2015 Lincoln City Transportation System Plan: Volume 2

November 2015

Lincoln City
Transportation System Plan

Prepared for:

City of Lincoln City

Oregon Department of Transportation

Prepared by:

DKS Associates

Acknowledgements

Project Team

City of Lincoln City

Lila Bradley, Public Works Director

Debra Martzahn Nicholson, Senior Planner

Stephanie Reid, City Engineer

Richard Townsend, Planning & Community Development Director

Oregon Department of Transportation

Terry Cole, Contract Manager

DKS Associates

John Bosket, Project Manager

Kevin Chewuk, Lead Transportation Planner

Ben Fuller, Assistant Transportation Planner

Angelo Planning Group

Matt Hastie

Darci Rudzinski

Shayna Rehberg

Volume 2 Contents

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

Section A

Glossary

Access Management: Refers to measures regulating access to streets, roads and highways from public roads and private driveways. Measures may include but are not limited to restrictions on the type and amount of access to roadways, and use of physical controls such as signals and channelization including raised medians, to reduce impacts of approach road traffic on the main facility.

Alternative Modes: Transportation alternatives other than single-occupant automobiles such as rail, transit, bicycles and walking.

Arterial (Street): A street designated in the functional class system as providing the highest amount of connectivity and mostly uninterrupted traffic flow through an urban area.

Aspirational Plan: The entire set of investments in the TSP if funding were not a constraint.

Bicycle Boulevard: Roadways where bicyclists and autos share the same travel lane. Bicycle boulevards may include a wider outside lane and/or bicycle boulevard treatment (e.g., sharrows, wayfinding). Bicycle boulevards may also include traffic calming measures.

Bicycle Facility: Any facility provided for the benefit of bicycle travel, including bikeways and parking facilities.

Bicycle Network: A system of connected bikeways that provide access to and from local and regional destinations.

Bike Lane: Area within street right-of-way designated specifically for bicycle use

Capacity: The maximum number of vehicles or individuals that can traverse a given segment of a transportation facility with prevailing roadway and traffic conditions.

Collector (Street): A street designated in the functional class system that provides connectivity between local and neighborhood streets with the arterial streets serving the urban area. Usually shorter in distance than arterials, designed with lower traffic speeds and has more traffic control devises than the arterial classification.

Crosswalk: Portion of a roadway designated for pedestrian crossing and can be either marked or unmarked. Unmarked crosswalks are the national extension of the shoulder, curb line or sidewalk.

Financially Constrained Plan: The set of investments in the TSP that could be funded assuming funding levels remain constant through 2035 in Lincoln City.

Level of Service (LOS): A qualitative measure describing the perception of operation conditions within a traffic steam by motorists and or passengers. An LOS rating of “A” to “F” describes the traffic flow on streets and at intersections, ranging from LOS A, representing virtually free flow conditions and no impedance to LOS F representing forced flow conditions and congestion.

Local (Street): A street designated in the functional class system that's primary purpose is to provide access to land use as opposed to enhancing mobility. These streets typically have low volumes and are very short in relation to collectors and arterials.

Mobility Targets: The level of congestion the corresponding jurisdiction has defined as acceptable. Mobility targets are in the form of LOS or v/c ratios.

Multi-Modal: Involving several modes of transportation including bus, rail, bicycle, motor vehicle etc.

National Highway System (NHS): The National Highway System is interconnected urban and rural principal arterial and highways that serve major population centers, ports, airports and other major travel destinations, meet national defense requirements and serve interstate and interregional travel.

Oregon Highway Plan (OHP): The document that establishes long range policies and investment strategies for the state highway system in Oregon.

Peak Period or Peak Hour: The period of the day with the highest number of travelers. This is normally between 4-6 PM on weekdays.

Pedestrian Facility: A facility provided for the benefit of pedestrian travel, including walkways, crosswalks, signs, signals and benches.

Project Advisory Committee (PAC): A committee of stakeholders in Sherwood who met regularly with the project team to give input for the production of the TSP.

Right-Of-Way (ROW): A general term denoting publicly-owned land or property upon which public facilities and infrastructure is placed.

Safety Priority Index System (SPIS): An indexing system used by Oregon Department of Transportation to prioritize safety improvements based on crash frequency and severity on state facilities.

Shared Street: Roadways where pedestrians, bicyclists, and autos share the street. Treatments intend to bring vehicles to a walking speed, and pedestrians are encouraged use enjoy the space as a pedestrian facility.

Shared-Use Path: Off-street route (typically recreationally focused) that can be used by several transportation modes, including bicycles, pedestrians and other non-motorized modes (i.e. skateboards, roller blades, etc.)

Technical Advisory Committee (TAC): A group of transportation professionals in the public sector who represent an agency with transportation system elements in Lincoln City (e.g., city, county, state, and Lincoln Count Transit staff). This group met regularly with the project team to give input for the production of the TSP.

Traffic Calming: Traffic control devices typically used in residential neighborhoods to slow traffic or possibly reduce the volume of traffic.

Traffic Impact Analysis (TIA): A study that evaluates the potential impacts a project may have on the transportation system, and determines mitigations required to meet transportation standards. These are necessary for projects to be approved (e.g., proposed developments, roadway extensions, zone changes).

Transportation Analysis Zone (TAZ): A geographic sub-area used to assess travel demands using a travel demand forecasting model, and is often defined by the transportation network and US Census blocks.

Transportation Demand Management (TDM): A policy tool as well as any action that removes single occupant vehicle trips from the roadway network during peak travel demand periods.

Transportation System Management (TSM): Management strategies such as signal improvements, traffic signal coordination, traffic calming, access management, local street connectivity, and intelligent transportation systems

Transportation System Management and Operations (TSMO): Strategies and policies that work towards improving mobility through cost-effective methods, and can be categorized as transportation system management or transportation demand management.

Transportation System Plan (TSP): Is a comprehensive plan that is developed to provide a coordinated, seamless integration of continuity between modes at the local level as well as integration with the regional transportation system.

Urban Area: The area immediately surrounding an incorporated city or rural community that is urban in character, regardless of size.

Urban Growth Boundary (UGB): The regional boundary that encompasses zoning designations in an urban area.

Volume-to-Capacity (v/c) ratio: A decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given turn movement, approach leg, or intersection. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. At 1.00, demand is greater than capacity and the turn movement, approach leg, or intersection is oversaturated—this results in excessive queues and long delays.

(This page intentionally left blank)

Section B

Memo 1: Transportation Master Plan Review

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

DKS Associates
TRANSPORTATION SOLUTIONS

Technical Memorandum #1

Date: June 14, 2012

To: Lincoln City TSP Project Management Team

From: John Bosket, P.E.

Subject: **Lincoln City Transportation System Plan**
Transportation Master Plan Review P11086-008

In 2009, the City of Lincoln City completed a draft of an update to their 1995 Transportation Master Plan (TMP). This draft was reviewed by a number of stakeholders, including the Oregon Department of Transportation (ODOT) and the Oregon Department of Land Conservation and Development (DLCD). Both ODOT and DLCD provided written responses indicating that there were several issues needing to be addressed before the TMP would be consistent with state plans and regulations, which would allow for adoption. The City began to address these comments through additional transportation analysis[1] and further revisions to the draft TMP, but that effort was not completed.

As part of the current effort to develop a Transportation System Plan (TSP) for the City, the 2009 draft TMP work (including revisions through 2011) and associated transportation analysis were reviewed to evaluate which elements could be carried forward and which would require update or replacement. This memorandum provides the findings of that review.

Review of ODOT and DLCD Comments on 2009 Draft TMP

Understanding the issues associated with the 2009 draft TMP previously identified by ODOT and DLCD provides a good starting point for identifying areas in need of revision. The following matrix summarizes key issues noted, how those issues were addressed through recent revisions by the City, and what further action will be needed through this TSP update.

[1] JRH Transportation Engineering, 2010.

720 SW Washington Street, Suite 500
Portland, Oregon 97205

(503) 243-3500
www.dksassociates.com

Issues identified by ODOT and DLCD	How has the City already responded?	Further action recommended
General Comments		
The TMP used a 16-year planning period, rather than a 20-year period as required by OAR 660-012-003(3).	The most recent version of the TMP uses a horizon year of 2032 for facilities under ODOT jurisdiction and a horizon year of 2030 for other facilities. Assuming adoption of the TSP would occur in 2013, this would result in 19-year and 17-year planning horizons, respectively.	Assuming adoption of the TSP would occur in 2013, the horizon year for the planning period should be increased to at least 2033. It is recommended that a 2035 horizon year be used.
Policies		
In response to OAR 660-012-0045, recommended a policy to provide notice to agencies that provide transportation facilities and services for certain land use actions that could affect the facility or service.	Policy 6.11 was added that states: "Coordinate with impacted county, state, and federal agencies regarding proposed development."	Review this policy with agency stakeholders and discuss potential revisions. At a minimum, consideration should be given to expanding this policy beyond proposed development to include other actions such as transportation projects and policy development.
There was confusion regarding the intent of a policy associated with routing trucks on roadways other than US-101. It was noted that no other truck routes in the City were identified and as a state highway, US-101 is open for all legal freight movement.	Policies 8.1 and 8.2 identify US-101 as the only through truck route and call for the design of local roadways to minimize use by trucks other than local deliveries.	Discuss with ODOT to confirm that revisions have addressed the original concern.
The City may have proposed a policy that identified a Special Transportation Area (STA) on US-101. However, only the Oregon Transportation Commission (OTC) can designate STAs on state highways.	This policy has been removed and replaced with Policy 10.2, which states: "Initiate the designation of Special Transportation Areas for pearl districts, as necessary to protect their unique character."	This new language does not designate STAs, but only directs the City to initiate the process, which would be within their authority to do. This policy could be expanded to acknowledge OTC authority over such decisions.

Issues identified by ODOT and DLCD	How has the City already responded?	Further action recommended
Existing Conditions		
The description of US-101 should note that it is designated in the Oregon Highway Plan (OHP) as a Statewide Highway and that it is not an OHP-designated freight route.	This correction has been made.	No further action recommended.
The southbound parking on US-101 in the Nelscott and Taft areas, and northbound parallel parking in the Taft area should be identified.	The only parking identified in either direction is between N. 22nd and N. 13th Streets.	Update as needed.
Both the official routing of the Oregon Coast Bike Route along US-101 and the alternate route should be documented.	There is no mention of the Oregon Coast Bike Route along US-101. Only one designated Bike Route is shown in Figure 3-7, which is partially on US-101 and partially on local streets.	This issue should be addressed through the Walking and Biking Plan, which will be incorporated into the TSP.
Mobility standards shown for ODOT are outdated.	The mobility standards were updated, but are again outdated following an Oregon Highway Plan amendment adopted 12/21/11.	Update the TSP to include the current mobility “targets” from the 1999 Oregon Highway Plan.
No mobility conditions are shown for City intersections.	Mobility conditions for Lincoln City intersections have been included.	Continue to include mobility conditions for City intersections through TSP development.
Crashes should be reported as rates per volume of traffic and compared against similar facilities in the state. Crash problems are not related to proposed solutions.	No action has been taken to address this.	Update the crash analysis as part of the TSP development and include analysis of highway segment crash rates with a comparison to statewide average crash rates for similar facilities. Identify where recommended projects could address safety issues noted.

Issues identified by ODOT and DLCD	How has the City already responded?	Further action recommended
Traffic Forecast		
Clarification is needed regarding forecasting methodology used. ODOT did not use a QRS-II model.	Some clarification has been provided, with a cumulative analysis methodology identified (not a QRS-II model). The description of the methodology for forecasting future traffic in the TMP is minimal, with no assumptions documented. The JRH Engineering Technical Memorandum (2010), which is assumed to provide the background for the traffic forecasts, provides considerably more information. However, the description is brief and the technical documentation provided in the appendix is difficult to follow.	Develop new future traffic forecasts for the new 2035 horizon year. The cumulative analysis methodology would continue to be appropriate, but new population, housing, and employment forecasts and allocations should be developed. This process should be thoroughly documented in technical memoranda, which could be included as appendices in the TSP.
Mobility standards shown for ODOT are outdated.	The mobility standards were updated, but are again outdated following an Oregon Highway Plan amendment adopted 12/21/11.	Update the TSP to include the current mobility “targets” from the 1999 Oregon Highway Plan.
Recommended Improvement Projects		
There is no assessment of project effectiveness in resolving transportation problems. An assessment of the operations of the highway must be provided. It also cannot be determined whether the TMP is relying upon an Eastside Bypass or not.	Such an assessment has not yet been provided. Improvement projects are stated with little or no explanation as to how they relate to deficiencies. It is not clear if an Eastside Bypass was ever analyzed.	During the TSP development process, the need for proposed improvements should be documented in Technical Memoranda and briefly summarized in the TSP itself. If a bypass or bypass study is mentioned, the policy and possible goal exception issues should be acknowledged.
Cost estimates for projects do not appear to have been adjusted to reflect the substantial cost increases that have occurred since 2004.	Cost estimates for local improvement projects appear to be in 2008 dollars. The reference year for cost estimates on state facilities is not provided.	All cost estimates should be updated to the current year (may be 2013).

Issues identified by ODOT and DLCD	How has the City already responded?	Further action recommended
"Widening" of US-101 is recommended, but there is no description of what that entails.	No significant improvement has been made to these project descriptions.	Improve project descriptions to identify ultimate road design (e.g., number of lanes, median treatments, shoulder, bicycle facilities, pedestrian facilities, right of way).
The TMP calls for study of an Eastside Bypass. Because such a bypass would be at least partially outside the UGB, the TMP must either: 1) clearly state that the bypass is not assumed to be constructed within the planning horizon, or 2) provide necessary information to obtain a Goal 12 exception. Proposing a Goal 12 exception may also require amending the Lincoln County TSP.	Neither of the options referenced were followed. The TMP does not include the bypass as a project – only as a study. It is not clear how the finding that a bypass would be beneficial was arrived at.	If a bypass or bypass study is mentioned, the policy and possible goal exception issues should be acknowledged.
There may be clarifications or corrections needed where the terms Special Transportation Area and Urban Business Area are used. The usage of these terms in the TMP may not be consistent with the OHP.	No significant improvement has been made to clarify intended use of these terms.	Revisit intentions during TSP development and include appropriate references.
Transportation Planning Rule Requirements		
Parameters for determining whether a TIA will be required are not consistent with OAR 660-012-0060. It is recommended that provisions established in Lincoln City Ordinance 2008-20, Section 12.28.200 Paragraph E be incorporated as part of the TMP to provide for greater coordination between the City's review and ODOT's review.	It does not appear that changes have been made to address this comment.	Improved requirements for coordination with ODOT and other facility providers should be included in the TSP. The Traffic Study Requirements in Lincoln City Municipal Code 12.28.200 (E) appear to better address this than the language in the current TMP and could be used as a starting point.

Issues identified by ODOT and DLCD	How has the City already responded?	Further action recommended
It is recommended that the City require TIAs to be prepared in a manner that will meet both City and ODOT requirements.	Minimum requirements for TIA reports are provided and applicants are encouraged to coordinate report preparation with City staff and staff from other jurisdictions.	Coordination requirements can be strengthened (see comment above).

Note: All issues identified are taken from the April 27, 2009 letter from John deTar at ODOT. DLCD also submitted a comment letter (Laren Woolley and Matthew Crall, April 27, 2009), but affirmed ODOT's comments rather than offering additional ones.

Evaluation of 2009 TMP and Supporting Transportation Analysis

While revisions to prior work will be needed for some elements of the TSP, there are a number of areas where work already completed can be used to expedite this process. The following summarizes how various elements can be used to facilitate the development of a complete TSP for the City of Lincoln City.

Section 2 – Transportation Goals and Policies

The breadth of goals and policies is generally adequate to accommodate any implementing actions needed. However, they may not have incorporated any input from community members. While the work completed provides a good starting point for the TSP development, it is recommended that the goals and policies be revisited with community members to ensure they reflect key values associated with transportation. The revised goals and policies will be used later in the project to evaluate packages of improvement alternatives considered and may be revised again towards the end of the project to incorporate implementing actions associated with plan recommendations.

Section 3 – Existing Inventory

This section provides a considerable amount of information describing the existing transportation system in Lincoln City. Much of this information can be transferred directly to the new TSP documents. However, it should be verified that the information is still current.

The traffic volumes provided are from 2004. More current traffic counts should be obtained and used in the analysis of existing conditions.

Section 4 – Existing Conditions and Deficiencies

Much of the existing intersection operations analysis may need to be updated. The analysis of intersection operations was based on traffic counts from 2009. Data obtained from Automatic Traffic Recorders on US-101 show that little growth in highway traffic volumes has occurred over the last 10 years. Therefore, relatively recent counts (within the last 3 years) may still be appropriate for use as long as they are not in the vicinity of significant new development. The counts themselves are not provided with the TMP and would need to be obtained to provide important information describing vehicle types.

ODOT has obtained new traffic counts for several intersections as part of the Walking and Biking Plan project. This new data should be compared to the older counts to verify that the older counts would be appropriate for use in analysis. Following this, a complete list of study intersections and supporting data sources (e.g., 2009 counts, 2011 counts from Walking and Biking Plan, or new 2012 counts) will be compiled.

The vehicle crash analysis only covered through the year 2008. This analysis should be revisited using five yeas of the most recent data (likely to extend at least through 2010).

Section 5 – 2032 Travel Demand Forecast and Future Deficiencies

As part of the TSP development process, new horizon year (2035) population, housing, and employment projections are being developed from which traffic growth estimates will be calculated. Therefore, this entire section would be replaced.

Section 6 – Improvement Projects

The improvement projects recommended in this section can be used as a starting point for alternatives development with the need for such projects being reassessed. New projects for bicycle and pedestrian modes of travel would come from the Walking and Biking Plan.

Section 7 – Transportation Planning Rule Requirements

The information in this section will likely be included in motor vehicle, pedestrian, bicycle, and transit elements of the TSP rather than in a separate section dedicated to TPR requirements. A description of the alignment of TPR requirements with the TSP may be included in the appendices or as part of a findings report prepared for public hearings. The information provided in this section can be used as a starting point for transportation demand management, transit, road design standards, access management, and traffic impact analysis requirements.

Section 8 – Finance Plan

Most needed components of this element appear to be included. There is a good discussion of funding sources and project costs. However, there is not a clear demonstration that existing (or proposed) funding sources would have the ability to fund proposed improvement projects.

