	50	3	0	0	70	0	0	1	1	1	0	9	0	1	0	137	
7:45 AM	0	55	2	0	1	88	0	0	0	0	3	0	11	0	3	0	163	
7:50 AM	0	47	5	0	0	77	0	0	2	2	4	0	11	1	0	0	149	
7:55 AM	3	55	3	0	0	80	0	0	1	1	5	0	8	0	6	0	162	1387
8:00 AM	1	47	5	0	2	42	0	0	1	2	1	0	11	1	4	0	117	1426
8:05 AM	0	74	5	0	2	45	0	0	0	0	5	0	2	0	0	0	133	1491
8:10 AM	2	42	2	0	1	54	0	0	0	0	4	0	7	1	2	0	115	1540
8:15 AM	1	64	12	0	1	38	0	0	1	0	1	0	12	1	1	0	132	1575
8:20 AM	2	33	2	0	1	30	1	0	1	1	1	0	15	0	4	0	91	1551
8:25 AM	3	40	6	0	2	21	0	0	2	1	1	0	11	0	1	0	88	1530
8:30 AM	0	40	1	0	3	58	1	0	2	0	2	0	5	1	2	0	115	1515
8:35 AM	2	47	7	0	0	60	1	0	1	1	6	0	13	0	1	0	139	1541
8:40 AM	4	35	2	0	4	42	0	0	0	4	8	0	9	1	4	0	113	1517
8:45 AM	3	50	2	0	3	55	2	0	2	1	4	0	5	2	0	0	129	1483
8:50 AM	2	50	7	0	3	48	0	1	0	1	6	0	6	0	1	0	125	1459
8:55 AM	4	47	7	0	3	46	0	0	2	1	4	0	6	1	1	0	122	1419
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	12	628	40	0	4	980	0	0	12	12	48	0	120	4	36	0	1896	
Heavy Trucks	0	28	4	0	0	68	0	0	0	0	0	0	12	0	0	0	112	
Pedestrians	0	4	0	0	0	0	0	0	0	4	0	0	0	0	0	0	8	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

Comments:

**LOCATION:** NE Harney St -- NE 31st St  
**CITY/STATE:** Lincoln, OR

**QC JOB #:** 15004609  
**DATE:** Wed, Jun 5 2019

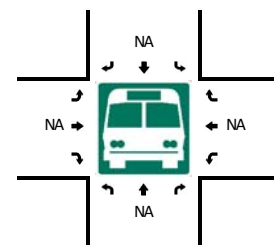
Peak-Hour: 7:20 AM -- 8:20 AM  
 Peak 15-Min: 7:45 AM -- 8:00 AM



5-Min Count Period Beginning At	NE Harney St (Northbound)				NE Harney St (Southbound)				NE 31st St (Eastbound)				NE 31st St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	
7:05 AM	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3	
7:10 AM	2	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	5	
7:15 AM	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	
7:20 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:25 AM	3	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	6	
7:30 AM	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	6	
7:35 AM	4	0	0	0	0	1	0	0	0	0	4	0	0	0	0	0	9	
7:40 AM	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	5	
7:45 AM	6	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	8	
7:50 AM	1	0	0	0	0	2	0	0	0	0	4	0	0	0	0	0	7	
7:55 AM	3	1	0	0	0	1	0	0	0	0	8	0	0	0	0	0	13	68
8:00 AM	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	5	71
8:05 AM	3	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	7	75
8:10 AM	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3	73
8:15 AM	2	0	0	0	0	0	0	0	1	0	4	0	0	0	0	0	7	77
8:20 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	78
8:25 AM	2	1	0	0	0	2	0	0	0	0	3	0	0	0	0	0	8	80
8:30 AM	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	3	77
8:35 AM	1	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	6	74
8:40 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	71
8:45 AM	5	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	6	69
8:50 AM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	64
8:55 AM	1	0	0	0	0	1	0	0	1	0	3	0	0	0	0	0	6	57
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	40	4	0	0	0	16	0	0	0	0	52	0	0	0	0	0	112	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians		0				0					0			0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

Comments:

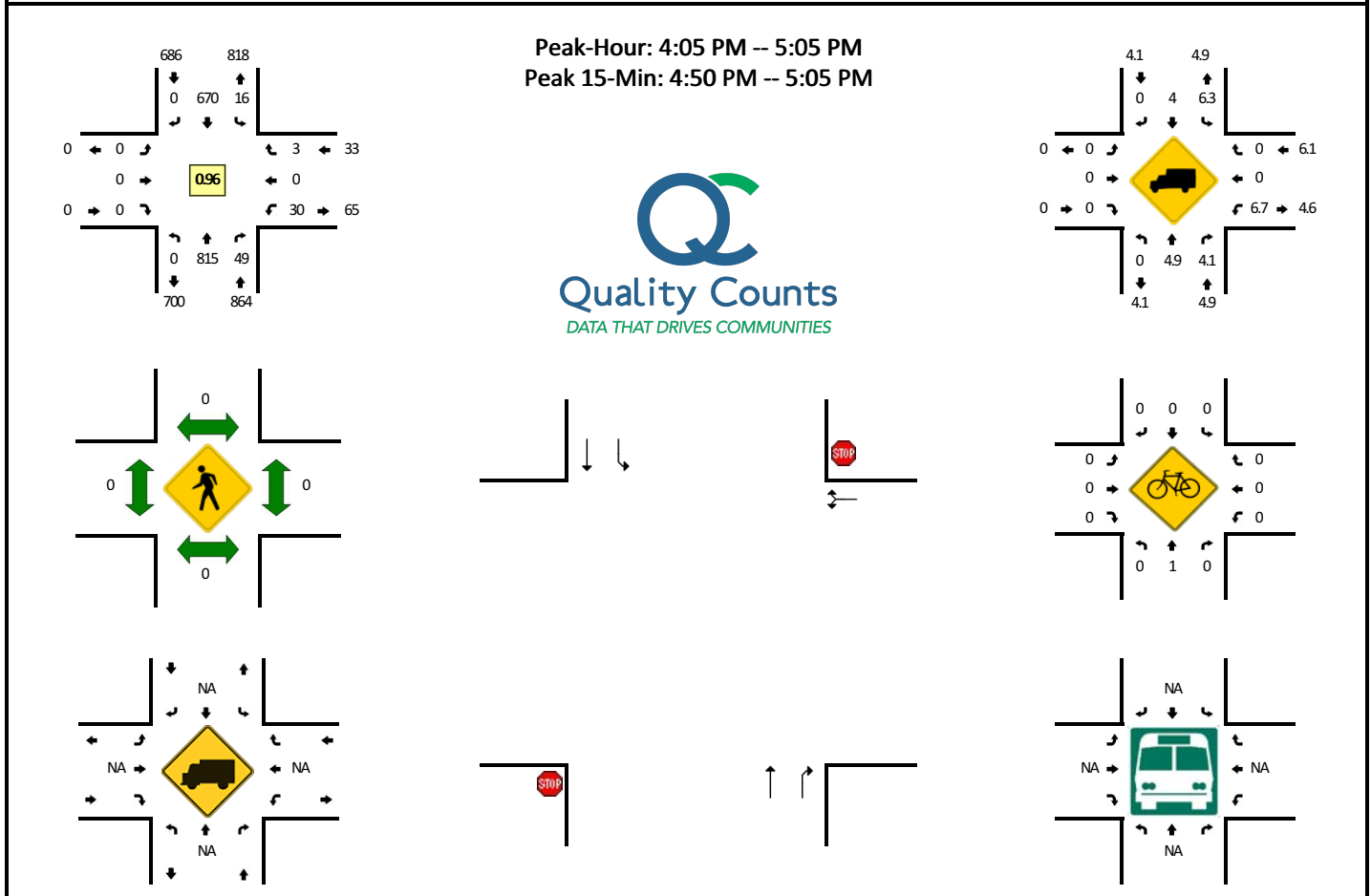
QC JOB #: 15004602  
DATE: Wed, Jun 5 2019



*Comments:*

**LOCATION:** Hwy 101 -- NE 31st St  
**CITY/STATE:** Lincoln, OR

**QC JOB #:** 15004604  
**DATE:** Wed, Jun 5 2019

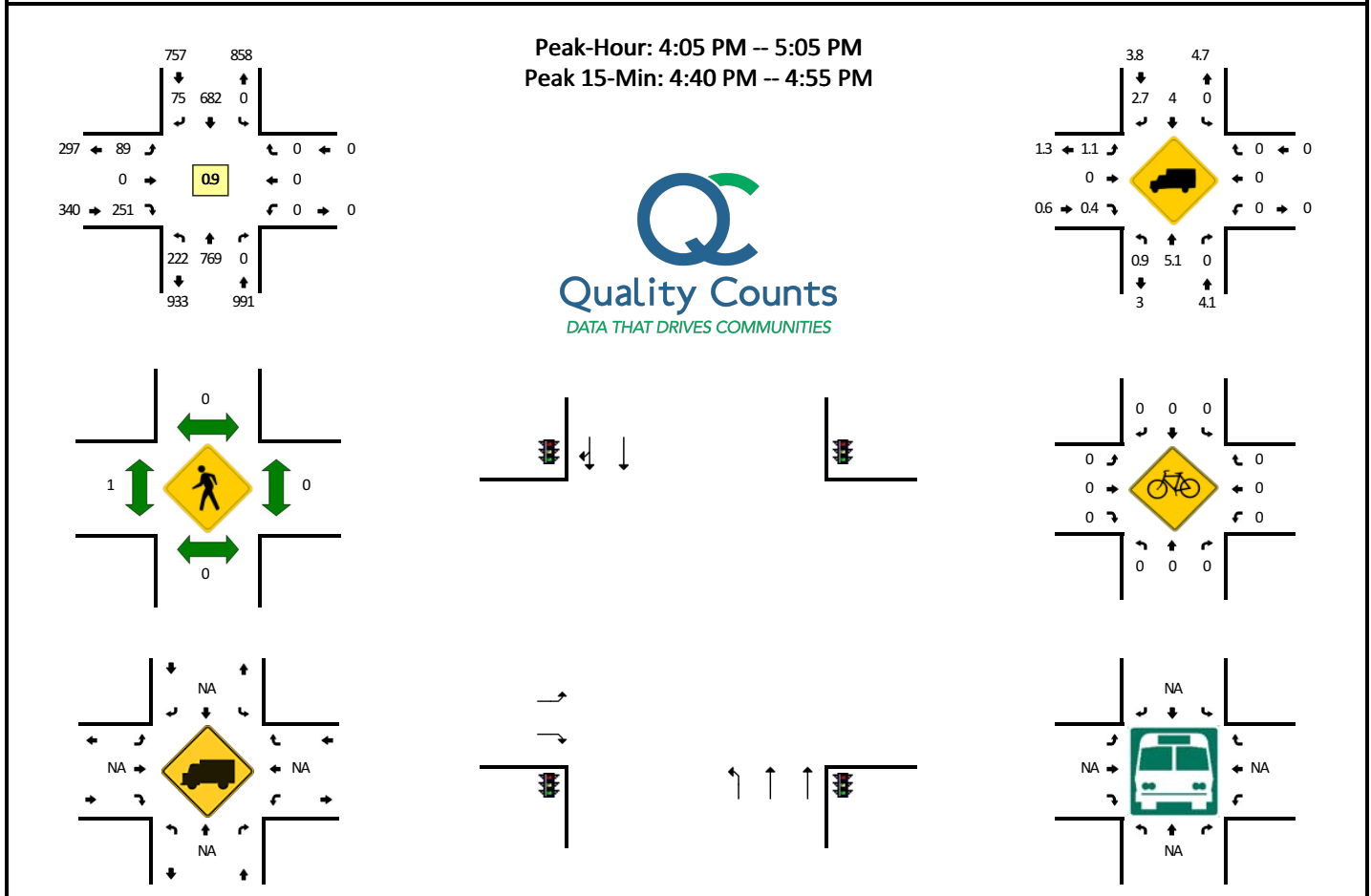


5-Min Count Period Beginning At	Hwy 101 (Northbound)				Hwy 101 (Southbound)				NE 31st St (Eastbound)				NE 31st St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	63	4	0	2	65	0	0	0	0	0	0	0	0	3	0	137	
4:05 PM	0	73	3	0	1	57	0	0	0	0	0	0	0	1	0	0	135	
4:10 PM	0	68	9	0	1	59	0	0	0	0	0	0	0	3	0	0	140	
4:15 PM	0	57	6	0	3	54	0	0	0	0	0	0	0	3	0	0	123	
4:20 PM	0	63	3	0	2	54	0	0	0	0	0	0	0	6	0	0	128	
4:25 PM	0	72	3	0	2	55	0	0	0	0	0	0	0	2	0	0	134	
4:30 PM	0	71	4	0	1	46	0	0	0	0	0	0	0	0	0	0	122	
4:35 PM	0	67	4	0	0	48	0	0	0	0	0	0	0	2	0	1	122	
4:40 PM	0	61	3	0	0	68	0	0	0	0	0	0	0	5	0	0	137	
4:45 PM	0	76	0	0	2	48	0	0	0	0	0	0	0	2	0	1	129	
4:50 PM	0	66	3	0	2	71	0	0	0	0	0	0	0	0	0	1	143	
4:55 PM	0	65	7	0	0	43	0	0	0	0	0	0	0	3	0	0	118	1568
5:00 PM	0	76	4	0	2	67	0	0	0	0	0	0	0	3	0	0	152	1583
5:05 PM	0	64	5	0	0	56	0	0	0	0	0	0	0	2	0	1	128	1576
5:10 PM	0	67	8	0	0	45	0	0	0	0	0	0	0	4	0	1	125	1561
5:15 PM	0	52	9	0	1	46	0	0	0	0	0	0	0	0	0	1	109	1547
5:20 PM	0	58	4	0	1	44	0	0	0	0	0	0	0	1	0	1	109	1528
5:25 PM	0	70	9	0	3	57	0	0	0	0	0	0	0	2	0	0	141	1535
5:30 PM	0	63	5	0	0	45	0	0	0	0	0	0	0	1	0	0	114	1527
5:35 PM	0	83	4	0	1	57	0	0	0	0	0	0	0	3	0	0	148	1553
5:40 PM	0	46	5	0	6	58	0	0	0	0	0	0	0	2	0	0	117	1533
5:45 PM	0	50	3	0	0	44	0	0	0	0	0	0	0	2	0	1	100	1504
5:50 PM	0	50	4	0	1	46	0	0	0	0	0	0	0	0	0	0	101	1462
5:55 PM	0	47	4	0	0	23	0	0	0	0	0	0	0	4	0	1	79	1423
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	828	56	0	16	724	0	0	0	0	0	0	24	0	4	0	1652	
Heavy Trucks	0	48	4	0	4	28	0	0	0	0	0	0	4	0	0	0	88	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

Comments:

**LOCATION:** Hwy 101 -- NW 25th St  
**CITY/STATE:** Lincoln, OR

**QC JOB #:** 15004606  
**DATE:** Wed, Jun 5 2019

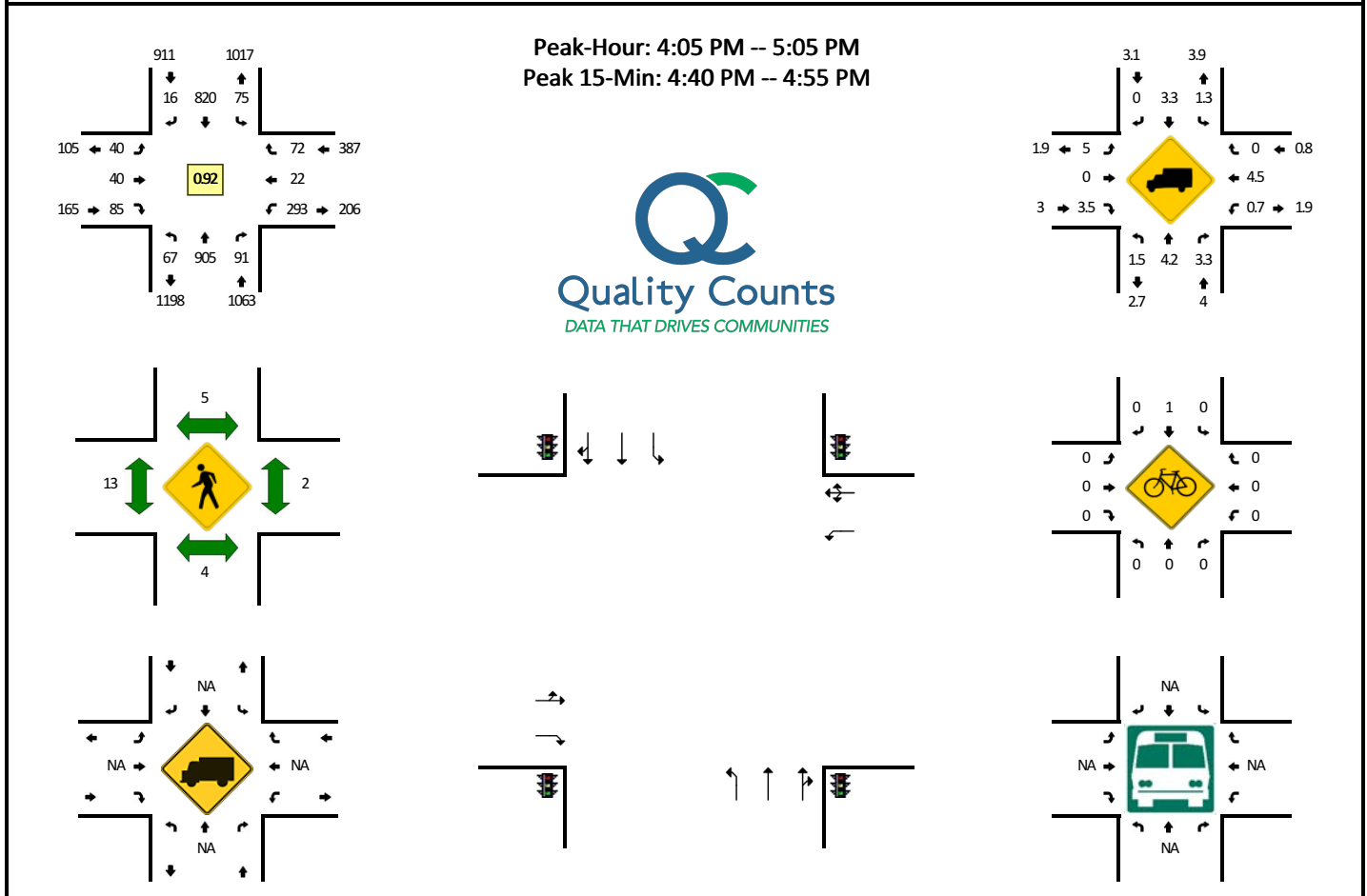


5-Min Count Period Beginning At	Hwy 101 (Northbound)				Hwy 101 (Southbound)				NW 25th St (Eastbound)				NW 25th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	13	75	0	0	0	53	8	0	9	0	9	0	0	0	0	0	167	
4:05 PM	18	51	0	0	0	46	7	0	13	0	22	0	0	0	0	0	157	
4:10 PM	13	75	0	0	0	55	8	0	1	0	16	0	0	0	0	0	168	
4:15 PM	14	53	0	0	0	59	8	0	7	0	19	0	0	0	0	0	160	
4:20 PM	17	72	0	0	0	61	3	0	7	0	20	0	0	0	0	0	180	
4:25 PM	18	57	0	0	0	41	6	0	9	0	27	0	0	0	0	0	158	
4:30 PM	12	76	0	0	0	45	3	0	5	0	20	0	0	0	0	0	161	
4:35 PM	33	55	0	0	0	52	4	0	10	0	8	0	0	0	0	0	162	
4:40 PM	17	57	0	0	0	80	10	0	9	0	24	0	0	0	0	0	197	
4:45 PM	29	67	0	0	0	63	7	0	4	0	28	0	0	0	0	0	198	
4:50 PM	13	74	0	0	0	66	8	0	8	0	16	0	0	0	0	0	185	
4:55 PM	22	45	0	0	0	39	6	0	12	0	27	0	0	0	0	0	151	2044
5:00 PM	16	87	0	0	0	75	5	0	4	0	24	0	0	0	0	0	211	2088
5:05 PM	19	54	0	0	0	42	4	0	10	0	23	0	0	0	0	0	152	2083
5:10 PM	14	73	0	0	0	51	3	0	13	0	18	0	0	0	0	0	172	2087
5:15 PM	24	42	0	0	0	47	0	0	13	0	16	0	0	0	0	0	142	2069
5:20 PM	17	73	0	0	0	50	6	0	3	0	21	0	0	0	0	0	170	2059
5:25 PM	16	62	0	0	0	48	7	0	5	0	18	0	0	0	0	0	156	2057
5:30 PM	10	78	0	0	0	45	5	0	8	0	17	0	0	0	0	0	163	2059
5:35 PM	22	64	0	0	0	43	12	0	10	0	14	0	0	0	0	0	165	2062
5:40 PM	14	50	0	0	0	54	6	0	8	0	23	0	0	0	0	0	155	2020
5:45 PM	13	40	0	0	0	35	1	0	3	0	14	0	0	0	0	0	106	1928
5:50 PM	11	62	0	0	0	50	3	0	5	0	16	0	0	0	0	0	147	1890
5:55 PM	15	34	0	0	0	30	4	0	9	0	20	0	0	0	0	0	112	1851
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	236	792	0	0	0	836	100	0	84	0	272	0	0	0	0	0	2320	
Heavy Trucks	0	40	0	0	0	32	0	0	0	0	0	0	0	0	0	0	72	
Pedestrians	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

Comments:

**LOCATION:** Hwy 101 -- NE 20th St  
**CITY/STATE:** Lincoln, OR

**QC JOB #:** 15004608  
**DATE:** Wed, Jun 5 2019

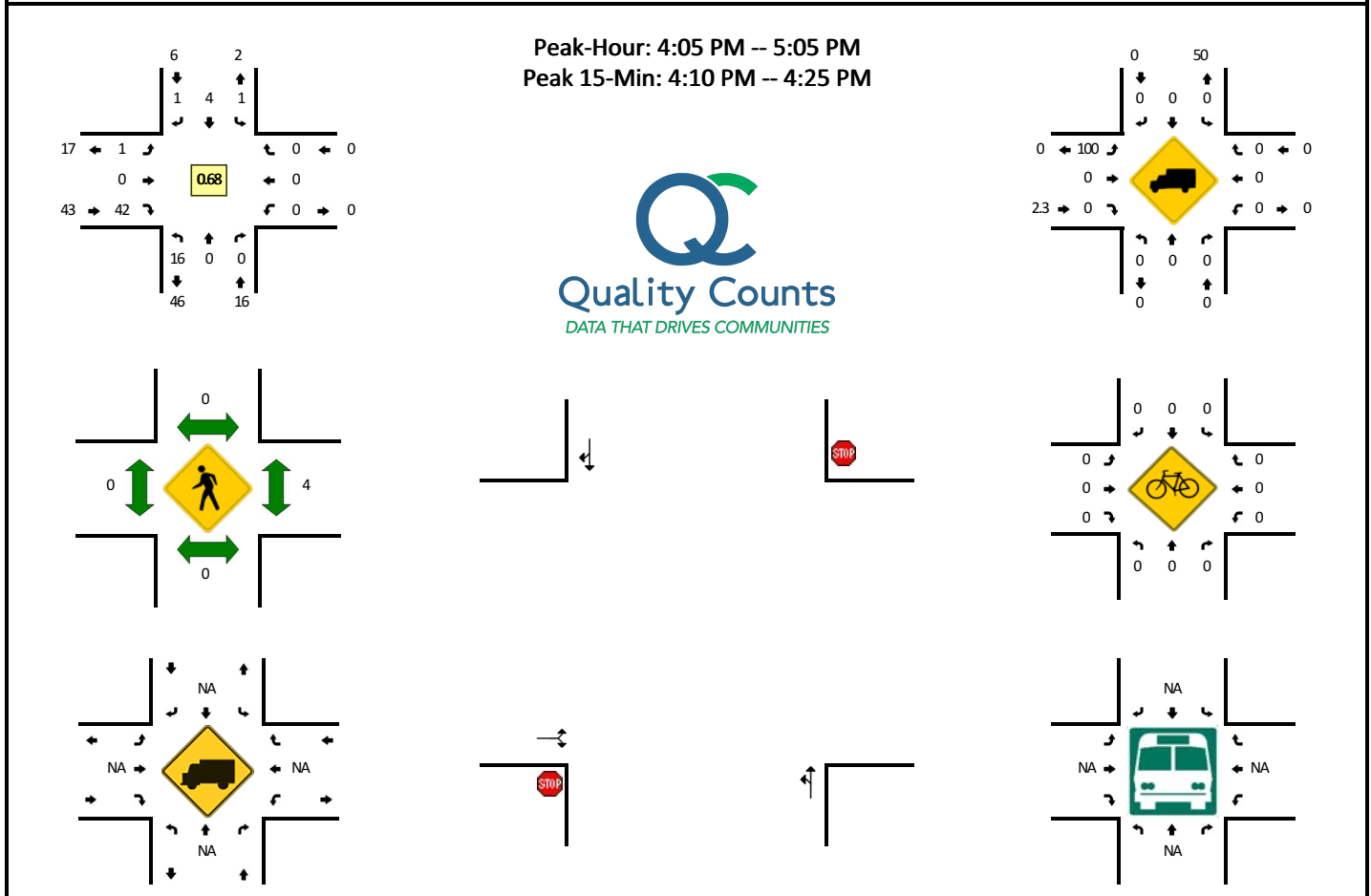


5-Min Count Period Beginning At	Hwy 101 (Northbound)				Hwy 101 (Southbound)				NE 20th St (Eastbound)				NE 20th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	96	12	0	7	71	1	0	2	1	10	0	14	1	5	0	226	
4:05 PM	5	55	3	0	3	51	0	0	5	6	6	0	35	4	4	0	177	
4:10 PM	4	84	13	0	8	69	1	0	3	3	5	0	20	1	6	0	217	
4:15 PM	9	51	7	0	9	48	0	0	3	3	10	0	24	2	9	0	175	
4:20 PM	2	87	13	0	10	77	1	0	5	3	3	0	22	3	1	0	227	
4:25 PM	7	71	2	0	6	57	4	0	0	4	5	0	33	0	5	0	194	
4:30 PM	8	96	9	0	4	70	2	0	4	3	11	0	14	1	4	0	226	
4:35 PM	8	72	5	0	5	58	1	0	1	6	6	0	41	6	3	0	212	
4:40 PM	5	85	9	0	4	81	1	0	2	4	10	0	16	1	5	0	223	
4:45 PM	7	71	7	0	7	76	3	0	5	1	12	0	35	2	13	0	239	
4:50 PM	1	95	5	0	6	86	1	0	3	3	5	0	14	0	5	0	224	
4:55 PM	10	39	5	0	10	65	0	0	6	3	7	0	21	2	10	0	178	2518
5:00 PM	1	99	13	0	3	82	2	0	3	1	5	0	18	0	7	0	234	2526
5:05 PM	6	54	8	0	6	61	1	0	5	1	9	0	28	2	8	0	189	2538
5:10 PM	3	97	6	0	8	80	2	0	5	1	4	0	21	4	8	0	239	2560
5:15 PM	3	57	7	0	5	52	2	0	2	9	4	0	26	2	3	0	172	2557
5:20 PM	4	90	6	0	3	60	1	0	1	0	4	0	18	6	2	0	195	2525
5:25 PM	2	68	7	0	4	60	0	0	4	0	9	0	30	3	5	0	192	2523
5:30 PM	5	90	9	0	3	60	2	0	1	1	7	0	22	0	2	0	202	2499
5:35 PM	3	76	8	0	5	50	1	0	4	3	7	0	30	2	4	0	193	2480
5:40 PM	4	62	7	0	10	74	2	0	2	2	6	0	20	2	5	0	196	2453
5:45 PM	4	48	7	0	6	47	0	0	4	5	8	0	14	1	6	0	150	2364
5:50 PM	1	65	6	0	3	62	0	0	3	1	5	0	12	1	3	0	162	2302
5:55 PM	7	43	8	0	2	47	0	0	0	3	2	0	27	1	4	0	144	2268
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	52	1004	84	0	68	972	20	0	40	32	108	0	260	12	92	0	2744	
Heavy Trucks	0	24	0	0	0	32	0	0	8	0	4	0	4	4	0	0	76	
Pedestrians	0	4	0	0	0	0	0	0	0	32	0	0	0	0	0	0	36	
Bicycles	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
Railroad																		
Stopped Buses																		

Comments:

**LOCATION:** NE Harney St -- NE 31st St  
**CITY/STATE:** Lincoln, OR

**QC JOB #:** 15004610  
**DATE:** Wed, Jun 5 2019



5-Min Count Period Beginning At	NE Harney St (Northbound)				NE Harney St (Southbound)				NE 31st St (Eastbound)				NE 31st St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	6	
4:05 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	
4:10 PM	4	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	11	
4:15 PM	2	0	0	0	0	1	0	0	0	0	4	0	0	0	0	0	7	
4:20 PM	0	0	0	0	0	1	0	0	0	0	5	0	0	0	0	0	6	
4:25 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	
4:30 PM	2	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	5	
4:35 PM	1	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	4	
4:40 PM	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	5	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:50 PM	1	0	0	0	0	1	0	1	0	0	3	0	0	0	0	0	6	
4:55 PM	1	0	0	0	0	0	1	0	0	0	5	0	0	0	0	0	7	
5:00 PM	2	0	0	0	0	1	0	0	0	0	4	0	0	0	0	0	7	64
5:05 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	65
5:10 PM	2	0	0	0	0	0	1	0	0	0	6	0	0	0	0	0	9	64
5:15 PM	1	0	0	0	0	1	0	0	0	0	10	0	0	0	0	0	12	62
5:20 PM	0	0	0	0	0	2	0	0	0	0	4	0	0	0	0	0	6	67
5:25 PM	0	2	0	0	0	1	0	0	0	0	10	0	0	0	0	0	13	67
5:30 PM	1	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	5	76
5:35 PM	2	0	0	0	0	1	0	0	1	0	5	0	0	0	0	0	9	76
5:40 PM	2	0	0	0	0	2	1	0	0	0	7	0	0	0	0	0	12	81
5:45 PM	2	1	0	0	0	0	0	0	0	0	5	0	0	0	0	0	8	88
5:50 PM	0	1	0	0	0	1	0	0	0	0	5	0	0	0	0	0	7	96
5:55 PM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	97
																		93
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	24	0	0	0	0	8	0	0	0	0	64	0	0	0	0	0	96	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians																		
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	
Railroad																		
Stopped Buses																		

Comments:

## Appendix C Existing Intersection Operations

Newport UGP Swap

Vistro File: H:\...\Vistro.vistro  
Report File: H:\...\Exist AM.pdf

Scenario 1 Exist AM  
10/15/2019

### Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 101/36th St	Two-way stop	HCM 6th Edition	WB Left	0.367	35.2	E
2	Hwy 101/31st St	Two-way stop	HCM 6th Edition	WB Left	0.426	47.8	E
3	Hwy 101/25th St	Signalized	HCM 6th Edition	NB Left	0.541	12.8	B
4	Hwy 101/20th St	Signalized	HCM 6th Edition	SB Left	0.483	16.5	B
5	31st St/Hamey St	Two-way stop	HCM 6th Edition	EB Left	0.001	9.4	A




V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report****Intersection 1: Hwy 101/36th St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 35.2  
 Level Of Service: E  
 Volume to Capacity (v/c): 0.367

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	130.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-4.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	438	21	6	777	55	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	0.00	0.00	10.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	438	21	6	777	55	5
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	135	6	2	240	17	2
Total Analysis Volume [veh/h]	541	26	7	959	68	6
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.37	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.57	0.00	35.18	21.96
Movement LOS	A	A	A	A	E	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.02	0.00	1.64	1.64
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.52	0.00	41.08	41.08
d_A, Approach Delay [s/veh]	0.00		0.06		34.11	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	1.61					
Intersection LOS	E					

**Intersection Level Of Service Report****Intersection 2: Hwy 101/31st St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 47.8  
 Level Of Service: E  
 Volume to Capacity (v/c): 0.426

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	35.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-2.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	454	32	15	817	49	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	0.00	0.00	10.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	454	32	15	817	49	5
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	10	5	249	15	2
Total Analysis Volume [veh/h]	554	39	18	996	60	6
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.02	0.01	0.43	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.69	0.00	47.83	28.80
Movement LOS	A	A	A	A	E	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.06	0.00	1.96	1.96
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.38	0.00	49.08	49.08
d_A, Approach Delay [s/veh]	0.00		0.15		46.10	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	1.91					
Intersection LOS	E					




### Intersection Level Of Service Report

#### Intersection 3: Hwy 101/25th St

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 12.8  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.541

#### Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	-2.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

#### Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	92	548	818	35	30	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	7.00	10.00	7.00	0.00	8.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	92	548	818	35	30	60
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	165	246	11	9	18
Total Analysis Volume [veh/h]	111	660	986	42	36	72
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		1	
v_co, Outbound Pedestrian Volume crossing	0		1		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	0	5	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	4.0	5.0	5.0	0.0	4.0	0.0
All red [s]	0.5	1.0	1.0	0.0	0.5	0.0
Split [s]	28	82	54	0	35	0
Vehicle Extension [s]	2.5	4.8	4.8	0.0	2.5	0.0
Walk [s]	0	7	7	0	8	0
Pedestrian Clearance [s]	0	17	14	0	19	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	4.00	4.00	4.00	2.50	2.50
g_i, Effective Green Time [s]	10	91	76	76	8	8
g / C, Green / Cycle	0.09	0.83	0.69	0.69	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.08	0.23	0.35	0.36	0.02	0.06
s, saturation flow rate [veh/h]	1395	2835	1451	1430	1500	1249
c, Capacity [veh/h]	132	2349	1006	991	114	95
d1, Uniform Delay [s]	49.00	2.11	8.02	8.08	48.11	49.81
k, delay calibration	0.08	0.50	0.50	0.50	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.29	0.30	1.86	1.94	1.16	8.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.84	0.28	0.51	0.52	0.32	0.76
d, Delay for Lane Group [s/veh]	59.29	2.41	9.87	10.02	49.27	58.64
Lane Group LOS	E	A	A	B	D	E
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.37	1.11	5.68	5.74	0.97	2.17
50th-Percentile Queue Length [ft/ln]	84.14	27.72	141.99	143.41	24.30	54.23
95th-Percentile Queue Length [veh/ln]	6.06	2.00	9.59	9.66	1.75	3.90
95th-Percentile Queue Length [ft/ln]	151.45	49.90	239.70	241.61	43.74	97.62

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	59.29	2.41	9.94	10.02	49.27	58.64
Movement LOS	E	A	A	B	D	E
d_A, Approach Delay [s/veh]	10.60		9.95		55.52	
Approach LOS	B		A		E	
d_I, Intersection Delay [s/veh]	12.79					
Intersection LOS	B					
Intersection V/C	0.541					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	10604.79	0.00	4788.15
d_p, Pedestrian Delay [s]	43.65	43.65	44.55
I_p,int, Pedestrian LOS Score for Intersection	2.665	2.560	2.035
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	55.00	55.00	55.00
I_b,int, Bicycle LOS Score for Intersection	4.768	4.981	4.132
Bicycle LOS	E	E	D

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 82s

SG: 4 35s

SG: 104 27s

SG: 6 54s

SG: 5 28s

SG: 106 21s





### Intersection Level Of Service Report

#### Intersection 4: Hwy 101/20th St

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 16.5  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.483

#### Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	75.00	90.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

#### Volumes

Name												
Base Volume Input [veh/h]	13	672	60	15	853	0	11	8	39	139	7	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	7.00	6.00	8.00	9.00	0.00	11.00	0.00	12.00	3.00	17.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	672	60	15	853	0	11	8	39	139	7	27
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	202	18	5	257	0	3	2	12	42	2	8
Total Analysis Volume [veh/h]	16	810	72	18	1028	0	13	10	47	167	8	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			2			0		
v_co, Outbound Pedestrian Volume crossing	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	33.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	15	45	0	15	45	0	0	16	0	0	34	0
Vehicle Extension [s]	2.5	5.1	0.0	2.5	5.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	14	0	0	12	0	0	18	0	0	17	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	3.0	0.0	2.5	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	4.50	5.00	5.00	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.00	3.00	2.50	3.00	3.00	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	2	74	74	2	74	74	6	6	10	10
g / C, Green / Cycle	0.01	0.67	0.67	0.02	0.67	0.67	0.06	0.06	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.01	0.27	0.27	0.01	0.32	0.32	0.01	0.04	0.07	0.07
s, saturation flow rate [veh/h]	1667	1653	1606	1561	1626	1626	1702	1325	1627	1391
c, Capacity [veh/h]	24	1107	1075	25	1090	1090	97	76	145	124
d1, Uniform Delay [s]	53.95	8.24	8.24	53.91	8.72	8.72	49.58	50.68	48.99	49.04
k, delay calibration	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.11	1.10	1.13	25.28	1.46	1.46	0.91	6.00	6.18	7.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.66	0.40	0.40	0.72	0.47	0.47	0.24	0.62	0.77	0.78
d, Delay for Lane Group [s/veh]	74.06	9.34	9.37	79.19	10.19	10.19	50.50	56.68	55.18	56.53
Lane Group LOS	E	A	A	E	B	B	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.58	4.75	4.63	0.67	5.82	5.82	0.63	1.39	3.24	2.85
50th-Percentile Queue Length [ft/ln]	14.40	118.81	115.71	16.75	145.60	145.60	15.74	34.74	80.95	71.13
95th-Percentile Queue Length [veh/ln]	1.04	8.33	8.16	1.21	9.78	9.78	1.13	2.50	5.83	5.12
95th-Percentile Queue Length [ft/ln]	25.92	208.20	203.91	30.15	244.55	244.55	28.33	62.53	145.71	128.03

**Movement, Approach, & Intersection Results**

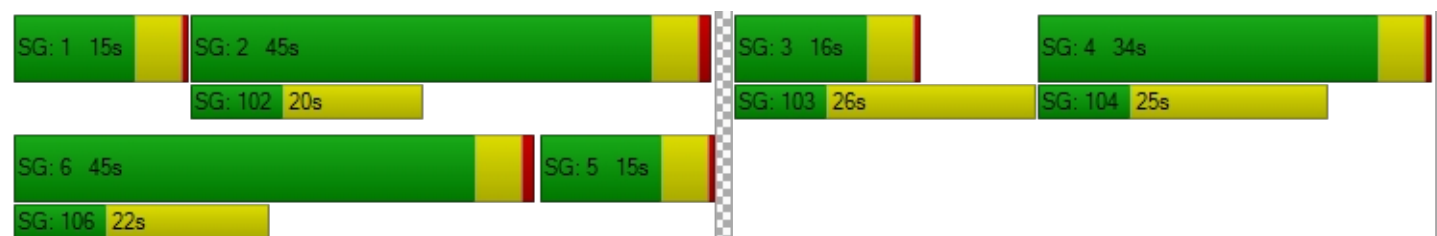
d_M, Delay for Movement [s/veh]	74.06	9.36	9.37	79.19	10.19	10.19	50.50	50.50	56.68	55.64	56.53	56.53
Movement LOS	E	A	A	E	B	B	D	D	E	E	E	E
d_A, Approach Delay [s/veh]	10.51			11.37			54.65			55.80		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	16.55											
Intersection LOS	B											
Intersection V/C	0.483											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			12.0			12.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	3730.20			0.00			5789.53			0.00		
d_p, Pedestrian Delay [s]	43.65			43.65			43.65			43.65		
I_p,int, Pedestrian LOS Score for Intersection	2.726			2.679			1.979			2.049		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	727			727			209			536		
d_b, Bicycle Delay [s]	22.27			22.27			44.10			29.46		
I_b,int, Bicycle LOS Score for Intersection	2.300			2.423			1.675			1.903		
Bicycle LOS	B			B			A			A		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report**  
**Intersection 5: 31st St/Hamey St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 9.4  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.001

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	4.00		-4.00		2.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	33	1	9	0	1	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	1	9	0	1	33
Peak Hour Factor	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	0	3	0	0	12
Total Analysis Volume [veh/h]	48	1	13	0	1	48
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.00	0.04
d_M, Delay for Movement [s/veh]	7.33	0.00	0.00	0.00	9.38	8.52
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.09	0.09	0.00	0.00	0.14	0.14
95th-Percentile Queue Length [ft/ln]	2.33	2.33	0.00	0.00	3.61	3.61
d_A, Approach Delay [s/veh]	7.18		0.00		8.54	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.94					
Intersection LOS	A					

## Newport UGP Swap

Vistro File: H:\...\Vistro.vistro  
Report File: H:\...\Exist AM.pdfScenario 1 Exist AM  
10/15/2019**Turning Movement Volume: Summary**

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Hwy 101/36th St	438	21	6	777	55	5	1302

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
2	Hwy 101/31st St	454	32	15	817	49	5	1372

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
3	Hwy 101/25th St	92	548	818	35	30	60	1583

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hwy 101/20th St	13	672	60	15	853	0	11	8	39	139	7	27	1844

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
5	31st St/Hamey St	33	1	9	0	1	33	77

Vistro File: H:\...\Vistro.vistro  
Report File: H:\...\Exist PM.pdf

Newport UGP Swap

Scenario 2 Exist PM  
10/15/2019

### Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Hwy 101/36th St	Two-way stop	HCM 6th Edition	WB Left	0.147	37.7	E
2	Hwy 101/31st St	Two-way stop	HCM 6th Edition	WB Left	0.366	61.1	F
3	Hwy 101/25th St	Signalized	HCM 6th Edition	EB Right	0.835	41.8	D
4	Hwy 101/20th St	Signalized	HCM 6th Edition	NB Left	0.743	35.9	D
5	31st St/Hamey St	Two-way stop	HCM 6th Edition	EB Left	0.001	10.2	B




V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report****Intersection 1: Hwy 101/36th St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 37.7  
 Level Of Service: E  
 Volume to Capacity (v/c): 0.147

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	130.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-4.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	923	37	7	787	18	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	3.00	0.00	4.00	0.00	33.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	923	37	7	787	18	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	243	10	2	207	5	2
Total Analysis Volume [veh/h]	972	39	7	828	19	7
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.15	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	10.24	0.00	37.73	21.85
Movement LOS	A	A	B	A	E	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.03	0.00	0.60	0.60
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.76	0.00	14.88	14.88
d_A, Approach Delay [s/veh]	0.00		0.09		33.45	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	0.50					
Intersection LOS	E					

**Intersection Level Of Service Report****Intersection 2: Hwy 101/31st St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 61.1  
 Level Of Service: F  
 Volume to Capacity (v/c): 0.366

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	35.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-2.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	954	57	19	784	35	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	4.00	6.00	4.00	0.00	7.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	954	57	19	784	35	4
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	248	15	5	204	9	1
Total Analysis Volume [veh/h]	994	59	20	817	36	4
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.01	0.00	0.03	0.01	0.37	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	10.75	0.00	61.13	36.21
Movement LOS	A	A	B	A	F	E
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.10	0.00	1.54	1.54
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2.39	0.00	38.56	38.56
d_A, Approach Delay [s/veh]	0.00		0.26		58.64	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	1.33					
Intersection LOS	F					

**Intersection Level Of Service Report****Intersection 3: Hwy 101/25th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 41.8  
 Level Of Service: D  
 Volume to Capacity (v/c): 0.835

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	-2.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	260	900	798	88	104	294
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	5.00	4.00	3.00	1.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	260	900	798	88	104	294
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	250	222	24	29	82
Total Analysis Volume [veh/h]	289	1000	887	98	116	327
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	0	5	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	4.0	5.0	5.0	0.0	4.0	0.0
All red [s]	0.5	1.0	1.0	0.0	0.5	0.0
Split [s]	30	90	60	0	30	0
Vehicle Extension [s]	2.5	4.8	4.8	0.0	2.5	0.0
Walk [s]	0	7	7	0	8	0
Pedestrian Clearance [s]	0	17	14	0	19	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	4.00	4.00	4.00	2.50	2.50
g_i, Effective Green Time [s]	25	84	55	55	26	26
g / C, Green / Cycle	0.21	0.70	0.45	0.45	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.19	0.35	0.32	0.33	0.08	0.24
s, saturation flow rate [veh/h]	1488	2881	1525	1473	1488	1339
c, Capacity [veh/h]	309	2017	693	670	316	285
d1, Uniform Delay [s]	46.73	8.28	26.35	26.80	40.33	47.23
k, delay calibration	0.26	0.50	0.50	0.50	0.08	0.42
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.08	0.87	6.08	7.05	0.53	95.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.93	0.50	0.71	0.74	0.37	1.15
d, Delay for Lane Group [s/veh]	70.81	9.15	32.43	33.85	40.86	142.75
Lane Group LOS	E	A	C	C	D	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	10.50	5.69	12.29	12.63	2.99	16.00
50th-Percentile Queue Length [ft/ln]	262.58	142.37	307.36	315.65	74.63	399.95
95th-Percentile Queue Length [veh/ln]	15.82	9.61	18.04	18.45	5.37	24.23
95th-Percentile Queue Length [ft/ln]	395.45	240.21	451.12	461.34	134.33	605.66

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	70.81	9.15	33.06	33.85	40.86	142.75
Movement LOS	E	A	C	C	D	F
d_A, Approach Delay [s/veh]	22.98		33.14		116.07	
Approach LOS	C		C		F	
d_I, Intersection Delay [s/veh]	41.84					
Intersection LOS	D					
Intersection V/C	0.835					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	7520.16
d_p, Pedestrian Delay [s]	48.60	48.60	49.50
I_p,int, Pedestrian LOS Score for Intersection	2.801	2.656	2.224
Crosswalk LOS	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
I_b,int, Bicycle LOS Score for Intersection	5.196	4.945	4.132
Bicycle LOS	F	E	D

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 90s

SG: 4 30s

SG: 104 27s

SG: 6 60s

SG: 5 30s

SG: 106 21s





### Intersection Level Of Service Report

#### Intersection 4: Hwy 101/20th St

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 35.9  
 Level Of Service: D  
 Volume to Capacity (v/c): 0.743

#### Intersection Setup

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	75.00	90.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

#### Volumes

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	78	1059	106	88	959	19	47	47	99	343	26	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	4.00	3.00	1.00	3.00	0.00	5.00	0.00	4.00	1.00	5.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	1059	106	88	959	19	47	47	99	343	26	84
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	288	29	24	261	5	13	13	27	93	7	23
Total Analysis Volume [veh/h]	85	1151	115	96	1042	21	51	51	108	373	28	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			3			2			2		
v_di, Inbound Pedestrian Volume crossing m	2			2			2			3		
v_co, Outbound Pedestrian Volume crossing	1			6			7			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			7			6			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	7.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	15	55	0	15	55	0	0	16	0	0	34	0
Vehicle Extension [s]	2.5	5.1	0.0	2.5	5.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	14	0	0	12	0	0	18	0	0	17	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	3.0	0.0	2.5	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	4.50	5.00	5.00	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.00	3.00	2.50	3.00	3.00	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	8	60	60	9	61	61	12	12	21	21
g / C, Green / Cycle	0.06	0.50	0.50	0.07	0.51	0.51	0.10	0.10	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.05	0.38	0.38	0.06	0.31	0.31	0.06	0.08	0.15	0.15
s, saturation flow rate [veh/h]	1654	1695	1641	1654	1709	1694	1707	1423	1654	1538
c, Capacity [veh/h]	107	847	820	120	867	859	167	139	291	271
d1, Uniform Delay [s]	55.36	24.19	24.26	54.88	21.21	21.23	52.03	52.89	48.19	48.19
k, delay calibration	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.24	6.28	6.60	8.88	3.26	3.31	2.69	6.82	6.22	6.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.79	0.76	0.76	0.80	0.62	0.62	0.61	0.78	0.87	0.87
d, Delay for Lane Group [s/veh]	64.60	30.46	30.86	63.76	24.47	24.53	54.72	59.70	54.41	54.83
Lane Group LOS	E	C	C	E	C	C	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.81	15.74	15.42	3.16	11.30	11.24	3.07	3.44	7.91	7.39
50th-Percentile Queue Length [ft/ln]	70.35	393.40	385.59	78.92	282.50	281.05	76.86	85.93	197.79	184.81
95th-Percentile Queue Length [veh/ln]	5.07	22.24	21.86	5.68	16.81	16.74	5.53	6.19	12.52	11.85
95th-Percentile Queue Length [ft/ln]	126.63	556.04	546.61	142.06	420.32	418.52	138.34	154.68	313.11	296.29

**Movement, Approach, & Intersection Results**

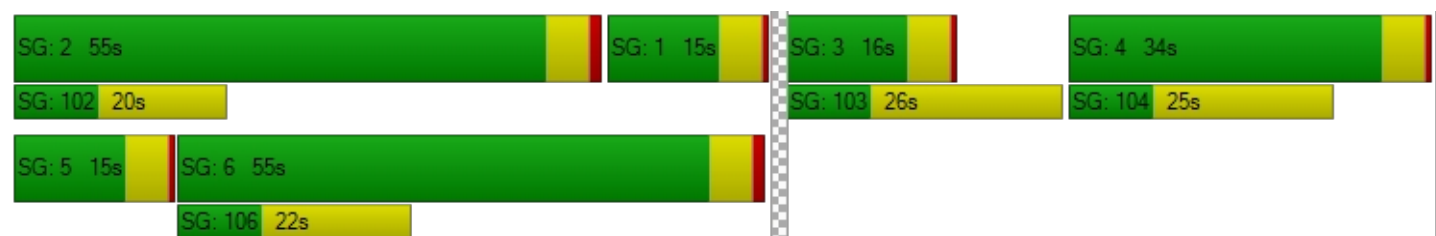
d_M, Delay for Movement [s/veh]	64.60	30.64	30.86	63.76	24.50	24.53	54.72	54.72	59.70	54.55	54.83	54.83
Movement LOS	E	C	C	E	C	C	D	D	E	D	D	D
d_A, Approach Delay [s/veh]	32.79			27.75			57.29			54.61		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	35.92											
Intersection LOS	D											
Intersection V/C	0.743											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			12.0			12.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	2300.69			1895.36			782.97			4315.98		
d_p, Pedestrian Delay [s]	48.60			48.60			48.60			48.60		
I_p,int, Pedestrian LOS Score for Intersection	2.873			2.791			2.065			2.198		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	833			833			192			492		
d_b, Bicycle Delay [s]	20.42			20.43			49.05			34.13		
I_b,int, Bicycle LOS Score for Intersection	2.674			2.516			1.906			2.371		
Bicycle LOS	B			B			A			B		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report**  
**Intersection 5: 31st St/Hamey St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 10.2  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.001

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	4.00		-4.00		2.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	19	0	5	1	1	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	100.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	0	5	1	1	49
Peak Hour Factor	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	0	2	0	0	18
Total Analysis Volume [veh/h]	28	0	7	1	1	72
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.07
d_M, Delay for Movement [s/veh]	7.27	0.00	0.00	0.00	10.19	8.58
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.05	0.05	0.00	0.00	0.22	0.22
95th-Percentile Queue Length [ft/ln]	1.33	1.33	0.00	0.00	5.47	5.47
d_A, Approach Delay [s/veh]	7.27		0.00		8.60	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.63					
Intersection LOS	B					

Newport UGP Swap

Vistro File: H:\...\Vistro.vistro  
Report File: H:\...\Exist PM.pdf

Scenario 2 Exist PM  
10/15/2019

**Turning Movement Volume: Summary**

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Hwy 101/36th St	923	37	7	787	18	7	1779

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
2	Hwy 101/31st St	954	57	19	784	35	4	1853

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
3	Hwy 101/25th St	260	900	798	88	104	294	2444

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Hwy 101/20th St	78	1059	106	88	959	19	47	47	99	343	26	84	2955

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
5	31st St/Hamey St	19	0	5	1	1	49	75

## Appendix D   Crash Data Summary Sheets

009 OREGON COAST D	US 101 Oregon Coast Highway (009) & NE 20th St January 1, 2013 through December 31, 2017
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[illegible]

009 OREGON COAST

US 101 Oregon Coast Highway (009) & NE 20th St  
January 1, 2013 through December 31, 2017

SER#	P	G	S	W	DATE	COUNTY	RD#	FC	CONN #	INT-TYP	SPCL USE	MOVE	A	S	PED	ACTN	EVENT	CAUSE
INVEST	E	L	M	H	R	CITY	CMPT/MLG	FIRST	STREET	RD CHAR	TRLR QTY	OWNER	G	E	LOC			
UNLOC?	D	C	J	L	K	LAT/LONG	LRS	INTERSECTION	SEQ#	LOCTN	(#LANES)	CNTL	DRVWY	LIGHT	SVRTY	V#	VEH TYPE	TO
00456	N	N	N	N	N	08/28/2014	1	14		INTER								
CITY		N			Thu	1P	MN	0	OREGON COAST HY	N								
							139.32	20TH ST		06								
No	44	39		5.46	-124	3	10.79		000900100S00									

009 OREGON COAST

US 101 Oregon Coast Highway (009) & NE 20th St  
January 1, 2013 through December 31, 2017

SER#	P INVEST UNLOC?	E A / C O D C J L K	G S W M H R DAY/TIME LAT/LONG	DATE	COUNTY CITY URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC FIRST STREET SECOND STREET INTERSECTION SEQ#	CONN #	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) INT-REL TRAF-CNTL	OFFRDN DBT SURF COLL TYP WTHR DRVWY LIGHT SVRTY	CRASH TYPE	SPCL USE TRLR QTY OWNER V#	VEH TYPE	MOVE FROM TO	A G E LICNS PED X RES LOC ERROR	CAUSE		
00699 NO RPT	N N N N		Mon 5P	12/30/2013	LINCOLN NEWPORT	1 MN 0	OREGON COAST HY		INTER S	CROSS N L-GRN-SIG	N CLR DRY	O-1STOP BACK	01 NONE PRVTE	0 BACK N S				000	10 00
No	44	39	5.46 -124		NEWPORT UA 3 10.79	139.32 000900100S00	20TH ST 1		06	0	N DUSK PDO		PSNGR CAR			01 DRVR NONE 59 F OR-Y OR<25	011	000	10
													02 NONE PRVTE	0 STOP N S				011	00
													PSNGR CAR			01 DRVR NONE 53 M OR-Y OR<25	000	000	00
00100 CITY	N N N N N		Mon 12P	02/22/2016	LINCOLN NEWPORT	1 MN 0	OREGON COAST HY		INTER S	CROSS N TRF SIGNAL	N CLR DRY	O-1STOP BACK	01 NONE N/A	9 BACK N S				088	10 00
No	44	39	5.46 -124		NEWPORT UA 3 10.79	139.32 000900100S00	20TH ST 1		06	0	N DAY PDO		SEMI TOW			01 DRVR NONE 00 U UNK UNK	000	000	00
													02 NONE N/A	9 STOP S N				011	00
													PSNGR CAR			01 DRVR NONE 00 U UNK UNK	000	000	00
00133 CITY	N N N N N		Mon 3P	03/25/2013	LINCOLN NEWPORT	1 MN 0	OREGON COAST HY		INTER CN	CROSS N TRF SIGNAL	N CLR DRY	ANGL-OTH ANGL	01 NONE PRVTE	0 STRGHT N S				000	04 00
No	44	39	5.46 -124		NEWPORT UA 3 10.79	139.32 000900100S00	20TH ST 1		01	0	N DAY PDO		PSNGR CAR			01 DRVR NONE 59 M OR-Y OR<25	000	000	00
													02 NONE PRVTE	0 STRGHT E W				000	00
													PSNGR CAR			01 DRVR NONE 84 M OR-Y OR<25	020	000	04
00342 NONE	N N N N		Sat 2P	07/13/2013	LINCOLN NEWPORT	1 MN 0	OREGON COAST HY		INTER CN	CROSS N TRF SIGNAL	N CLR DRY	S-STRGHT SS-O	01 NONE PRVTE	0 STRGHT N S				000	13 00
No	44	39	5.46 -124		NEWPORT UA 3 10.79	139.32 000900100S00	20TH ST 1		03	0	N DAY PDO		PSNGR CAR			01 DRVR NONE 88 F OR-Y OR<25	045	000	13
													02 NONE PRVTE	0 STRGHT N S				000	00
													PSNGR CAR			01 DRVR NONE 61 F OR-Y OR<25	000	000	00
00133 NONE	N N N N		Fri 9A	03/04/2016	LINCOLN NEWPORT	1 MN 0	OREGON COAST HY		INTER CN	CROSS N TRF SIGNAL	N CLR DRY	ANGL-OTH ANGL	01 NONE N/A	9 STRGHT W E				000	04 00
No	44	39	5.46 -124		NEWPORT UA 3 10.79	139.32 000900100S00	20TH ST 1		03	0	N DAY PDO		PSNGR CAR			01 DRVR NONE 00 U UNK UNK	000	000	00