(This page intentionally left blank)

Section C

Memo 2: Background Document Review

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

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

Technical Memorandum #2

Date: July 24, 2012

To: Lincoln City TSP Project Management Team

From: John Bosket, P.E.
Kevin Chewuk

Subject: **Lincoln City Transportation System Plan**
Background Document Review P11086-008

This memorandum summarizes planning documents, policies, and regulations that are applicable to the 2012 Lincoln City Transportation System Plan (TSP) update (see Appendix A for a complete list). The city's Draft 2009 Transportation Master Plan will serve as the foundation for the update process, upon which new information obtained from system analysis and stakeholder input will be applied to address changing transportation needs through the year 2035. As new strategies for addressing transportation needs are proposed, compliance and coordination with the plans, policies, and regulations described in this document will be required.

Transportation System Planning in Oregon

Transportation system planning in Oregon is required by Statewide Planning Goal 12 – Transportation.[1] The Transportation Planning Rule (TPR), OAR 660-012, describes how to implement Statewide Planning Goal 12.[2]

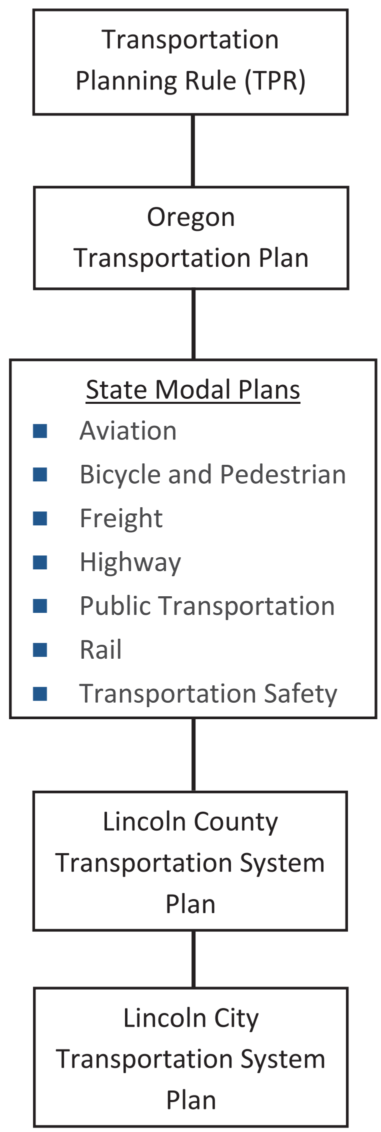
By implementing Statewide Planning Goal 12 (Transportation), the TPR promotes the development of safe, convenient, and economic transportation systems that are designed to reduce reliance on the automobile. Key elements include direction for preparing, coordinating, and implementing transportation system plans. In particular, OAR 660-012-0060 addresses amendments to plans and land use regulations and includes measures to be taken to ensure allowed land uses are consistent with the identified function and capacity of existing and planned transportation facilities. This rule includes criteria for identifying significant effects of plan or land use regulation amendments on transportation facilities, actions to be taken when a significant effect would occur, identification of planned facilities, and coordination with transportation facility providers.

Recent amendments to the TPR (effective January 1, 2012) include new language in 660-012-060 that allows a local government to exempt a zone change from the "significant effect" determination if the proposed zoning is consistent with the comprehensive plan map designation and the TSP. The

[1] Statewide Planning Goals: http://www.oregon.gov/LCD/goals.shtml
[2] Transportation Planning Rule: http://arcweb.sos.state.or.us/rules/OARS_600/OAR_660/660_012.html

amendments also allow a local government to amend a functional plan, comprehensive plan, or land use regulation without applying mobility standards if the subject area is within a designated multi-modal mixed-use area (MMA). In order to implement these recent amendments to the TPR, the plan amendment language in the city's zoning code may need to be revised during the implementation phase of this TSP update.

OAR 660-012-0045 requires each local government to amend its land use regulations to implement the TSP. It also requires local government to adopt land use or subdivision ordinance regulations consistent with applicable federal and state requirements, to protect transportation facilities, corridors and sites for their identified functions. This policy is achieved through a variety of measures, including access control measures, standards to protect future operations of roads, and expanded notice requirements and coordinated review procedures for land use applications. Measures also include a process to apply conditions of approval to development proposals, and regulations assuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities, and performance standards of facilities identified in the TSP.



Specifically, the TPR requires:

- The state to prepare a TSP, referred to as the Oregon Transportation Plan (OTP); and
- Counties and cities to prepare local TSPs that are consistent with the OTP.

As the guiding document for local TSPs, the OTP[3] establishes goals, policies, strategies and initiatives that address the core challenges and opportunities facing transportation in Oregon. The goals and policies are further implemented by various modal plans, including the Aviation System Plan, Bicycle and Pedestrian Plan, Freight Plan, Highway Plan, Public Transportation Plan, Rail Plan and the Transportation Safety Action Plan. Each of the OTP's seven goals are defined by more specific policies and strategies:

OTP Goal 1, Mobility and Accessibility, aims to enhance Oregon's quality of life and economic vitality by providing a balanced, efficient, cost-effective and integrated multimodal transportation system that ensures appropriate access to all areas of the state, the nation and the world, with connectivity among modes and places.

- **Policy 1.1: Development of an Integrated Multimodal System.** It is the policy of the State of Oregon to plan and

[3] Oregon Transportation Plan: http://www.oregon.gov/ODOT/TD/TP/OTP.shtml

develop a balanced, integrated transportation system with modal choices for the movement of people and goods.

- **Strategy 1.1.1:** Plan and develop a multimodal transportation system that increases the efficient movement of people and goods for commerce and production of goods and services that is coordinated with regional and local plans. Require regional and local transportation plans to address existing and future centers of economic activity, routes and modes connecting passenger facilities and freight facilities, intermodal facilities and industrial land, and major intercity and intra-city transportation corridors and supporting transportation networks.
- **Strategy 1.1.2:** Promote the growth of intercity bus, truck, rail, air, pipeline and marine services to link all areas of the state with national and international transportation facilities and services. Increase the frequency of intercity services to provide travel options.
- **Strategy 1.1.4:** In developing transportation plans to respond to transportation needs, use the most cost-effective modes and solutions over the long term, considering changing conditions and based on the following:

  - Managing the existing transportation system effectively.
  - Improving the efficiency and operational capacity of existing transportation infrastructure and facilities by making minor improvements to the existing system.
  - Adding capacity to the existing transportation system.
  - Adding new facilities to the transportation system.

- **Policy 1.2: Equity, Efficiency and Travel Choices.** It is the policy of the State of Oregon to promote a transportation system with multiple travel choices that are easy to use, reliable, cost-effective and accessible to all potential users, including the transportation disadvantaged.
  - **Strategy 1.2.1:** Develop and promote inter and intra-city public transportation.
  - **Strategy 1.2.2:** Better integrate, locate, and design passenger and freight multimodal transportation facilities and connections to expedite travel and provide travel options. Locate and design transportation facilities to connect with other modes.
- **Policy 1.3: Relationship of Interurban and Urban Mobility.** It is the policy of the State of Oregon to provide intercity mobility through and near urban areas in a manner which minimizes adverse effects on urban land use and travel patterns and provides for efficient long distance travel.
  - **Strategy 1.3.1:** Use a regional planning approach and inter-regional coordination to address problems that extend across urban growth boundaries.

- **Strategy 1.3.2:** In coordination with affected jurisdictions, develop and manage the transportation network so that local trips can be conducted primarily on the local system and the interstate and statewide facilities can primarily serve intercity movement and interconnect the systems. Develop, maintain and improve parallel roadways, freight rail, transit, bus rapid transit, commuter rail and light rail to provide alternatives to using intercity highways for local trips where possible.

What this means for the Lincoln City TSP Update: *The TSP update will promote the growth of existing and future centers of economic activity, routes and modes connecting passenger facilities and freight facilities, intermodal facilities and industrial land, and major intercity and intra-city transportation corridors and supporting transportation networks. It will also promote the most cost-effective modes and solutions over the long term that are easy to use, reliable, cost-effective and accessible to all potential users, including the transportation disadvantaged.*

OTP Goal 2, Management of the System, aims to improve the efficiency of the transportation system by optimizing the existing transportation infrastructure capacity with improved operations and management.

- **Policy 2.1: Capacity and Operational Efficiency.** It is the policy of the State of Oregon to manage the transportation system to improve its capacity and operational efficiency for the long term benefit of people and goods movement.

  - **Strategy 2.1.1:** Promote transportation demand management and other transportation system operations techniques that reduce peak period travel, help shift traffic volumes away from the peak period and improve traffic flow. Such techniques may include high occupancy vehicle lanes with express transit service, truck-only lanes, van/carpools, park-and-ride facilities, parking management programs, telework, flexible work schedules, peak period pricing, ramp metering, traveler information systems, traffic signal optimization, route diversion strategies, incident management and enhancement of rail, transit, bicycling and walking.

  - **Strategy 2.1.2:** Protect the integrity of statewide transportation corridors and facilities from encroachment by such means as managing access to state highways, limiting interchanges, creating safe rail crossings and controlling incompatible land use around airports, ports, pipelines and other intermodal passenger and freight facilities.

  - **Strategy 2.1.3:** Use advanced traveler information devices, incident management, speed management, improvements to signaling systems and other technologies to extend the efficiency, safety and capacity of transportation systems. Develop protocols and implement methods for alternate routing to respond to incidents.

  - **Strategy 2.1.4:** Enhance efficiency and reduce conflicts among transportation users, for example by reducing bottlenecks and geometric constraints, and improving or removing modal crossings. Provide for a network of arterials and highways to efficiently move goods and services while enhancing safety and community movements on local streets. Provide for signal prioritization and road patterns that support public transit. Support rail reconfiguration and additional tracks that benefit passenger and freight movements.

What this means for the Lincoln City TSP Update: *The TSP update will prioritize travel demand management and transportation system operations techniques that fine tune existing systems and policies over costly major roadway capacity improvements.*

OTP Goal 3, Economic Vitality, promotes the expansion and diversification of Oregon's economy through the efficient and effective movement of people, goods, services and information in a safe, energy-efficient and environmentally sound manner.

- **Policy 3.2 – Moving People to Support Economic Vitality.** It is the policy of the State of Oregon to develop an integrated system of transportation facilities, services and information so that intrastate, interstate and international travelers can travel easily for business and recreation.
  - **Strategy 3.2.2:** In regional and local transportation system plans, support options for traveling to employment, services and businesses. These include, but are not limited to, driving, walking, bicycling, ridesharing, public transportation and rail.
  - **Strategy 3.2.4:** Address scenic values in state, regional and local planning, improvements and maintenance. Support state and federal Scenic Byways and Tour Routes and connections to parks and recreation areas.
  - **Strategy 3.2.5:** Promote tourism via air, bicycles, motor vehicles, rail and ships. Support connections to recreational trails.
- **Policy 3.3 – Downtowns and Economic Development.** It is the policy of the State of Oregon to provide transportation improvements to support downtowns and to coordinate transportation and economic development strategies.
  - **Strategy 3.3.1:** Coordinate private and public resources to provide transportation improvements and services to help stimulate active and vital downtowns, economic centers and main streets.

What this means for the Lincoln City TSP Update: *The TSP update will identify projects that support a prosperous and competitive economy by preserving and enhancing business opportunities, and ensuring the efficient movement of people and goods to recreational, employment, housing and other destinations in Lincoln City.*

OTP Goal 4, Sustainability, seeks to provide a transportation system that meets present needs without compromising the ability of future generations to meet their needs from the joint perspective of environmental, economic and community objectives. This system is consistent with, yet recognizes differences in, local and regional land use and economic development plans. It is efficient and offers choices among transportation modes. It distributes benefits and burdens fairly and is operated, maintained and improved to be sensitive to both the natural and built environments.

- **Policy 4.1 – Environmentally Responsible Transportation System.** It is the policy of the State of Oregon to provide a transportation system that is environmentally responsible and encourages conservation and protection of natural resources.
  - **Strategy 4.1.1:** Practice stewardship of air, water, land, wildlife and botanical resources. Take into account the natural environments in the planning, design, construction, operation and maintenance of the transportation system. Create transportation systems compatible with native habitats and species and help restore ecological processes, considering such plans as the Oregon Conservation Strategy and the Oregon Plan for Salmon and Watersheds. Where adverse impacts cannot reasonably be avoided, minimize or mitigate their effects on the environment. Work with state and federal agencies and other stakeholders to integrate environmental solutions and goals into planning for infrastructure development and provide for an ecosystem-based mitigation process.
  - **Strategy 4.1.2:** Encourage the development and use of technologies that reduce greenhouse gases.
- **Policy 4.3 – Creating Communities.** It is the policy of the State of Oregon to increase access to goods and services and promote health by encouraging development of compact communities and neighborhoods that integrate residential, commercial and employment land uses to help make shorter trips, transit, walking and bicycling feasible. Integrate features that support the use of transportation choices.
  - **Strategy 4.3.1:** Support the sustainable development of land with a mix of uses and a range of densities, land use intensities and transportation options in order to increase the efficiency of the transportation system. Support travel options that allow individuals to reduce vehicle use.
  - **Strategy 4.3.2:** Promote safe and convenient bicycling and walking networks in communities. Fill in missing gaps in sidewalk and bikeway networks, especially to important community destinations such as schools, shopping areas, parks, medical facilities and transit facilities. Enhance walking, bicycling and connections to public transit through appropriate community and main street design. Promote facility designs that encourage walking and biking.
  - **Strategy 4.3.4:** Promote transportation facility design, including context sensitive design, which fits the physical setting, serves and responds to the scenic, aesthetic, historic and environmental resources, and maintains safety and mobility.
  - **Strategy 4.3.5:** Reduce transportation barriers to daily activities for those who rely on walking, biking, rideshare, car-sharing and public transportation by providing: Access to

public transportation and the knowledge of how to use it. Facility designs that consider the needs of the mobility-challenged including seniors, people with disabilities, children and non-English speaking populations.

What this means for the Lincoln City TSP Update: *The TSP update will identify solutions that support the movement of people over vehicles, and that reduce transportation barriers to daily activities for walkers, bikers and public transportation users. The solutions will be environmentally responsible and should fit the physical setting and context of the surrounding land use.*

OTP Goal 5, Safety and Security, aims to plan, build, operate and maintain the transportation system so that it is safe and secure.

- **Policy 5.1 – Safety.** It is the policy of the State of Oregon to continually improve the safety and security of all modes and transportation facilities for system users including operators, passengers, pedestrians, recipients of goods and services, and property owners.
  - **Strategy 5.1.3:** Ensure that safety and security issues are addressed in planning, design, construction, operation and maintenance of new and existing transportation systems, facilities and assets.
- **Policy 5.2 – Security.** It is the policy of the State of Oregon to provide transportation security consistent with the leadership of federal, state and local homeland security entities.
  - **Strategy 5.2.3:** Improve the evacuation and emergency response capabilities of the urban and rural transportation system.

What this means for the Lincoln City TSP Update: *The TSP update will develop projects that ensure the transportation system maintains and improves individual safety and security and maximizes public safety and service access.*

OTP Goal 6, Funding the Transportation System, seeks to create a transportation funding structure that will support a viable transportation system to achieve state and local goals today and in the future.

- **Policy 6.1 – Funding Structure.** It is the policy of the State of Oregon to develop a transportation finance structure that addresses the public funding aspects of all modes and reinforces plan strategies. This structure should include provisions for flexibility in the use of new funding sources and new partnerships to achieve system integration while also protecting transportation funds for transportation purposes.
  - **Strategy 6.1.2:** Develop and maintain adequate resources for demonstrated and proven transportation needs for all transportation modes and jurisdictions.

What this means for the Lincoln City TSP Update: *The TSP update will include an assessment of the level of transportation funding projected to be available through the 20-year planning horizon in comparison to the cost of developing a transportation system that is able to meet the City's needs. Opportunities to establish stable funding sources will be discussed and project prioritization will consider the feasibility of funding.*

Goal 7 – Coordination, Communication and Cooperation

To pursue coordination, communication and cooperation among transportation users, providers and those most affected by transportation activities to align interests, remove barriers and bring innovative solutions so the transportation system functions as one system.

- **Policy 7.1 – A Coordinated Transportation System.** It is the policy of the State of Oregon to work collaboratively with other jurisdictions and agencies with the objective of removing barriers so the transportation system can function as one system.
    - **Strategy 7.1.1:** Examine transportation functions among and within state and local agencies and providers in order to make the delivery of transportation services and facilities more efficient. Consider consolidation of functions where it can improve efficiency, accountability and service delivery.
- **Policy 7.3 – Public Involvement and Consultation.** It is the policy of the State of Oregon to involve Oregonians to the fullest practical extent in transportation planning and implementation in order to deliver a transportation system that meets the diverse needs of the state.
    - **Strategy 7.3.1:** In all phases of decision-making, provide affected Oregonians early, open, continuous, and meaningful opportunity to influence decisions about proposed transportation activities. When preparing and adopting a multimodal transportation plan, modal/topic plan, facility plan or transportation improvement program, conduct and publicize a program for citizen, business, and tribal, local, state and federal government involvement. Clearly define the procedures by which these groups will be involved.
    - **Strategy 7.3.3:** Seek out and facilitate the involvement of those potentially affected including traditionally underserved populations.

What this means for the Lincoln City TSP Update: *The TSP update will offer public involvement opportunities to all stakeholders and residents, and will coordinate with other jurisdictions and agencies to ensure the transportation system limits barriers and functions as one system.*

Why does Lincoln City need an Updated TSP?

The city's current Transportation Master Plan was adopted in 1995. Since then, several regulations and requirements have been integrated or modified in the TPR, OTP, and State Modal Plans and overall driving, walking and biking habits have evolved in the city. In 2009, the City of Lincoln City completed a draft of an update to their 1995 plan to address some of the changes, however, there were several issues needing to be addressed before the plan would be consistent with state plans and regulations. The current effort will use much of this past work to develop a TSP for the City of Lincoln City that brings them into compliance with the TPR and more appropriately serves their transportation needs.

How is the Transportation System Defined?

The following sections summarize the state and local roadway classifications and land use designations for areas of Lincoln City derived from the identified documents. This information ultimately determines the adopted standards, regulations, and policies that apply to the transportation system in Lincoln City.

ODOT Classification for Highway 101 in Lincoln City

OHP Goal 1, Policy 1A (State Highway Classification System) categorizes state highways for planning and management decisions. Within Lincoln City, Highway 101 (aka, US 101) is classified as a Statewide Highway. Statewide Highways typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal. Inside Special Transportation Areas (see Special Designations below), local access may also be a priority.

> ***What this means for the Lincoln City TSP Update:*** *While this policy places importance on the efficient travel of through motor vehicle trips on Highway 101, the policy must still be balanced with other goals and objectives of the Oregon Transportation Plan to ensure its multi-modal intentions are addressed.*

Special Designations: OHP Goal 1, Policy 1B identifies special highway segment designations for specific types of land use patterns to foster compact development on state highways in which the need for appropriate local access outweighs the considerations of highway mobility. Within Lincoln City, a portion of Highway 101 within the Taft district (475 feet north of SW Fleet Avenue to 250 feet south of SW/SE 51st Street) has a Special Transportation Area (STA) designation.

The primary objective of a STA is to provide access to and circulation amongst community activities, businesses, and residences and to accommodate pedestrian, bicycle, and transit movement along and across the highway. While traffic moves through an STA and automobiles may play an important role in accessing an STA, convenience of movement within an STA is focused upon pedestrian, bicycle, and transit modes. STAs look like traditional "Main Streets" and are generally located on both sides of a state highway. Direct street connections and shared on-street parking are encouraged. Local auto, pedestrian, bicycle, and transit movements to the area are generally as important as the through movement of traffic. Because of this, ODOT's mobility targets and design standards in STA's are intended to allow for lower speed operations.

What this means for the Lincoln City TSP Update: *The STA designation is better suited for multi-modal areas adjacent to the highway, allowing for lower speed operations and associated design standards. Additional highway segments in Lincoln City should be considered, such as in the Historic Oceanlake District between 12th Street and 21st Street.*

State Highway Freight System: OHP Goal 1, Policy 1C addresses the need to balance the movement of goods and services with other uses. It states that the timeliness of freight movements should be considered when developing and implementing plans and projects on freight routes. Within Lincoln City, Highway 101 is classified as a Federal Truck Route.

What this means for the Lincoln City TSP Update: *Transportation solutions along Highway 101 through Lincoln City must be accommodating to the Federal Truck Route designation. Federal Truck Routes require 12' travel lanes, with potential for 11' travel lanes within STA's with lower trucks volumes.*

Scenic Byways: OHP Goal 1, Policy 1D addresses the need to preserve and enhance the scenic assets of designated routes. It requires any transportation improvements along designated routes to consider the aesthetics and design elements of the project, along with safety and performance impacts. Within Lincoln City, Highway 101 is classified as a Scenic Byway.

What this means for the Lincoln City TSP Update: *Transportation improvements recommended along Highway 101 through Lincoln City must consider aesthetics and design elements that support the Scenic Byway designation.*

Lifeline Routes: OHP Goal 1, Policy 1E designates certain routes to be maintained for emergency response in the event of an earthquake. In Lincoln City, Highway 101, SE 51st Street and Schooner Creek Road are classified in the ODOT Emergency Operations Plan as Priority 1 Lifeline Routes, considered essential for emergency response within the first 72 hours after an event. There are no other lifeline routes within the city. Seismic Lifeline Routes were originally identified by local emergency coordinators in 1995. Based on the geological analysis available at the time, these routes were determined to most likely be available after a seismic event. The routes were initially used to help assess the need for retrofitting state and local bridges. ODOT is currently in the process of updating the list of designated routes, an effort that is expected to be completed in late 2012.

What this means for the Lincoln City TSP Update: *The City can use the TSP update to designate local lifeline routes to ensure their intended function is considered in system investment and management decisions.*

Lincoln City Classification for Roadways

To manage the roadway network, the city classified the roadways based on a hierarchy according to the intended purpose of each road. From highest to lowest intended usage, the classifications are principal arterials, minor arterial, major collectors, minor collectors and local streets. Roadways with a higher intended usage generally provide more efficient traffic movement (or mobility) through the city, while roadways with lower intended usage provide greater access for shorter trips to local destinations such as businesses or residences.

Principal Arterials are intended to serve as the main travel route through the city. These roadways serve the highest volume of motor vehicle traffic and are primarily utilized for longer distance regional trips. The only roadway in the city classified as a principal arterial is Highway 101.

Minor Arterial Roadways are intended to act as a corridor connecting many parts of the city and serve traffic traveling to and from principal arterial roadways. These roadways provide greater accessibility to neighborhoods, often connecting to major activity generators and provide efficient through movement for local traffic. In Lincoln City, East Devil's Lake Road and 14th Street/West Devil's Lake Road are classified as minor arterials.

Major Collector Roadways often connect the neighborhoods to the minor arterial roadways. These roadways serve as major neighborhood routes and generally provide more direct property access or driveways than arterial roadways. In Lincoln City, N.W. Logan Road, N.W. 39th Street, N.E. Holmes Road/N.W. 30th Street, N.W. 21st Street/N.E. 22nd Street, N.W. Jetty Avenue (between N.W. 21st and N.W. 39th Streets), N.W. Inlet Avenue/N.W. Harbor (between N.W. 6th Drive and N.W. 21st Street), S.W. Ebb Avenue, S.W. 32nd Street, S.E. Fleet Avenue/S.E. Spyglass Ridge Road/S.E. High School Drive/S.E. 48th Place (between S.E. 32nd Drive and Highway 101) and Schooner Creek Road are classified as major collectors.

Minor Collector Roadways provide more direct access to residences and serve limited-through travel in Lincoln City. These roadways are often lined with residences and are designed to serve lower volumes of traffic. In Lincoln City, N.W. 26th Street, N.E. 21st Street (east of Hwy 101), N.E. Mast Avenue/N.E. 11th Street/N. Oar Place (between N. 6th Drive and N. 22nd Street, N.W. 14th Avenue (west of Hwy 101), N. 6th Drive, S.E. 3rd Street, S.E. Port Avenue, S.W. 12th Street (west of Hwy 101), S.W. Coast Ave between S.W. 11th Drive & S.W. Bard/S.W. 24th Street, S.W. Anchor Avenue (between S.W. Bard Road and S.W. 32nd Street), S.W. 50th Street/S.W. Coast Avenue (Taft district), S.W. 51st Street, S.W. 62nd Street and S.W. 63rd Street are classified as minor collectors.

Local Roadways provide more direct access to residences without serving through travel in Lincoln City. These roadways are often lined with residences and are designed to serve lower volumes of traffic with a statutory speed limit of 25 miles per hour.

What this means for the Lincoln City TSP Update: *The functional classification system for the City will be revisited for the TSP update.*

How is the Transportation System Managed?

State Highway Mobility Targets: OHP Goal 1, Policy 1F sets mobility targets for ensuring a reliable and acceptable level of mobility on the highway system. Each intersection along Highway 101 has a mobility target requiring that the highway operate at or below a specified volume to capacity (v/c) ratio. The mobility targets shown in Table 1 are applicable to Highway 101 in Lincoln City (pursuant to Policy 1F, Table 6).

- **Volume to capacity (V/C) ratio:** A decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used (i.e., the saturation) at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and will experience excessive queues and long delays.

Table 1: Highway 101 Intersection Mobility Targets

Highway 101 Segment	Posted Speed Limit / Special Designation	Highway 101 Signalized Intersections	Unsignalized Intersections	
			Highway 101 Approaches	Side Street Approaches to Highway 101
From the North UGB (near Clancy Road) to just east of Logan Road	45 mph/ none	0.80 v/c	0.80 v/c	0.90 v/c
From just east of Logan Road to just north of Fleet Avenue	30 mph/ none	0.90 v/c	0.90 v/c	0.95 v/c
From just north of Fleet Avenue to just south of 51st Street	30 to 35 mph/ STA	0.95 v/c	0.95 v/c	1.00 v/c
From just south of 51st Street to just south of 63rd Street	30 to 35 mph/ none	0.90 v/c	0.90 v/c	0.95 v/c
From just south of 63rd Street to the south UGB (just north of 64th Street)	45 mph/ none	0.80 v/c	0.80 v/c	0.90 v/c

Source: 1999 Oregon Highway Plan, Policy 1F, Table 6

OHP Action 1F.3, of Policy 1F allows local jurisdictions to consider alternate mobility standards for state highways where it would be infeasible to meet the standards listed in Table 1 above. The alternative standards shall be clear and objective and must be related to v/c ratios. The standards must demonstrate that it would be infeasible to meet the highway mobility standards listed in Table 1 above and must be adopted as part of the local TSP. In addition, the TSP shall include all feasible actions for:

- Providing a network of local streets, collectors and arterials to relieve traffic demand on state highways and to provide convenient pedestrian and bicycle ways;
- Managing access and traffic operations to minimize traffic accidents, avoid traffic backups on freeway ramps, and make the most efficient use of highway capacity;
- Managing traffic demand, where feasible, to manage peak hour traffic loads on state highways;
- Providing alternative modes of transportation; and
- Managing land use to limit vehicular demand on state highways consistent with the Land Use and Transportation Policy (1B).

The TSP shall include a financially feasible implementation program and shall demonstrate strong public and private commitment to carry out the identified improvements and other actions. The alternate highway mobility standards will become effective only after the Transportation Commission has adopted them.

What this means for the Lincoln City TSP Update: *System performance for Highway 101 will be measured, in part, using the adopted mobility targets. The TSP update will evaluate the need for adopting alternate mobility targets for Highway 101 if there are no feasible project alternatives identified to meet the existing mobility targets.*

City and County Mobility Standards: The city of Lincoln City and Lincoln County do not have adopted mobility standards for intersections under their jurisdiction. The Draft Lincoln City TMP[4] identifies Level of Service (LOS) D as the minimum performance standard for both signalized and unsignalized intersections under Lincoln City jurisdiction and therefore will be considered as the city standard for the Lincoln City TSP update. The Lincoln County[5] TSP applied the ODOT mobility target for District/Local Interest Roads (0.95 v/c) to intersections under county jurisdiction. This standard will be applied to intersections along East Devil's Lake Road, 14th Street/West Devil's Lake Road, NW Logan Road, and 51st Street for the Lincoln City TSP update.

What this means for the Lincoln City TSP Update: *City street performance will be evaluated in part, using a mobility standard requiring operation of LOS D or better. The City may wish to revisit the mobility standard identified in the Draft TMP and customize it to meet the needs of the City.*

Access Management on Highway 101: The Oregon Access Management Rule[6] (OAR 734-051) attempts to balance the safety and mobility needs of travelers along state highways with the access needs of property and business owners. ODOT's rules manage access to the state's highway facilities in order to maintain highway function, operations, safety, and the preservation of public investment consistent with the policies of the 1999 OHP. Access management rules allow ODOT to control the

[4] Draft Lincoln City TMP, p.4-1, June 2009.
[5] Lincoln County Transportation System Plan, Page 3-7
[6] Access Management Rule: http://arcweb.sos.state.or.us/rules/OARS_700/OAR_734/734_051.html

issuing of permits for access to state highways, state highway rights of way and other properties under the State's jurisdiction.

In addition, the ability to close existing approaches, set access spacing standards and establish a formal appeals process in relation to access issues is identified. These rules enable the State to direct location and spacing of intersections and approaches on state highways, ensuring the relevance of the functional classification system and preserving the efficient operation of state routes.

OHP Goal 3, Policy 3A and OAR 734-051 set access spacing standards for driveways and approaches to the state highway system.[7] The standards are based on state highway classification and differ based on posted speed. The applicable standards for Highway 101 through Lincoln City can been seen in Table 2.

Table 2: Highway 101 Access Spacing Standards

Highway 101 Segment	Posted Speed Limit	Minimum Intersection Spacing
From the North UGB (near Clancy Road) to just east of Logan Road	45 mph	800 feet
From just east of Logan Road to just south of 63rd Street	30 to 35 mph	500 feet
From just south of 63rd Street to the south UGB (just north of 64th Street)	45 mph	800 feet

Source: 1999 Oregon Highway Plan, Appendix C Revisions to Address Senate Bill 264

What this means for the Lincoln City TSP Update: *ODOT access spacing standards for Highway 101 should be incorporated into the TSP, along with supporting policies that work towards meeting the access spacing standards in Table 2.*

Access Management on Local Roadways: The city of Lincoln City and Lincoln County do not identify minimum intersection spacing standards for driveways or public roadways under their jurisdiction.

What this means for the Lincoln City TSP Update: *The TSP update will develop access spacing standards for streets in Lincoln City. Access spacing standards can help increase the safety of streets by creating an environment that matches the street functional classification and forestalling costly major capacity improvements.*

Major Projects: OHP Goal 1, Policy 1G requires maintaining performance and improving safety by improving efficiency and management before adding capacity. The intent of policy 1G and Action 1G.2 is to ensure that major improvement projects to state highway facilities have been through a planning process that involves coordination between state, regional, and local stakeholders and the public, and that there is substantial support for the proposed improvement.

[7] ODOT Access Management Standards (Appendix C): www.oregon.gov/ODOT/TD/TP/OHP_AM.shtml

> ***What this means for the Lincoln City TSP Update:*** *The TSP update will consider project alternatives that improve or manage the existing transportation system before implementing higher cost street capacity enhancement projects.*

Projects off Highway 101: OHP Goal 2, Policy 2B establishes ODOT's interest in projects on local roads that maintain or improve safety and mobility performance on state roadways, and supports local jurisdictions in adopting land use and access management policies.

> ***What this means for the Lincoln City TSP Update:*** *The TSP will include sections describing existing and future land use patterns, access management and implementation measures, and will consider solutions that reduce the need for local trips on Highway 101.*

Traffic Safety: OHP Goal 2, Policy 2F identifies the need for projects in the state to improve safety for all users of the state highway system through engineering, education, enforcement, and emergency services. One component of the TSP is to identify existing crash patterns and rates and to develop strategies to address safety issues. Proposed projects will aim to reduce the vehicle crash potential and/or improve bicycle and pedestrian safety by providing upgraded facilities that meet current standards.

> ***What this means for the Lincoln City TSP Update:*** *The TSP update will develop projects that ensure the transportation system maintains and improves individual safety and security by maximizing the comfort and convenience of walking, biking and transit transportation options, public safety and service access.*

Alternative Passenger Modes: OHP Goal 4, Policy 4B, requires that highway projects encourage the use of alternative passenger modes to reduce local trips. The TSP will also consider ways to support and increase the use of alternative passenger modes to reduce trips on highways and other facilities.

> ***What this means for the Lincoln City TSP Update:*** *The TSP update will incorporate the recommended improvements from the Lincoln City Walking and Biking Plan and from Regional Transit Studies, and will consider additional solutions that will enhance multi-modal travel in Lincoln City.*

Transportation Demand Management: OHP Goal 4, Policy 4D, encourages efficient use of the state transportation system through investment in transportation demand management strategies.

> ***What this means for the Lincoln City TSP Update:*** *The TSP update will consider transportation demand management strategies to create greater mobility, reduce auto trips, make more efficient use of the roadway system, and minimize air pollution.*

Projects on Highway 101: The Highway Design Manual[8] (HDM) provides uniform design standards and procedures for ODOT and is in general agreement with the 2001 American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and*

[8] ODOT Highway Design Manual: http://www.oregon.gov/ODOT/HWY/ENGSERVICES/hwy_manuals.shtml

Streets. Some key areas where guidance is provided are the location and design of new construction, major reconstruction, and resurfacing, restoration or rehabilitation (3R) projects. The HDM should be used for all projects on Highway 101 in Lincoln City to determine design requirements, including the minimum required volume to capacity ratios for use in the design of highway projects.

> ***What this means for the Lincoln City TSP Update:*** *System performance of Highway 101 improvement projects will be measured, in part, using the HDM v/c ratios. While HDM standards must be applied to ODOT facilities, design exceptions can be granted to those standards where conditions justify such action in order to balance the policies and objectives of the Oregon Transportation Plan.*

Oregon Bike and Pedestrian Plan: The provision of safe and accessible bicycling and walking facilities in an effort to encourage increased levels of bicycling and walking is the goal of the Oregon Bicycle and Pedestrian Plan, which is an element of the Oregon Transportation Plan. The plan identifies actions that will assist local jurisdictions in understanding the principals and policies that ODOT follows in providing bike and walkways along state highways. In order to achieve the plan's objectives, the strategies for system design are outlined, including:

- Providing bikeway and walkway systems and integrating with other transportation systems
- Providing a safe and accessible biking and walking environment
- Developing educational programs that improve bicycle and pedestrian safety

The Policy & Action section contains background information, legal mandates and current conditions, goals, actions and implementation strategies ODOT proposes to improve bicycle and pedestrian transportation. The Bikeway & Walkway Planning Design, Maintenance & Safety section assists ODOT, cities and counties in designing, constructing and maintaining pedestrian and bicycle facilities. Design standards are recommended and information on safety is provided.

> ***What this means for the Lincoln City TSP Update:*** *The TSP update will incorporate the recommended improvements from the Lincoln City Walking and Biking Plan. The TSP update will also identify additional improvements that could enhance safety, increase connectivity and provide seamless connections between walking and biking facilities and other travel modes in Lincoln City.*

Other Background Information for the TSP Update

The following sections summarize additional background information or guidance documents that will be used in updating the Lincoln City TSP.

Public Involvement: OHP Goal 2, Policy 2D requires that citizens, businesses, regional and local governments, state agencies, and tribal governments have opportunities to have input into decisions regarding proposed policies, plans, programs, and improvement projects that affect the state highway system.

What this means for the Lincoln City TSP Update: *The TSP update will offer public involvement opportunities to all stakeholders and residents.*

Environmental Resources: OHP Goal 5, Policy 5A requires that the design, construction, operation, and maintenance of the state highway system should maintain or improve the natural and built environment including air quality, fish passage and habitat, wildlife habitat and migration routes, sensitive habitats (i.e. wetlands, designated critical habitat, etc.), vegetation, and water resources where affected by ODOT facilities.

What this means for the Lincoln City TSP Update: *The TSP update will consider the potential for environmental impacts of all proposed solutions.*

Lincoln City Comprehensive Plan (1995): The Lincoln City Comprehensive Plan was last amended in 1995. It includes transportation goals and policies that were implemented by the 1995 Transportation Master Plan and are still relevant for this TSP update. The transportation section also identifies safety and operational concerns on Highway 101 including conflicts between local users, visitors, and through traffic; lack of alternate routes; lack of connections between neighborhoods and services; and lack of pedestrian and bicycle facilities. The overall transportation goal in the Comprehensive Plan is to "provide a safe, convenient and rapid transportation network to facilitate the movement of goods and people." The policies related to transportation include:

- Roadway Development
  1. Identify an overall improvement strategy for Lincoln City's "Main Street" which will lead to better utilization of the roadway, reduced traffic congestion and conflicts, and enhanced local traffic circulation.
  2. Identify, and develop bicycle routes through and around town that are safe, attractive, and user-friendly.
  3. Identify suitable alternate north-south local "reliever" routes to Hwy 101.
  4. Develop improved east-west street connections with neighborhood needs and the direction of commercial in mind.
  5. Develop a functional classification plan for all streets in the city.
  6. Identify short-term improvements at critical intersections and along street segments, to solve pressing current traffic safety and congestion problems. Consider temporary test trials.
- Pedestrian Facilities
  1. Develop a plan for improved pedestrian crossings of 101, including signal treatments, with some crosswalk relocation and development.