009 OREGON COAST

US 101 Oregon Coast Highway (009) & NE 20th St  
January 1, 2013 through December 31, 2017

[illegible]





ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING

ACTION CODE TRANSLATION LIST		
ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
055	SPRAY	BLINDED BY WATER SPRAY
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST		
CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST		
COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST		
CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST			DRIVER RESIDENCE CODE TRANSLATION LIST		
LIC CODE	SHORT DESC	LONG DESCRIPTION	RES CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)	1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
1	OR-Y	VALID OREGON LICENSE	2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY	3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
3	SUSP	SUSPENDED/REVOKED	4	N-RES	NON-RESIDENT
4	EXP	EXPIRED	9	UNK	UNKNOWN IF OREGON RESIDENT
8	N-VAL	OTHER NON-VALID LICENSE			
9	UNK	UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH			

ERROR CODE TRANSLATION LIST		
ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNUED FROM WRONG LANE
007	TO WRONG	TURNUED INTO WRONG LANE
008	ILLEG U	U-TURNUED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST		
EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHICLE)
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN

EVENT CODE TRANSLATION LIST		
EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY

EVENT CODE TRANSLATION LIST		
EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)

FUNCTIONAL CLASSIFICATION TRANSLATION LIST		
FUNC CLASS	DESCRIPTION	
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE	
02	RURAL PRINCIPAL ARTERIAL - OTHER	
06	RURAL MINOR ARTERIAL	
07	RURAL MAJOR COLLECTOR	
08	RURAL MINOR COLLECTOR	
09	RURAL LOCAL	
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE	
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP	
14	URBAN PRINCIPAL ARTERIAL - OTHER	
16	URBAN MINOR ARTERIAL	
17	URBAN MAJOR COLLECTOR	
18	URBAN MINOR COLLECTOR	
19	URBAN LOCAL	
78	UNKNOWN RURAL SYSTEM	
79	UNKNOWN RURAL NON-SYSTEM	
98	UNKNOWN URBAN SYSTEM	
99	UNKNOWN URBAN NON-SYSTEM	

HIGHWAY COMPONENT TRANSLATION LIST	
CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY (K)
2	INJA	SUSPECTED SERIOUS INJURY (A)
3	INJB	SUSPECTED MINOR INJURY (B)
4	INJC	POSSIBLE INJURY (C)
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE
9	NONE	NO APPARENT INJURY (O)

LIGHT CONDITION CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST	
CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY
9	PARKNG	PARKING MANEUVER

NON-MOTORIST LOCATION CODE TRANSLATION LIST	
CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

ROAD CHARACTER CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYANCE
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OBJECT
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN OBJECT
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	OTHR	OTHER TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING
095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH









ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING

ACTION CODE TRANSLATION LIST		
ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
055	SPRAY	BLINDED BY WATER SPRAY
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST		
CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST		
COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST		
CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST			DRIVER RESIDENCE CODE TRANSLATION LIST		
LIC CODE	SHORT DESC	LONG DESCRIPTION	RES CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)	1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
1	OR-Y	VALID OREGON LICENSE	2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY	3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
3	SUSP	SUSPENDED/REVOKED	4	N-RES	NON-RESIDENT
4	EXP	EXPIRED	9	UNK	UNKNOWN IF OREGON RESIDENT
8	N-VAL	OTHER NON-VALID LICENSE			
9	UNK	UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH			

ERROR CODE TRANSLATION LIST		
ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNUED FROM WRONG LANE
007	TO WRONG	TURNUED INTO WRONG LANE
008	ILLEG U	U-TURNUED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST		
EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHICLE)
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN

EVENT CODE TRANSLATION LIST		
EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY

EVENT CODE TRANSLATION LIST		
EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)

FUNCTIONAL CLASSIFICATION TRANSLATION LIST		
FUNC CLASS	DESCRIPTION	
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE	
02	RURAL PRINCIPAL ARTERIAL - OTHER	
06	RURAL MINOR ARTERIAL	
07	RURAL MAJOR COLLECTOR	
08	RURAL MINOR COLLECTOR	
09	RURAL LOCAL	
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE	
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP	
14	URBAN PRINCIPAL ARTERIAL - OTHER	
16	URBAN MINOR ARTERIAL	
17	URBAN MAJOR COLLECTOR	
18	URBAN MINOR COLLECTOR	
19	URBAN LOCAL	
78	UNKNOWN RURAL SYSTEM	
79	UNKNOWN RURAL NON-SYSTEM	
98	UNKNOWN URBAN SYSTEM	
99	UNKNOWN URBAN NON-SYSTEM	

HIGHWAY COMPONENT TRANSLATION LIST	
CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY (K)
2	INJA	SUSPECTED SERIOUS INJURY (A)
3	INJB	SUSPECTED MINOR INJURY (B)
4	INJC	POSSIBLE INJURY (C)
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE
9	NONE	NO APPARENT INJURY (O)

LIGHT CONDITION CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST	
CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY
9	PARKNG	PARKING MANEUVER

NON-MOTORIST LOCATION CODE TRANSLATION LIST	
CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

ROAD CHARACTER CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYANCE
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OBJECT
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN OBJECT
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	OTHR	OTHER TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCDR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING
095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
CONTINUOUS SYSTEM CRASH LISTING

009 OREGON COAST  
D  
R  
S  
U  
P G S W  
US 101 Oregon Coast Highway (009) & NE 31st St  
January 1, 2013 through December 31, 2017

SER#	P	G	S	W	DATE	COUNTY	RD#	FC	CONN #	INT-TYP	SPCL USE	MOVE	A	S	PED	ACTN	EVENT	CAUSE												
INVEST	E	L	M	H	R	CITY	CMPT/MLG	MILEPNT	FIRST STREET	RD CHAR	(MEDIAN)	OWNER	QTY	G	E	LOC	ERROR													
UNLOC?	D	C	J	L	K	URBAN AREA	LRS		INTERSECTION	DIRECT	LEGS	TRAFFIC	VEH	TYPE	SVRTY	LOC	ERROR													
					LAT/LONG				SEQ#	LOCTN	(#LANES)	CNTL	DRVWY	LIGHT	SVRTY	V#	VEH	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR			
00232	N	N	N	Y	05/21/2013	LINCOLN	1	14		INTER	3-LEG	N		N RAIN	S-1STOP	01	NONE	0	STRGHT									092	07	
NONE				N	Tue 3P	NEWPORT	MN	0	NE 31ST ST	CN		STOP SIGN	N WET	REAR			PRVTE	N S								000		00		
No	44	39	36.53	-124	3 14.35	NEWPORT UA	138.73		OREGON COAST HY	01	0		N DAY	PDO			PSNGR	CAR		01	DRVR	NONE	20	M	OR-Y	026	000		07	
							000900100S00		1															OR<25						







ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING

ACTION CODE TRANSLATION LIST		
ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
055	SPRAY	BLINDED BY WATER SPRAY
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST		
CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST		
COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST		
CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST			DRIVER RESIDENCE CODE TRANSLATION LIST		
LIC CODE	SHORT DESC	LONG DESCRIPTION	RES CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)	1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
1	OR-Y	VALID OREGON LICENSE	2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY	3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
3	SUSP	SUSPENDED/REVOKED	4	N-RES	NON-RESIDENT
4	EXP	EXPIRED	9	UNK	UNKNOWN IF OREGON RESIDENT
8	N-VAL	OTHER NON-VALID LICENSE			
9	UNK	UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH			

ERROR CODE TRANSLATION LIST		
ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNE D FROM WRONG LANE
007	TO WRONG	TURNE D INTO WRONG LANE
008	ILLEG U	U-TURNE D ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPE D IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPE D POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDE D OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDE D TRAFFIC SIGNAL
021	RAN STOP	DISREGARDE D STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDE D WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDE D POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDE D SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDE D RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILE D TO AVOID STOPPE D OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILE D TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSE D VEHICLE STOPPE D AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDE D ROADWAYS)

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST		
EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHICLE)
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN

EVENT CODE TRANSLATION LIST		
EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY

EVENT CODE TRANSLATION LIST		
EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)

FUNCTIONAL CLASSIFICATION TRANSLATION LIST		
FUNC CLASS	DESCRIPTION	
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE	
02	RURAL PRINCIPAL ARTERIAL - OTHER	
06	RURAL MINOR ARTERIAL	
07	RURAL MAJOR COLLECTOR	
08	RURAL MINOR COLLECTOR	
09	RURAL LOCAL	
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE	
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP	
14	URBAN PRINCIPAL ARTERIAL - OTHER	
16	URBAN MINOR ARTERIAL	
17	URBAN MAJOR COLLECTOR	
18	URBAN MINOR COLLECTOR	
19	URBAN LOCAL	
78	UNKNOWN RURAL SYSTEM	
79	UNKNOWN RURAL NON-SYSTEM	
98	UNKNOWN URBAN SYSTEM	
99	UNKNOWN URBAN NON-SYSTEM	

HIGHWAY COMPONENT TRANSLATION LIST	
CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY (K)
2	INJA	SUSPECTED SERIOUS INJURY (A)
3	INJB	SUSPECTED MINOR INJURY (B)
4	INJC	POSSIBLE INJURY (C)
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE
9	NONE	NO APPARENT INJURY (O)

LIGHT CONDITION CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST	
CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY
9	PARKNG	PARKING MANEUVER

NON-MOTORIST LOCATION CODE TRANSLATION LIST	
CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

ROAD CHARACTER CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYANCE
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OBJECT
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN OBJECT
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	OTHR	OTHER TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING
095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH



009 OREGON COAST

US 101 Oregon Coast Highway (009) & NE 36th St  
January 1, 2013 through December 31, 2017

[illegible]





ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING

ACTION CODE TRANSLATION LIST		
ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
055	SPRAY	BLINDED BY WATER SPRAY
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST		
CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST		
COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST		
CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST			DRIVER RESIDENCE CODE TRANSLATION LIST		
LIC CODE	SHORT DESC	LONG DESCRIPTION	RES CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)	1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
1	OR-Y	VALID OREGON LICENSE	2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY	3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
3	SUSP	SUSPENDED/REVOKED	4	N-RES	NON-RESIDENT
4	EXP	EXPIRED	9	UNK	UNKNOWN IF OREGON RESIDENT
8	N-VAL	OTHER NON-VALID LICENSE			
9	UNK	UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH			

ERROR CODE TRANSLATION LIST		
ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNE D FROM WRONG LANE
007	TO WRONG	TURNE D INTO WRONG LANE
008	ILLEG U	U-TURNE D ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPE D IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPE D POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDE D OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDE D TRAFFIC SIGNAL
021	RAN STOP	DISREGARDE D STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDE D WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDE D POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDE D SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDE D RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILE D TO AVOID STOPPE D OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILE D TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSE D VEHICLE STOPPE D AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDE D ROADWAYS)

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST		
EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHICLE)
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN

EVENT CODE TRANSLATION LIST		
EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY

EVENT CODE TRANSLATION LIST		
EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)

FUNCTIONAL CLASSIFICATION TRANSLATION LIST		
FUNC CLASS	DESCRIPTION	
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE	
02	RURAL PRINCIPAL ARTERIAL - OTHER	
06	RURAL MINOR ARTERIAL	
07	RURAL MAJOR COLLECTOR	
08	RURAL MINOR COLLECTOR	
09	RURAL LOCAL	
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE	
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP	
14	URBAN PRINCIPAL ARTERIAL - OTHER	
16	URBAN MINOR ARTERIAL	
17	URBAN MAJOR COLLECTOR	
18	URBAN MINOR COLLECTOR	
19	URBAN LOCAL	
78	UNKNOWN RURAL SYSTEM	
79	UNKNOWN RURAL NON-SYSTEM	
98	UNKNOWN URBAN SYSTEM	
99	UNKNOWN URBAN NON-SYSTEM	

HIGHWAY COMPONENT TRANSLATION LIST	
CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY (K)
2	INJA	SUSPECTED SERIOUS INJURY (A)
3	INJB	SUSPECTED MINOR INJURY (B)
4	INJC	POSSIBLE INJURY (C)
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE
9	NONE	NO APPARENT INJURY (O)

LIGHT CONDITION CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST	
CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY
9	PARKNG	PARKING MANEUVER

NON-MOTORIST LOCATION CODE TRANSLATION LIST	
CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

ROAD CHARACTER CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYANCE
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OBJECT
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN OBJECT
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	OTHR	OTHER TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING
095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST		
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH




## Appendix E 2040 Background Operations

**Intersection Level Of Service Report****Intersection 1: Hwy 101/36th St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 56.5  
 Level Of Service: F  
 Volume to Capacity (v/c): 0.588

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	130.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-4.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	438	21	6	777	55	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	0.00	0.00	10.00	0.00	0.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	11	9	2	3	28	7
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	537	30	8	935	83	12
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	149	8	2	260	23	3
Total Analysis Volume [veh/h]	597	33	9	1039	92	13
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.59	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	8.78	0.00	56.54	40.16
Movement LOS	A	A	A	A	F	E
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.03	0.00	3.37	3.37
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.71	0.00	84.29	84.29
d_A, Approach Delay [s/veh]	0.00		0.08		54.51	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	3.25					
Intersection LOS	F					




### Intersection Level Of Service Report

#### Intersection 2: Hwy 101/31st St

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 77.9  
 Level Of Service: F  
 Volume to Capacity (v/c): 0.612

#### Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	35.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-2.00	
Crosswalk	Yes		Yes		Yes	

#### Volumes

Name						
Base Volume Input [veh/h]	454	32	15	817	49	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	0.00	0.00	10.00	0.00	0.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	9	13	3	28	11	11
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	554	45	18	1008	60	16
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	154	13	5	280	17	4
Total Analysis Volume [veh/h]	616	50	20	1120	67	18
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.02	0.01	0.61	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	8.94	0.00	77.94	52.11
Movement LOS	A	A	A	A	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.07	0.00	3.45	3.45
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.64	0.00	86.17	86.17
d_A, Approach Delay [s/veh]	0.00		0.16		72.47	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	3.35					
Intersection LOS	F					




### Intersection Level Of Service Report

#### Intersection 3: Hwy 101/25th St

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 14.2  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.622

#### Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	-2.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

#### Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	92	548	818	35	30	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	7.00	10.00	7.00	0.00	8.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	20	45	8	2	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	678	1027	50	38	72
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	188	285	14	11	20
Total Analysis Volume [veh/h]	122	753	1141	56	42	80
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		1	
v_co, Outbound Pedestrian Volume crossing	0		1		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	0	5	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	4.0	5.0	5.0	0.0	4.0	0.0
All red [s]	0.5	1.0	1.0	0.0	0.5	0.0
Split [s]	28	82	54	0	35	0
Vehicle Extension [s]	2.5	4.8	4.8	0.0	2.5	0.0
Walk [s]	0	7	7	0	8	0
Pedestrian Clearance [s]	0	17	14	0	19	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	4.00	4.00	4.00	2.50	2.50
g_i, Effective Green Time [s]	11	90	75	75	9	9
g / C, Green / Cycle	0.10	0.82	0.68	0.68	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.09	0.27	0.41	0.42	0.03	0.06
s, saturation flow rate [veh/h]	1395	2835	1451	1427	1500	1250
c, Capacity [veh/h]	144	2328	982	966	125	104
d1, Uniform Delay [s]	48.48	2.39	9.75	9.87	47.54	49.36
k, delay calibration	0.08	0.50	0.50	0.50	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.85	0.37	2.81	2.98	1.16	8.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.85	0.32	0.61	0.62	0.34	0.77
d, Delay for Lane Group [s/veh]	58.34	2.76	12.56	12.85	48.71	57.87
Lane Group LOS	E	A	B	B	D	E
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.67	1.44	7.86	7.98	1.13	2.39
50th-Percentile Queue Length [ft/ln]	91.80	35.94	196.60	199.52	28.16	59.84
95th-Percentile Queue Length [veh/ln]	6.61	2.59	12.46	12.61	2.03	4.31
95th-Percentile Queue Length [ft/ln]	165.25	64.69	311.58	315.34	50.68	107.71

**Movement, Approach, & Intersection Results**

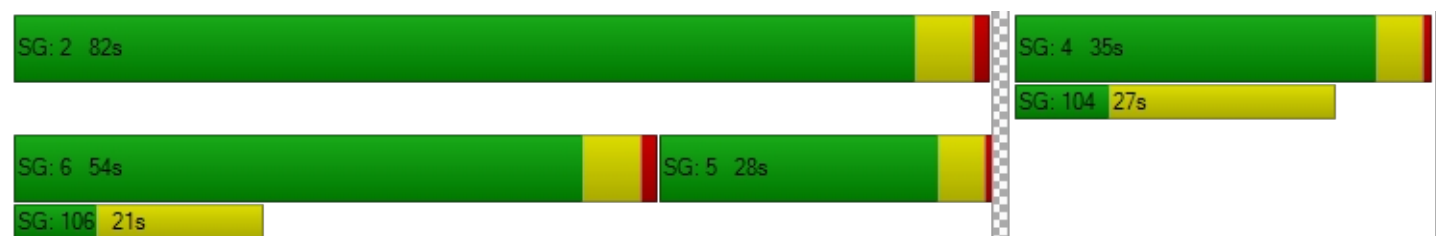
d_M, Delay for Movement [s/veh]	58.34	2.76	12.70	12.85	48.71	57.87
Movement LOS	E	A	B	B	D	E
d_A, Approach Delay [s/veh]	10.51		12.70		54.71	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	14.17					
Intersection LOS	B					
Intersection V/C	0.622					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	10466.90	0.00	4640.17
d_p, Pedestrian Delay [s]	43.65	43.65	44.55
I_p,int, Pedestrian LOS Score for Intersection	2.717	2.625	2.047
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	55.00	55.00	55.00
I_b,int, Bicycle LOS Score for Intersection	4.854	5.120	4.132
Bicycle LOS	E	F	D

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-







### Intersection Level Of Service Report

#### Intersection 4: Hwy 101/20th St

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 18.3  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.551

#### Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	75.00	90.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

#### Volumes

Name												
Base Volume Input [veh/h]	13	672	60	15	853	0	11	8	39	139	7	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	7.00	6.00	8.00	9.00	0.00	11.00	0.00	12.00	3.00	17.00	0.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	16	0	8	35	2	1	0	0	0	0	3
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	822	72	26	1059	2	14	10	47	167	8	35
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	228	20	7	294	1	4	3	13	46	2	10
Total Analysis Volume [veh/h]	18	913	80	29	1177	2	16	11	52	186	9	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			2			0		
v_co, Outbound Pedestrian Volume crossing	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	33.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	15	45	0	15	45	0	0	16	0	0	34	0
Vehicle Extension [s]	2.5	5.1	0.0	2.5	5.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	14	0	0	12	0	0	18	0	0	17	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	3.0	0.0	2.5	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	4.50	5.00	5.00	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.00	3.00	2.50	3.00	3.00	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	2	72	72	2	72	72	7	7	11	11
g / C, Green / Cycle	0.02	0.65	0.65	0.02	0.66	0.66	0.06	0.06	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.01	0.30	0.30	0.02	0.36	0.36	0.02	0.04	0.08	0.08
s, saturation flow rate [veh/h]	1667	1653	1607	1561	1626	1625	1700	1326	1627	1388
c, Capacity [veh/h]	27	1077	1046	35	1069	1068	102	80	160	136
d1, Uniform Delay [s]	53.87	9.62	9.62	53.61	10.13	10.13	49.38	50.55	48.49	48.53
k, delay calibration	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.11	1.46	1.50	30.53	2.05	2.05	1.01	6.47	6.23	7.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.68	0.47	0.47	0.84	0.55	0.55	0.26	0.65	0.79	0.79
d, Delay for Lane Group [s/veh]	73.98	11.08	11.13	84.14	12.18	12.18	50.39	57.02	54.72	56.07
Lane Group LOS	E	B	B	F	B	B	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.64	6.05	5.89	1.09	7.61	7.61	0.74	1.54	3.64	3.18
50th-Percentile Queue Length [ft/ln]	16.08	151.30	147.37	27.28	190.22	190.13	18.44	38.54	90.97	79.62
95th-Percentile Queue Length [veh/ln]	1.16	10.09	9.88	1.96	12.13	12.13	1.33	2.77	6.55	5.73
95th-Percentile Queue Length [ft/ln]	28.95	252.16	246.92	49.11	303.32	303.20	33.20	69.37	163.75	143.32

**Movement, Approach, & Intersection Results**

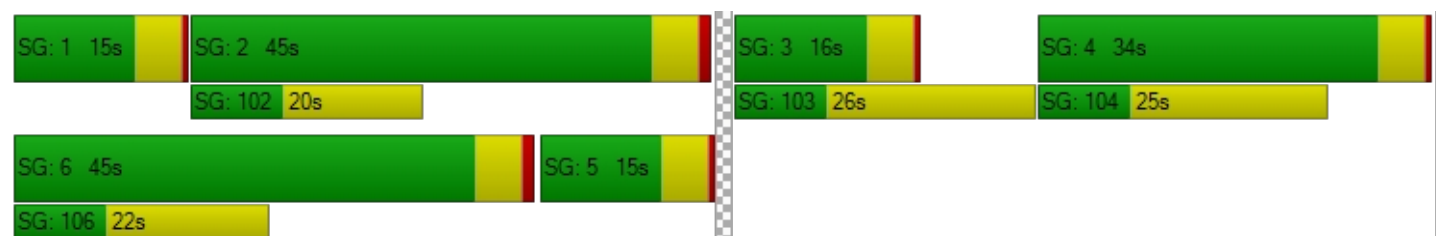
d_M, Delay for Movement [s/veh]	73.98	11.10	11.13	84.14	12.18	12.18	50.39	50.39	57.02	55.17	56.07	56.07
Movement LOS	E	B	B	F	B	B	D	D	E	E	E	E
d_A, Approach Delay [s/veh]	12.22			13.91			54.76			55.34		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	18.34											
Intersection LOS	B											
Intersection V/C	0.551											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			12.0			12.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	3703.14			0.00			5769.88			0.00		
d_p, Pedestrian Delay [s]	43.65			43.65			43.65			43.65		
I_p,int, Pedestrian LOS Score for Intersection	2.782			2.733			1.984			2.064		
Crosswalk LOS	C			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	727			727			209			536		
d_b, Bicycle Delay [s]	22.27			22.27			44.10			29.46		
I_b,int, Bicycle LOS Score for Intersection	2.394			2.556			1.690			1.946		
Bicycle LOS	B			B			A			A		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






### Intersection Level Of Service Report

#### Intersection 5: 31st St/Hamey St

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 9.3  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.010

#### Intersection Setup

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	4.00		-4.00		2.00	
Crosswalk	No		No		No	

#### Volumes

Name						
Base Volume Input [veh/h]	33	1	9	0	1	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	10	15	7	4
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	1	19	15	8	37
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	0	5	4	2	10
Total Analysis Volume [veh/h]	37	1	21	17	9	41
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.01	0.04
d_M, Delay for Movement [s/veh]	7.43	0.00	0.00	0.00	9.34	8.62
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.00	0.00	0.16	0.16
95th-Percentile Queue Length [ft/ln]	1.87	1.87	0.00	0.00	3.90	3.90
d_A, Approach Delay [s/veh]	7.23		0.00		8.75	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	5.65					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 1: Hwy 101/36th St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 129.5  
 Level Of Service: F  
 Volume to Capacity (v/c): 0.715

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	130.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-4.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	923	37	7	787	18	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	3.00	0.00	4.00	0.00	33.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	7	29	7	12	35	7
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1115	66	14	956	53	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	293	17	4	252	14	4
Total Analysis Volume [veh/h]	1174	69	15	1006	56	15
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.03	0.01	0.72	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	11.52	0.00	129.46	99.09
Movement LOS	A	A	B	A	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.08	0.00	4.06	4.06
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2.04	0.00	101.53	101.53
d_A, Approach Delay [s/veh]	0.00		0.17		123.04	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	3.82					
Intersection LOS	F					




### Intersection Level Of Service Report

#### Intersection 2: Hwy 101/31st St

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 190.0  
 Level Of Service: F  
 Volume to Capacity (v/c): 0.790

#### Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	35.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-2.00	
Crosswalk	Yes		Yes		Yes	

#### Volumes

Name						
Base Volume Input [veh/h]	954	57	19	784	35	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	4.00	6.00	4.00	0.00	7.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	29	46	12	35	4	3
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1174	103	31	976	39	7
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	306	27	8	254	10	2
Total Analysis Volume [veh/h]	1223	107	32	1017	41	7
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.06	0.01	0.79	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	12.59	0.00	189.97	136.39
Movement LOS	A	A	B	A	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.20	0.00	3.64	3.64
95th-Percentile Queue Length [ft/ln]	0.00	0.00	5.05	0.00	90.91	90.91
d_A, Approach Delay [s/veh]	0.00		0.38		182.15	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	3.77					
Intersection LOS	F					




### Intersection Level Of Service Report

#### Intersection 3: Hwy 101/25th St

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 48.5  
 Level Of Service: D  
 Volume to Capacity (v/c): 0.916

#### Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	-2.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

#### Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	260	900	798	88	104	294
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	5.00	4.00	3.00	1.00	0.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	63	35	4	12	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	1143	993	110	137	353
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	318	276	31	38	98
Total Analysis Volume [veh/h]	347	1270	1103	122	152	392
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	0	5	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	4.0	5.0	5.0	0.0	4.0	0.0
All red [s]	0.5	1.0	1.0	0.0	0.5	0.0
Split [s]	30	90	60	0	30	0
Vehicle Extension [s]	2.5	4.8	4.8	0.0	2.5	0.0
Walk [s]	0	7	7	0	8	0
Pedestrian Clearance [s]	0	17	14	0	19	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	4.00	4.00	4.00	2.50	2.50
g_i, Effective Green Time [s]	26	84	54	54	26	26
g / C, Green / Cycle	0.21	0.70	0.45	0.45	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.21	0.40	0.36	0.37	0.09	0.26
s, saturation flow rate [veh/h]	1653	3202	1695	1637	1654	1488
c, Capacity [veh/h]	352	2241	762	736	352	316
d1, Uniform Delay [s]	47.07	8.96	28.44	29.02	40.95	47.23
k, delay calibration	0.31	0.50	0.50	0.50	0.08	0.48
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.82	1.05	8.79	10.62	0.62	130.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.99	0.57	0.80	0.83	0.43	1.24
d, Delay for Lane Group [s/veh]	81.89	10.00	37.23	39.65	41.58	178.11
Lane Group LOS	F	B	D	D	D	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	13.66	7.82	16.68	17.30	3.97	20.88
50th-Percentile Queue Length [ft/ln]	341.49	195.40	417.02	432.38	99.28	522.05
95th-Percentile Queue Length [veh/ln]	19.72	12.40	23.38	24.12	7.15	31.60
95th-Percentile Queue Length [ft/ln]	493.02	310.02	584.48	602.89	178.70	789.92

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	81.89	10.00	38.30	39.65	41.58	178.11
Movement LOS	F	B	D	D	D	F
d_A, Approach Delay [s/veh]	25.43		38.44		139.96	
Approach LOS	C		D		F	
d_I, Intersection Delay [s/veh]	48.54					
Intersection LOS	D					
Intersection V/C	0.916					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	7012.83
d_p, Pedestrian Delay [s]	48.60	48.60	49.50
I_p,int, Pedestrian LOS Score for Intersection	2.920	2.789	2.283
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
I_b,int, Bicycle LOS Score for Intersection	5.466	5.143	4.132
Bicycle LOS	F	F	D