2. Develop criteria for further sidewalk development along the streets in the city, incorporating federal guidelines for the handicapped.

3. Develop an off-street pedestrian trail system, perhaps integrated with a bike trail system, to supplement on-street provisions.

- Bicycle Facilities

1. Identify and develop a system of off-Hwy 101 bicycle routes through and around town that are safe, attractive and user-friendly. Sign the Oregon Coast Bike Route.

2. Modify and update the 1987 City Bicycle Master Plan to reflect the latest information on traffic volumes, travel patterns, and new development locations in the city.

3. Identify a strategy for the development of bicycle repair and storage facilities in convenient locations to encourage bicycle travel in the city.

4. Investigate the potential for hostel-type accommodations in conjunction with the Oregon Coast Bike Route.

- Street Lighting

1. Develop criteria for identifying those street segments which warrant new or improved lighting.

2. Identify a strategy for jurisdictional responsibility for street lighting operations and maintenance.

- Public Transit

1. Identify the feasibility of instituting public transit service in the city, addressing the needs of a varied market (general residents, elderly, handicapped, visitors, intercity travel, etc.)

2. Develop a basic framework for a transit system in the city (routes, service levels, ridership, and capital, operating, and maintenance costs).

3. Evaluate the appropriate role of the existing cab and senior citizens' bus service in handling future public transit needs.

- Travel Demand Reduction

1. Investigate strategies for reducing vehicle trip-making in the city other than public transit--for example: carpool/vanpool incentives and flex-time applications.

- Off-Street Parking Development

1. Refine the public off-street parking development plan along Hwy 101 through the city.

2. Develop improved beach access parking facilities in the city.

3. Identify a strategy for gradual and timely replacement of on-street parking along Hwy 101 associated with future roadway improvements.

- Transportation Financing

1. Identify financial strategies and resources that will allow long-term financing of transportation improvements in the city.

2. Identify the appropriate roles of System Development Charges (SDCs) and Local Improvement Districts (LIDs) in transportation improvement financing.

3. Develop a Capital Improvement Program for Transportation needs that can be implemented with available funding sources.

- Public Involvement

1. Develop a Transportation Master Plan that addresses general public issues and concerns related to transportation system development in the city.

2. Evaluate and adopt those strategies and policies which most closely reflect the community's views and needs, while accommodating the state's need to move traffic safely and efficiently through the community.

3. Appoint members to a Regional Task Force to study regional transportation issues: a) to identify problem areas, b) to evaluate mutually acceptable solutions, and c) to coordinate efforts to achieve them.

4. Monitor the impact and effectiveness of the Transportation Master Plan as it is implemented.

The transportation policies in the Comprehensive Plan do not refer to the "string of pearls" concept, which was the result of a more recent visioning process for Lincoln City. In addition, there may be other policies in this section that do not reflect the most current efforts of the city to plan for the future transportation network. As policy language is developed for the TSP update, it will be necessary to revisit the Comprehensive Plan policies and make amendments to ensure consistency in the two documents. This assessment will be done during the implementation phase of the TSP update project.

What this means for the Lincoln City TSP Update: *The Comprehensive Plan may need to be amended at the end of the project to implement the TSP recommendations. Recommended amendments to policies/ordinances are commonly included in the appendix of the TSP.*

Lincoln City Municipal Code: The Lincoln City Municipal Code regulates land use within the community, including subdivisions, design standards, and procedural requirements. Sections of the code that are relevant to the TSP update are summarized below. During the implementation phase of the TSP update, these are the sections of the code that may need to be revised in order to be consistent with and implement the goals and policies identified in the plan.

- Title 12 - STREETS, SIDEWALKS AND PUBLIC PLACES: This title regulates the use, maintenance, and improvement of streets, sidewalks, and public places.
- Chapter 12.28 – VEHICULAR ACCESS AND CIRCULATION: This chapter includes local standards related to access to Highway 101 as well as other city streets, general requirements for on-site circulation for vehicles and pedestrians (requiring these to be adequate to serve the expected traffic on site), and driveway design standards.
- Title 16 – SUBDIVISIONS: This title provides standards for the subdivision of property.
- Chapter 16.12 – DESIGN STANDARDS: This chapter includes a variety of transportation facility standards, including:
  - Requirements for connectivity/continuity of local streets (16.12.020 and 16.12.060);
  - Right-of-way and pavement width requirements by street functional classification (16.12.030) – these do not specify how the required paved width must be striped or utilized (i.e., travel lanes, bike lanes, sidewalks, etc.);
  - Cul-de-sac, roadway and intersection design and engineering standards (16.12.050, 16.12.070, 16.12.100 and 16.12.120);
  - Alley requirements for commercial and industrial districts (16.12.150);
  - Block size standards (16.12.160 and 16.12.170); and
  - Standards that allow the planning commission to require pedestrian ways in certain circumstances (16.12.200).
- Chapter 16.12 – IMPROVEMENTS: This chapter identifies infrastructure improvements required of subdivisions, including streets built to city standards and sidewalks on both sides of the street built to city standards.
- Title 17 – ZONING: The majority of this title is composed of chapters dedicated to the requirements of specific zoning districts. Each zone identifies the land uses permitted and site development requirements (e.g., lot size and dimensions, building height) for property in the zone. In some zones (for example, R-1 and R-M), transportation facilities are not included as allowed uses; in other zones (Nelscott Plan District), transportation facilities are permitted outright. During the implementation phase of this TSP update, it may be useful to identify the applicability of transportation uses in each zone.

Chapters and sections applicable to transportation are summarized below.

- Chapter 17.56 - OFF-STREET PARKING AND LOADING REGULATIONS: Off-street parking and loading regulations for all zones are contained in Chapter 17.56; however, a few chapters for specific districts or development types include minor modifications to these standards. Neither this chapter nor the rest of the code appear to include requirements related to bicycle parking.

- Chapter 17.74 - COMMERCIAL DESIGN STANDARDS: In addition to the requirements of the specific zoning district, commercial and mixed use development in the General Commercial and Recreation Commercial zones is subject to additional design standards. These standards address issues including:
  - Building setbacks, orientation / parking location, and pedestrian circulation, providing a variety of options for site configuration that provide for pedestrian connections from the sidewalk (17.74.060);
  - Conformity with the TSP when transportation and streetscape improvements are required for new development (17.74.090);
  - Requirements for pedestrian spaces with pedestrian amenities (17.74.100);
  - Minor modifications to the parking standards in Chapter 17.56 to allow on-street parking to count towards requirements (17.74.110); and
  - Landscaping; lighting; and building design.

Several of the city's special districts have special standards related to transportation.

- The Nelscott Plan District (17.34) includes special design standards related to block layout (17.34.080); requirements for conformity with the TSP when transportation and streetscape improvements are required for new development (17.34.100); requirements for pedestrian spaces with pedestrian amenities (17.34.110); modifications to off-street parking and circulation standards (17.34.120); a requirement to provide a continuous pedestrian system conforming to city standards (17.34.130); and landscaping, lighting, and building design standards.
- The Taft Village Core Zone (17.45) includes modifications to parking standards that are specific to the zone (17.45.080).
- The Oceanlake Plan District (17.50) is similar to the Nelscott Plan District, and includes special design standards related to block layout, alleys, and connections to public parking facilities (17.50.080); requirements for conformity with the TSP when transportation and streetscape improvements are required for new development (17.50.100); requirements for pedestrian spaces with pedestrian amenities (17.50.110); modifications to off-street parking and circulation standards (17.50.120); a requirement to provide a continuous pedestrian system conforming to city standards (17.50.130); and landscaping, lighting, and building design standards.

As described previously, the TPR includes requirements for local government land use regulations to implement the TPR. While a full audit of TPR compliance is not part of this phase of the TSP update, this section indicates where updates may be needed during of the future implementation phase.

- Bike Parking Requirements: The TPR requires that certain uses provide for bicycle parking. The current code does not appear to address bicycle parking. This will likely need to be included in Chapter 17.56, which addresses off-street parking.
- Pedestrian and Bicycle On-Site Circulation: The TPR requires that certain types of development, including subdivisions and multi-family and commercial development, provide for safe and convenient bicycle and pedestrian access to nearby destinations including residential areas, transit stops, and neighborhood activity centers. While the existing code includes requirements related to on-site pedestrian circulation for subdivisions, commercial and mixed use development in certain zones, the requirements generally only pertain to connections from entrances to the public sidewalk and do not provide for connections to other key destinations that may be nearby. These standards (including sections 16.12.200, 17.74.060, and 17.50.130) may need to be modified to fully meet TPR requirements. Commercial development in the Professional Campus (PC) zone (Chapter 17.24) is not subject to these requirements; this may need to be remedied. In addition, there do not appear to be standards related to on-site pedestrian and bicycle circulation for multi-family development. For TPR compliance, this may need to be added to Chapter 17.20, which contains standards for the Multiple-Family Residential (R-M) Zone.
- Requirements for Bikeways and sidewalks: The TPR mandates that bikeways be required along arterials and major collectors. The standards in the existing code do not specify when bike facilities are required on street cross-sections. This will presumably be incorporated into the updated TSP; however, a reference from the code (for example, in section 16.12.030) may be necessary. The TPR mandates that sidewalks be required along arterials, collectors, and most local streets in urban areas. The existing code specifies that sidewalks must be installed along both sides of the street in a new subdivision (section 16.16.060), but does not require sidewalks otherwise, and does not reference the TSP for widths. Amendments to the code to address this more fully may be needed.

What this means for the Lincoln City TSP Update: *The Municipal Code may need to be amended at the end of the project to implement the TSP recommendations.*

Lincoln City Economic Opportunities and Buildable Land Needs Assessment: Chapter 1 of this report describes the buildable land inventory that was conducted in 2005 in order to assess the amount of developable land, for each land use zone, available within the city and it's urban growth boundary (UGB). The summary indicates there are approximately 610 buildable acres of residential land and 93 buildable acres of non-residential land within the city limits and UGB.

Chapter 2 of the report examines whether existing buildable lands within the city and UGB will be able to accommodate anticipated demands for the 20-year planning horizon (to the year 2025). Generally, "the City of Lincoln City has adequate identifiable residential capacity to accommodate its

20-year population and dwelling unit forecast, but with very little excess capacity." The report also indicates that any change in the availability of buildable land or related residential capacity could trigger a need to expand the UGB. The projection of non-residential lands needs indicates that some existing buildable lands may need to be rezoned for commercial or industrial uses in order to accommodate future demand. The report concludes that, "While the overall land supply [within the UGB] appears to be adequate in aggregate, a significant portion of the buildable lands inventory is currently un-served by utilities, with the ability to serve this area in question."

Growth management strategies in Chapter 3 are based on these land supply assumptions and include new Comprehensive Plan policy language and recommended actions to ensure logical and efficient use of available lands through the 20-year planning horizon. This section recommends new policy language for the Transportation section of the Comprehensive Plan that is intended to address TPR requirements (OAR 660-012-0060) for zone changes and plan amendments. However, it does not appear this language was ever adopted into the Comprehensive Plan.

The final section of this report outlines economic goals and strategies intended to achieve a 20-year economic development vision. Those goals and strategies that may have implications for the TSP update process are:

- Establish a "string of pearls" pattern along the commercial strip in Lincoln City (Highway 101) that links vibrant commercial strips with multi-modal transportation corridors, including public transit options.
- Rezone some single-family areas to multi-family, allow accessory dwelling units and general increase the housing unit density.

> ***What this means for the Lincoln City TSP Update:*** *The information in the buildable land inventory will be used to identify likely areas for future growth within the city and UGB, which in turn will be used to estimate future traffic levels and needed transportation improvements.*

Lincoln City Wastewater Facilities Plan: The plan estimated that over 27 percent of the residences in the area are used seasonally as vacation rentals or as second homes. The seasonal occupation typically occurs during holidays and on weekends. It estimated that there are over 2,500 units for transient lodging provided in the area and over 1,300 seasonal homes, with a total potential transient population of 8,754 (assuming 100 percent occupancy). This estimate did not include day-trippers that will not spend the night in the city.

Future population estimates for Lincoln City were developed using the State of Oregon Office of Economic Analysis average annual growth rates shown in Table 3. Using the growth rates, the plan estimated that the population for the Lincoln City UGB would be 11,090 by 2022, about 12,500 by 2035 and over 14,000 by 2050.

Table 3: Population Growth Rates Assumed in the Wastewater Facilities Plan

Year	Average Annual Growth Rate
2001 - 2005	1.29%
2006 - 2010	1.21%
2011 - 2015	1.18%
2016 - 2020	1.12%
2021 - 2025	1.04%
2026 - 2030	0.95%
2031 - 2035	0.87%
2036 - 2050	0.81%

Source: Lincoln City Wastewater Facilities Plan

What this means for the Lincoln City TSP Update: *The average annual growth rates shown in Table 3 were referenced when the future population estimates for Lincoln City were developed for the TSP update.*

Pending Land Use Actions: The following is a summary of approved subdivisions that have not yet been developed or are partially developed. This information can be used to more accurately estimate the density and type of future development in these areas, which in turn will be helpful in projecting future traffic levels and resulting transportation improvement needs.

- The Villages at Cascade Head - a new 550-acre subdivision north of Lincoln City on East Devil's Lake Boulevard. The original approval included 1,829 new units in single and multi-family format. To date, 78 lots have been platted and are intended for attached single-family housing; several homes have been completed but the majority of lots do not have improvements. The remaining area has not been platted.
- Lincoln Palisades - a new subdivision north of Lincoln City off Logan Road via Highway 101. The first two phases of this subdivision included 101 platted lots intended for single-family housing, most of which have been developed. The next approved phases (3-7) include 93 additional lots which are currently unrecorded and unimproved. The land use approval for Phases 3-7 will expire in June 28, 2012, unless the final plat for Phase 3 is submitted by that date. The phasing plan also indicated "future phases" of development on 3.4 acres of adjacent land.
- Hunter's Highland - approximately 3-acre subdivision south of Lincoln City on SW Dune Avenue. The subdivision includes 17 platted lots for single-family housing with one pre-existing home. The remaining lots are undeveloped.

- Resort at Bayview - south of central Lincoln City and north of Schooner Creek Road. This subdivision includes 73 platted lots intended for single-family housing, six of which have been developed.
- Olivia Beach - a new “coastal community” just south of central Lincoln City along SW Coast and Anchor Avenues. The approval included 89 platted lots in two phases intended for single-family housing; 25 lots remain undeveloped.
- Garden Estates - located north of central Lincoln City between Highway 101 and Devil’s Lake along NE Holmes Road. Approval included 44 platted lots, 18 of which remain undeveloped.
- The Cove at Lincoln City - a new subdivision located east of Highway 101 between 16th and 19th Avenues. The subdivision approval included a total of 60 lots intended for attached single-family housing in groupings of two. Six lots have been recorded and developed; a second final plat (10 lots) has been submitted and is under review.
- The Pointe - south of the city center and west of Highway 101. The subdivision was approved for seven single-family lots and one public/open space lot to be donated to the city. The final plat is currently under review.

What this means for the Lincoln City TSP Update: *The pending land use actions will be used to more accurately estimate the density and type of future development in these areas of Lincoln City.*

Appendix A: Applicable Plans and Policies

The following plans and policies were reviewed for the Lincoln City TSP Update:

State of Oregon

- Transportation Planning Rule (OAR 660-012), amended December 2011
- Oregon Statewide Planning Goals, amended February 2005
- Oregon Access Management Rule (OAR 734-051), amended December 2011
- Oregon Transportation Plan, September 2006
- 1999 Oregon Highway Plan, amended December 2011
- ODOT Highway Design Manual, revised June 2011
- Oregon Bicycle and Pedestrian Plan, June 1995

City of Lincoln City

- Draft Lincoln City Transportation Master Plan, 2009
- Lincoln City Comprehensive Plan, March 1995
- Lincoln City Municipal Code, February 2012
- Lincoln City Economic Opportunities and Buildable Land Needs Assessment, June 2006
- Pending Land Use Proposals in Lincoln City, as of December 2011
- Lincoln City Wastewater Facilities Plan, July 2003

Lincoln County

- Lincoln County Transportation System Plan, October 2007

(This page intentionally left blank)

Section D

Memo 3: Population and Employment Forecasts

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

Technical Memorandum #3 – Final DRAFT

DATE: June 2, 2012

TO: Lincoln City TSP Update Project Management Team

FROM: Matt Hastie and Becky Hewitt, Angelo Planning Group

SUBJECT: **Lincoln City Transportation System Plan Update**
Population and Employment Forecasts

This memorandum summarizes population and employment projections for the City of Lincoln City to be used in updating the city's Transportation System Plan (TSP). These projections will be used to prepare a set of land use forecasts that will in turn be used to estimate future travel demand and traffic levels within the city to assess future traffic conditions and the potential need for transportation improvements.

Population and Housing Forecasts

A variety of methods can be used to forecast future population growth and several different forecasts have been prepared for different planning projects for the city during the past decade. For planning purposes, and specifically for evaluations of possible urban growth boundary amendments, the Oregon Department of Land Conservation (DLCD) requires counties and the cities within them to prepare a set of "coordinated population forecasts." Counties are tasked with preparing these forecasts and coordinating with their cities in doing so. If a county has not prepared a set of coordinated forecasts within the past 10 years, DLCD requires the following "safe harbor" approach to preparing a 20-year population forecast for a city detailed in Oregon Revised Statute (ORS) 195.034.

- Use population growth rates established for the county by the Oregon Office of Economic Analysis in its most recent state and county forecasts.
- Use the most recent population estimate prepared by the Portland State University Population Research Center as the assumed current population of the city.
- Assume the city's share of county population will remain the same during the forecast period. Use current city and county population estimates to calculate the current share of population.

The forecast we have prepared utilizes this methodology and also describes population growth in Lincoln City and Lincoln County during the past 20 years as a basis for comparison to the 20-year future forecast.

Historic Population Growth

Historical (20-year) population growth is summarized in Tables 1 and 2. Between 1990 and 2010 the county grew by an average rate of 0.9% per year, while population in the city increased by an average of 1.5% per year. The city's growth rate was higher than the statewide average while the county rate was lower. Growth in the 1990s was much faster than between 2000 and 2010, both for the city and for the county as a whole. City growth averaged 2.3% per year during the first period but only 0.7% per year during the latter period. Average annual county growth was 1.4% and 0.4%, respectively during the same two periods. Table 1 also shows the city's share of county population during this period. During the 1990s, the city's share of population increased from 15.2% to 16.7%, a relative increase of about 10%. However, between 2000 and 2010, the city's share increased much more gradually from 16.7% to 17.2%, a relative increase of only 3%.

Table 1. Population Change, Oregon, Lincoln County and Lincoln City, 1990 – 2010

Area	**Population**			**Change 1990-2010**		
	1990	*2000*	*2010*	*Number*	*Percent*	*AAGR*
U.S.	248,709,873	281,421,906	308,745,538	60,035,665	24%	1.1%
Oregon	2,842,321	3,421,399	3,831,074	988,753	35%	1.5%
Lincoln County	38,889	44,479	46,034	7,145	18%	0.8%
Lincoln City	5,903	7,437	7,935	2,032	34%	1.5%

Source: US Census, Portland State University Population Research Center; growth rates calculated by APG

* AAGR = Average Annual Growth Rate. For these estimates, AAGR is calculated as the average rate, compounded each year – i.e., each year the population grows by another x%. This differs from an average annual growth rate calculated by dividing the entire amount of growth in a given period by the number of years in that period.

Table 2. Annual Population Growth, Lincoln County and Lincoln City, 1990-2010

Year	**Lincoln County**	**Lincoln City**	**Percent of County**
1990	38,889	5,903	15.2%
2000	44,479	7,437	16.7%
2001	44,650	7,420	16.6%
2002	44,700	7,420	16.6%
2003	45,000	7,420	16.5%
2004	44,400	7,470	16.8%
2005	44,405	7,615	17.1%
2006	44,520	7,615	17.1%
2007	44,630	7,615	17.1%
2008	44,713	7,875	17.6%
2009	44,700	7,930	17.7%
2010	46,135	7,935	17.2%
AAGR 1990-2010*	0.9%	1.5%	
AAGR 2000-2010*	0.4%	0.7%	
AAGR 1990-2000*	1.4%	2.3%	

Source: US Census, Portland State University Population Research Center; growth rates calculated by APG

* AAGR = Average Annual Growth Rate. For these estimates, AAGR is calculated as the average rate, compounded each year – i.e., each year the population grows by another x%. This differs from an average annual growth rate calculated by dividing the entire amount of growth in a given period by the number of years in that period.

County-wide Population Projections

The Oregon Office of Economic Analysis produces and regularly updates future population projections for the State of Oregon and its counties. Table 2 summarizes future forecasts for Lincoln County, last updated in 2005.

Table 3. Population Forecasts, 2000-2040, Oregon and Lincoln County

Area Name	2000	2005	2010	2015	2020	2025	2030	2035	2040
Oregon	3,436,750	3,618,200	3,843,900	4,095,708	4,359,258	4,626,015	4,891,225	5,154,793	5,425,408
Lincoln County	44,600	45,365	46,945	48,776	50,379	52,039	53,710	55,364	57,247

Source: Oregon Office of Economic Analysis

Table 4. Forecasted Population Growth Rates, 2000-2040, Oregon and Lincoln County

Area Name	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040
Oregon	1.03%	1.21%	1.27%	1.25%	1.19%	1.11%	1.05%	1.02%
Lincoln County	0.34%	0.68%	0.77%	0.65%	0.65%	0.63%	0.61%	0.67%

Source: Oregon Office of Economic Analysis

Future Lincoln City Population Projections

For the purposes of the TSP Update, land use forecasts are needed for the area within the city's urban growth boundary (UGB), which extends beyond the city limits. As a result, population projections also are needed for this entire area. Current population estimates and projected future growth rates for the area between the city limits and UGB are not currently available. However, in preparing the city's Wastewater Master Plan in 2004 and 2005, estimates of current population and future projections were prepared for the entire UGB. At that time, the population within the UGB was estimated at 8,557 for the year 2000. In 2010, the estimated UGB population was 8,969, or approximately 113% of the population within the city limits. In projecting future UGB population, the Wastewater Master Plan assumed that this ratio would continue to hold for the remainder of the planning period. For the purposes of the TSP projections, we are making a similar assumption using the 2010 ratio.

Table 5 summarizes future projections for Lincoln City, including the population within the city limits and UGB for the forecast period for the TSP (2013-2035). Consistent with the safe harbor approach identified in ORS 195.034, these projections assume the average annual growth rates from the Oregon Office of Economic Analysis, the most current (2011) population estimate for Lincoln City, the same continuing share of population within the county and a similar ratio of population for the area within the UGB as compared to the population within the city limits. While we have assumed the same share of county population in the future per the state's safe harbor approach, it should be noted that

Lincoln City's share of County population has increased during the past two decades, from 15.2% in 1990 to 16.7% in 2000 and 17.2% in 2010.

Table 5. Population Projections, 2013-2035, Lincoln County, Lincoln City and Lincoln City UGB

Year	Lincoln County	Lincoln City	Lincoln City UGB
2013	48,031	8,261	9,505
2025	52,039	8,950	10,116
2035	55,364	9,522	10,763

Source: Oregon Office of Economic Analysis for County projections; APG for City and UGB projections

Demographic Conditions

Based on 2010 US Census data, the population of Lincoln City is roughly 80% white non-Hispanic, 13% Hispanic, 4% Native American, and 2% Asian. More than 20% are age 65 and over, while roughly 18% are under age 18. The average household size is 2.06, below the state average. The median household income is just under $27,000, well below the state average. Nearly 23% of the population is below the poverty level, compared to 14% statewide. There were a total of 6,025 housing units in Lincoln City as of 2010; of these, over 30% are multi-family units. Just over half (51%) of occupied housing units are owner-occupied, with a median home value of $232,900 as of 2010.[1]

Housing Unit Forecasts

The City of Lincoln City conducted a housing needs assessment and economic opportunities analysis in 2005. As part of that project, consultants Johnson Gardner (now Johnson Reid) estimated future needed housing units by type of structure (single family detached units, duplexes, multi-family units and manufactured home parks). These projections covered the period from 2005 through 2005 and relied on a combination of information related to future population projections; analysis of future demographic indicators (age, income and size of household) that affect the size and type of housing needed; and an assumed average household size. Johnson Gardner assumed an average household size of 1.8 persons per housing unit for new households. This is lower than the current average household size but consistent with trends at the local, state and national level that show projected decreases in average household size in future years. The housing needs assessment also discussed projected future housing units associated with seasonal occupancy or vacation rental units. Currently, these units, account for approximately 29% of housing units in Lincoln City.

For the purposes of these projections, we have relied on the distribution of housing size and housing types assumed by Johnson Reid and have assumed that these conditions will remain relatively constant between 2025 and 2035. These trends are combined with the population projections described above to estimate future total and new housing units in Lincoln City through the year 2035. Our projections also assume that seasonally occupied units will continue to make up a similar percentage of units in the future and that the mix of housing types for seasonally occupied units will remaining relatively consistent. These projections are summarized in Table 6. They indicate the estimated number of existing units (as of 2013), new units projected to be built between 2013 and 2035 and the total number of projected units in 2035.

[1] Source: U.S. Census Bureau: State and County QuickFacts; Census 2010 and American Community Survey 5-Year Estimates 2006-2010.

__Table 6. Housing Units Projections, 2005-2035, Lincoln City UGB__

Year	Single Family Units	Duplexes	Multi-Family Units	Manufactured Homes	Total Units
2013 (Existing)	4,516	348	2,208	511	7,583
2013-2020 (new)	181	25	106	13	326
2021-2025 (new)	125	22	75	9	231
2026-2030 (new)	124	20	75	9	233
2031-2035 (new)	122	19	75	9	231
2035 Total	5,068	434	2,539	551	8,604

Source: Johnson Reid and APG

Employment Forecasts

Reliable employment data at the local level is difficult to come by. As a result, this analysis relies on work done by Johnson Gardner (now Johnson Reid) as part of a 2005 *Comprehensive Economic Opportunities and Buildable Land Needs Assessment*. That assessment included estimates of current and projected future employment for the Lincoln City UGB. The primary source of data on current employment patterns was the State of Oregon Employment Department's ES-202 reports (the Quarterly Census of Employment and Wages, which includes all workers covered by unemployment insurance). The projected job growth utilizes the State of Oregon's projected growth rates by sector over the next decade in the region, and applies these rates of growth to the estimated current employment distribution within the Lincoln City UGB. The employment estimates were done for 2005, with projections in 5-year increments through 2025. Average annual growth rates by industry for this 20-year period are also reported. These average annual growth rates were used to estimate employment by industry for both 2013 and 2035; the industry projections were then summed to determine the total employment. Table 7 summarizes employment estimates and projections for the Lincoln City UGB, including both the original 2005 and 2025 estimates by Johnson Gardner and the estimates for 2013 and 2035 created for this project.

Table 7. Employment Projections, 2005-2035, Lincoln City UGB

Employment Sector	2005	2013	2025	2035	Annual Rate
Construction	218	248	301	354	1.64%
Manufacturing	85	80	74	69	-0.71%
Wholesale Trade	34	37	43	48	1.14%
Retail Trade	1065	1173	1356	1531	1.22%
Transportation, Warehousing & Utilities	50	63	88	117	2.91%
Information	86	95	110	125	1.28%
Financial Activities	175	190	214	237	1.01%
Professional & Business Services	342	410	540	679	2.31%
Education & Health Services	840	1021	1366	1742	2.46%
Leisure & Hospitality	2282	2558	3037	3504	1.44%
Other Services	137	150	172	193	1.14%
Government	172	182	200	216	0.76%
Total	**5486**	**6207**	**7501**	**8815**	

Source: *Comprehensive Economic Opportunities and Buildable Land Needs Assessment, Johnson Gardner, 2005 for 2005 and 2025 estimates;* APG for 2013 and 2035 projections

(This page intentionally left blank)

Section E

Memo 4: Population and Employment Forecast Allocations

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

Technical Memorandum #4

DATE: August 29, 2012

TO: Lincoln City TSP Update Project Management Team

FROM: Matt Hastie and Carolyn Reid, Angelo Planning Group

SUBJECT: **Lincoln City Transportation System Plan Update Population and Employment Forecast Allocations**

Overview

This memorandum summarizes the methodology for and results of future housing and employment allocations to support the Lincoln City Transportation System Plan (TSP) process. This memo draws on the housing and employment forecasts generated in Technical Memo #3 and uses them to estimate the number of existing and future housing units and employees within each of 53 transportation analysis zones (TAZs). It estimates for 2013 (assuming the TSP will be adopted in 2013, this was used as the baseline year) and future allocations for 2035. These estimates will be used for transportation modeling in the TSP update process.

The memo describes the analytical process used to allocate forecasts to TAZs, as well as the final output tables generated through this analysis. Tables associated with the housing allocation are in Appendix A, and the employment allocation tables are in Appendix B.

A map of the 53 TAZ designations is shown in Figure 1.

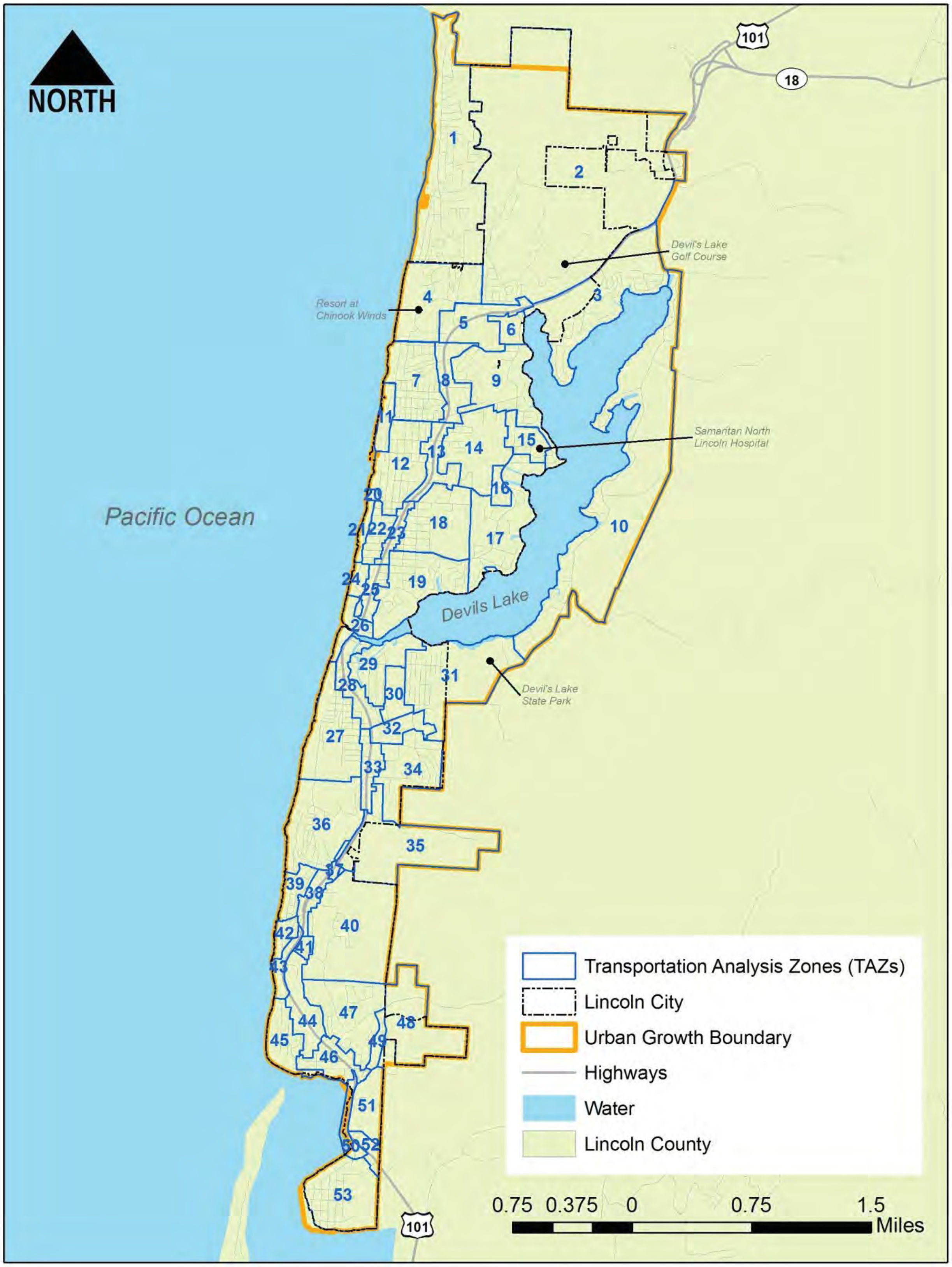


Figure 1 - Lincoln City Transportation Analysis Zones (TAZs)

Housing Units

Dwelling Units by Type for 2013

The total number of housing units for 2013 were allocated by type to the 53 TAZs based on the distribution in the 2010 census at the block level.[1] These types were: Single Family Units, Duplexes, Multi-Family Units, and Manufactured Homes. The housing types shown by taxlot property codes within TAZs were used to determine the percentage of each type of housing unit within a given TAZ. For example, 19 of the 53 TAZs include only single family residences ,and five TAZs have no housing at all. The results of this allocation for 2013 housing units can be found in the first section of Table A-1 in Appendix A. Based on current zoning (shown in Appendix C), we also have assumed that all housing in the area between the city limits and Urban Growth Boundary (also called the Urban Growth Area or UGA) would be composed completely of single family detached housing.

Occupancy by Type for 2013

Housing units were further classified by occupancy type: full time occupied, seasonally occupied, or vacation rental dwelling, because different dwelling unit types have varying trip rates in transportation models.

Seasonal units were determined based on vacancy rates from the 2006-2010 American Community Survey using the classification “For seasonal, recreational, or occasional use.” This vacancy type was calculated as a rate for each census block, and then averaged for all census blocks within a given TAZ to estimate the rate of seasonal occupancy. For context, Table 1 shows an overview of vacancy status for Lincoln City.

Table 1 – Overview of Vacancy Types in Lincoln City, Oregon

	Lincoln City, Oregon	
Vacancy Status	Estimate	Percent
Total number of dwelling units	5,731	100%
Total vacant:	1,900	33.2%
For rent	192	3.4%
Rented, not occupied	36	0.6%
For sale only	165	2.9%
Sold, not occupied	0	0.0%
For seasonal, recreational, or occasional use	1,432	25.0%
For migrant workers	0	0.0%
Other vacant	75	1.3%
Source: 2006-2010 American Community Survey		

A vacation rental dwelling (VRD) in Lincoln City is defined as “a dwelling unit that is used, rented or occupied on a daily or weekly basis, or is available for use, rent, or occupancy on a daily or

[1] Because the boundaries of the census blocks and TAZs do not align exactly, the centroid of each census block was used to determine to which TAZ it should be allocated.

weekly basis, or is advertised, or listed by an agent, as available for use, rent, or occupancy on a daily or weekly basis."[2] The American Community Survey vacancy status data does not distinguish this specific type of rental unit. In order to make the most accurate estimate for the number of VRD units, city staff provided GIS data showing parcels with VRD permits. According to this data, there are a total of 324 VRDs within Lincoln City. The rate of VRDs as a percentage of total dwelling units was used to allocate this occupancy type for all TAZs within the city boundary.

One adjustment was made for TAZ 1, which is located outside Lincoln City but within the UGA. According to city staff, this area has approximately 158 VRDs.

The full time occupancy category was calculated using the percentage of housing units remaining after subtracting seasonal and VRD units from the total.

The results of occupancy by type for each TAZ are shown in Table A-3 of Appendix A.

Housing Units by Occupancy by Dwelling Unit Type for 2013

The final output for 2013 housing units shows all units by occupancy and by dwelling unit type. In allocating dwelling unit types within the occupancy categories, the following assumptions were made:

- No VRD or seasonal dwelling units are manufactured homes.
- All VRD units are single-family homes.
- All housing units in the UGA are single family residences (as noted previously).

A few adjustments were made to specific allocations within TAZs based on comments from city staff. Total 2013 housing units by occupancy type by dwelling unit type can be found in Appendix A, Table and Figure A-1.

2035 Housing Units

The 2035 housing unit calculations were based on the total number of units by type allocated in the housing unit forecasts detailed in Technical Memo #3. The 2013 units were used as a baseline, and new housing units were allocated based on underlying zoning within buildable lands.

First, all Lincoln City zoning classes were examined to determine which zones permit each of the four housing types (single family, duplex, multi-family, and manufactured). The determinations are shown in Table 2.