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-







### Intersection Level Of Service Report

#### Intersection 4: Hwy 101/20th St

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 63.2  
 Level Of Service: E  
 Volume to Capacity (v/c): 0.921

#### Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	75.00	90.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

#### Volumes

Name												
Base Volume Input [veh/h]	78	1059	106	88	959	19	47	47	99	343	26	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	4.00	3.00	1.00	3.00	0.00	5.00	0.00	4.00	1.00	5.00	0.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	47	0	6	28	1	4	0	0	0	0	12
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	1318	127	112	1179	24	60	56	119	412	31	113
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	358	35	30	320	7	16	15	32	112	8	31
Total Analysis Volume [veh/h]	102	1433	138	122	1282	26	65	61	129	448	34	123
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			3			2			2		
v_di, Inbound Pedestrian Volume crossing m	2			2			2			3		
v_co, Outbound Pedestrian Volume crossing	1			6			7			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			7			6			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	7.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	15	55	0	15	55	0	0	16	0	0	34	0
Vehicle Extension [s]	2.5	5.1	0.0	2.5	5.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	14	0	0	12	0	0	18	0	0	17	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	3.0	0.0	2.5	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	4.50	5.00	5.00	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.00	3.00	2.50	3.00	3.00	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	9	53	53	11	54	54	13	13	25	25
g / C, Green / Cycle	0.08	0.44	0.44	0.09	0.45	0.45	0.11	0.11	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.06	0.47	0.47	0.07	0.38	0.39	0.07	0.09	0.19	0.19
s, saturation flow rate [veh/h]	1654	1695	1643	1654	1709	1694	1706	1424	1654	1531
c, Capacity [veh/h]	124	748	725	145	775	769	182	152	348	322
d1, Uniform Delay [s]	54.70	33.53	33.53	53.93	29.06	29.12	51.70	52.59	46.20	46.23
k, delay calibration	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.08	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.50	49.41	55.63	9.37	11.00	11.27	3.47	9.33	8.98	9.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	1.06	1.08	0.84	0.85	0.85	0.69	0.85	0.90	0.90
d, Delay for Lane Group [s/veh]	64.21	82.94	89.15	63.30	40.06	40.39	55.16	61.92	55.18	56.06
Lane Group LOS	E	F	F	E	D	D	E	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.37	31.37	31.65	4.00	18.71	18.69	3.83	4.20	9.94	9.31
50th-Percentile Queue Length [ft/ln]	84.16	784.14	791.33	100.09	467.66	467.16	95.77	105.03	248.56	232.78
95th-Percentile Queue Length [veh/ln]	6.06	42.33	43.17	7.21	25.80	25.78	6.90	7.56	15.11	14.32
95th-Percentile Queue Length [ft/ln]	151.48	1058.21	1079.24	180.16	644.99	644.40	172.39	189.06	377.84	357.89

**Movement, Approach, & Intersection Results**

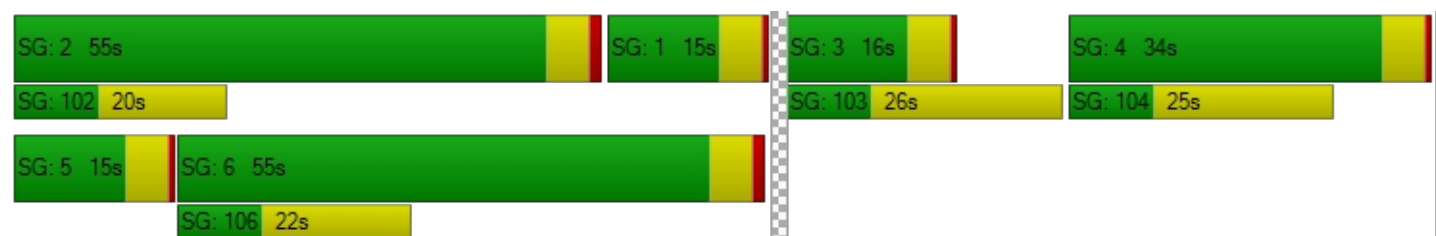
d_M, Delay for Movement [s/veh]	64.21	85.72	89.15	63.30	40.22	40.39	55.16	55.16	61.92	55.45	56.06	56.06
Movement LOS	E	F	F	E	D	D	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	84.69			42.19			58.58			55.60		
Approach LOS	F			D			E			E		
d_I, Intersection Delay [s/veh]	63.24											
Intersection LOS	E											
Intersection V/C	0.921											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			12.0			12.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	2215.48			1791.51			775.42			4104.77		
d_p, Pedestrian Delay [s]	48.60			48.60			48.60			48.60		
I_p,int, Pedestrian LOS Score for Intersection	3.002			2.908			2.089			2.254		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	833			833			192			492		
d_b, Bicycle Delay [s]	20.42			20.43			49.05			34.13		
I_b,int, Bicycle LOS Score for Intersection	2.940			2.739			1.980			2.558		
Bicycle LOS	C			B			A			B		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report**  
**Intersection 5: 31st St/Hamey St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 10.6  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.056

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	4.00		-4.00		2.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	19	0	5	1	1	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	100.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	15	26	5
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	0	5	16	27	54
Peak Hour Factor	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	0	2	6	10	20
Total Analysis Volume [veh/h]	28	0	7	24	40	79
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.06	0.07
d_M, Delay for Movement [s/veh]	7.38	0.00	0.00	0.00	10.63	8.97
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.00	0.00	0.45	0.45
95th-Percentile Queue Length [ft/ln]	1.39	1.39	0.00	0.00	11.18	11.18
d_A, Approach Delay [s/veh]	7.38		0.00		9.53	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.53					
Intersection LOS	B					




## Appendix F 2040 Total Traffic Operations

**Intersection Level Of Service Report****Intersection 1: Hwy 101/36th St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 117.6  
 Level Of Service: F  
 Volume to Capacity (v/c): 0.907

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	130.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-4.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	438	21	6	777	55	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	0.00	0.00	10.00	0.00	0.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	11	9	2	3	28	7
Site-Generated Trips [veh/h]	0	15	7	0	41	22
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	537	45	15	935	124	34
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	149	13	4	260	34	9
Total Analysis Volume [veh/h]	597	50	17	1039	138	38
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.02	0.01	0.91	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	8.87	0.00	117.58	100.56
Movement LOS	A	A	A	A	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.00	7.88	7.88
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.37	0.00	196.92	196.92
d_A, Approach Delay [s/veh]	0.00		0.14		113.91	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	10.75					
Intersection LOS	F					




### Intersection Level Of Service Report

#### Intersection 2: Hwy 101/31st St

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 205.6  
 Level Of Service: F  
 Volume to Capacity (v/c): 1.110

#### Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	35.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-2.00	
Crosswalk	Yes		Yes		Yes	

#### Volumes

Name						
Base Volume Input [veh/h]	454	32	15	817	49	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	0.00	0.00	10.00	0.00	0.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	9	13	3	28	11	11
Site-Generated Trips [veh/h]	15	15	0	41	41	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	569	60	18	1049	101	16
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	158	17	5	291	28	4
Total Analysis Volume [veh/h]	632	67	20	1166	112	18
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.02	0.01	1.11	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	9.06	0.00	205.62	177.12
Movement LOS	A	A	A	A	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.07	0.00	8.09	8.09
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.69	0.00	202.34	202.34
d_A, Approach Delay [s/veh]	0.00		0.15		201.67	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	13.10					
Intersection LOS	F					




### Intersection Level Of Service Report

#### Intersection 3: Hwy 101/25th St

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 13.0  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.592

#### Intersection Setup

Name	Northbound		Southbound		Eastbound	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	-2.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

#### Volumes

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	92	548	818	35	30	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	7.00	10.00	7.00	0.00	8.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	20	45	8	2	0
Site-Generated Trips [veh/h]	0	26	71	11	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	704	1098	61	42	72
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	196	305	17	12	20
Total Analysis Volume [veh/h]	122	782	1220	68	47	80
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		1	
v_co, Outbound Pedestrian Volume crossing	0		1		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	0	5	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	4.0	5.0	5.0	0.0	4.0	0.0
All red [s]	0.5	1.0	1.0	0.0	0.5	0.0
Split [s]	28	82	54	0	35	0
Vehicle Extension [s]	2.5	4.8	4.8	0.0	2.5	0.0
Walk [s]	0	7	7	0	8	0
Pedestrian Clearance [s]	0	17	14	0	19	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	4.00	4.00	4.00	2.50	2.50
g_i, Effective Green Time [s]	10	91	76	76	9	9
g / C, Green / Cycle	0.09	0.83	0.69	0.69	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.08	0.25	0.40	0.41	0.03	0.06
s, saturation flow rate [veh/h]	1549	3150	1612	1582	1667	1388
c, Capacity [veh/h]	147	2605	1115	1094	129	107
d1, Uniform Delay [s]	48.94	2.19	8.71	8.82	48.17	49.66
k, delay calibration	0.08	0.50	0.50	0.50	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.77	0.30	2.18	2.32	1.28	7.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.83	0.30	0.58	0.59	0.36	0.74
d, Delay for Lane Group [s/veh]	57.71	2.48	10.89	11.14	49.44	57.01
Lane Group LOS	E	A	B	B	D	E
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.64	1.35	7.68	7.80	1.27	2.37
50th-Percentile Queue Length [ft/ln]	90.97	33.82	192.06	195.03	31.74	59.18
95th-Percentile Queue Length [veh/ln]	6.55	2.43	12.23	12.38	2.29	4.26
95th-Percentile Queue Length [ft/ln]	163.75	60.87	305.69	309.55	57.14	106.53

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	57.71	2.48	11.01	11.14	49.44	57.01
Movement LOS	E	A	B	B	D	E
d_A, Approach Delay [s/veh]	9.94		11.02		54.21	
Approach LOS	A		B		D	
d_I, Intersection Delay [s/veh]	12.96					
Intersection LOS	B					
Intersection V/C	0.592					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	10466.90	0.00	4513.33
d_p, Pedestrian Delay [s]	43.65	43.65	44.55
I_p,int, Pedestrian LOS Score for Intersection	2.738	2.656	2.053
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	55.00	55.00	55.00
I_b,int, Bicycle LOS Score for Intersection	4.878	5.195	4.132
Bicycle LOS	E	F	D

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 82s

SG: 4 35s

SG: 104 27s

SG: 6 54s

SG: 5 28s

SG: 106 21s





### Intersection Level Of Service Report

#### Intersection 4: Hwy 101/20th St

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 18.8  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.577

#### Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	75.00	90.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

#### Volumes

Name												
Base Volume Input [veh/h]	13	672	60	15	853	0	11	8	39	139	7	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	7.00	6.00	8.00	9.00	0.00	11.00	0.00	12.00	3.00	17.00	0.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	16	0	8	35	2	1	0	0	0	0	3
Site-Generated Trips [veh/h]	0	22	0	6	59	6	2	0	0	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	844	72	32	1118	8	16	10	47	167	8	37
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	234	20	9	311	2	4	3	13	46	2	10
Total Analysis Volume [veh/h]	18	938	80	36	1242	9	18	11	52	186	9	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			2			0		
v_co, Outbound Pedestrian Volume crossing	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	33.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	15	45	0	15	45	0	0	16	0	0	34	0
Vehicle Extension [s]	2.5	5.1	0.0	2.5	5.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	14	0	0	12	0	0	18	0	0	17	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	3.0	0.0	2.5	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	4.50	5.00	5.00	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.00	3.00	2.50	3.00	3.00	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	2	71	71	3	72	72	7	7	11	11
g / C, Green / Cycle	0.02	0.64	0.64	0.03	0.66	0.66	0.06	0.06	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.01	0.31	0.31	0.02	0.39	0.39	0.02	0.04	0.08	0.08
s, saturation flow rate [veh/h]	1667	1653	1608	1561	1626	1621	1697	1326	1627	1386
c, Capacity [veh/h]	27	1065	1036	44	1067	1064	103	80	161	137
d1, Uniform Delay [s]	53.87	10.12	10.12	53.21	10.57	10.57	49.41	50.52	48.45	48.49
k, delay calibration	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.11	1.58	1.62	23.57	2.37	2.37	1.10	6.36	6.22	7.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.68	0.48	0.48	0.82	0.59	0.59	0.28	0.65	0.79	0.80
d, Delay for Lane Group [s/veh]	73.98	11.70	11.74	76.78	12.93	12.94	50.52	56.88	54.67	56.04
Lane Group LOS	E	B	B	E	B	B	D	E	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.64	6.44	6.28	1.28	8.44	8.42	0.79	1.54	3.67	3.21
50th-Percentile Queue Length [ft/ln]	16.08	161.09	157.03	31.88	210.99	210.59	19.84	38.48	91.78	80.22
95th-Percentile Queue Length [veh/ln]	1.16	10.61	10.39	2.30	13.20	13.18	1.43	2.77	6.61	5.78
95th-Percentile Queue Length [ft/ln]	28.95	265.16	259.78	57.39	330.09	329.59	35.72	69.27	165.20	144.40

**Movement, Approach, & Intersection Results**

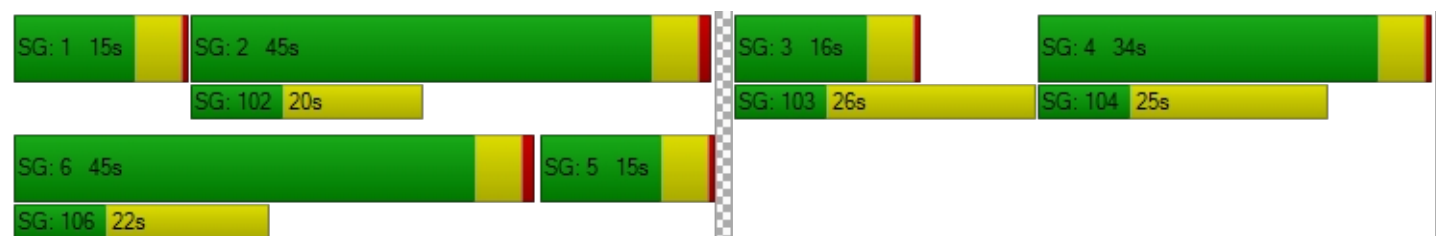
d_M, Delay for Movement [s/veh]	73.98	11.72	11.74	76.78	12.94	12.94	50.52	50.52	56.88	55.12	56.04	56.04
Movement LOS	E	B	B	E	B	B	D	D	E	E	E	E
d_A, Approach Delay [s/veh]	12.80			14.72			54.60			55.30		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	18.82											
Intersection LOS	B											
Intersection V/C	0.577											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			12.0			12.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	3703.14			0.00			5701.08			0.00		
d_p, Pedestrian Delay [s]	43.65			43.65			43.65			43.65		
I_p,int, Pedestrian LOS Score for Intersection	2.799			2.754			1.987			2.067		
Crosswalk LOS	C			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	727			727			209			536		
d_b, Bicycle Delay [s]	22.27			22.27			44.10			29.46		
I_b,int, Bicycle LOS Score for Intersection	2.414			2.621			1.693			1.949		
Bicycle LOS	B			B			A			A		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






### Intersection Level Of Service Report Intersection 5: 31st St/Hamey St

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 9.6  
Level Of Service: A  
Volume to Capacity (v/c): 0.031

#### Intersection Setup

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	4.00		0.00		2.00	
Crosswalk	No		No		No	

#### Volumes

Name						
Base Volume Input [veh/h]	33	1	9	0	1	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	10	15	7	4
Site-Generated Trips [veh/h]	0	0	6	41	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	1	25	56	23	37
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	0	7	16	6	10
Total Analysis Volume [veh/h]	37	1	28	62	26	41
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.03	0.04
d_M, Delay for Movement [s/veh]	7.69	0.00	0.00	0.00	9.64	8.87
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.00	0.00	0.23	0.23
95th-Percentile Queue Length [ft/ln]	2.08	2.08	0.00	0.00	5.81	5.81
d_A, Approach Delay [s/veh]	7.49		0.00		9.17	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.61					
Intersection LOS	A					




### Intersection Level Of Service Report

#### Intersection 6: Harney St/Site Dwy 2

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.8  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.051

#### Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

#### Volumes

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	15	0	0	47	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	15	0	0	47	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	0	0	13	0
Total Analysis Volume [veh/h]	0	17	0	0	52	1
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.25	0.00	8.75	8.55
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.17	0.17
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	4.13	4.13
d_A, Approach Delay [s/veh]	0.00		3.62		8.75	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.62					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 7: Harney St/Site Dwy 2**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.5  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.064

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	22	0	0	62
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	22	0	0	62
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	6	0	0	17
Total Analysis Volume [veh/h]	1	0	24	0	0	69
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.06
d_M, Delay for Movement [s/veh]	0.00	0.00	7.25	0.00	9.03	8.55
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.05	0.20	0.20
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.13	1.13	5.09	5.09
d_A, Approach Delay [s/veh]	0.00		7.25		8.55	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	8.13					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 1: Hwy 101/36th St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 604.8  
 Level Of Service: F  
 Volume to Capacity (v/c): 1.749

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	130.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	923	37	7	787	18	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	3.00	0.00	4.00	0.00	33.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	7	29	7	12	35	7
Site-Generated Trips [veh/h]	0	50	24	1	17	15
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1115	116	38	957	70	29
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	293	31	10	252	18	8
Total Analysis Volume [veh/h]	1174	122	40	1007	74	31
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.07	0.01	1.75	0.15
d_M, Delay for Movement [s/veh]	0.00	0.00	12.18	0.00	604.77	537.49
Movement LOS	A	A	B	A	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.24	0.00	10.12	10.12
95th-Percentile Queue Length [ft/ln]	0.00	0.00	5.96	0.00	252.95	252.95
d_A, Approach Delay [s/veh]	0.00		0.47		584.91	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	25.29					
Intersection LOS	F					




### Intersection Level Of Service Report

#### Intersection 2: Hwy 101/31st St

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 531.5  
 Level Of Service: F  
 Volume to Capacity (v/c): 1.690

#### Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	35.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-2.00	
Crosswalk	Yes		Yes		Yes	

#### Volumes

Name						
Base Volume Input [veh/h]	954	57	19	784	35	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	4.00	6.00	4.00	0.00	7.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	29	46	12	35	4	3
Site-Generated Trips [veh/h]	50	50	1	17	37	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1224	153	32	993	76	7
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	319	40	8	259	20	2
Total Analysis Volume [veh/h]	1275	159	33	1034	79	7
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.01	0.00	0.07	0.01	1.69	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	13.40	0.00	531.52	471.39
Movement LOS	A	A	B	A	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.23	0.00	8.36	8.36
95th-Percentile Queue Length [ft/ln]	0.00	0.00	5.75	0.00	209.12	209.12
d_A, Approach Delay [s/veh]	0.00		0.41		526.62	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	17.68					
Intersection LOS	F					

**Intersection Level Of Service Report**  
**Intersection 3: Hwy 101/25th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 48.8  
 Level Of Service: D  
 Volume to Capacity (v/c): 0.937

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	-2.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	260	900	798	88	104	294
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	5.00	4.00	3.00	1.00	0.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	63	35	4	12	0
Site-Generated Trips [veh/h]	0	87	47	7	13	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	1230	1040	117	150	353
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	342	289	33	42	98
Total Analysis Volume [veh/h]	347	1367	1156	130	167	392
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	0	5	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	4.0	5.0	5.0	0.0	4.0	0.0
All red [s]	0.5	1.0	1.0	0.0	0.5	0.0
Split [s]	30	90	60	0	30	0
Vehicle Extension [s]	2.5	4.8	4.8	0.0	2.5	0.0
Walk [s]	0	7	7	0	8	0
Pedestrian Clearance [s]	0	17	14	0	19	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	4.00	4.00	4.00	2.50	2.50
g_i, Effective Green Time [s]	26	84	54	54	26	26
g / C, Green / Cycle	0.21	0.70	0.45	0.45	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.21	0.43	0.38	0.39	0.10	0.26
s, saturation flow rate [veh/h]	1653	3202	1695	1636	1654	1488
c, Capacity [veh/h]	352	2241	762	736	352	316
d1, Uniform Delay [s]	47.07	9.43	29.27	29.92	41.37	47.23
k, delay calibration	0.31	0.50	0.50	0.50	0.08	0.48
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.82	1.25	11.02	13.67	0.74	130.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.99	0.61	0.84	0.87	0.48	1.24
d, Delay for Lane Group [s/veh]	81.89	10.68	40.28	43.59	42.11	178.11
Lane Group LOS	F	B	D	D	D	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	13.66	8.88	18.34	19.16	4.41	20.88
50th-Percentile Queue Length [ft/ln]	341.49	221.94	458.54	479.06	110.29	522.05
95th-Percentile Queue Length [veh/ln]	19.72	13.76	25.37	26.34	7.86	31.60
95th-Percentile Queue Length [ft/ln]	493.02	344.10	634.13	658.54	196.41	789.92

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	81.89	10.68	41.75	43.59	42.11	178.11
Movement LOS	F	B	D	D	D	F
d_A, Approach Delay [s/veh]	25.10		41.94		137.48	
Approach LOS	C		D		F	
d_I, Intersection Delay [s/veh]	48.83					
Intersection LOS	D					
Intersection V/C	0.937					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	6843.72
d_p, Pedestrian Delay [s]	48.60	48.60	49.50
I_p,int, Pedestrian LOS Score for Intersection	2.949	2.832	2.291
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
I_b,int, Bicycle LOS Score for Intersection	5.546	5.193	4.132
Bicycle LOS	F	F	D

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-







### Intersection Level Of Service Report

#### Intersection 4: Hwy 101/20th St

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 73.3  
 Level Of Service: E  
 Volume to Capacity (v/c): 0.954

#### Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	75.00	90.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

#### Volumes

Name												
Base Volume Input [veh/h]	78	1059	106	88	959	19	47	47	99	343	26	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	4.00	3.00	1.00	3.00	0.00	5.00	0.00	4.00	1.00	5.00	0.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	47	0	6	28	1	4	0	0	0	0	12
Site-Generated Trips [veh/h]	0	75	0	4	39	4	6	0	0	0	0	6
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	1393	127	116	1218	28	66	56	119	412	31	119
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	379	35	32	331	8	18	15	32	112	8	32
Total Analysis Volume [veh/h]	102	1514	138	126	1324	30	72	61	129	448	34	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			3			2			2		
v_di, Inbound Pedestrian Volume crossing m	2			2			2			3		
v_co, Outbound Pedestrian Volume crossing	1			6			7			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			7			6			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	7.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	15	55	0	15	55	0	0	16	0	0	34	0
Vehicle Extension [s]	2.5	5.1	0.0	2.5	5.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	14	0	0	12	0	0	18	0	0	17	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	3.0	0.0	2.5	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	4.50	5.00	5.00	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.00	3.00	2.50	3.00	3.00	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	9	53	53	11	54	54	13	13	25	25
g / C, Green / Cycle	0.08	0.44	0.44	0.09	0.45	0.45	0.11	0.11	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.06	0.49	0.50	0.08	0.40	0.40	0.08	0.09	0.19	0.19
s, saturation flow rate [veh/h]	1654	1695	1645	1654	1709	1692	1704	1424	1654	1528
c, Capacity [veh/h]	124	744	723	145	772	764	182	152	351	324
d1, Uniform Delay [s]	54.70	33.65	33.65	54.07	29.94	30.02	51.93	52.59	46.07	46.10
k, delay calibration	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.08	0.12	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.50	69.50	78.07	11.15	13.64	14.06	4.17	9.33	9.28	10.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	1.12	1.14	0.87	0.88	0.88	0.73	0.85	0.90	0.91
d, Delay for Lane Group [s/veh]	64.21	103.15	111.72	65.22	43.58	44.09	56.10	61.92	55.35	56.32
Lane Group LOS	E	F	F	E	D	D	E	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.37	35.39	36.07	4.20	20.30	20.31	4.09	4.20	10.07	9.43
50th-Percentile Queue Length [ft/ln]	84.16	884.64	901.80	105.10	507.41	507.65	102.17	105.03	251.82	235.64
95th-Percentile Queue Length [veh/ln]	6.06	48.90	50.38	7.57	27.68	27.70	7.36	7.56	15.28	14.46
95th-Percentile Queue Length [ft/ln]	151.48	1222.52	1259.43	189.16	692.12	692.40	183.91	189.06	381.95	361.52

**Movement, Approach, & Intersection Results**

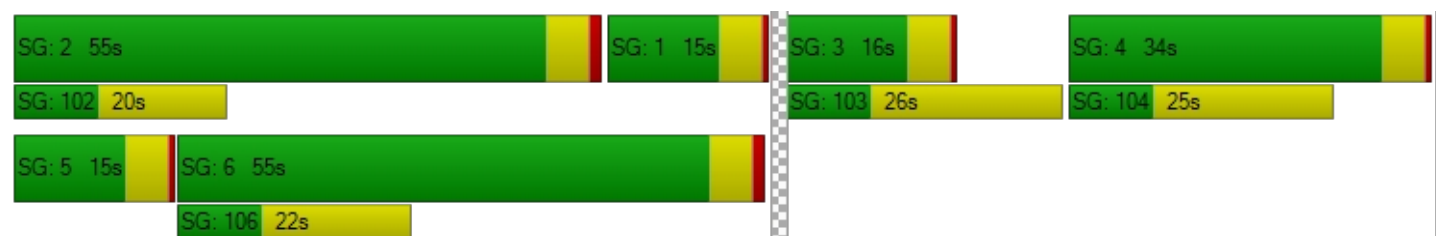
d_M, Delay for Movement [s/veh]	64.21	107.02	111.72	65.22	43.83	44.09	56.10	56.10	61.92	55.64	56.32	56.32
Movement LOS	E	F	F	E	D	D	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	104.90			45.65			58.97			55.82		
Approach LOS	F			D			E			E		
d_I, Intersection Delay [s/veh]	73.32											
Intersection LOS	E											
Intersection V/C	0.954											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			12.0			12.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	2215.48			1772.03			769.39			4104.77		
d_p, Pedestrian Delay [s]	48.60			48.60			48.60			48.60		
I_p,int, Pedestrian LOS Score for Intersection	3.026			2.936			2.092			2.257		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	833			833			192			492		
d_b, Bicycle Delay [s]	20.42			20.43			49.05			34.13		
I_b,int, Bicycle LOS Score for Intersection	3.007			2.781			1.992			2.568		
Bicycle LOS	C			C			A			B		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






### Intersection Level Of Service Report Intersection 5: 31st St/Hamey St

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 11.8  
Level Of Service: B  
Volume to Capacity (v/c): 0.170

#### Intersection Setup

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	4.00		-4.00		2.00	
Crosswalk	No		No		No	

#### Volumes

Name						
Base Volume Input [veh/h]	19	0	5	1	1	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	100.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	15	26	5
Site-Generated Trips [veh/h]	0	0	4	37	51	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	0	9	53	78	54
Peak Hour Factor	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	0	3	19	29	20
Total Analysis Volume [veh/h]	28	0	13	78	115	79
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.17	0.08
d_M, Delay for Movement [s/veh]	7.68	0.00	0.00	0.00	11.82	10.04
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.00	0.00	0.97	0.97
95th-Percentile Queue Length [ft/ln]	1.56	1.56	0.00	0.00	24.34	24.34
d_A, Approach Delay [s/veh]	7.68		0.00		11.09	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	7.56					
Intersection LOS	B					

**Intersection Level Of Service Report****Intersection 6: Harney St/Site Dwy 1**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.8  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.041

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	51	0	0	41	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	51	0	0	41	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	0	0	10	0
Total Analysis Volume [veh/h]	0	51	0	0	41	1
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.04	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.31	0.00	8.80	8.59
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.13	0.13
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	3.31	3.31
d_A, Approach Delay [s/veh]	0.00		3.66		8.79	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.97					
Intersection LOS	A					




### Intersection Level Of Service Report

#### Intersection 7: Harney St/Site Dwy 2

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.4  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.030

#### Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

#### Volumes

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	74	0	0	32
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	74	0	0	32
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	19	0	0	8
Total Analysis Volume [veh/h]	1	0	74	0	0	32
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.05	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	7.33	0.00	9.58	8.42
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.14	0.14	0.09	0.09
95th-Percentile Queue Length [ft/ln]	0.00	0.00	3.58	3.58	2.28	2.28
d_A, Approach Delay [s/veh]	0.00		7.33		8.42	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.59					
Intersection LOS	A					