[2] Section 170.08.010 Definitions retrieved from: http://www.codepublishing.com/OR/LincolnCity/html/LincolnCity17/LincolnCity1708.html#17.08.010

Table 2 - Housing types permitted by each zone

	Housing Types			
Zones that permit housing	Single Family	Duplex	Multi-Family	Manufactured
Single-Family Residential (R-1) Zone: 5,000SF	X	X		X
Single-Family Residential (R-1) Zone: 7,500SF	X	X		X
Single-Family Residential (R-1) Zone: 10,000SF	X	X		X
Multiple-Family Residential (R-M) Zone	X	X	X	X
Recreation-Commercial (RC) Zone	X	X	X	X
Recreation-Residential (R-R) Zone	X			X
General Commercial (GC) Zone	X		X	X
Nelscott Business District (NBD)`	X	X	X	
Nelscott Cottage Residential (NCR)	X			
Nelscott Beachside Mixed Use (NBMU)	X	X	X	
Professional Campus (PC) Zone			X	
Planned Industrial (PI) Zone				
Taft Village Core (TVC) Zone	X	X	X	X
County R-1	X	X		

Note: an X indicates that the housing type is permitted within the zone (either as an outright permitted or conditional use)

Next, GIS geoprocessing tools were used to divide each TAZ into sub-areas based on taxlot property code allocations and then by zoning type. Developable land within these sub-areas was then extracted using the designations from the Buildable Land Inventory GIS data completed in 2005[3]. Finally, the acreage of the resulting supply of buildable land in the GIS data layer was calculated; this showed all buildable land by TAZ by property type by zone. A map of developed and buildable land according to the Buildable Land Inventory is shown in Figure 2.

New housing units by type for 2035 were determined by subtracting the 2013 baseline from the 2035 forecast, a difference of 1,009 units. These new units were then distributed by type based on the percentage of buildable land within each TAZ where the housing unit type is permitted based on zoning. This result shows total new housing units by type for each TAZ.

The final step was to further classify new housing by occupancy type. The same rates of full-time, VRD, and seasonal occupancy used for the baseline calculations were also used for the 2035 projections. A few adjustments to these findings were made based on feedback from city staff. Total housing units for 2035 by occupancy type by dwelling unit type can be found in Appendix A, Table and Figure A-2.

[3] *Comprehensive Economic Opportunities and Buildable Land Needs Assessment, Johnson Gardner, 2005.*

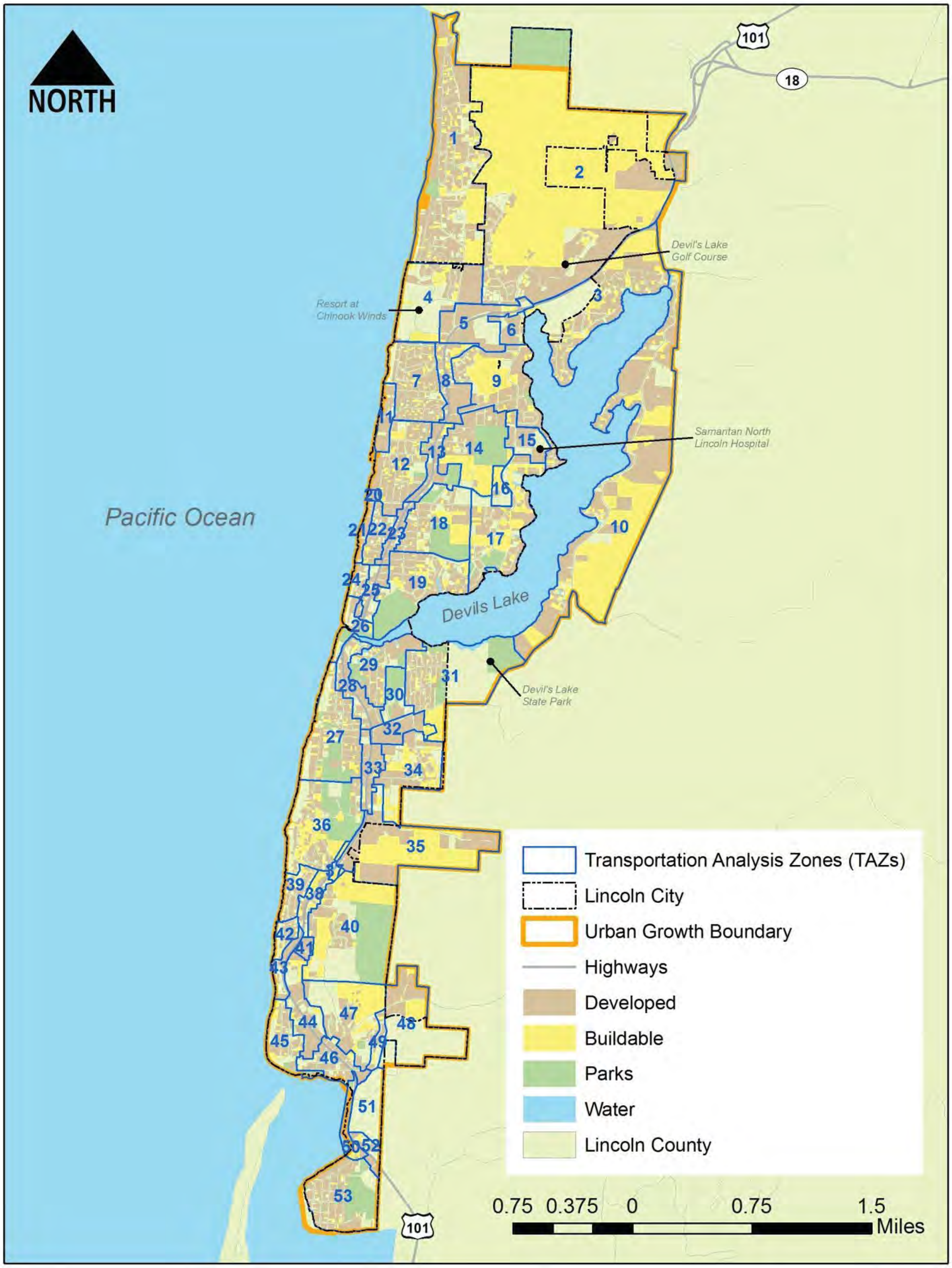


Figure 2 - Developed and Buildable Land

Employment

Employment Allocation for 2013

Employment density and location data were not available for this analysis. Instead, employment forecasts by sector generated for Technical Memo #3 were first distributed based on the location of a few major employers.

The city identified several existing major employers, and calls were made to human resources personnel at each employment location to estimate the number of employees. The results of this brief survey are shown in Table 3.

Table 3 – Major employers in Lincoln City

TAZ	Employer	Number of Employees	Sector
4	Chinook Winds Casino Resort	918	Leisure & Hospitality
43	the Inn at Spanish Head	100	Leisure & Hospitality
28	City Hall	80	Government
30	Police Department	37	Government
15	Samaritan N. Lincoln Hospital	264	Education & Health Services
28	Lincoln City Career Technical High School	7	Education & Health Services
16	Oceanlake Elementary School	20	Education & Health Services
47	Taft Elementary School	20	Education & Health Services
40	Taft High School	55	Education & Health Services

After assigning each of the major employers to the appropriate TAZ and employment sector, the remaining employment was distributed according to the percentage of developed land in each TAZ where existing taxlot property classifications and zoning indicated the presence of each employment sector. First, the zoning code was examined to determine which employment sectors are permitted in each zone, as shown in Table 4.

Table 4 – Employment sectors permitted by each zone

	Zones that permit employment by type								
Employment Sectors	Multiple-Family Residential (R-M) Zone	Recreation-Commercial (RC) Zone	General Commercial (GC) Zone	Nelscott Business District (NBD)`	Nelscott Cottage Residential (NCR)	Nelscott Beachside Mixed Use (NBMU)	Professional Campus (PC) Zone	Planned Industrial (PI) Zone	Taft Village Core (TVC) Zone
Construction			X					X	
Manufacturing			X					X	
Wholesale Trade								X	
Retail Trade		X	X	X		X		X	X
Transportation, Warehousing & Utilities			X	X	X	X		X	
Information			X	X		X	X		X

Employment Sectors	Zones that permit employment by type Multiple-Family Residential (R-M) Zone	Recreation-Commercial (RC) Zone	General Commercial (GC) Zone	Nelscott Business District (NBD)`	Nelscott Cottage Residential (NCR)	Nelscott Beachside Mixed Use (NBMU)	Professional Campus (PC) Zone	Planned Industrial (PI) Zone	Taft Village Core (TVC) Zone
Financial Activities			X				X		X
Professional & Business Services			X	X		X	X		X
Education & Health Services			X	X	X	X	X		
Leisure & Hospitality	X	X	X	X	X	X	X		X
Other Services			X						
Government				X			X		
Note: an X indicates that the employment sector (or selected uses within it) is permitted within the zone									

Next, the same GIS geoprocessing protocol used to generate the buildable land by TAZ, property code, and zoning data set to allocate future housing units was used to classify all existing built land (according to the 2005 Buildable Land Inventory referenced above) by the same attributes. Based on the acreage of each sub-area of buildable land within a TAZ, employees were allocated proportionally based on which employment sectors are permitted in that zone. (Figure 2 shows buildable and developed land.) Sub-areas that constituted less than 0.1 percent of the TAZ were eliminated from the data set as insignificant artifacts of the spatial analysis.

Some of these proportional allocations were adjusted based on feedback from city staff.

The 2013 employment allocated by sector to TAZ is shown in Appendix B, Table and Figure B-1.

Future Employment Allocations

For 2025 and 2035 employment allocations, the new employees were distributed to the buildable portions of each TAZ using the same method. For developable land located in the UGA, only half of the buildable area was considered available for the first time period (2025), while the total acreage of buildable land was considered available for the second time period (2035). Again, small adjustments were made based on guidance from city staff.

The 2025 and 2035 employment allocations by sector and TAZ are shown in Appendix B, Tables and Figures B-2 and B-3.

(This page intentionally left blank)

Section F

Memo 5: Vision, Goals, and Objectives

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

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

REVISED TECHNICAL MEMORANDUM #5

DATE: June 14, 2013

TO: Lincoln City TSP Project Management Team

FROM: John Bosket, P.E.
Kevin Chewuk, P.T.P.

SUBJECT: **Lincoln City Transportation System Plan**
Vision, Goals, and Objectives P11086-010

The purpose of this memorandum is to facilitate the process of developing the transportation-related vision, goals, and objectives for Lincoln City. This effort will continue throughout the planning process, shaped by input received from the Project Advisory Committee and the general public.

SETTING DIRECTION FOR TRANSPORTATION PLANNING

The process of identifying a vision, goals, and objectives helps describe the transportation system that best fits Lincoln City's values and guides how the Transportation System Plan (TSP) will be developed and implemented. This process typically begins with the development of a **vision statement**. A vision statement generally consists of an imaginative description of the desired condition in the future. It is important that the vision statement align with the community's core values.

Goals and objectives create manageable stepping stones through which the broad vision statement can be achieved. **Goals** are the first step down from the broader vision. They are still somewhat general in nature and should be challenging, but not unreasonable. Each goal must be supported by more finite **objectives**. In contrast to goals, objectives should be specific and measurable. Where feasible, providing a targeted time period helps with objective prioritization and achievement.

The solutions recommended through the TSP must be consistent with the goals and objectives. To accomplish this, measurable evaluation criteria that are based on the goals and objectives will be developed as part of the process to screen and prioritize TSP actions.

The vision, goals, and objectives can be refined continuously throughout the TSP process. Towards the end of the process, when solutions have been identified, **policy** statements to guide future decisions can be developed to help the city implement plan recommendations.

DRAFT VISION AND GOALS

Members of the Project Advisory Committee (PAC) for the TSP project discussed the desired transportation system in Lincoln City at the first PAC meeting. The following draft vision statement was developed from the input provided.

Transportation Vision Statement

All transportation modes flow smoothly and safely to and throughout the city, meeting the needs of residents, businesses, visitors, and people of all physical and financial conditions. Connectivity is improved to support travel within and between the pearls, where mixed-use development is complemented by enhanced walking and biking environments. Environmental resources are protected, right of way is used wisely, and healthy lifestyles are promoted.

Transportation Goals and Objectives

Goal 1: Provide for efficient motor vehicle travel to and through the city.

Objective 1a: Develop and preserve a north-south arterial corridor through the city to provide an alternative route to US 101.

Objective 1b: Develop and preserve east-west collector corridors through the city to improve connectivity across US 101.

Objective 1c: Develop a program to systematically implement improvements that enhance mobility at designated high-priority locations.

Objective 1d: Adopt a standard for mobility to help maintain a minimum level of motor vehicle travel efficiency. State and County standards for mobility will be supported on facilities under the respective jurisdiction.

Objective 1e: Designate off-highway loading zones to remove stopped delivery trucks on US 101.

Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.

Objective 2a: Incorporate the projects from the Lincoln City Walking and Biking Plan into the TSP.

Objective 2b: Consider walking and biking user needs that complement the basic provision of services to encourage higher levels of usage (e.g., street lighting, bike parking).

Objective 2c: Improve walking and biking connections to community amenities.

Objective 2d: Enhance way finding signage for those walking and biking, directing them to bus stops, beaches, and key routes and destinations.

Objective 2e: Promote walking, bicycling, and sharing the road through public information and participation.

Objective 2f: Identify necessary changes to the land development code to ensure connectivity between compatible land uses for pedestrian and bicycle trips.

Goal 3: Provide transit service and amenities that encourage a higher level of ridership.

Objective 3a: Identify locations for designated Park-and-Ride lots.

Objective 3b: Locate transit stops in locations that are safe and convenient for users.

Objective 3c: Explore the viability of implementing tourist-based transit options (e.g., trolley) that operate only during the summer.

Objective 3d: Identify areas that support additional transit services, and coordinate with transit providers to improve the coverage, quality and frequency of services

Objective 3e: Consider transit user needs that complement the basic provision of service to encourage higher levels of usage (e.g., sidewalk and bicycle connections, shelters, benches).

Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.

Objective 4a: Ensure that the transportation system provides equitable access to underserved and vulnerable populations.

Objective 4b: Ensure that the transportation system supports an age-friendly city.

Objective 4c: Identify new or improved transportation connections to enhance system efficiency.

Objective 4d: Ensure the pedestrian throughway is clear of obstacles and obstructions (e.g., utility poles).

Objective 4e: Provide connections for all modes that meet applicable City and Americans with Disabilities Act (ADA) standards.

Goal 5: Enhance the health and safety of residents.

Objective 5a: Identify improvements to address high collision locations and improve safety for walking, biking and driving trips in the city.

Objective 5b: Enhance existing crossings of US 101 for walking and biking users.

Objective 5c: Identify deficient locations in the city where enhanced street crossings for walking and biking users are needed.

Objective 5d: Identify investments needed along tsunami evacuation and Seismic Lifeline Routes.

Objective 5e: Improve the visibility of transportation users in constrained areas, such as on hills and blind curves.

Objective 5f: Install amenities at signalized pedestrian crossings to improve safety of underserved and vulnerable populations (e.g., chirpers).

Objective 5g: Identify programs that encourage walking and bicycling, and educate regarding good traffic behavior and consideration for all users.

Goal 6: Foster a sustainable transportation system.

Objective 6a: Develop and support reasonable alternative mobility targets that align with economic and physical limitations on US 101 and City streets where necessary

Objective 6b: Identify opportunities to reduce the use of US 101 for local trips.

Objective 6c: Minimize impacts to the scenic, natural and cultural resources in the city.

Objective 6d: Support alternative vehicle types by identifying potential electric vehicle plug-in stations and developing implementing code provisions.

Objective 6e: Identify areas where alternative land use types would significantly shorten trip lengths or reduce the need for motor vehicle travel within the city.

Objective 6f: Maintain the existing transportation system assets to preserve their intended function and maintain their useful life.

Objective 6g: Identify opportunities to improve travel reliability and safety with system management solutions.

Objective 6h: Identify stable and diverse revenue sources for transportation investments to meet the needs of the city.

Objective 6i: Consider costs and benefits when identifying project solutions and prioritizing public investments.

Objective 6j: Identify new and creative funding sources to leverage high priority transportation projects.

Objective 6k: Utilize transparency when determining transportation system investments.

Goal 7: Ensure the transportation system supports a prosperous and competitive economy.

Objective 7a: Improve the freight system efficiency, access, capacity and reliability.

Objective 7b: Identify transportation improvements that will enhance access to employment.

Objective 7c: Increase the distribution of travel information to maximize the reliability and effectiveness of US 101.

Goal 8: Coordinate with local and state agencies and transportation plans.

Objective 8a: Work with the Cascades West Area Commission on Transportation and the Valley/North Coast Regional Solutions Center to promote projects that improve regional linkages.

Objective 8b: Develop TSP policy and municipal code language to implement the TSP update.

Objective 8c: Meet the requirements of the Oregon Transportation Planning Rule.

Objective 8d: Coordinate with the Oregon Transportation Plan and associated modal plans.

Objective 8e: Coordinate with the Lincoln County Transportation System Plan.

Objective 8f: Coordinate the TSP update with the local neighborhood plans and visions.

(This page intentionally left blank)

Section G

Memo 6: Existing Transportation Conditions

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

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

TECHNICAL MEMORANDUM #6

DATE: May 29, 2013

TO: Lincoln City TSP Project Management Team

FROM: John Bosket, P.E.
Kevin Chewuk,
Ben Fuller

SUBJECT: **Lincoln City Transportation System Plan**
Existing Transportation Conditions P11086-010

This memorandum provides a summary of the existing transportation conditions for the city of Lincoln City, providing answers to the following questions:

- What makes Lincoln City unique?
- Where do people want to go?
- How do people get there?
- Where do people come from?
- What factors determine how people travel?
- What transportation infrastructure is available?
- How is the transportation system managed?
- What travel conditions do people face?

WHAT MAKES LINCOLN CITY UNIQUE?

Stretching along the shores of the Pacific Ocean and adjacent to Devils Lake, Lincoln City is largely a tourism-based city. While the population of permanent residents in the city is close to 8,000, summer populations can rise to nearly 30,000. Visitors are drawn to the city's seven-mile beachfront, lake activities, casino entertainment, outlet shopping, and more.

Lincoln City is characterized by its six historical business districts, referred to as pearls, along US 101 (see Figure A1 in the appendix). Each pearl (Wecoma, Oceanlake, Delake, Nelscott, Taft, and Cutler), is unique with its own history, and developed independently as a town before being incorporated into Lincoln City in 1965. In recent years, the city has made great strides in investing in the Pearls, building upon the unique characteristics of each in an effort to create a string of villages. These

View from Lincoln City beachside

characteristics make Lincoln City unique, as well as define the key transportation issues that the city seeks to overcome.

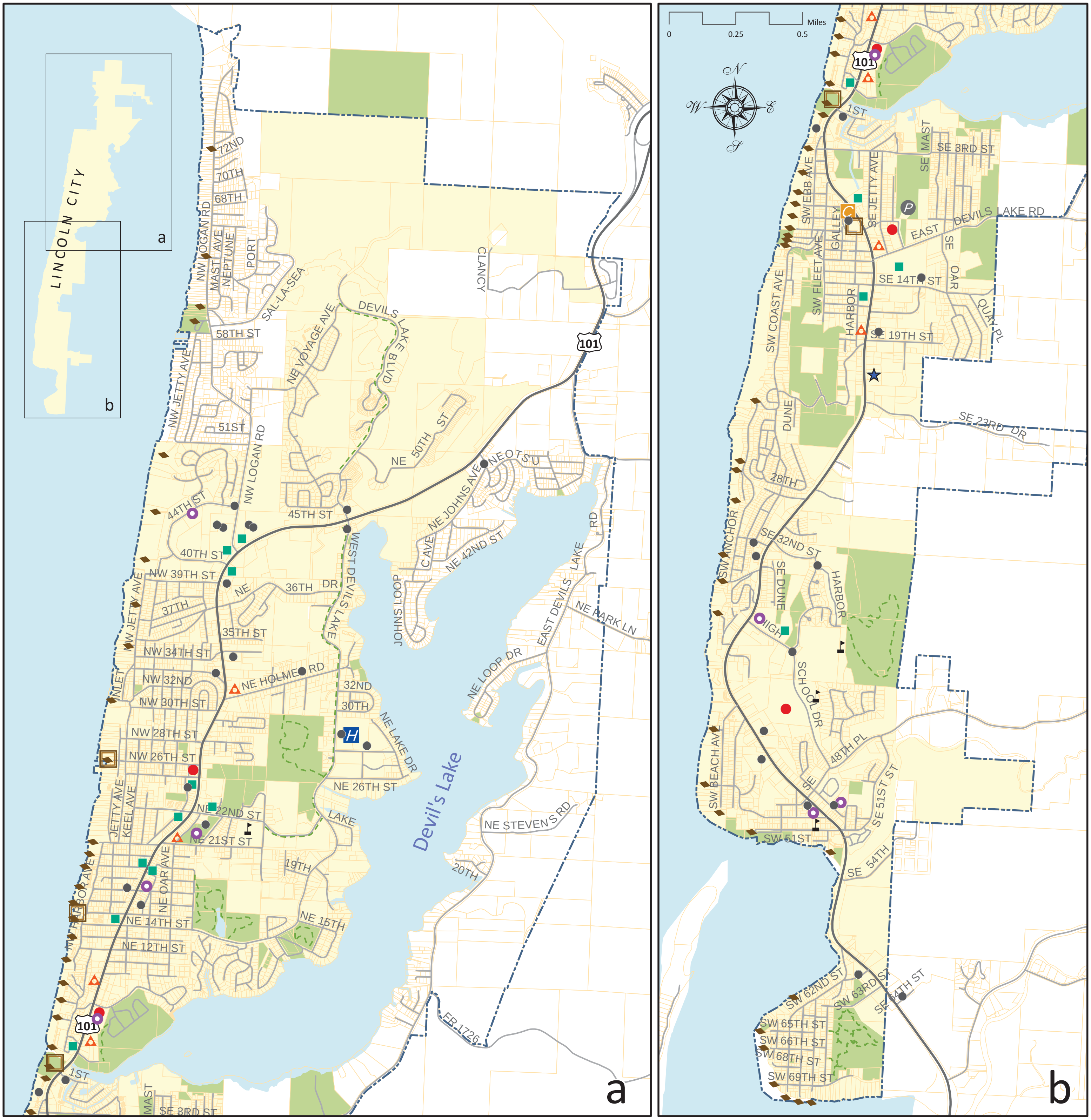
WHERE DO PEOPLE WANT TO GO?

One of the first steps in planning for an effective transportation system is gaining an understanding of the key destinations that people currently travel to throughout the city. These destination points are referred to as activity generators (or trip attractors).

As a coastal city that thrives on tourism, Lincoln City is home to numerous destinations that attract tourists and residents alike. Major destinations include beach access areas, Chinook Winds Casino Resort, Tanger Factory Stores, and Oregon Coast Community College. The most common categories of activity generators in the city include the following (see Figure 1 on the following page for the general locations of some of these activity generators):

- Recreational/Entertainment (e.g., Beach, Casino, Hotels, Vacation Rentals, Lincoln City 6 movie theater, Delake Bowl)
- Schools (e.g., Oregon Coast Community College, Career Tech High, Taft High, Oceanlake Elementary, Taft Elementary, Lincoln City Adventist, Lincoln City HeadStart)
- Places of employment (e.g., Chinook Winds Casino Resort, Tanger Factory Stores, Samaritan North Lincoln Hospital)
- Shopping (e.g., Siletz Bay Area, North Commercial Area, Nelscott Commercial Area, grocery stores, restaurants)
- Cultural (e.g., North Lincoln County Historical Museum, Lincoln City Cultural Center)
- Community/Government (e.g., City Hall, Driftwood Public Library, Lincoln City Community Center)
- Public Transportation (e.g., Bus stops)

Each of these categories of activity generators represents important starting and ending points for travel and provides a good basis for planning ideal routes.



1 Activity Generators

Lincoln City
Transportation System Plan

Activity Generators

- City Hall
- Fire Station
- Hospital
- Police Station
- School
- Major Public Parking Lot
- Bus Stop
- Beach Access
- Library
- Entertainment
- Professional/Office
- Shopping
- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

HOW DO PEOPLE GET THERE?

Most Lincoln City residents commuted to work between the years 2005 and 2009 via single occupant motor vehicles (about 72 percent)[1]. A notable number of residents carpooled (about 11 percent) and walked (about 11 percent) to work. Approximately two percent used public transportation and one percent biked to work.

Table 1 compares the commute patterns of Lincoln City residents to other cities in the region. Commuting to work via public transit was low in each of the three cities (two percent or less). About 12 percent of employees in Lincoln City and Tillamook walked or biked to work, about three percent more than employees in Newport. Slightly more residents worked at home in Lincoln City (about three percent) than Newport and Tillamook (about two percent and one percent, respectively).

Table 1: Transportation Modes Used to Commute to Work

	Percent of Commuters		
Transportation Mode	Lincoln City	Newport	Tillamook
Workers over 16 years old	*3,482*	*4,377*	*2,117*
Motor Vehicle- Single Occupant	72%	71%	78%
Motor Vehicle- Carpool	11%	11%	8%
Walked	11%	5%	11%
Biked / Other	1%	4%	1%
Public Transportation	2%	1%	<1%
Worked at Home	3%	2%	1%

Source: US Census Bureau, 2006-2010 American Community Survey

Although the U.S. Census Bureau is a valuable source of information for work commute patterns in Lincoln City, it does not report the transportation modes utilized to other activity generators like schools, recreation, shopping or access to transit. Non-motor vehicle transportation modes are likely in higher use in Lincoln City for these types of trips.

How Transportation Modes are Used in the City

Analysis of pedestrian, bicycle, and motor vehicle activity at key intersections throughout Lincoln City during the late afternoon and evening peak period (1:00 p.m. to 5:00 p.m.) on a typical weekday[2] found that during the summer months, activity levels generally increase due to the overall pleasant weather and longer days enticing residents and visitors of Lincoln City to get out and travel to various activity generators throughout the city. Weekend pedestrian and bicycle activity levels in the summer are generally higher than the activity levels of a typical weekday.

- **Pedestrian volumes** are generally highest near popular beach accesses, including the 15th Street beach access and the D River Beach Wayside. The highest hourly pedestrian activity during the summer evening peak occurred at the US 101 intersection with NE 17th Street, with 110 pedestrian crossings in the one-hour period between 3:05 p.m. and 4:05 p.m. Pedestrian activity is higher due to the adjacent retail

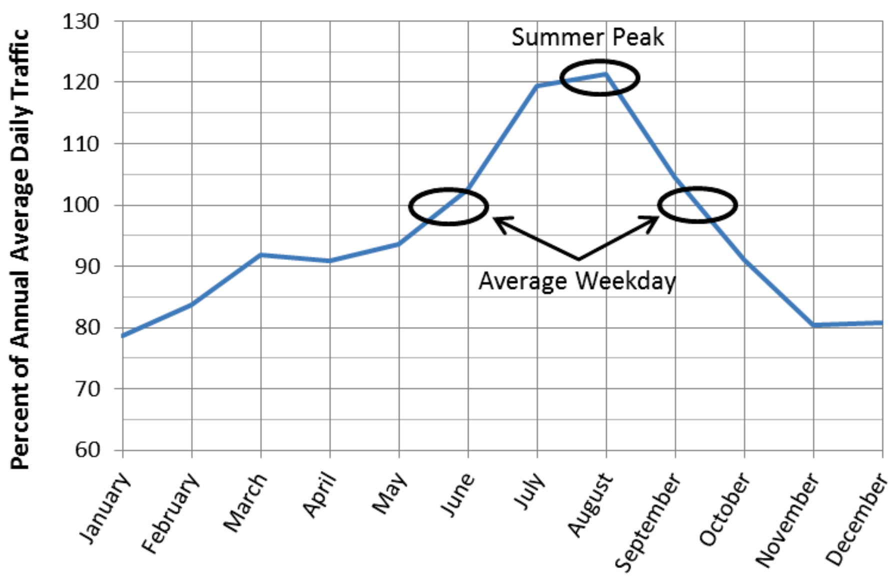
[1] 2006-2010 American Community Survey, US Census Bureau
[2] Based on counts conducted September 21st and October 5th in 2011, and October 2nd, October 3rd, and October 4th in 2012

through the Oceanlake Pearl. The highest hourly pedestrian activity levels at the reviewed intersections during the evening peak period are displayed in Figure A2 in the appendix.

- **Bicycle volumes** are generally low during the evening peak period, with 25 of the 40 intersections having no observed bicyclists during the reviewed hours. The US 101/SE 48th Place intersection and US 101/NW Logan Road intersections had the highest observed bicycle volumes, with 11 and 24 bicyclists, respectively, counted during a single hour. The remaining study intersections generally had less than ten observed bicyclists over a single one hour period. The highest hourly bicycle activity levels at the reviewed intersections during the evening peak period are displayed in Figure A2 in the appendix.

- **Motor vehicle volumes** on the roadways in Lincoln City peak during the evening between 3:00 p.m. and 4:00 p.m., but generally vary depending on the time of year. During the summer months, traffic volumes increase due to an influx of vacationers and visitors to Lincoln City. For this reason, the traffic count data was adjusted to represent two separate conditions: summer and average weekday traffic conditions. The final p.m. peak summer and average weekday traffic volumes developed for the reviewed intersections are displayed in Figure A3 in the appendix.

Summer motor vehicles volumes are highest on US 101, generally ranging between 650 and 1,250 vehicles in each direction during the evening peak hour. During an average weekday (typically during late May and early September), volumes are generally 20 percent lower than those along the highway during the summer (see the image on the right).



Summer volumes on US 101 in Lincoln City are generally 20 percent higher than those along the highway during an average weekday

WHERE DO PEOPLE COME FROM?

Much of the traffic in Lincoln City is related to employment or tourism. These trips either originate within the city or enter from the north or south via US 101 to reach their destinations.

Lincoln City Employees

Over half of the workers (about 53 percent[3]) in Lincoln City live in another city. The commute mode for employees that travel into the city is often dependent on the regional transportation system. Walking, biking, transit, or other facility deficits outside the city likely discourage commuters from utilizing those travel modes.

Throughout Lincoln City, more than 70 percent of the commuters travel to work via single occupant motor vehicle (see Table 2). Carpooling has a much higher mode share in northern Lincoln City (20 percent) than in other areas in the city (5 percent in central Lincoln City and 11 percent in southern Lincoln City). The greatest percent of residents walking to their place of employment is in southern Lincoln City (13 percent of residents), while the highest bicycle commuting to work occurs in central Lincoln City (1 percent). The highest usage of public transportation to work occurs in the central part of the city (4 percent).

Table 2: Work Commute Mode by Area of Lincoln City

Transportation Mode	Northern Lincoln City (1)	Central Lincoln City (2)	Southern Lincoln City (3)
Motor Vehicle-Single Occupant	76%	75%	72%
Motor Vehicle-Carpool	20%	5%	11%
Walked	3%	11%	13%
Biked / Other	0%	1%	<1%
Public Transportation	0%	4%	1%
Worked at Home	1%	4%	3%

Source: US Census Bureau, 2006-2010 American Community Survey
1. Includes the Wecoma pearl and Roads End neighborhood
2. Includes the Oceanlake pearl
3. Includes the Delake, Nelscott, Taft, and Cutler pearls

Lincoln City Tourists

Located about 50 miles west of Salem and 75 miles southwest of Portland, Lincoln City is a desirable choice for getaways. Visitors arrive via US 101 and often stay for extended periods, traveling to major destinations throughout the city. During the peak summer travel periods, more than 20,000 tourists may be in Lincoln City at any particular time. Walking and biking may be a popular travel choice for visitors among hotels or vacation rentals and the many destinations in the city.

[3] 2000 Census Transportation Planning Package (CTPP)

WHAT FACTORS DETERMINE HOW PEOPLE TRAVEL?

Travelers often weigh a variety of factors when deciding how to commute to their destination. Whether the trip will be via motor vehicle, walking, bicycle, or public transportation, the choice is often a balance between ease and convenience of travel, travel cost, and travel time.

Where are you going? Whether you are going to work, school, shopping, or to a park, your trip type (or your destination point) often determines your mode of transportation. Those destined for a park or school generally have a higher likelihood to walk or bicycle than those going to work or shopping. The distance of that destination plays a role in mode choice. Trips that are shorter generally present a better opportunity to walk or bicycle; longer distance trips more often require transit or motor vehicle modes.

Will you have to cross a busy road or walk along a road without sidewalks? The availability of sidewalks, curb ramps to provide wheelchair access, crosswalks, and bicycle lanes increases the comfort and access of walking and biking. A lack of these facilities, particularly on higher volume or higher speed roadways, discourages people from utilizing non-motor vehicle modes of transportation.

Where you work and how long it takes you to get there. Most Lincoln City residents who have jobs (about 75 percent) work within Lincoln City.[4] Most of those who commute to work outside the city travel to employment locations at least 10 miles outside of the city and commute via motor vehicle.

Age and income. Demographic characteristics such as age and income play a key role in determining mode of transportation. Lincoln City residents with lower incomes, as well as the youngest and oldest residents, often account for more trips via walking, biking, and public transportation. As seen in Table 3, school-age children and residents over 65 make up between 35 and 40 percent of the population. The northern part of Lincoln City has the highest median household incomes (around $53,000), which is nearly double the income of households located in other parts of Lincoln City.

Table 3: Key Demographics in Lincoln City

	Northern Lincoln City	Central Lincoln City	Southern Lincoln City
Age (By Percent of Residents)			
Under 18	16%	10%	25%
18 to 64	62%	65%	60%
65+	22%	25%	15%
Median Household Income	$53,828	$27,033	$27,755

Source: US Census Bureau, 2006-2010 American Community Survey

[4] 2000 Census Transportation Planning Package (CTPP)

Is it cold or raining? Weather plays a role in determining how trips are made. Lincoln City experiences cool, rainy winters, with mild and generally dry summers. According to the national weather service, average temperatures in the winter months (November to March) are around 46 degrees Fahrenheit, with measurable rainfall occurring about 17 days each winter month. The spring and fall months (April, May, and October) are slightly warmer and dryer, with average temperatures around 51 degrees Fahrenheit, and about 12 days of measurable rainfall. The summer months (June to September) are typically very pleasant, with average temperatures around 57 degrees Fahrenheit, with about 5 days of measurable rainfall each month.[5] Cold, rainy weather discourages walking and biking trips, forcing users to make a trip via motor vehicle when they would otherwise walk or bike.

Are you able to walk or bike on a steep hill? The sloping and hilly topography in some of Lincoln City's, neighborhoods can be a deterrent to walking and bicycling. US 101 is relatively flat, but walking or biking along some of the neighborhood streets to the east and west of the highway is more difficult and presents barriers for those with disabilities.

Steep hill without pedestrian or bicycle facilities

[5] Climate of Lincoln County, Oregon Climate Service

WHAT TRANSPORTATION INFRASTRUCTURE IS AVAILABLE?

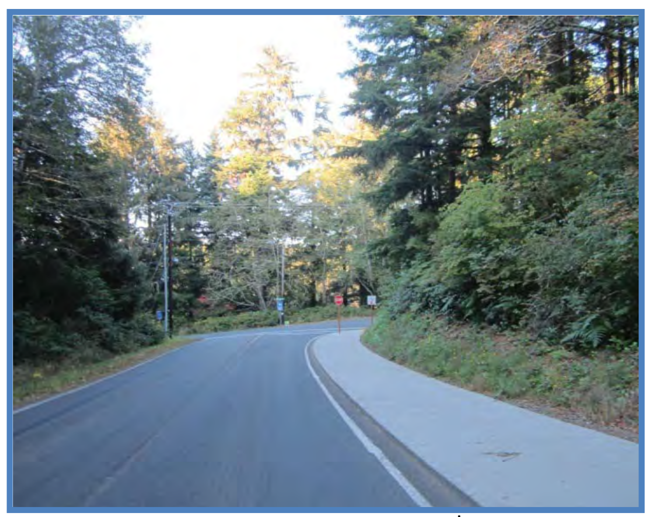
Existing transportation infrastructure that residents use on a daily basis includes sidewalks, bike lanes, shared-use paths, roadways, and transit.