## Appendix G 2040 Total Traffic Mitigation

**Intersection Level Of Service Report****Intersection 1: Hwy 101/36th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 14.5  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.727

**Intersection Setup**

Name	Northbound		Southbound		Westbound	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	1	0
Pocket Length [ft]	100.00	130.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-4.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	438	21	6	777	55	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	0.00	0.00	10.00	0.00	0.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	11	9	2	3	28	7
Site-Generated Trips [veh/h]	0	15	7	0	41	22
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	22
Total Hourly Volume [veh/h]	537	45	15	935	124	12
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	149	13	4	260	34	3
Total Analysis Volume [veh/h]	597	50	17	1039	138	13
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	86	0	9	95	15	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	39	39	39	39	39	39
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	1	27	4	4
g / C, Green / Cycle	0.56	0.56	0.02	0.68	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.37	0.03	0.01	0.64	0.08	0.01
s, saturation flow rate [veh/h]	1626	1488	1667	1612	1666	1487
c, Capacity [veh/h]	906	829	36	1099	189	169
d1, Uniform Delay [s]	6.05	3.96	18.88	5.57	16.73	15.48
k, delay calibration	0.11	0.11	0.11	0.33	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.82	0.03	9.02	12.55	5.32	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.66	0.06	0.47	0.95	0.73	0.08
d, Delay for Lane Group [s/veh]	6.87	3.99	27.89	18.12	22.05	15.67
Lane Group LOS	A	A	C	B	C	B
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.01	0.11	0.22	5.48	1.29	0.10
50th-Percentile Queue Length [ft/ln]	50.22	2.64	5.59	136.88	32.23	2.43
95th-Percentile Queue Length [veh/ln]	3.62	0.19	0.40	9.31	2.32	0.17
95th-Percentile Queue Length [ft/ln]	90.40	4.76	10.05	232.82	58.02	4.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	6.87	3.99	27.89	18.12	22.05	15.67
Movement LOS	A	A	C	B	C	B
d_A, Approach Delay [s/veh]	6.65		18.28		21.50	
Approach LOS	A		B		C	
d_I, Intersection Delay [s/veh]	14.48					
Intersection LOS	B					
Intersection V/C	0.727					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	46.37
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.061
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	55.00	55.00	55.00
I_b,int, Bicycle LOS Score for Intersection	5.200	5.875	4.132
Bicycle LOS	F	F	D

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report****Intersection 2: Hwy 101/31st St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 23.4  
 Level Of Service: C  
 Volume to Capacity (v/c): 0.791

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	1	0
Pocket Length [ft]	100.00	35.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-2.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	454	32	15	817	49	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	0.00	0.00	10.00	0.00	0.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	9	13	3	28	11	11
Site-Generated Trips [veh/h]	15	15	0	41	41	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	11
Total Hourly Volume [veh/h]	569	60	18	1049	101	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	158	17	5	291	28	1
Total Analysis Volume [veh/h]	632	67	20	1166	112	6
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	87.5
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	89	0	9	98	12	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	42	42	42	42	42	42
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	1	30	4	4
g / C, Green / Cycle	0.60	0.60	0.03	0.72	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.39	0.05	0.01	0.72	0.07	0.00
s, saturation flow rate [veh/h]	1626	1488	1667	1612	1666	1487
c, Capacity [veh/h]	967	885	45	1156	154	137
d1, Uniform Delay [s]	5.63	3.60	20.11	5.93	18.53	17.36
k, delay calibration	0.12	0.11	0.11	0.46	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.81	0.04	6.87	27.54	6.48	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.65	0.08	0.45	1.01	0.73	0.04
d, Delay for Lane Group [s/veh]	6.44	3.64	26.98	33.47	25.01	17.49
Lane Group LOS	A	A	C	F	C	B
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.08	0.14	0.26	10.45	1.20	0.05
50th-Percentile Queue Length [ft/ln]	52.09	3.39	6.40	261.28	29.97	1.28
95th-Percentile Queue Length [veh/ln]	3.75	0.24	0.46	15.86	2.16	0.09
95th-Percentile Queue Length [ft/ln]	93.77	6.10	11.52	396.58	53.95	2.31

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	6.44	3.64	26.98	33.47	25.01	17.49
Movement LOS	A	A	C	F	C	B
d_A, Approach Delay [s/veh]	6.17		33.36		24.63	
Approach LOS	A		C		C	
d_I, Intersection Delay [s/veh]	23.36					
Intersection LOS	C					
Intersection V/C	0.791					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	46.37
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.037
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	55.00	55.00	55.00
I_b,int, Bicycle LOS Score for Intersection	5.286	6.089	4.132
Bicycle LOS	F	F	D

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report****Intersection 3: Hwy 101/25th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 10.8  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.560

**Intersection Setup**

Name	Northbound		Southbound		Eastbound	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	-2.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	92	548	818	35	30	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	7.00	10.00	7.00	0.00	8.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	20	45	8	2	0
Site-Generated Trips [veh/h]	0	26	71	11	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	48
Total Hourly Volume [veh/h]	110	704	1098	61	42	24
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	196	305	17	12	7
Total Analysis Volume [veh/h]	122	782	1220	68	47	27
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		1	
v_co, Outbound Pedestrian Volume crossing	0		1		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	60.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	0	5	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	4.0	5.0	5.0	0.0	4.0	0.0
All red [s]	0.5	1.0	1.0	0.0	0.5	0.0
Split [s]	14	78	64	0	32	0
Vehicle Extension [s]	2.5	4.8	4.8	0.0	2.5	0.0
Walk [s]	0	7	7	0	8	0
Pedestrian Clearance [s]	0	17	14	0	19	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	4.00	4.00	4.00	2.50	2.50
g_i, Effective Green Time [s]	10	95	81	81	5	5
g / C, Green / Cycle	0.09	0.86	0.73	0.73	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.08	0.25	0.40	0.41	0.03	0.02
s, saturation flow rate [veh/h]	1549	3150	1612	1582	1667	1384
c, Capacity [veh/h]	134	2706	1179	1157	76	63
d1, Uniform Delay [s]	49.79	1.45	6.60	6.69	51.57	51.11
k, delay calibration	0.08	0.50	0.50	0.50	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.42	0.27	1.82	1.93	6.06	3.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.91	0.29	0.55	0.56	0.62	0.43
d, Delay for Lane Group [s/veh]	65.21	1.72	8.42	8.62	57.63	54.53
Lane Group LOS	E	A	A	A	E	D
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.89	0.84	6.29	6.39	1.40	0.78
50th-Percentile Queue Length [ft/ln]	97.25	20.91	157.22	159.65	34.97	19.59
95th-Percentile Queue Length [veh/ln]	7.00	1.51	10.40	10.53	2.52	1.41
95th-Percentile Queue Length [ft/ln]	175.04	37.64	260.04	263.25	62.94	35.26

**Movement, Approach, & Intersection Results**

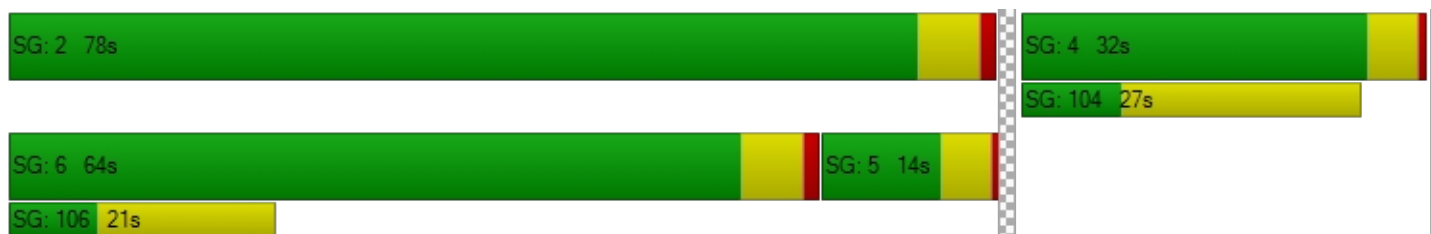
d_M, Delay for Movement [s/veh]	65.21	1.72	8.51	8.62	57.63	54.53
Movement LOS	E	A	A	A	E	D
d_A, Approach Delay [s/veh]	10.29		8.52		56.50	
Approach LOS	B		A		E	
d_I, Intersection Delay [s/veh]	10.79					
Intersection LOS	B					
Intersection V/C	0.560					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	11380.41	0.00	4513.33
d_p, Pedestrian Delay [s]	43.65	43.65	44.55
I_p,int, Pedestrian LOS Score for Intersection	2.737	2.656	2.119
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	55.00	55.00	55.00
I_b,int, Bicycle LOS Score for Intersection	4.878	5.195	4.132
Bicycle LOS	E	F	D

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report****Intersection 4: Hwy 101/20th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 18.5  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.577

**Intersection Setup**

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	1
Pocket Length [ft]	150.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	75.00	90.00	100.00	90.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name												
Base Volume Input [veh/h]	13	672	60	15	853	0	11	8	39	139	7	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	7.00	6.00	8.00	9.00	0.00	11.00	0.00	12.00	3.00	17.00	0.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	16	0	8	35	2	1	0	0	0	0	3
Site-Generated Trips [veh/h]	0	22	0	6	59	6	2	0	0	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	31	0	0	0
Total Hourly Volume [veh/h]	16	844	72	32	1118	8	16	10	16	167	8	37
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	234	20	9	311	2	4	3	4	46	2	10
Total Analysis Volume [veh/h]	18	938	80	36	1242	9	18	11	18	186	9	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			2			0		
v_co, Outbound Pedestrian Volume crossing	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	97.5
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	3	3	0	4	0
Auxiliary Signal Groups									1,3			
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	6	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.0	0.5	0.5	0.0	0.5	0.0
Split [s]	17	27	0	22	32	0	0	31	31	0	30	0
Vehicle Extension [s]	2.5	5.1	0.0	2.5	5.1	0.0	0.0	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	8	0	0	8	0	0	8	8	0	8	0
Pedestrian Clearance [s]	0	14	0	0	12	0	0	18	18	0	17	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	3.0	0.0	2.5	3.0	0.0	0.0	2.5	2.5	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	4.50	5.00	5.00	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.50	3.00	3.00	2.50	3.00	3.00	2.50	0.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	2	69	69	3	71	71	6	30	14	14	14
g / C, Green / Cycle	0.02	0.63	0.63	0.03	0.64	0.64	0.05	0.27	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.31	0.31	0.02	0.39	0.39	0.02	0.01	0.06	0.10	0.03
s, saturation flow rate [veh/h]	1667	1653	1608	1561	1626	1621	1697	1343	1406	1084	1488
c, Capacity [veh/h]	26	1039	1011	43	1042	1039	86	366	213	198	185
d1, Uniform Delay [s]	53.89	11.02	11.02	53.22	11.54	11.54	50.44	29.49	46.96	48.00	43.36
k, delay calibration	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.33	1.69	1.74	24.36	2.57	2.57	1.69	0.04	0.92	1.78	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.69	0.50	0.50	0.83	0.60	0.60	0.34	0.05	0.40	0.55	0.22
d, Delay for Lane Group [s/veh]	75.22	12.72	12.77	77.58	14.10	14.11	52.13	29.53	47.88	49.79	43.80
Lane Group LOS	E	B	B	E	B	B	D	C	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.65	6.83	6.66	1.28	8.98	8.96	0.81	0.36	2.29	3.01	1.03
50th-Percentile Queue Length [ft/ln]	16.24	170.81	166.50	32.07	224.40	223.99	20.28	8.93	57.30	75.35	25.73
95th-Percentile Queue Length [veh/ln]	1.17	11.12	10.89	2.31	13.89	13.87	1.46	0.64	4.13	5.42	1.85
95th-Percentile Queue Length [ft/ln]	29.23	277.98	272.31	57.72	347.24	346.71	36.51	16.07	103.15	135.62	46.31

**Movement, Approach, & Intersection Results**

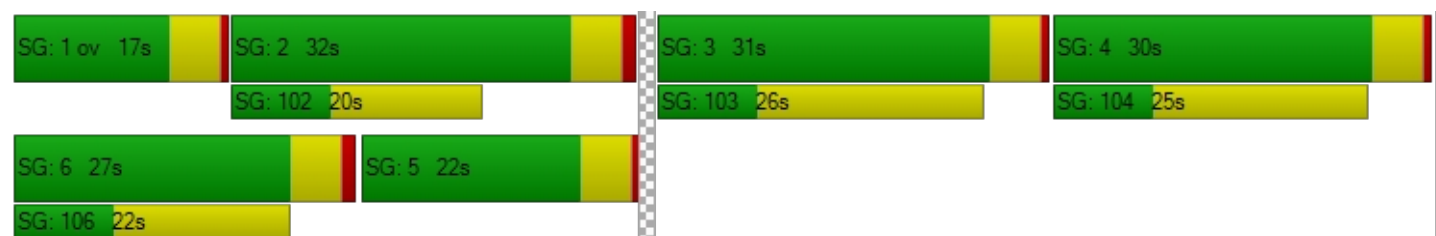
d_M, Delay for Movement [s/veh]	75.22	12.74	12.77	77.58	14.11	14.11	52.13	52.13	29.53	48.90	49.79	43.80
Movement LOS	E	B	B	E	B	B	D	D	C	D	D	D
d_A, Approach Delay [s/veh]	13.83			15.88			43.47			48.05		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	18.48											
Intersection LOS	B											
Intersection V/C	0.577											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			12.0			12.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	2817.70			0.00			5701.08			0.00		
d_p, Pedestrian Delay [s]	43.65			43.65			43.65			43.65		
I_p,int, Pedestrian LOS Score for Intersection	3.080			2.754			2.030			2.228		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	400			491			482			464		
d_b, Bicycle Delay [s]	35.20			31.31			31.69			32.46		
I_b,int, Bicycle LOS Score for Intersection	2.414			2.621			1.688			1.949		
Bicycle LOS	B			B			A			A		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report****Intersection 5: 31st St/Hamey St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 9.6  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.031

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	4.00		0.00		2.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	33	1	9	0	1	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	10	15	7	4
Site-Generated Trips [veh/h]	0	0	6	41	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	1	25	56	23	37
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	0	7	16	6	10
Total Analysis Volume [veh/h]	37	1	28	62	26	41
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.03	0.04
d_M, Delay for Movement [s/veh]	7.69	0.00	0.00	0.00	9.64	8.87
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.00	0.00	0.23	0.23
95th-Percentile Queue Length [ft/ln]	2.08	2.08	0.00	0.00	5.81	5.81
d_A, Approach Delay [s/veh]	7.49		0.00		9.17	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.61					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 6: Harney St/Site Dwy 1**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.8  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.051

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	15	0	0	47	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	15	0	0	47	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	0	0	13	0
Total Analysis Volume [veh/h]	0	17	0	0	52	1
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.25	0.00	8.75	8.55
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.17	0.17
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	4.13	4.13
d_A, Approach Delay [s/veh]	0.00		3.62		8.75	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.62					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 7: Harney St/Site Dwy 2**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.5  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.064

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	22	0	0	62
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	22	0	0	62
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	6	0	0	17
Total Analysis Volume [veh/h]	1	0	24	0	0	69
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.06
d_M, Delay for Movement [s/veh]	0.00	0.00	7.25	0.00	9.03	8.55
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.05	0.20	0.20
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.13	1.13	5.09	5.09
d_A, Approach Delay [s/veh]	0.00		7.25		8.55	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	8.13					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 1: Hwy 101/36th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 40.0  
 Level Of Service: D  
 Volume to Capacity (v/c): 0.877

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	130.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	923	37	7	787	18	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	3.00	0.00	4.00	0.00	33.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	7	29	7	12	35	7
Site-Generated Trips [veh/h]	0	50	24	1	17	15
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	17
Total Hourly Volume [veh/h]	1115	116	38	957	70	12
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	293	31	10	252	18	3
Total Analysis Volume [veh/h]	1174	122	40	1007	74	13
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	98	0	10	108	12	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	48	48	48	48	48	48
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	2	36	4	4
g / C, Green / Cycle	0.63	0.63	0.04	0.76	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.70	0.08	0.02	0.59	0.04	0.01
s, saturation flow rate [veh/h]	1681	1452	1667	1695	1667	1100
c, Capacity [veh/h]	1054	911	78	1284	125	83
d1, Uniform Delay [s]	8.91	3.63	22.27	3.47	21.40	20.69
k, delay calibration	0.50	0.11	0.11	0.41	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	64.35	0.07	5.21	4.04	4.36	0.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.11	0.13	0.52	0.78	0.59	0.16
d, Delay for Lane Group [s/veh]	73.27	3.69	27.48	7.51	25.76	21.57
Lane Group LOS	F	A	C	A	C	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	24.56	0.29	0.51	2.22	0.88	0.14
50th-Percentile Queue Length [ft/ln]	614.07	7.15	12.80	55.48	21.95	3.59
95th-Percentile Queue Length [veh/ln]	35.58	0.51	0.92	3.99	1.58	0.26
95th-Percentile Queue Length [ft/ln]	889.57	12.86	23.05	99.86	39.51	6.46

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	73.27	3.69	27.48	7.51	25.76	21.57
Movement LOS	F	A	C	A	C	C
d_A, Approach Delay [s/veh]	66.72		8.27		25.13	
Approach LOS	E		A		C	
d_I, Intersection Delay [s/veh]	40.04					
Intersection LOS	D					
Intersection V/C	0.877					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.066
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
I_b,int, Bicycle LOS Score for Intersection	6.271	5.860	4.132
Bicycle LOS	F	F	D

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report****Intersection 2: Hwy 101/31st St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 58.2  
 Level Of Service: E  
 Volume to Capacity (v/c): 0.947

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	1
Pocket Length [ft]	100.00	35.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-2.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	954	57	19	784	35	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	4.00	6.00	4.00	0.00	7.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	29	46	12	35	4	3
Site-Generated Trips [veh/h]	50	50	1	17	37	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1224	153	32	993	76	7
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	319	40	8	259	20	2
Total Analysis Volume [veh/h]	1275	159	33	1034	79	7
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	101.5
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	98	0	9	107	13	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	47	47	47	47	47	47
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	2	36	3	3
g / C, Green / Cycle	0.63	0.63	0.04	0.76	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.76	0.11	0.02	0.61	0.05	0.00
s, saturation flow rate [veh/h]	1681	1440	1588	1695	1666	1406
c, Capacity [veh/h]	1062	910	64	1282	125	106
d1, Uniform Delay [s]	8.75	3.62	22.32	3.61	21.32	20.42
k, delay calibration	0.50	0.11	0.11	0.43	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	99.61	0.09	6.16	4.73	5.15	0.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.20	0.17	0.51	0.81	0.63	0.07
d, Delay for Lane Group [s/veh]	108.36	3.71	28.49	8.35	26.48	20.68
Lane Group LOS	F	A	C	A	C	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	34.94	0.37	0.44	2.49	0.95	0.07
50th-Percentile Queue Length [ft/ln]	873.38	9.19	10.97	62.34	23.75	1.83
95th-Percentile Queue Length [veh/ln]	51.35	0.66	0.79	4.49	1.71	0.13
95th-Percentile Queue Length [ft/ln]	1283.70	16.54	19.75	112.20	42.75	3.29

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	108.36	3.71	28.49	8.35	26.48	20.68
Movement LOS	F	A	C	A	C	C
d_A, Approach Delay [s/veh]	96.75		8.97		26.00	
Approach LOS	F		A		C	
d_I, Intersection Delay [s/veh]	58.20					
Intersection LOS	E					
Intersection V/C	0.947					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.046
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
I_b,int, Bicycle LOS Score for Intersection	6.499	5.893	4.132
Bicycle LOS	F	F	D

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report****Intersection 3: Hwy 101/25th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 31.7  
 Level Of Service: C  
 Volume to Capacity (v/c): 0.761

**Intersection Setup**

Name	Northbound		Southbound		Eastbound	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	-2.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	260	900	798	88	104	294
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	5.00	4.00	3.00	1.00	0.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	63	35	4	12	0
Site-Generated Trips [veh/h]	0	87	47	7	13	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	1230	1040	117	150	353
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	342	289	33	42	98
Total Analysis Volume [veh/h]	347	1367	1156	130	167	392
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.5
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Overlap
Signal Group	5	2	6	0	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	0	5	5
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	4.0	5.0	5.0	0.0	4.0	4.0
All red [s]	0.5	1.0	1.0	0.0	0.5	0.5
Split [s]	32	88	56	0	32	32
Vehicle Extension [s]	2.5	4.8	4.8	0.0	2.5	2.5
Walk [s]	0	7	7	0	8	8
Pedestrian Clearance [s]	0	17	14	0	19	19
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	2.5
Minimum Recall	No	Yes	Yes		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	4.00	4.00	4.00	2.50	0.00
g_i, Effective Green Time [s]	27	84	53	53	25	56
g / C, Green / Cycle	0.22	0.70	0.44	0.44	0.21	0.47
(v / s)_i Volume / Saturation Flow Rate	0.21	0.43	0.38	0.39	0.10	0.26
s, saturation flow rate [veh/h]	1653	3202	1695	1636	1654	1488
c, Capacity [veh/h]	370	2251	749	723	346	700
d1, Uniform Delay [s]	45.71	9.22	30.12	30.80	41.71	22.81
k, delay calibration	0.31	0.50	0.50	0.50	0.08	0.48
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.21	1.23	12.27	15.36	0.78	3.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.94	0.61	0.86	0.89	0.48	0.56
d, Delay for Lane Group [s/veh]	69.92	10.45	42.39	46.16	42.49	25.88
Lane Group LOS	E	B	D	D	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	12.58	8.74	18.85	19.74	4.43	8.45
50th-Percentile Queue Length [ft/ln]	314.49	218.56	471.15	493.60	110.84	211.17
95th-Percentile Queue Length [veh/ln]	18.40	13.59	25.97	27.03	7.89	13.21
95th-Percentile Queue Length [ft/ln]	459.90	339.78	649.14	675.78	197.17	330.33

**Movement, Approach, & Intersection Results**

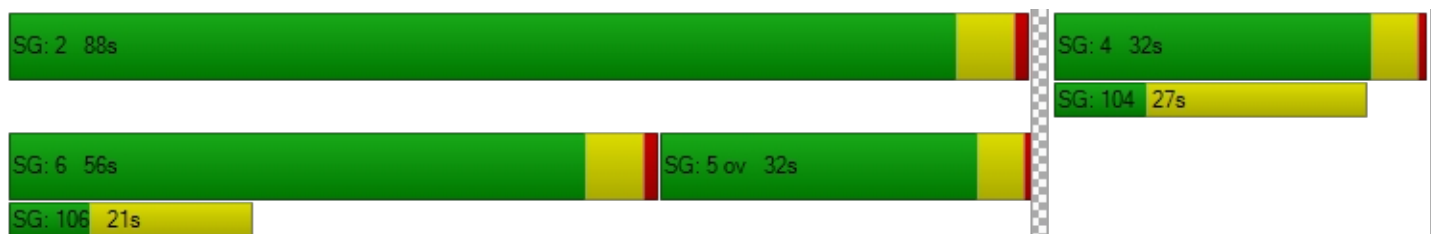
d_M, Delay for Movement [s/veh]	69.92	10.45	44.06	46.16	42.49	25.88
Movement LOS	E	B	D	D	D	C
d_A, Approach Delay [s/veh]	22.49		44.28		30.84	
Approach LOS	C		D		C	
d_I, Intersection Delay [s/veh]	31.67					
Intersection LOS	C					
Intersection V/C	0.761					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	6843.72
d_p, Pedestrian Delay [s]	48.60	48.60	49.50
I_p,int, Pedestrian LOS Score for Intersection	2.949	2.832	2.291
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
I_b,int, Bicycle LOS Score for Intersection	5.546	5.193	4.132
Bicycle LOS	F	F	D

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report****Intersection 4: Hwy 101/20th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 51.1  
 Level Of Service: D  
 Volume to Capacity (v/c): 0.890

**Intersection Setup**

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	0	0	1	1	0	1
Pocket Length [ft]	150.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	75.00	90.00	100.00	90.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name												
Base Volume Input [veh/h]	78	1059	106	88	959	19	47	47	99	343	26	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	4.00	3.00	1.00	3.00	0.00	5.00	0.00	4.00	1.00	5.00	0.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	47	0	6	28	1	4	0	0	0	0	12
Site-Generated Trips [veh/h]	0	75	0	4	39	4	6	0	0	0	0	6
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	1393	127	116	1218	28	66	56	119	412	31	119
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	379	35	32	331	8	18	15	32	112	8	32
Total Analysis Volume [veh/h]	102	1514	138	126	1324	30	72	61	129	448	34	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			3			2			2		
v_di, Inbound Pedestrian Volume crossing m	2			2			2			3		
v_co, Outbound Pedestrian Volume crossing	1			6			7			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			7			6			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	81.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	3	3	0	4	0
Auxiliary Signal Groups									1,3			
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	6	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	31	31	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.0	0.5	0.5	0.0	0.5	0.0
Split [s]	13	44	0	13	44	0	0	31	31	0	32	0
Vehicle Extension [s]	2.5	5.1	0.0	2.5	5.1	0.0	0.0	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	8	0	0	8	0	0	8	8	0	8	0
Pedestrian Clearance [s]	0	14	0	0	12	0	0	18	18	0	17	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	3.0	0.0	2.5	3.0	0.0	0.0	2.5	2.5	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	4.50	5.00	5.00	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.00	3.00	2.50	3.00	3.00	2.50	0.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	9	60	60	9	60	60	13	26	21	21	21
g / C, Green / Cycle	0.07	0.50	0.50	0.07	0.50	0.50	0.11	0.21	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.06	0.49	0.50	0.08	0.40	0.40	0.08	0.09	0.15	0.15	0.09
s, saturation flow rate [veh/h]	1654	1695	1645	1654	1709	1692	1704	1436	1654	1612	1475
c, Capacity [veh/h]	119	842	817	119	848	840	180	309	284	277	253
d1, Uniform Delay [s]	55.12	29.85	30.24	55.74	25.26	25.33	52.15	40.66	48.34	48.34	45.12
k, delay calibration	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.05	27.94	32.86	48.86	7.82	8.02	4.41	0.67	5.69	5.81	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	0.99	1.01	1.06	0.80	0.80	0.74	0.42	0.86	0.86	0.51
d, Delay for Lane Group [s/veh]	67.17	57.79	63.10	104.60	33.08	33.35	56.56	41.33	54.03	54.14	46.29
Lane Group LOS	E	E	F	F	C	C	E	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.45	29.13	29.99	5.23	17.48	17.47	4.11	3.36	7.53	7.35	3.58
50th-Percentile Queue Length [ft/ln]	86.31	728.37	749.87	130.74	437.09	436.64	102.74	84.06	188.34	183.74	89.42
95th-Percentile Queue Length [veh/ln]	6.21	37.99	39.16	9.14	24.34	24.32	7.40	6.05	12.04	11.80	6.44
95th-Percentile Queue Length [ft/ln]	155.35	949.68	978.91	228.44	608.53	607.98	184.93	151.30	300.88	294.89	160.95

**Movement, Approach, & Intersection Results**

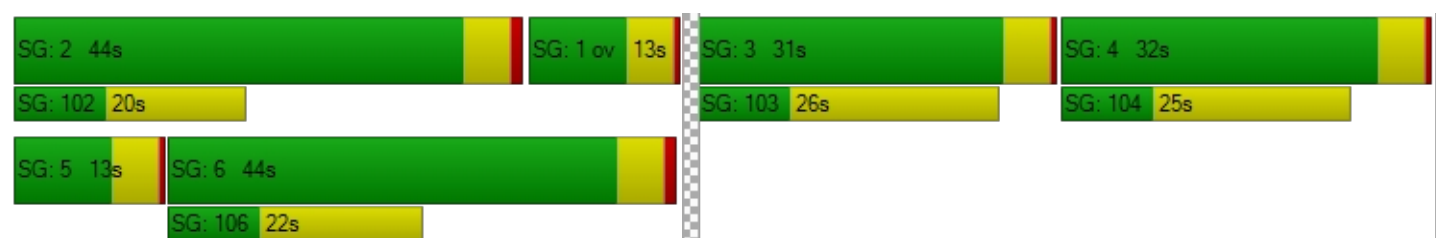
d_M, Delay for Movement [s/veh]	67.17	60.19	63.10	104.60	33.21	33.35	56.56	56.56	41.33	54.08	54.14	46.29
Movement LOS	E	E	E	F	C	C	E	E	D	D	D	D
d_A, Approach Delay [s/veh]	60.82			39.29			49.06			52.44		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	51.07											
Intersection LOS	D											
Intersection V/C	0.890											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			12.0			12.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	2215.48			1772.03			769.39			4104.77		
d_p, Pedestrian Delay [s]	48.60			48.60			48.60			48.60		
I_p,int, Pedestrian LOS Score for Intersection	3.026			2.936			2.092			2.372		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	650			650			442			458		
d_b, Bicycle Delay [s]	27.34			27.35			36.43			35.65		
I_b,int, Bicycle LOS Score for Intersection	3.007			2.781			1.992			2.568		
Bicycle LOS	C			C			A			B		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report****Intersection 5: 31st St/Hamey St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 11.8  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.170

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	4.00		-4.00		2.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	19	0	5	1	1	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	100.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	15	26	5
Site-Generated Trips [veh/h]	0	0	4	37	51	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	0	9	53	78	54
Peak Hour Factor	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	0	3	19	29	20
Total Analysis Volume [veh/h]	28	0	13	78	115	79
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.17	0.08
d_M, Delay for Movement [s/veh]	7.68	0.00	0.00	0.00	11.82	10.04
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.00	0.00	0.97	0.97
95th-Percentile Queue Length [ft/ln]	1.56	1.56	0.00	0.00	24.34	24.34
d_A, Approach Delay [s/veh]	7.68		0.00		11.09	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	7.56					
Intersection LOS	B					

**Intersection Level Of Service Report****Intersection 6: Harney St/Site Dwy 1**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.8  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.041

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	51	0	0	41	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	51	0	0	41	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	0	0	10	0
Total Analysis Volume [veh/h]	0	51	0	0	41	1
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.04	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.31	0.00	8.80	8.59
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.13	0.13
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	3.31	3.31
d_A, Approach Delay [s/veh]	0.00		3.66		8.79	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.97					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 7: Harney St/Site Dwy 2**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.4  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.030

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	74	0	0	32
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	74	0	0	32
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	19	0	0	8
Total Analysis Volume [veh/h]	1	0	74	0	0	32
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.00	0.00	0.05	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	7.33	0.00	9.58	8.42
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.14	0.14	0.09	0.09
95th-Percentile Queue Length [ft/ln]	0.00	0.00	3.58	3.58	2.28	2.28
d_A, Approach Delay [s/veh]	0.00		7.33		8.42	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.59					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 1: Hwy 101/36th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 13.9  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.727

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	1	0
Pocket Length [ft]	100.00	100.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-4.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	438	21	6	777	55	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	0.00	0.00	10.00	0.00	0.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	11	9	2	3	28	7
Site-Generated Trips [veh/h]	0	15	7	0	41	22
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	22
Total Hourly Volume [veh/h]	537	45	15	935	124	12
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	149	13	4	260	34	3
Total Analysis Volume [veh/h]	597	50	17	1039	138	13
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	86	0	9	95	15	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	39	39	39	39	39	39
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	1	27	4	4
g / C, Green / Cycle	0.56	0.56	0.02	0.68	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.20	0.20	0.01	0.64	0.08	0.01
s, saturation flow rate [veh/h]	1626	1582	1667	1612	1666	1487
c, Capacity [veh/h]	906	882	36	1099	189	169
d1, Uniform Delay [s]	4.78	4.81	18.87	5.57	16.73	15.48
k, delay calibration	0.11	0.11	0.11	0.33	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.24	0.26	9.03	12.55	5.33	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.36	0.37	0.47	0.95	0.73	0.08
d, Delay for Lane Group [s/veh]	5.01	5.06	27.90	18.12	22.06	15.67
Lane Group LOS	A	A	C	B	C	B
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.83	0.84	0.22	5.47	1.29	0.10
50th-Percentile Queue Length [ft/ln]	20.77	20.96	5.59	136.81	32.23	2.42
95th-Percentile Queue Length [veh/ln]	1.50	1.51	0.40	9.31	2.32	0.17
95th-Percentile Queue Length [ft/ln]	37.38	37.73	10.06	232.72	58.02	4.36

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	5.04	5.06	27.90	18.12	22.06	15.67
Movement LOS	A	A	C	B	C	B
d_A, Approach Delay [s/veh]	5.04		18.28		21.51	
Approach LOS	A		B		C	
d_I, Intersection Delay [s/veh]	13.92					
Intersection LOS	B					
Intersection V/C	0.727					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	46.37
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.061
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	55.00	55.00	55.00
I_b,int, Bicycle LOS Score for Intersection	4.666	5.875	4.132
Bicycle LOS	E	F	D

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report****Intersection 2: Hwy 101/31st St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 22.8  
 Level Of Service: C  
 Volume to Capacity (v/c): 0.791

**Intersection Setup**

Name	Northbound		Southbound		Westbound	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	1	0
Pocket Length [ft]	100.00	100.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-2.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Northbound		Southbound		Westbound	
Base Volume Input [veh/h]	454	32	15	817	49	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	0.00	0.00	10.00	0.00	0.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	9	13	3	28	11	11
Site-Generated Trips [veh/h]	15	15	0	41	41	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	11
Total Hourly Volume [veh/h]	569	60	18	1049	101	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	158	17	5	291	28	1
Total Analysis Volume [veh/h]	632	67	20	1166	112	6
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	87.5
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	89	0	9	98	12	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	42	42	42	42	42	42
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	1	30	4	4
g / C, Green / Cycle	0.60	0.60	0.03	0.72	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.01	0.72	0.07	0.00
s, saturation flow rate [veh/h]	1626	1572	1667	1612	1666	1487
c, Capacity [veh/h]	967	936	45	1156	153	137
d1, Uniform Delay [s]	4.38	4.42	20.10	5.93	18.53	17.35
k, delay calibration	0.11	0.11	0.11	0.46	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	0.25	6.92	27.50	6.54	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.36	0.37	0.45	1.01	0.73	0.04
d, Delay for Lane Group [s/veh]	4.61	4.67	27.01	33.42	25.07	17.48
Lane Group LOS	A	A	C	F	C	B
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.86	0.87	0.26	10.43	1.20	0.05
50th-Percentile Queue Length [ft/ln]	21.60	21.87	6.41	260.79	30.02	1.28
95th-Percentile Queue Length [veh/ln]	1.55	1.57	0.46	15.84	2.16	0.09
95th-Percentile Queue Length [ft/ln]	38.87	39.36	11.53	395.93	54.03	2.31

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	4.63	4.67	27.01	33.42	25.07	17.48
Movement LOS	A	A	C	F	C	B
d_A, Approach Delay [s/veh]	4.64		33.31		24.69	
Approach LOS	A		C		C	
d_I, Intersection Delay [s/veh]	22.80					
Intersection LOS	C					
Intersection V/C	0.791					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	46.37
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.037
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	55.00	55.00	55.00
I_b,int, Bicycle LOS Score for Intersection	4.709	6.089	4.132
Bicycle LOS	E	F	D

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report****Intersection 3: Hwy 101/25th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 10.8  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.560

**Intersection Setup**

Name	Northbound		Southbound		Eastbound	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	-2.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	92	548	818	35	30	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	7.00	10.00	7.00	0.00	8.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	20	45	8	2	0
Site-Generated Trips [veh/h]	0	26	71	11	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	48
Total Hourly Volume [veh/h]	110	704	1098	61	42	24
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	196	305	17	12	7
Total Analysis Volume [veh/h]	122	782	1220	68	47	27
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		1	
v_co, Outbound Pedestrian Volume crossing	0		1		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	60.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	0	5	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	4.0	5.0	5.0	0.0	4.0	0.0
All red [s]	0.5	1.0	1.0	0.0	0.5	0.0
Split [s]	14	78	64	0	32	0
Vehicle Extension [s]	2.5	4.8	4.8	0.0	2.5	0.0
Walk [s]	0	7	7	0	8	0
Pedestrian Clearance [s]	0	17	14	0	19	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	4.00	4.00	4.00	2.50	2.50
g_i, Effective Green Time [s]	10	95	81	81	5	5
g / C, Green / Cycle	0.09	0.86	0.73	0.73	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.08	0.25	0.40	0.41	0.03	0.02
s, saturation flow rate [veh/h]	1549	3150	1612	1582	1667	1384
c, Capacity [veh/h]	134	2706	1179	1157	76	63
d1, Uniform Delay [s]	49.79	1.45	6.60	6.69	51.57	51.11
k, delay calibration	0.08	0.50	0.50	0.50	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.42	0.27	1.82	1.93	6.06	3.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.91	0.29	0.55	0.56	0.62	0.43
d, Delay for Lane Group [s/veh]	65.21	1.72	8.42	8.62	57.63	54.53
Lane Group LOS	E	A	A	A	E	D
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.89	0.84	6.29	6.39	1.40	0.78
50th-Percentile Queue Length [ft/ln]	97.25	20.91	157.22	159.65	34.97	19.59
95th-Percentile Queue Length [veh/ln]	7.00	1.51	10.40	10.53	2.52	1.41
95th-Percentile Queue Length [ft/ln]	175.04	37.64	260.04	263.25	62.94	35.26

**Movement, Approach, & Intersection Results**

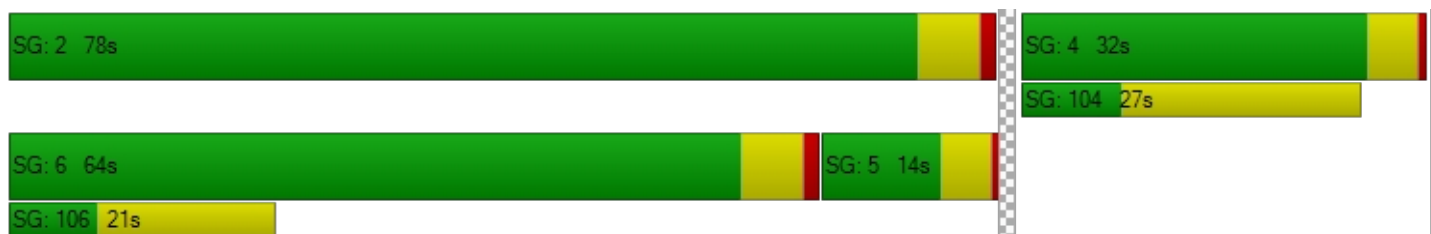
d_M, Delay for Movement [s/veh]	65.21	1.72	8.51	8.62	57.63	54.53
Movement LOS	E	A	A	A	E	D
d_A, Approach Delay [s/veh]	10.29		8.52		56.50	
Approach LOS	B		A		E	
d_I, Intersection Delay [s/veh]	10.79					
Intersection LOS	B					
Intersection V/C	0.560					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	11380.41	0.00	4513.33
d_p, Pedestrian Delay [s]	43.65	43.65	44.55
I_p,int, Pedestrian LOS Score for Intersection	2.737	2.656	2.119
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	55.00	55.00	55.00
I_b,int, Bicycle LOS Score for Intersection	4.878	5.195	4.132
Bicycle LOS	E	F	D

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report****Intersection 4: Hwy 101/20th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 18.5  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.577

**Intersection Setup**

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	1
Pocket Length [ft]	150.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	75.00	90.00	100.00	90.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name												
Base Volume Input [veh/h]	13	672	60	15	853	0	11	8	39	139	7	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	7.00	6.00	8.00	9.00	0.00	11.00	0.00	12.00	3.00	17.00	0.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	16	0	8	35	2	1	0	0	0	0	3
Site-Generated Trips [veh/h]	0	22	0	6	59	6	2	0	0	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	31	0	0	0
Total Hourly Volume [veh/h]	16	844	72	32	1118	8	16	10	16	167	8	37
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	234	20	9	311	2	4	3	4	46	2	10
Total Analysis Volume [veh/h]	18	938	80	36	1242	9	18	11	18	186	9	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			2			0		
v_co, Outbound Pedestrian Volume crossing	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	97.5
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	3	3	0	4	0
Auxiliary Signal Groups									1,3			
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	6	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.0	0.5	0.5	0.0	0.5	0.0
Split [s]	17	27	0	22	32	0	0	31	31	0	30	0
Vehicle Extension [s]	2.5	5.1	0.0	2.5	5.1	0.0	0.0	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	8	0	0	8	0	0	8	8	0	8	0
Pedestrian Clearance [s]	0	14	0	0	12	0	0	18	18	0	17	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	3.0	0.0	2.5	3.0	0.0	0.0	2.5	2.5	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	4.50	5.00	5.00	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.50	3.00	3.00	2.50	3.00	3.00	2.50	0.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	2	69	69	3	71	71	6	30	14	14	14
g / C, Green / Cycle	0.02	0.63	0.63	0.03	0.64	0.64	0.05	0.27	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.31	0.31	0.02	0.39	0.39	0.02	0.01	0.06	0.10	0.03
s, saturation flow rate [veh/h]	1667	1653	1608	1561	1626	1621	1697	1343	1406	1084	1488
c, Capacity [veh/h]	26	1039	1011	43	1042	1039	86	366	213	198	185
d1, Uniform Delay [s]	53.89	11.02	11.02	53.22	11.54	11.54	50.44	29.49	46.96	48.00	43.36
k, delay calibration	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.33	1.69	1.74	24.36	2.57	2.57	1.69	0.04	0.92	1.78	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.69	0.50	0.50	0.83	0.60	0.60	0.34	0.05	0.40	0.55	0.22
d, Delay for Lane Group [s/veh]	75.22	12.72	12.77	77.58	14.10	14.11	52.13	29.53	47.88	49.79	43.80
Lane Group LOS	E	B	B	E	B	B	D	C	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.65	6.83	6.66	1.28	8.98	8.96	0.81	0.36	2.29	3.01	1.03
50th-Percentile Queue Length [ft/ln]	16.24	170.81	166.50	32.07	224.40	223.99	20.28	8.93	57.30	75.35	25.73
95th-Percentile Queue Length [veh/ln]	1.17	11.12	10.89	2.31	13.89	13.87	1.46	0.64	4.13	5.42	1.85
95th-Percentile Queue Length [ft/ln]	29.23	277.98	272.31	57.72	347.24	346.71	36.51	16.07	103.15	135.62	46.31

**Movement, Approach, & Intersection Results**

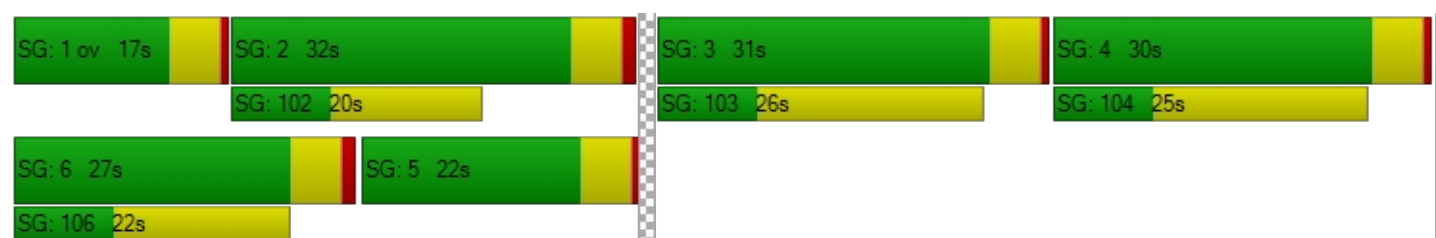
d_M, Delay for Movement [s/veh]	75.22	12.74	12.77	77.58	14.11	14.11	52.13	52.13	29.53	48.90	49.79	43.80
Movement LOS	E	B	B	E	B	B	D	D	C	D	D	D
d_A, Approach Delay [s/veh]	13.83			15.88			43.47			48.05		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	18.48											
Intersection LOS	B											
Intersection V/C	0.577											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			12.0			12.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	2817.70			0.00			5701.08			0.00		
d_p, Pedestrian Delay [s]	43.65			43.65			43.65			43.65		
I_p,int, Pedestrian LOS Score for Intersection	3.080			2.754			2.030			2.228		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	400			491			482			464		
d_b, Bicycle Delay [s]	35.20			31.31			31.69			32.46		
I_b,int, Bicycle LOS Score for Intersection	2.414			2.621			1.688			1.949		
Bicycle LOS	B			B			A			A		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report****Intersection 5: 31st St/Hamey St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 9.6  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.031

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	4.00		0.00		2.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	33	1	9	0	1	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	10	15	7	4
Site-Generated Trips [veh/h]	0	0	6	41	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	1	25	56	23	37
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	0	7	16	6	10
Total Analysis Volume [veh/h]	37	1	28	62	26	41
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.03	0.04
d_M, Delay for Movement [s/veh]	7.69	0.00	0.00	0.00	9.64	8.87
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.00	0.00	0.23	0.23
95th-Percentile Queue Length [ft/ln]	2.08	2.08	0.00	0.00	5.81	5.81
d_A, Approach Delay [s/veh]	7.49		0.00		9.17	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.61					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 6: Harney St/Site Dwy 1**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.8  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.051

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	15	0	0	47	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	15	0	0	47	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	0	0	13	0
Total Analysis Volume [veh/h]	0	17	0	0	52	1
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.25	0.00	8.75	8.55
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.17	0.17
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	4.13	4.13
d_A, Approach Delay [s/veh]	0.00		3.62		8.75	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.62					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 7: Harney St/Site Dwy 2**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.5  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.064

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	22	0	0	62
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	22	0	0	62
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	6	0	0	17
Total Analysis Volume [veh/h]	1	0	24	0	0	69
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.06
d_M, Delay for Movement [s/veh]	0.00	0.00	7.25	0.00	9.03	8.55
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.05	0.20	0.20
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.13	1.13	5.09	5.09
d_A, Approach Delay [s/veh]	0.00		7.25		8.55	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	8.13					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 1: Hwy 101/36th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 9.0  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.782

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	923	37	7	787	18	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	3.00	0.00	4.00	0.00	33.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	7	29	7	12	35	7
Site-Generated Trips [veh/h]	0	50	24	1	17	15
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	17
Total Hourly Volume [veh/h]	1115	116	38	957	70	12
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	293	31	10	252	18	3
Total Analysis Volume [veh/h]	1174	122	40	1007	74	13
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	98	0	10	108	12	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	33	33	33	33	33	33
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	2	22	3	3
g / C, Green / Cycle	0.50	0.50	0.05	0.67	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.39	0.40	0.02	0.59	0.04	0.01
s, saturation flow rate [veh/h]	1681	1627	1667	1695	1667	1100
c, Capacity [veh/h]	843	816	79	1137	141	93
d1, Uniform Delay [s]	6.62	6.76	15.22	4.37	14.36	13.88
k, delay calibration	0.11	0.11	0.11	0.19	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.51	1.80	4.93	4.35	3.00	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.77	0.79	0.51	0.89	0.52	0.14
d, Delay for Lane Group [s/veh]	8.13	8.57	20.16	8.71	17.36	14.56
Lane Group LOS	A	A	C	A	B	B
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.08	2.18	0.34	1.63	0.54	0.09
50th-Percentile Queue Length [ft/ln]	52.12	54.41	8.61	40.72	13.43	2.22
95th-Percentile Queue Length [veh/ln]	3.75	3.92	0.62	2.93	0.97	0.16
95th-Percentile Queue Length [ft/ln]	93.81	97.95	15.49	73.29	24.18	4.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	8.33	8.57	20.16	8.71	17.36	14.56
Movement LOS	A	A	C	A	B	B
d_A, Approach Delay [s/veh]	8.35		9.15		16.94	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	9.00					
Intersection LOS	A					
Intersection V/C	0.782					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.066
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
I_b,int, Bicycle LOS Score for Intersection	5.202	5.860	4.132
Bicycle LOS	F	F	D

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report****Intersection 2: Hwy 101/31st St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 9.4  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.793

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	200.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		-2.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	954	57	19	784	35	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	4.00	6.00	4.00	0.00	7.00
Growth Factor	1.2000	1.0000	1.0000	1.2000	1.0000	1.0000
In-Process Volume [veh/h]	29	46	12	35	4	3
Site-Generated Trips [veh/h]	50	50	1	17	37	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1224	153	32	993	76	7
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	319	40	8	259	20	2
Total Analysis Volume [veh/h]	1275	159	33	1034	79	7
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	101.5
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	98	0	9	107	13	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	35	35	35	35	35	35
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	19	1	24	3	3
g / C, Green / Cycle	0.54	0.54	0.04	0.69	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.43	0.44	0.02	0.61	0.05	0.00
s, saturation flow rate [veh/h]	1681	1618	1588	1695	1666	1406
c, Capacity [veh/h]	905	871	63	1172	136	115
d1, Uniform Delay [s]	6.56	6.75	16.62	4.30	15.62	14.96
k, delay calibration	0.11	0.11	0.11	0.24	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.61	2.03	6.50	5.11	3.87	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.79	0.82	0.52	0.88	0.58	0.06
d, Delay for Lane Group [s/veh]	8.17	8.78	23.11	9.41	19.49	15.18
Lane Group LOS	A	A	C	A	B	B
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.45	2.59	0.33	2.02	0.65	0.05
50th-Percentile Queue Length [ft/ln]	61.16	64.83	8.34	50.49	16.29	1.25
95th-Percentile Queue Length [veh/ln]	4.40	4.67	0.60	3.64	1.17	0.09
95th-Percentile Queue Length [ft/ln]	110.09	116.69	15.00	90.89	29.33	2.24

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	8.43	8.78	23.11	9.41	19.49	15.18
Movement LOS	A	A	C	A	B	B
d_A, Approach Delay [s/veh]	8.47		9.84		19.14	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	9.39					
Intersection LOS	A					
Intersection V/C	0.793					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.34
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.046
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
I_b,int, Bicycle LOS Score for Intersection	5.315	5.893	4.132
Bicycle LOS	F	F	D

**Sequence**

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report****Intersection 3: Hwy 101/25th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 31.7  
 Level Of Service: C  
 Volume to Capacity (v/c): 0.761

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	-2.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	260	900	798	88	104	294
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	5.00	4.00	3.00	1.00	0.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	63	35	4	12	0
Site-Generated Trips [veh/h]	0	87	47	7	13	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	1230	1040	117	150	353
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	342	289	33	42	98
Total Analysis Volume [veh/h]	347	1367	1156	130	167	392
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.5
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Overlap
Signal Group	5	2	6	0	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	10	10	0	5	5
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	4.0	5.0	5.0	0.0	4.0	4.0
All red [s]	0.5	1.0	1.0	0.0	0.5	0.5
Split [s]	32	88	56	0	32	32
Vehicle Extension [s]	2.5	4.8	4.8	0.0	2.5	2.5
Walk [s]	0	7	7	0	8	8
Pedestrian Clearance [s]	0	17	14	0	19	19
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	4.0	4.0	0.0	2.5	2.5
Minimum Recall	No	Yes	Yes		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.50	6.00	6.00	6.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	4.00	4.00	4.00	2.50	0.00
g_i, Effective Green Time [s]	27	84	53	53	25	56
g / C, Green / Cycle	0.22	0.70	0.44	0.44	0.21	0.47
(v / s)_i Volume / Saturation Flow Rate	0.21	0.43	0.38	0.39	0.10	0.26
s, saturation flow rate [veh/h]	1653	3202	1695	1636	1654	1488
c, Capacity [veh/h]	370	2251	749	723	346	700
d1, Uniform Delay [s]	45.71	9.22	30.12	30.80	41.71	22.81
k, delay calibration	0.31	0.50	0.50	0.50	0.08	0.48
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.21	1.23	12.27	15.36	0.78	3.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.94	0.61	0.86	0.89	0.48	0.56
d, Delay for Lane Group [s/veh]	69.92	10.45	42.39	46.16	42.49	25.88
Lane Group LOS	E	B	D	D	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	12.58	8.74	18.85	19.74	4.43	8.45
50th-Percentile Queue Length [ft/ln]	314.49	218.56	471.15	493.60	110.84	211.17
95th-Percentile Queue Length [veh/ln]	18.40	13.59	25.97	27.03	7.89	13.21
95th-Percentile Queue Length [ft/ln]	459.90	339.78	649.14	675.78	197.17	330.33

**Movement, Approach, & Intersection Results**

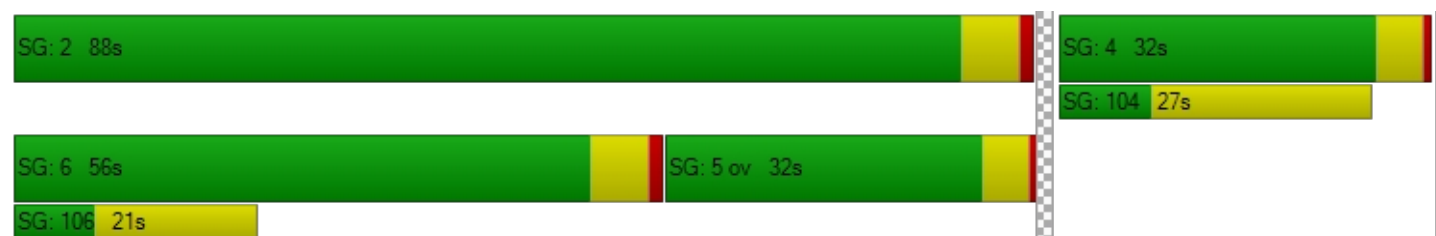
d_M, Delay for Movement [s/veh]	69.92	10.45	44.06	46.16	42.49	25.88
Movement LOS	E	B	D	D	D	C
d_A, Approach Delay [s/veh]	22.49		44.28		30.84	
Approach LOS	C		D		C	
d_I, Intersection Delay [s/veh]	31.67					
Intersection LOS	C					
Intersection V/C	0.761					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	6843.72
d_p, Pedestrian Delay [s]	48.60	48.60	49.50
I_p,int, Pedestrian LOS Score for Intersection	2.949	2.832	2.291
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
I_b,int, Bicycle LOS Score for Intersection	5.546	5.193	4.132
Bicycle LOS	F	F	D

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report****Intersection 4: Hwy 101/20th St**

Control Type: Signalized  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 51.1  
 Level Of Service: D  
 Volume to Capacity (v/c): 0.890

**Intersection Setup**

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	0	0	1	1	0	1
Pocket Length [ft]	150.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	75.00	90.00	100.00	90.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name												
Base Volume Input [veh/h]	78	1059	106	88	959	19	47	47	99	343	26	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	4.00	3.00	1.00	3.00	0.00	5.00	0.00	4.00	1.00	5.00	0.00
Growth Factor	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000	1.2000
In-Process Volume [veh/h]	0	47	0	6	28	1	4	0	0	0	0	12
Site-Generated Trips [veh/h]	0	75	0	4	39	4	6	0	0	0	0	6
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	1393	127	116	1218	28	66	56	119	412	31	119
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	379	35	32	331	8	18	15	32	112	8	32
Total Analysis Volume [veh/h]	102	1514	138	126	1324	30	72	61	129	448	34	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			3			2			2		
v_di, Inbound Pedestrian Volume crossing m	2			2			2			3		
v_co, Outbound Pedestrian Volume crossing	1			6			7			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			7			6			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	81.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	3	3	0	4	0
Auxiliary Signal Groups									1,3			
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	6	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	31	31	0	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.0	0.5	0.5	0.0	0.5	0.0
Split [s]	13	44	0	13	44	0	0	31	31	0	32	0
Vehicle Extension [s]	2.5	5.1	0.0	2.5	5.1	0.0	0.0	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	8	0	0	8	0	0	8	8	0	8	0
Pedestrian Clearance [s]	0	14	0	0	12	0	0	18	18	0	17	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	3.0	0.0	2.5	3.0	0.0	0.0	2.5	2.5	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	4.50	5.00	5.00	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.00	3.00	2.50	3.00	3.00	2.50	0.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	9	60	60	9	60	60	13	26	21	21	21
g / C, Green / Cycle	0.07	0.50	0.50	0.07	0.50	0.50	0.11	0.21	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.06	0.49	0.50	0.08	0.40	0.40	0.08	0.09	0.15	0.15	0.09
s, saturation flow rate [veh/h]	1654	1695	1645	1654	1709	1692	1704	1436	1654	1612	1475
c, Capacity [veh/h]	119	842	817	119	848	840	180	309	284	277	253
d1, Uniform Delay [s]	55.12	29.85	30.24	55.74	25.26	25.33	52.15	40.66	48.34	48.34	45.12
k, delay calibration	0.08	0.50	0.50	0.08	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.05	27.94	32.86	48.86	7.82	8.02	4.41	0.67	5.69	5.81	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	0.99	1.01	1.06	0.80	0.80	0.74	0.42	0.86	0.86	0.51
d, Delay for Lane Group [s/veh]	67.17	57.79	63.10	104.60	33.08	33.35	56.56	41.33	54.03	54.14	46.29
Lane Group LOS	E	E	F	F	C	C	E	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.45	29.13	29.99	5.23	17.48	17.47	4.11	3.36	7.53	7.35	3.58
50th-Percentile Queue Length [ft/ln]	86.31	728.37	749.87	130.74	437.09	436.64	102.74	84.06	188.34	183.74	89.42
95th-Percentile Queue Length [veh/ln]	6.21	37.99	39.16	9.14	24.34	24.32	7.40	6.05	12.04	11.80	6.44
95th-Percentile Queue Length [ft/ln]	155.35	949.68	978.91	228.44	608.53	607.98	184.93	151.30	300.88	294.89	160.95

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	67.17	60.19	63.10	104.60	33.21	33.35	56.56	56.56	41.33	54.08	54.14	46.29
Movement LOS	E	E	E	F	C	C	E	E	D	D	D	D
d_A, Approach Delay [s/veh]	60.82			39.29			49.06			52.44		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	51.07											
Intersection LOS	D											
Intersection V/C	0.890											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			12.0			12.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	2215.48			1772.03			769.39			4104.77		
d_p, Pedestrian Delay [s]	48.60			48.60			48.60			48.60		
I_p,int, Pedestrian LOS Score for Intersection	3.026			2.936			2.092			2.372		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	650			650			442			458		
d_b, Bicycle Delay [s]	27.34			27.35			36.43			35.65		
I_b,int, Bicycle LOS Score for Intersection	3.007			2.781			1.992			2.568		
Bicycle LOS	C			C			A			B		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






**Intersection Level Of Service Report****Intersection 5: 31st St/Hamey St**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 11.8  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.170

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	4.00		-4.00		2.00	
Crosswalk	No		No		No	

**Volumes**

Name						
Base Volume Input [veh/h]	19	0	5	1	1	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	100.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	15	26	5
Site-Generated Trips [veh/h]	0	0	4	37	51	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	0	9	53	78	54
Peak Hour Factor	0.6800	0.6800	0.6800	0.6800	0.6800	0.6800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	0	3	19	29	20
Total Analysis Volume [veh/h]	28	0	13	78	115	79
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.17	0.08
d_M, Delay for Movement [s/veh]	7.68	0.00	0.00	0.00	11.82	10.04
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.00	0.00	0.97	0.97
95th-Percentile Queue Length [ft/ln]	1.56	1.56	0.00	0.00	24.34	24.34
d_A, Approach Delay [s/veh]	7.68		0.00		11.09	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	7.56					
Intersection LOS	B					

**Intersection Level Of Service Report****Intersection 6: Harney St/Site Dwy 1**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.8  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.041

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	51	0	0	41	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	51	0	0	41	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	0	0	10	0
Total Analysis Volume [veh/h]	0	51	0	0	41	1
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.04	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.31	0.00	8.80	8.59
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.13	0.13
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	3.31	3.31
d_A, Approach Delay [s/veh]	0.00		3.66		8.79	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.97					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 7: Harney St/Site Dwy 2**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 8.4  
 Level Of Service: A  
 Volume to Capacity (v/c): 0.030

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

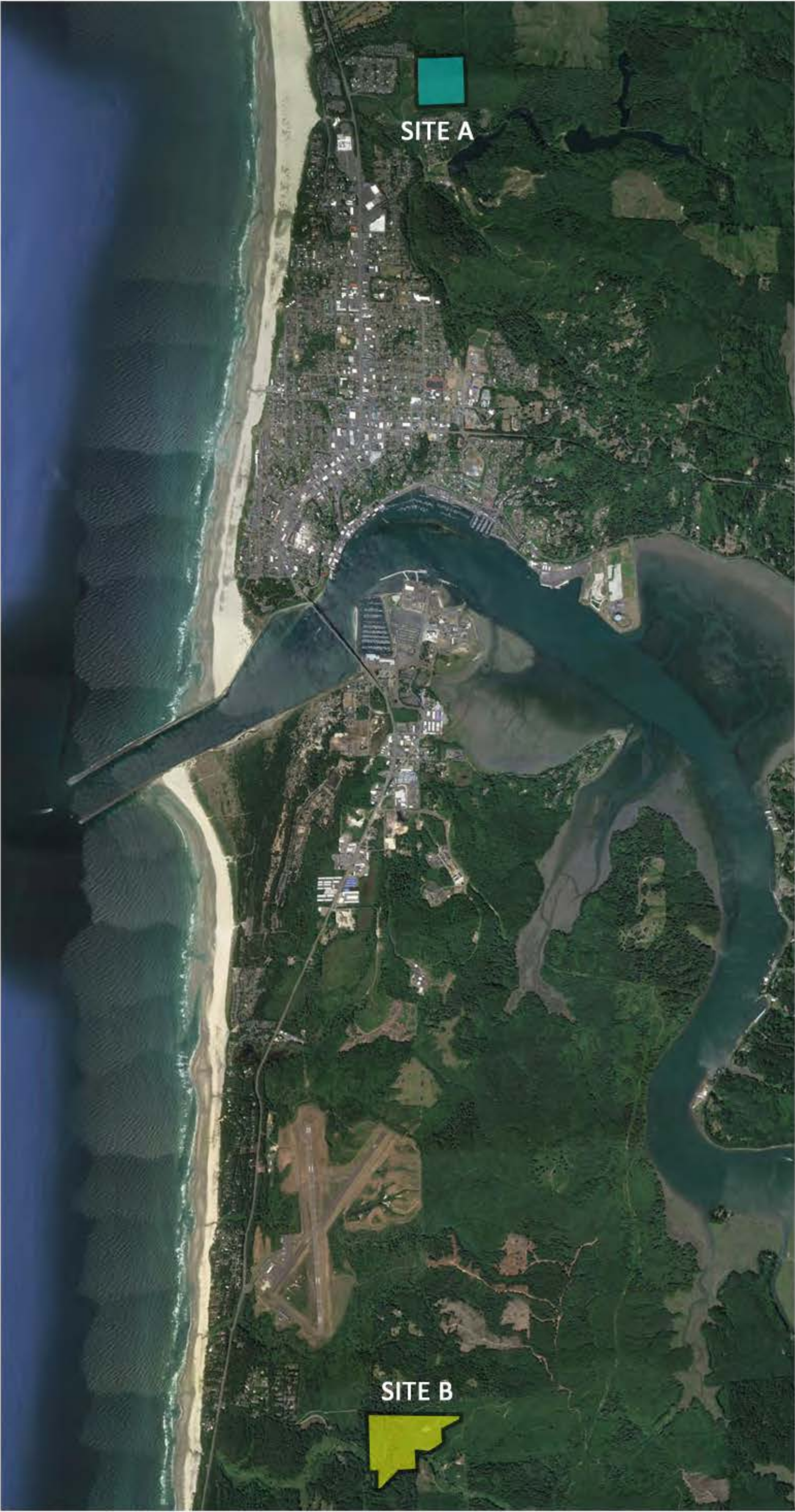
Name						
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	74	0	0	32
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	74	0	0	32
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	19	0	0	8
Total Analysis Volume [veh/h]	1	0	74	0	0	32
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.05	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	7.33	0.00	9.58	8.42
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.14	0.14	0.09	0.09
95th-Percentile Queue Length [ft/ln]	0.00	0.00	3.58	3.58	2.28	2.28
d_A, Approach Delay [s/veh]	0.00		7.33		8.42	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.59					
Intersection LOS	A					





#### EXISTING ZONING | COMP PLAN DESIGNATION

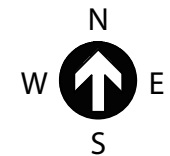
43.4  
ACRES TIMBER CONSERVATION (T-C)

#### PROPOSED ZONING | COMP PLAN DESIGNATION

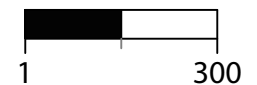
43.4  
ACRES HIGH DENSITY RESIDENTIAL (R-4)  
COMP: HIGH DENSITY RESIDENTIAL

#### SITE NOTE

SITE MAP HAS BEEN PREPARED USING DATA FROM EXISTING COUNTY SURVEYOR DATA AND USGS ELEVATION DATA. THIS MAP HAS BEEN PREPARED FOR ILLUSTRATIVE PURPOSES ONLY. ALL BOUNDARY AND DIMENSIONAL INFORMATION SHOULD BE VERIFIED BY A PROFESSIONAL LAND SURVEYOR.



SCALE: 1" = 300'



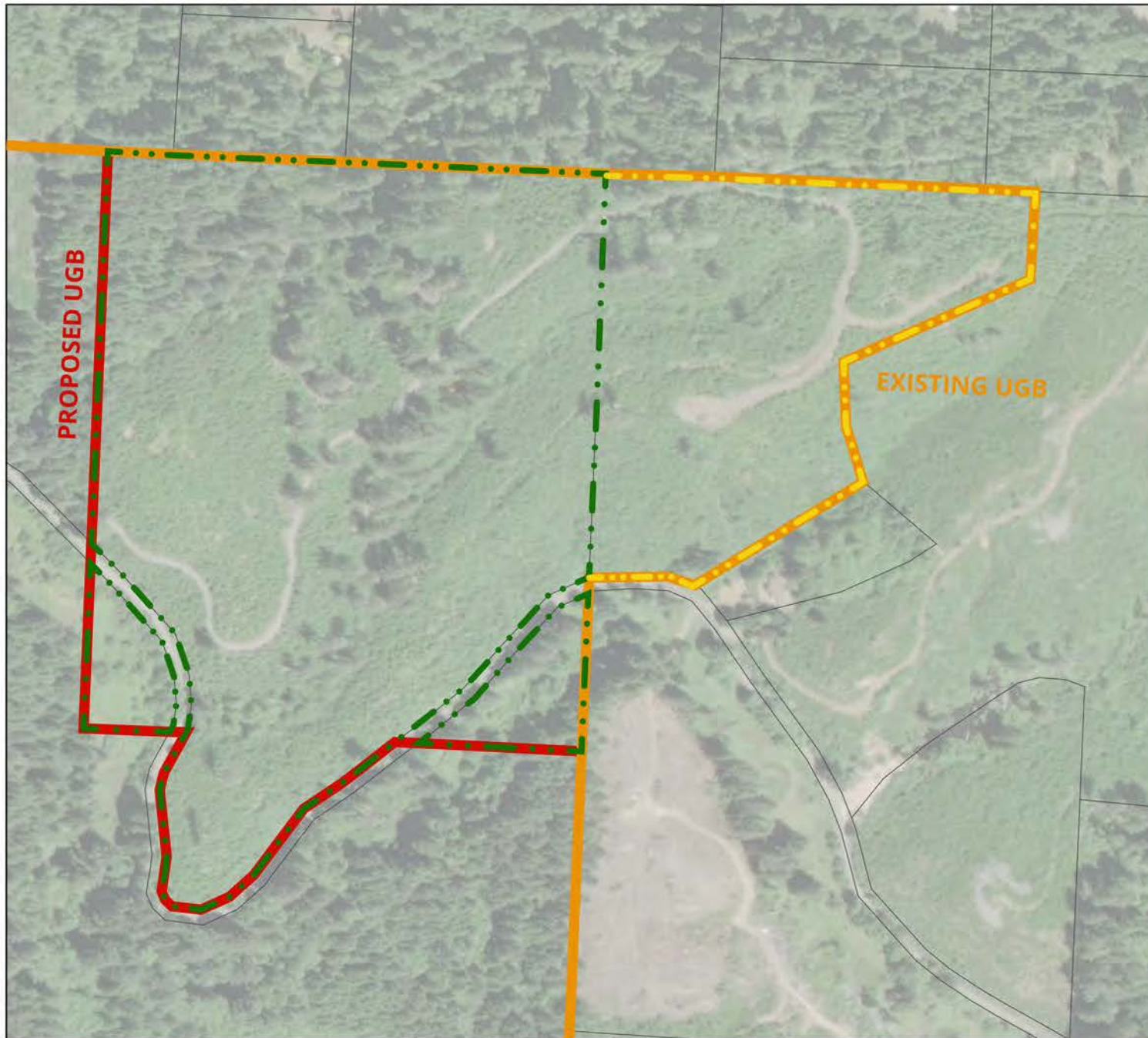
## HANCOCK UGB ADJUSTMENT

SITE A ZONE CHANGE EXHIBIT

**3J CONSULTING**

CIVIL ENGINEERING · WATER RESOURCES · LAND USE PLANNING

SEPTEMBER 2020

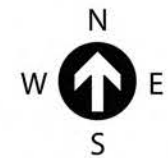


#### EXISTING ZONING | COMP PLAN DESIGNATION

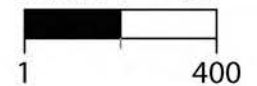
71 RURAL RESIDENTIAL (RR-10) |  
ACRES HIGH DENSITY RESIDENTIAL (HDR)

#### SITE NOTE

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SCALE: 1" = 400'

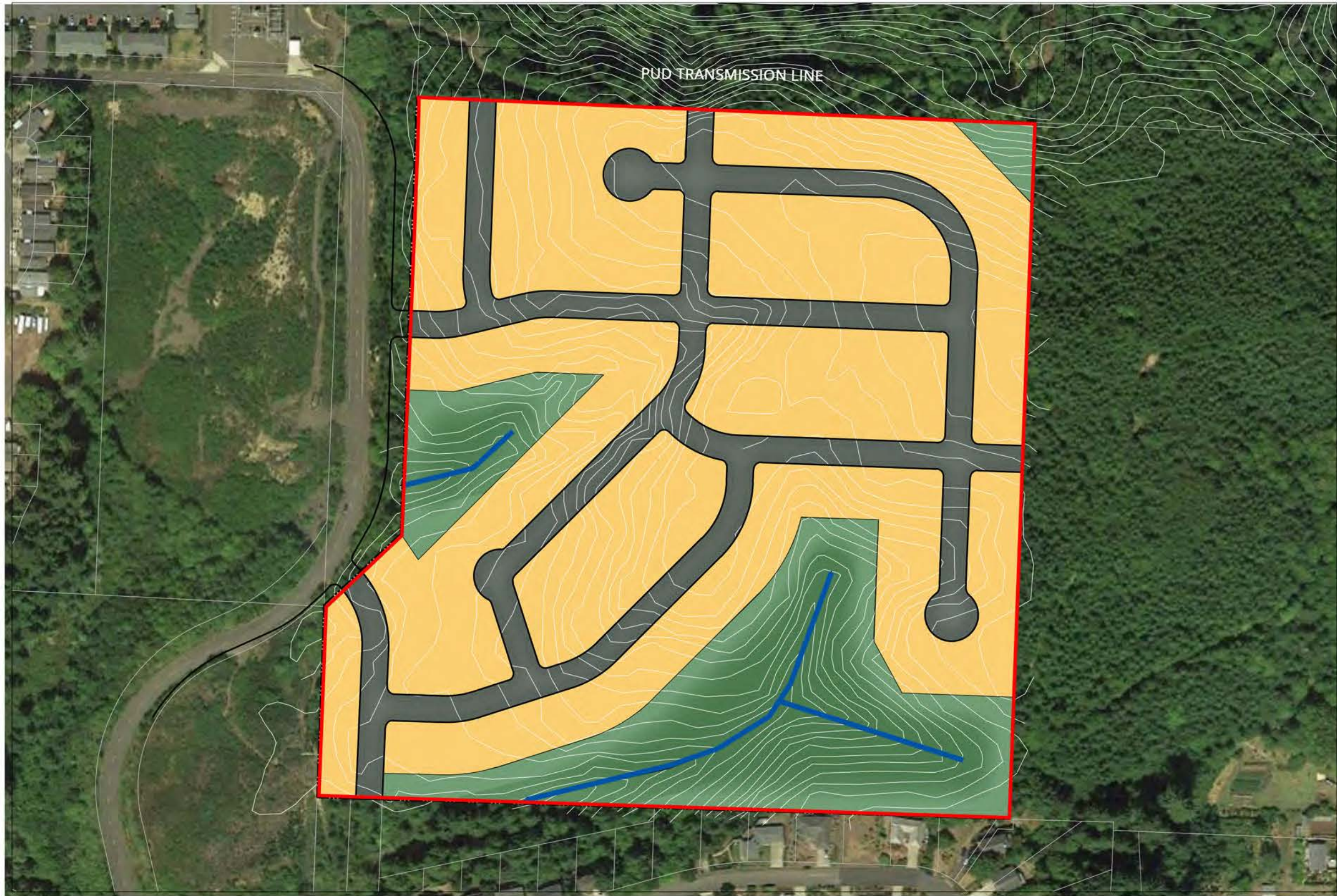


## HANCOCK UGB ADJUSTMENT

UGB AMENDMENT EXHIBIT

**3J CONSULTING**  
CIVIL ENGINEERING · WATER RESOURCES · LAND USE PLANNING

SEPTEMBER 2020

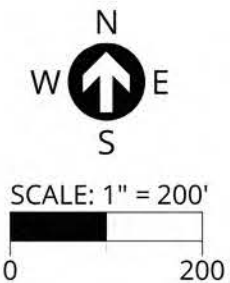


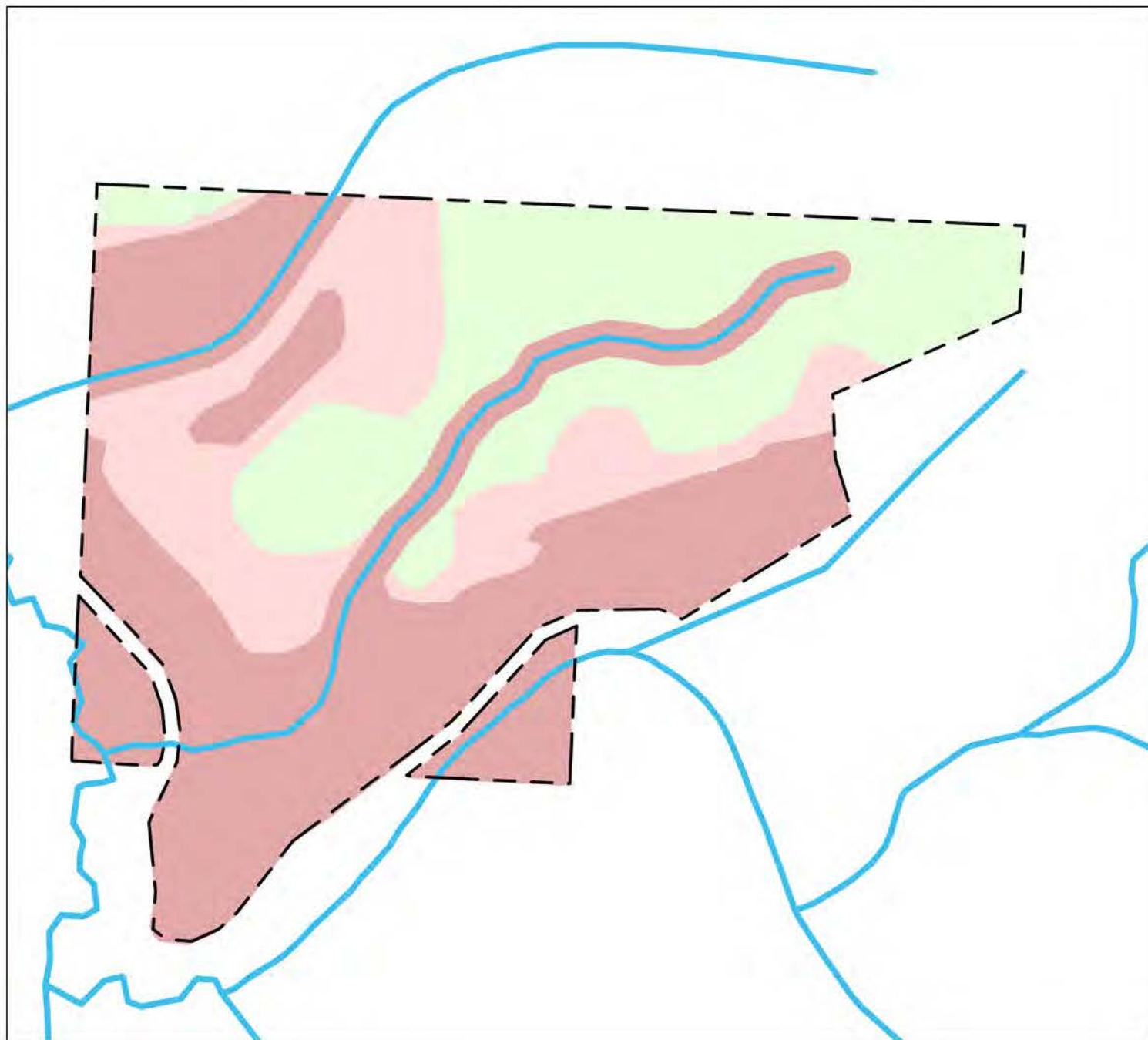
**SITE NOTE**

SITE MAP HAS BEEN PREPARED USING DATA FROM EXISTING TAX MAPS AND COUNTY RLIS GIS DATA. THIS MAP HAS BEEN PREPARED FOR ILLUSTRATIVE PURPOSES ONLY. ALL BOUNDARY AND DIMENSIONAL INFORMATION SHOULD BE VERIFIED BY A PROFESSIONAL LAND SURVEYOR.

**LEGEND**

- DEVELOPABLE LOT AREA  
21.6 ACRES
- STREAM BUFFER/STEEP SLOPES  
8.4 ACRES
- POTENTIAL STREAM ALIGNMENT



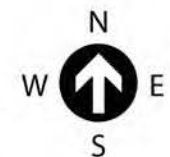


#### LEGEND

	EST. ACREAGE
<span style="color: green;">■</span> BUILDABLE	22.5
<span style="color: pink;">■</span> PARTIALLY CONSTRAINED	15.2
<span style="color: red;">■</span> CONSTRAINED	33.7
- - - SITE B BOUNDARY	
<span style="color: blue;">—</span> STREAMS	

#### SITE NOTE

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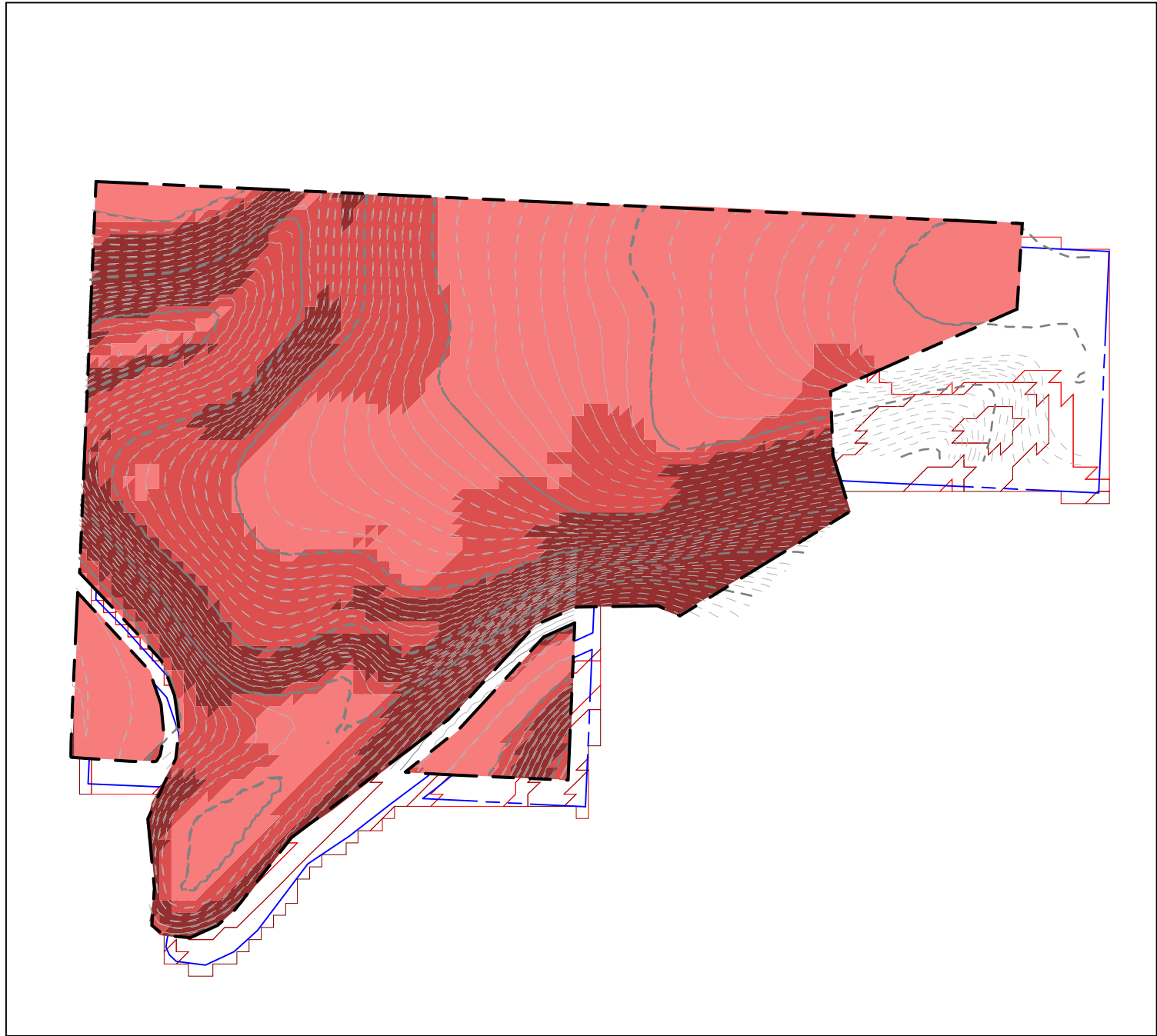
SCALE: 1" = 400'

## HANCOCK UGB ADJUSTMENT

SITE B BUILDABLE LANDS ANALYSIS

**3J CONSULTING**  
CIVIL ENGINEERING · WATER RESOURCES · LAND USE PLANNING

SEPTEMBER 2020

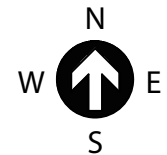


#### LEGEND

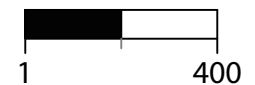
- 0 - 10% SLOPE
- 10 - 25% SLOPE
- >25% SLOPE
- SITE B BOUNDARY
- 40 FT MAJOR CONTOURS
- 5 FT MINOR CONTOURS

#### SITE NOTE

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SCALE: 1" = 400'

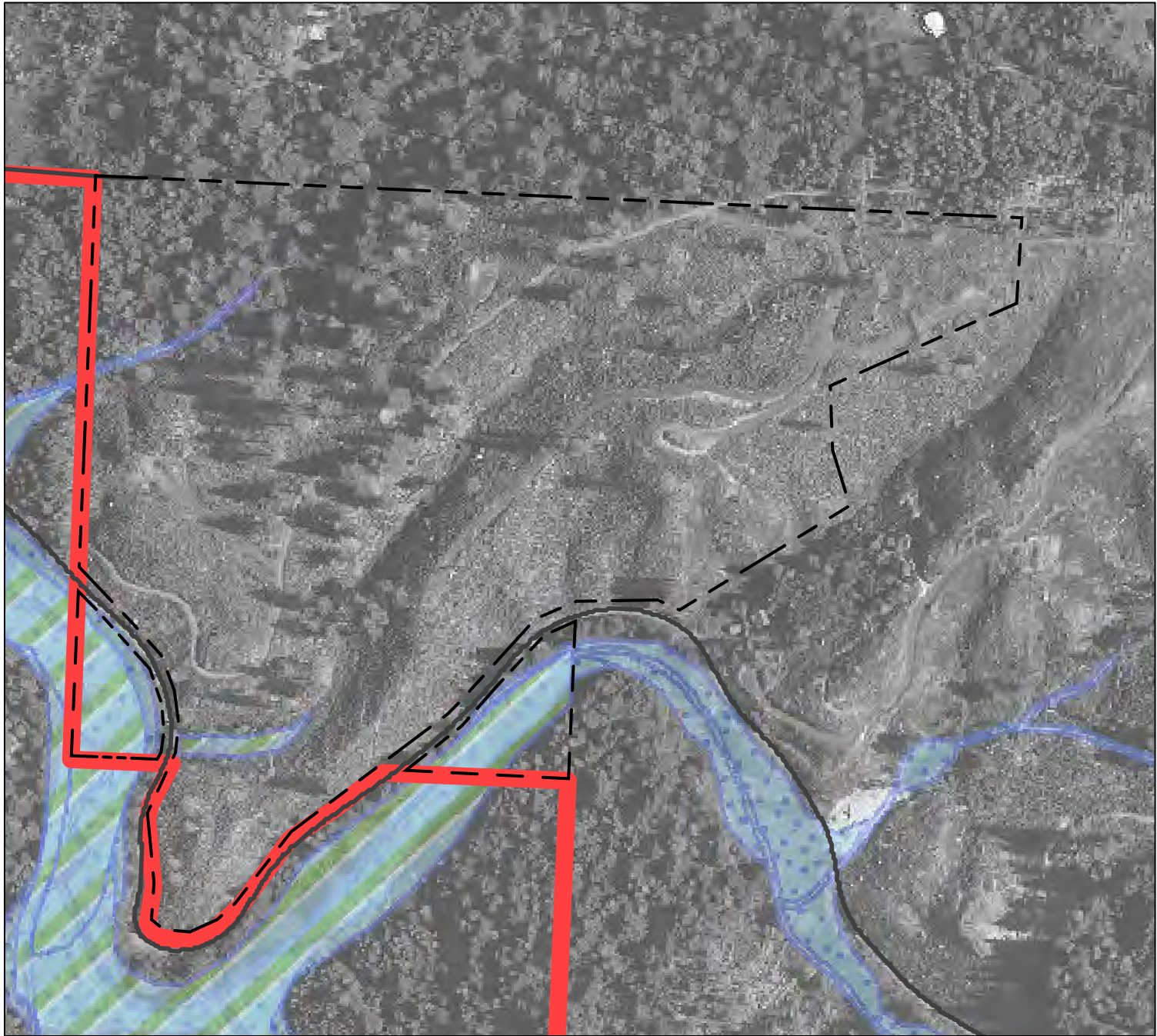


## HANCOCK UGB ADJUSTMENT





SITE B SLOPE ANALYSIS

**3J CONSULTING**  
CIVIL ENGINEERING · WATER RESOURCES · LAND USE PLANNING

SEPTEMBER 2020

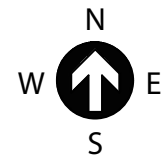


#### LEGEND


-  LOCAL WETLAND INVENTORY
-  NATIONAL WETLAND INVENTORY
-  SITE B BOUNDARY
-  URBAN GROWTH BOUNDARY (OUT OF DATE)

#### SITE NOTE

SITE MAP HAS BEEN PREPARED USING DATA FROM EXISTING CITY OF NEWBERG WETLAND MAPS. THIS MAP HAS BEEN PREPARED FOR ILLUSTRATIVE PURPOSES ONLY. ALL BOUNDARY AND DIMENSIONAL INFORMATION SHOULD BE VERIFIED BY A PROFESSIONAL LAND SURVEYOR.



SCALE: 1" = 400'



A horizontal scale bar with a black segment on the left and a white segment on the right. The number '1' is at the left end and '400' is at the right end.

## HANCOCK UGB ADJUSTMENT


SITE B WETLAND ANALYSIS

**3J CONSULTING**  
CIVIL ENGINEERING · WATER RESOURCES · LAND USE PLANNING

SEPTEMBER 2020

# Memorandum

To: Newport City Council

From: Derrick Tokos, Community Development Director 

Date: January 13, 2021

Re: Updated Supplemental Analysis for Boston Timber Opportunities, LLC UGB  
Amendment (File 1-UGB-20/1-CP-20)

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This memo addresses boundary location and priority provisions outlined in OAR 660-024-0065 and OAR 660-024-0067. It has been updated since the December 14, 2020 Planning Commission hearing to address specific feedback contained in a December 17, 2020 email from Kevin Young, Senior Urban Planner, with the Department of Land Conservation and Development.

The locational provisions of the above referenced Administrative Rules require that the City evaluate lands within 1 mile of the Newport Urban Growth Boundary (UGB) to see if the 43.4 acres the applicant proposes to add to the UGB is best suited for that purpose given (a) the identified residential need and (b) the State of Oregon's priorities which emphasize non-resource (i.e. "exception") land being added as opposed to resource (i.e. "farm and forest") lands. A map enclosed as Attachment "A" shows the 1 mile study area. If exception areas are contiguous to the 1 mile buffer, then the analysis must extend another ½ mile from the Newport UGB. This 1½ mile buffer has not been mapped, but is addressed in the analysis. Exception lands exist south, east, and north of the City of Newport UGB and maps illustrating these areas are attached as Attachments "B," "C," and "D."

The City may exclude lands from the study area if it determines that it is not practicable for the City to extend the necessary public services, or the lands are subject to development hazards such as bluff and dune backed erosion hazards, landslide hazards, or tsunami inundation (OAR 660-024-0065(4)(a) and (b)). Both of these factors are relevant to lands within the study area.

Exception lands south of the Newport UGB are being excluded because they are far removed from City water and wastewater services, and are significantly impacted by bluff and dune backed erosion hazards, landslide hazards, or tsunami inundation. The extent to which the properties are impacted by development hazards is illustrated on Attachment "B." Water and wastewater service would have to be extended from SE 50<sup>th</sup> Street, which is over three miles to the north. For wastewater alone, a force main and lift stations would have to be extended south along the US 101 corridor which is heavily impacted by wetlands and lies within the tsunami inundation area. The City Waterwater Master Plan, by Brown and Caldwell, dated February 9, 2018, includes an estimate for extending sewer service to the Surfland unincorporated rural residential development, which lies just inside the Newport UGB and is a little more than 1 mile from existing services at SE 50<sup>th</sup> Street. Its location is identified on Attachment "B." The project cost is estimated to be a little more than \$6.2 million (2016 dollars), including a force main, lift station, and gravity main distribution system. This is not a project the City can presently fund, having exhausted much of its resources upsizing

lift stations on the north side of town to address overflow problems. Exception lands are an additional two miles distant from the Surfland development. These properties are heavily parcelized, meaning the City would expect a lower level of development, that would occur incrementally during the planning period. This has been an impediment to extending service to Surfland, because without the connection of a significant number of units the flow of effluent will be too low, and the wastewater system will not operate properly. Many of the properties are also subject to inundation from a near shore XXL Cascadia earthquake and resulting tsunami, as mapped by the Oregon Department of Geology and Mineral Industries (DOGAMI), and all are reliant upon a stretch of US 101 that is within the tsunami inundation area and serves as the sole point of vehicle access to these lands.

Exception lands to the east are depicted on Attachment "C." They face similar issues as unincorporated exception lands to the south. Property between US 20 and the Yaquina Bay Road is steeply sloped and within a landslide hazard area mapped by DOGAMI. Wastewater would be directed downslope to a lift station at SE Running Springs Drive and SE Bay Blvd. That lift station is at capacity and would have to be upsized. The same goes for the force main between that lift station and the Bayfront lift station located at Port Dock 7. From there effluent is directed to the Northside lift station, which then pumps it under Yaquina Bay to the City's wastewater treatment plant in South Beach. The City's Wastewater Master Plan estimates the cost of these upgrades at a little more than \$5.2 million (2016 dollars). Exception areas east of Newport's UGB that are north of US 20, are situated along Yaquina Heights Drive and Newport Heights Drive. Some of these lands are within mapped landslide hazard areas. They are steeply sloped except where they border the roads and the Wastewater Master Plan assumes only a 40% of otherwise permissible infill due to slope constraints. This area feeds to the Bayfront lift station which is capacity constrained (part of the \$5.2 million cost). Wastewater service to this area would require new lift stations and force mains along each of the main roads due to the elevation changes. This has not been priced out, but would likely be more expensive than the Surfland extension due to the terrain.

Exception areas north of the Newport UGB, as shown on Attachment "D," are located tight to US 101. These lands rely upon highway access and, unfortunately, this stretch of US 101 is within an active landslide area. City wastewater service is only 1/3 of a mile from the UGB at US 101 and NE 73<sup>rd</sup> Street; however, the City cannot practicably extend that service further north due to the unstable terrain in that area. The only other exception land in that area is the Iron Mountain Quarry, at the east end of NE 71<sup>st</sup> St. This is a Goal 5 protected aggregate site that abuts industrial land and would be brought into the City as industrial if added to the UGB and annexed. It is not suitable for residential development.

What is left are resource lands, which are exclusively Timber-Conservation (T-C) forest zoned properties. They are identified as "County Resource Lands" on the attached maps, and are situated east and inland from exception lands. These properties are privately managed timberlands with some being smaller and others larger than the applicant's 43.4 acre site. They share the same service limitations as the exception lands excluded for the reasons noted above, and are in fact even further removed from those services. Most of the resource zoned properties are undeveloped, although some parcels contain private residences. Access is available by logging road or private residential driveways. The applicant's property is unique in that it does not share these same limitations. City services are in place immediately adjacent to the subject property that are capable of supporting urban levels of development. Sewer lift stations that serve this area (unlike some of the others mentioned) were recently upsized to address chronic overflow issues the City had experienced, and a new water tank, pumps, and main lines have been constructed to provide adequate water pressure. A paved collector roadway abuts the property, as does an electric utility substation. As illustrated on the attached maps, most resource lands within the study area are geographically isolated from urban development, being separated by exception lands or as yet un-served properties within the urban growth boundary. That is not the case with the applicant's site, which is bordered by urban

scale residential development to the south and west. Further, a utility easement for high voltage power lines cuts across the north end of the property. The result is a property isolated on three sides from other forest lands, which will allow for urbanization to occur with minimal impacts to nearby forest operations. The property does have some terrain limitations; however, such limitations are common on both exception and resource lands in the vicinity of Newport. The property is outside of mapped landslide and tsunami inundation hazard areas.

Considering the above, boundary locational requirements outlined in OAR 660-024-0065 and 660-024-0067 have been adequately addressed for this UGB amendment.

#### Attachments






Attachment A – UGB Study Area

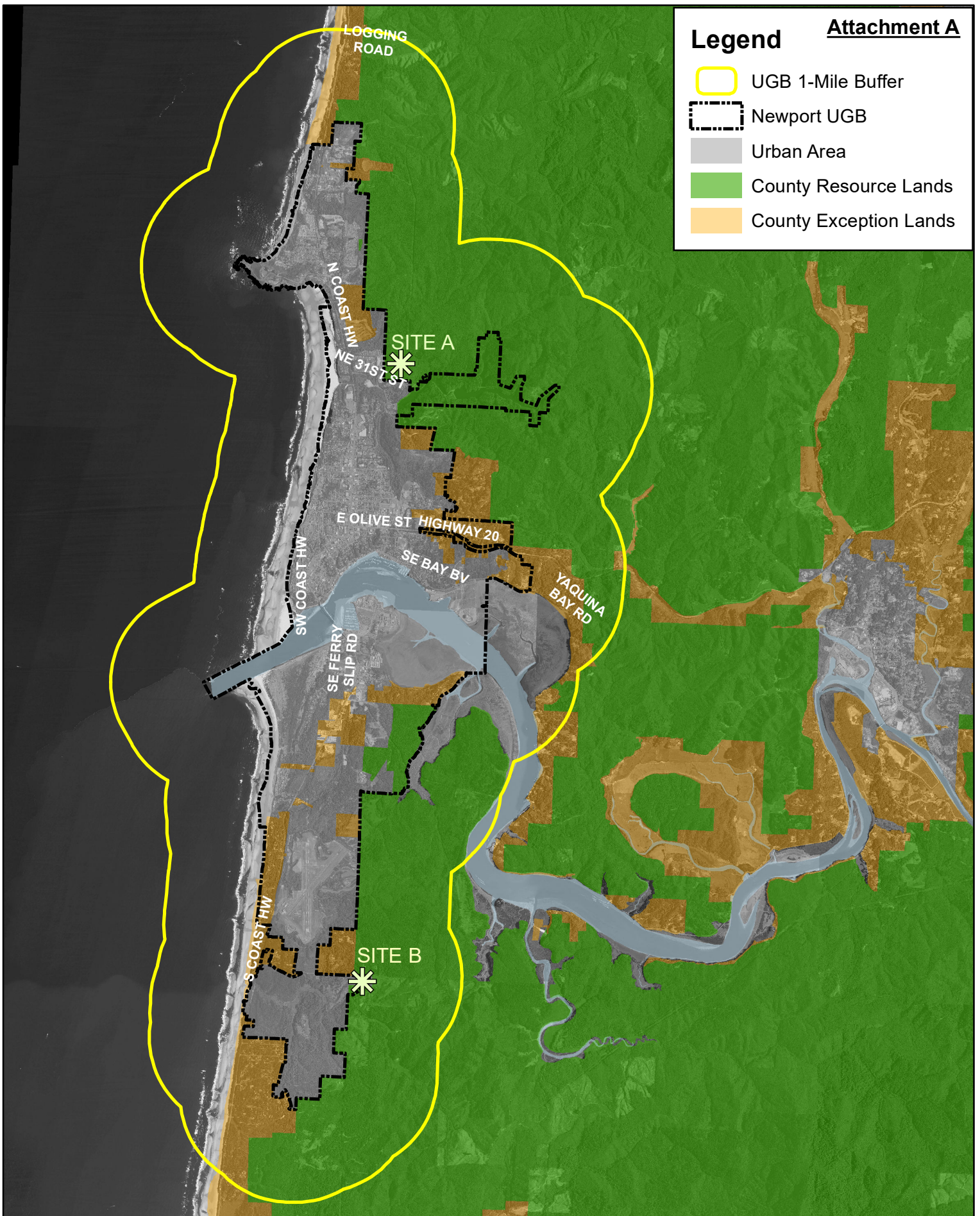
Attachment B – Exception Lands South of Newport

Attachment C – Exception Lands East of Newport

Attachment D – Exception Lands North of Newport

**Legend**









-  UGB 1-Mile Buffer
-  Newport UGB
-  Urban Area
-  County Resource Lands
-  County Exception Lands

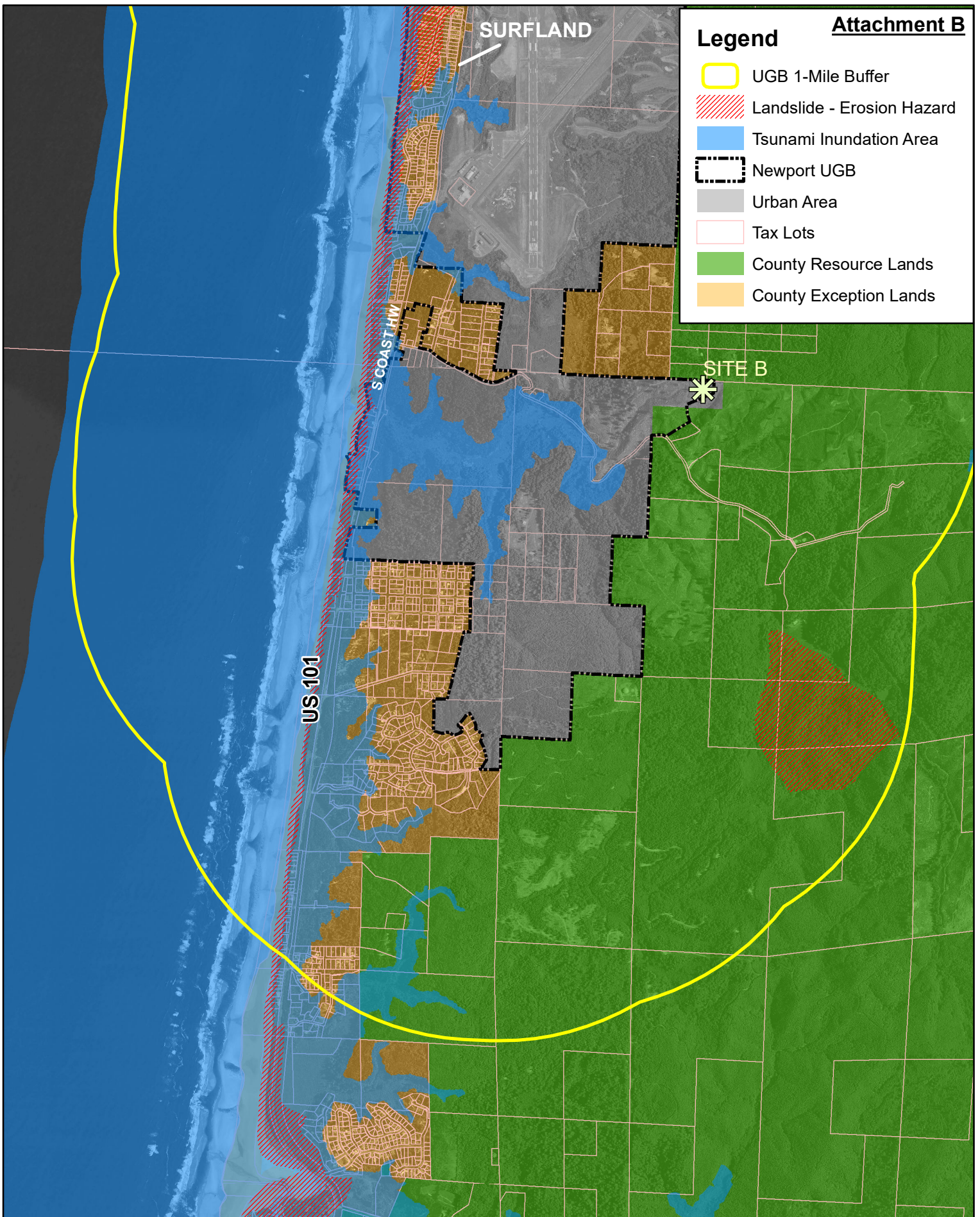


**Urban Growth Boundary Study Area  
Boston Timber Opportunities, LLC (File No. 1-UGB-20/1-CP-20)**



**Legend**

-  UGB 1-Mile Buffer
-  Landslide - Erosion Hazard
-  Tsunami Inundation Area
-  Newport UGB
-  Urban Area
-  Tax Lots
-  County Resource Lands
-  County Exception Lands



**UGB Study Area - Exception Land South of Newport  
Boston Timber Opportunities, LLC (File No. 1-UGB-20/1-CP-20)**



City of Newport  
Community Development Department  
169 SW Coast Highway  
Newport, OR 97365  
Phone: 1.541.574.0629  
Fax: 1.541.574.0644









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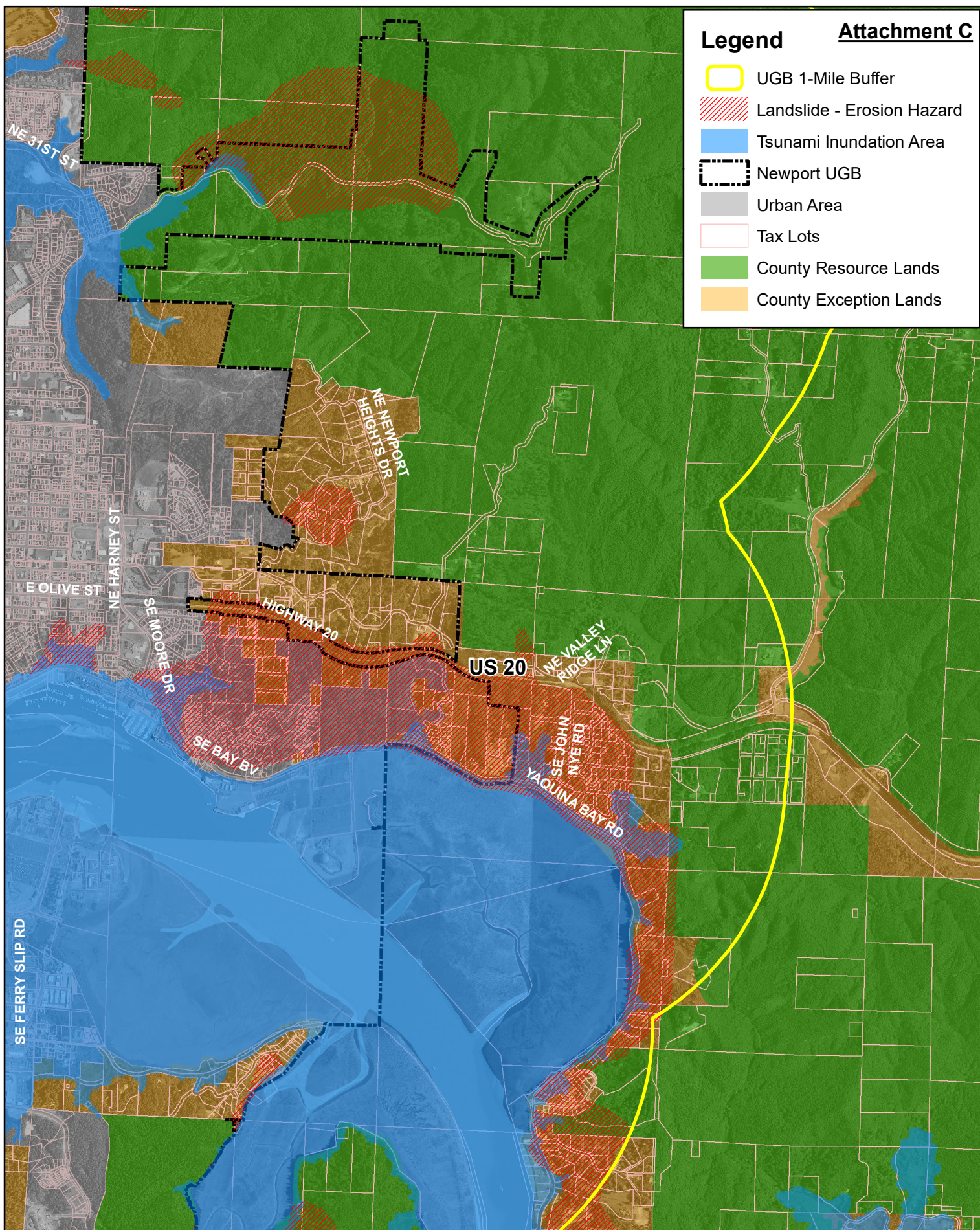
Image Taken July 2018  
4-inch, 4-band Digital Orthophotos  
Quantum Spatial, Inc. Corvallis, OR

0 1,200 2,400 4,800 Feet



**Legend**

-  UGB 1-Mile Buffer
-  Landslide - Erosion Hazard
-  Tsunami Inundation Area
-  Newport UGB
-  Urban Area
-  Tax Lots
-  County Resource Lands
-  County Exception Lands



**UGB Study Area - Exception Land East of Newport  
Boston Timber Opportunities, LLC (File No. 1-UGB-20/1-CP-20)**



City of Newport  
Community Development Department  
169 SW Coast Highway  
Newport, OR 97365  
Phone: 1.541.574.0629  
Fax: 1.541.574.0644









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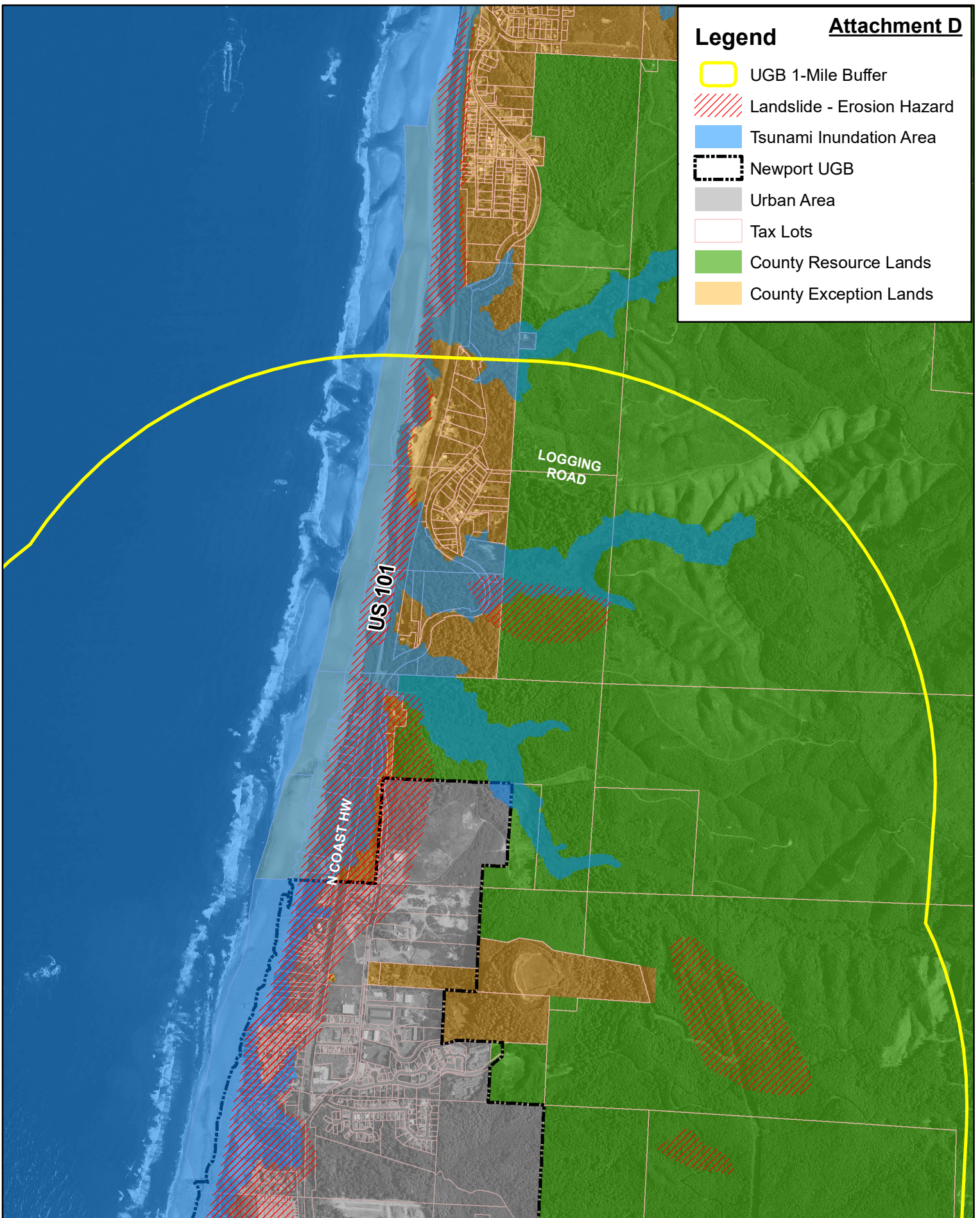
Image Taken July 2018  
4-inch, 4-band Digital Orthophotos  
Quantum Spatial, Inc. Corvallis, OR

0 1,200 2,400 4,800 Feet



**Legend**

-  UGB 1-Mile Buffer
-  Landslide - Erosion Hazard
-  Tsunami Inundation Area
-  Newport UGB
-  Urban Area
-  Tax Lots
-  County Resource Lands
-  County Exception Lands



**UGB Study Area - Exception Land North of Newport  
Boston Timber Opportunities, LLC (File No. 1-UGB-20/1-CP-20)**



City of Newport  
Community Development Department  
169 SW Coast Highway  
Newport, OR 97365  
Phone: 1.541.574.0629  
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Image Taken July 2018  
4-inch, 4-band Digital Orthophotos  
Quantum Spatial, Inc. Corvallis, OR

0 1,200 2,400 Feet