Walking

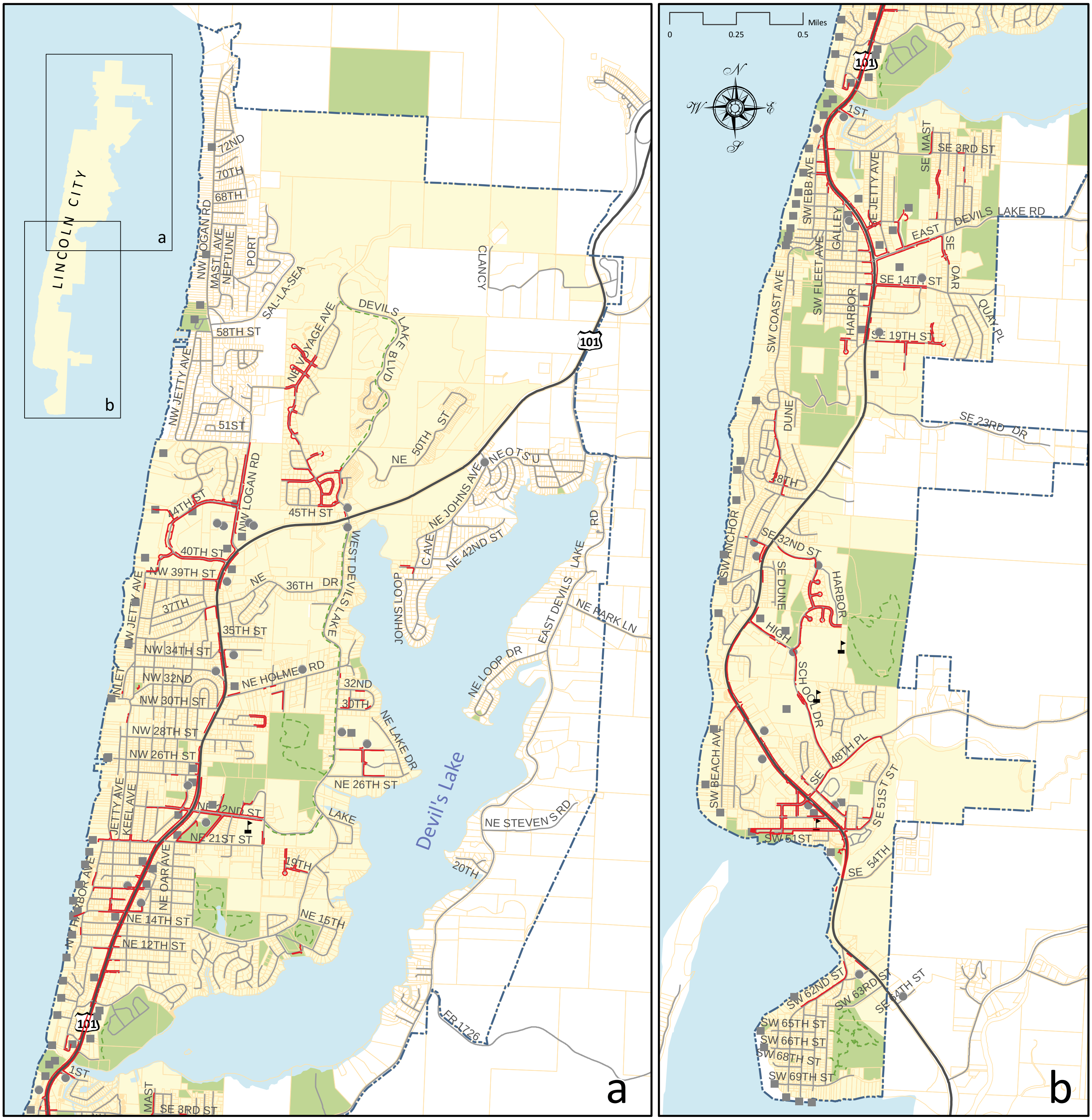
Walking plays a key role in Lincoln City's transportation network. Planning for pedestrians not only helps the city provide a complete, multi-modal transportation system, it supports healthy lifestyles and addresses a social equity issue, ensuring that the young, the elderly, and those not financially able to afford motorized transport have access to goods, services, employment, and education. Approximately eleven percent of commuters in the city walk to work, with another two percent utilizing public transportation to get to work, which generally includes a walking trip at the beginning or end. In addition to the work commute trips, walking trips are made to and from recreational or shopping areas, schools, or other activity generators. Continuous sidewalk connections between all activity generators and arterial/collector roadways are desirable to allow for safe and attractive non-motorized travel options. Lincoln City's walking network, shown in Figure 2, is composed of sidewalks, shared-use paths, and roadway shoulders.

Sidewalks are located along roadways, are often separated from the roadway with a curb and/or planting strip, and have a hard, smooth surface, such as concrete. The Oregon Department of Transportation (ODOT) standard for sidewalk width is six feet, with a minimum width of five feet acceptable on local streets. Lincoln City requires sidewalks to be between five and eight feet wide, depending on the street classification. The existing sidewalk network along US 101 is generally continuous on both sides between NE 22nd Street and SE 14th Street, and between SW Beach Avenue and SE 51st Street. Outside of these areas, sidewalks along US 101 are discontinuous or absent. Off of US 101, continuous sidewalks are rare.

Shared-use paths serve a variety of non-motorized travelers, including pedestrians, bicyclists, skateboarders, and runners. Shared-use paths are typically paved (asphalt or concrete), but may also consist of an unpaved smooth surface as long as it meets Americans with Disabilities Act (ADA) standards. Shared-use paths are usually wider (e.g., 10 – 14 feet) than an average five-foot sidewalk. A shared-use path currently exists along NE 22nd Street and NE West Devils Lake Road (Head to Bay Trail).


Head to Bay Trail along NE 22nd Street

Roadway shoulders serve as pedestrian routes in many rural Oregon communities. On roadways with low traffic volumes (i.e., less than 3,000 vehicles per day), shoulders may be adequate for pedestrian travel. These shoulders must be wide enough so that both pedestrians and bicyclists can use them, usually six feet or wider.



2 Existing Pedestrian Facilities

Lincoln City

Transportation System Plan

Sidewalk Facilities

- Sidewalk
- School
- Activity Generator
- Bus Stop
- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

Bicycling

Lincoln City's bicycling network, shown in Figure 3, consists of shared roadways, shoulder bikeways, bike lanes, and shared-use paths.

Shared roadways include roadways on which bicyclists and motorists share the same travel lane. The most suitable roadways for shared bicycle use are those with low speeds (25 mph or less) and low traffic volumes (3,000 vehicles of fewer per day). Shared roadways, often signed as bicycle routes, serve to provide continuity to other bicycle facilities (e.g., bicycle lanes) or can be designated as a preferred route through the community. Common practice is to sign a route with standard Manual on Uniform Traffic Control Devices (MUTCD) green bicycle route signs with directional arrows and/or pavement markings. Shared roadways can have signs that highlight a special route or provide directional information in bicycling minutes or distance. Most local roadways in the city are considered shared roadways, but do not have signs of pavement markings.

Example of a signed bike route

Shoulder bikeways are paved roadways that have striped shoulders wide enough for bicycle travel. ODOT recommends a six-foot paved shoulder to adequately provide for bicyclists, and a four-foot minimum width in constrained areas. Roadways with shoulders less than four feet are considered shared roadways. Some shoulder bikeways are signed to alert motorists to expect bicycle travel along the roadway. Shoulder lanes adequate for bicycle travel are available along various short segments of US 101 in Lincoln City.

Bike lanes are portions of the roadway designated specifically for bicycle travel via a striped lane and pavement stencils. ODOT standard width for a bicycle lane is six feet. The minimum width of a bicycle lane against a curb or adjacent to a parking lane is five feet. A bicycle lane may be as narrow as four feet, but only in very constrained situations. Lincoln City requires bike lanes to be five feet wide on collector and local streets, and six feet wide on arterial streets. Bike lanes are most appropriate on arterials and collectors, where high traffic volumes and speeds warrant greater separation of the travel modes. Existing bike lanes along US 101 are limited to the east side of US 101 between SE 14th Street and SE East Devils Lake Road, and for a short segment south of NE 34th Street (also on the east side). Off of US

Contraflow bike lane along SE 3rd Street

101, bike lanes exist on both sides of NW 21st Street, on both sides of SE East Devils Lake Road between US 101 and SE Oar Avenue, on both sides of SE 32nd Street, on the east side of NE Logan Road for a short segment south of NW 50th Street, and a contraflow bike lane exists along SE 3rd Street between US 101 and SE Harbor Avenue (see Figure 3).

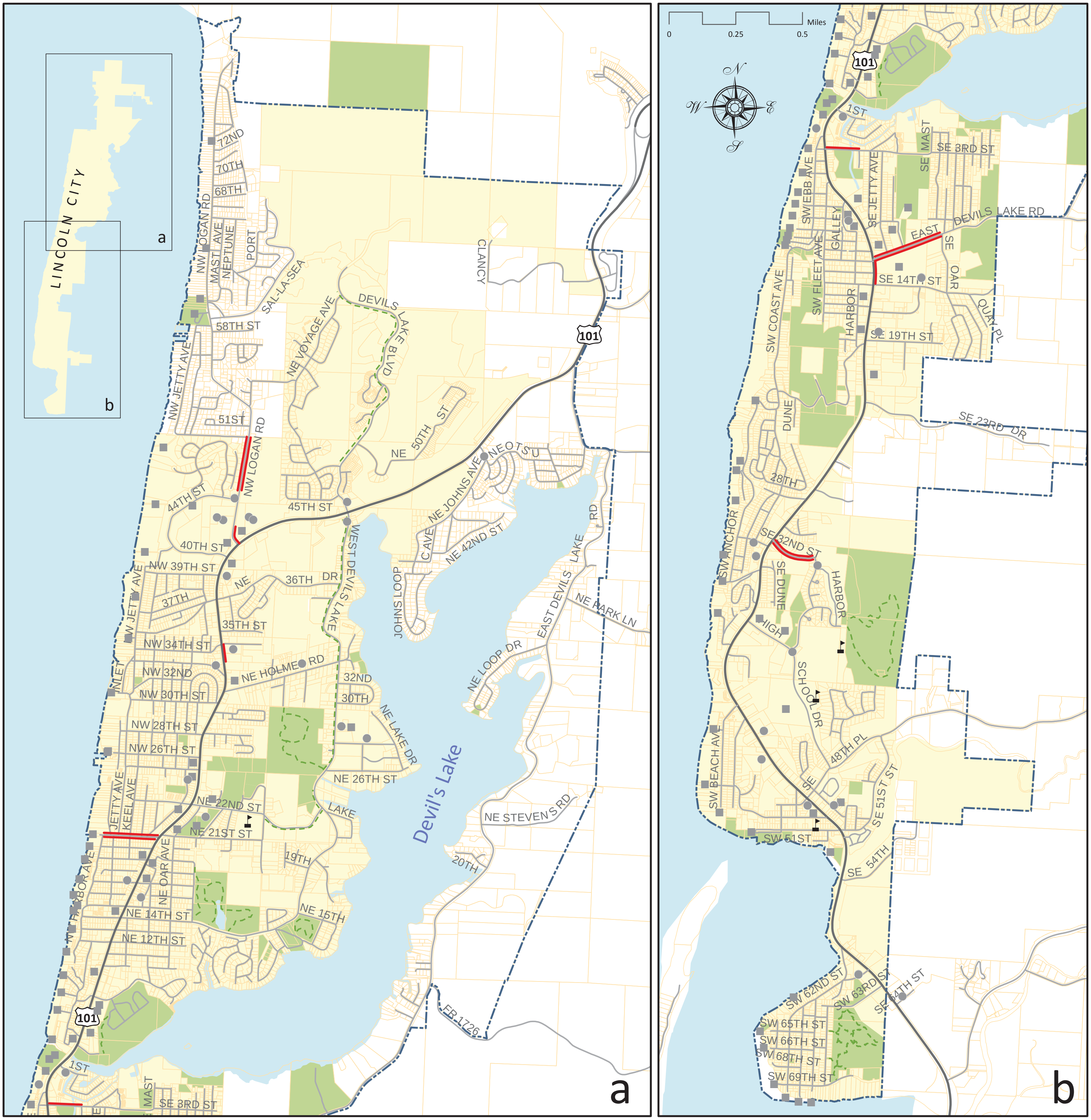
Shared-use paths provide off-street travel for bicyclists. Shared-use paths are typically paved (asphalt or concrete), but may also consist of an unpaved smooth surface as long as it meets Americans with Disabilities Act (ADA) standards. Shared-use paths, such as the Head to Bay Trail along NE 22nd Street and NE West Devils Lake Road, usually are wider than an average sidewalk (e.g., 10 – 14 feet).

Bicycle Parking: End-of-trip bicycle facilities are a fundamental component of a bicycle network. Lack of safe and secure facilities for either short-term or long-term parking can be an obstacle to promoting bicycle riding.

Bus stop with short-term bike parking along NW 17th Street

Short-term parking accommodates visitors, customers, messengers, and others expecting to depart within two hours. It requires a standard rack, appropriate location and placement, and weather protection.

Long-term parking accommodates employees, students, residents, commuters, and others who park for more than two hours. This parking requires a secure, weather-protected manner and location.



3 Existing Bicycle Facilities

Lincoln City
Transportation System Plan

Bicycle Facilities

- Bicycle Lane
- School
- Activity Generator
- Bus Stop
- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

Transit

Lincoln Count Transit provides transit service in Lincoln City via two fixed bus routes connecting the city with Gleneden Beach, Depoe Bay and Newport, and an Americans with Disabilities Act (ADA) paratransit service. Figure 4 shows the fixed transit routes in Lincoln City.

Bus stop with a shelter along SE Spyglass Ridge Drive

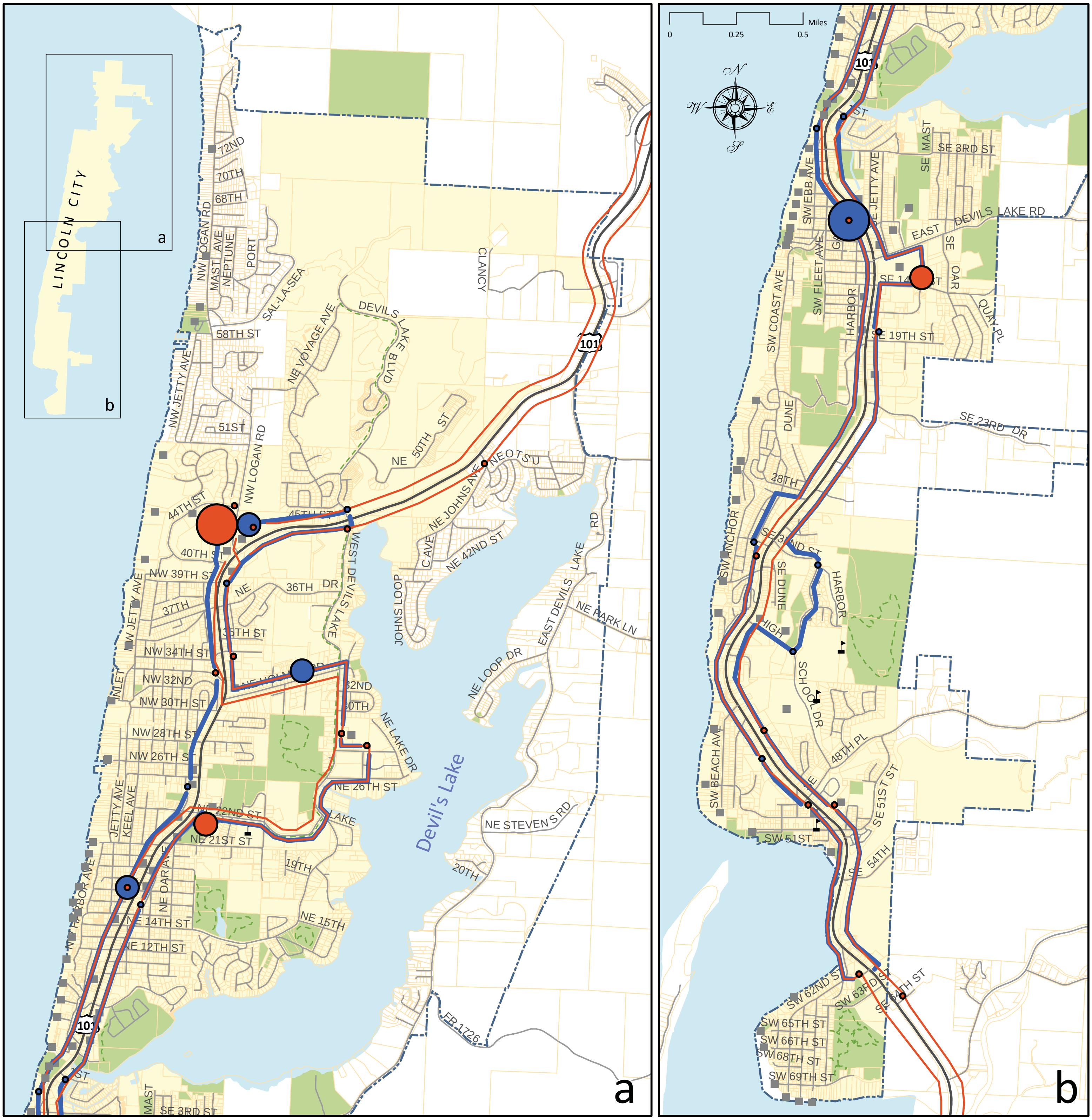
Transit Access and Amenities: Bus stops in Lincoln City are located along US 101, SE High School Drive, SE Fleet Avenue, SW 32nd Street, SE 14th Street, NE 22nd Street, NE West Devils Lake Road, NE 28th Street, NE Holmes Road, and NW Logan Road. Only some of the bus stops offer benches and shelter, and some lack sidewalk connections to the surrounding neighborhoods and businesses. Most transit users in the city are less than a mile from a bus stop.

Although Lincoln County Transit does not have a designated park and ride facility in the city, the public parking lot along NW 17th Street is located adjacent to a bus stop. This stop provides transit users access to the Lincoln City Loop and most major destinations in the city, and offers a shelter and bike parking. All Lincoln County buses are equipped with a lift to allow for wheelchair access and include bicycle racks.

Lincoln City Loop (LINC) is an intra-city transit system that stretches seven miles from SW 62nd Street to the DMV (Department of Motor Vehicles) at NE West Devils Lake Road. Key destinations along this route include Safeway, Lincoln City Chamber of Commerce, Department of Motor Vehicles, Samaritan North Lincoln Hospital, Lincoln City Community Center, the public parking lot along NW 17th Street, City Hall, Driftwood Public Library, Tanger Outlets, Oregon Coast Community College and Taft High School. The LINC route operates from 7:30 a.m. to 6:00 p.m. Monday through Saturday with approximately one hour headways

The Lincoln County Newport-Rose Lodge route travels through Lincoln City three times a day with two additional express routes from Newport City Hall to Rose Lodge Monday through Saturday. Transit service along this route is provided from 5:45 a.m. to 9:15 p.m. with headways typically between three to five hours. Key destinations along this route include Chinook Winds Casino, Samaritan North Lincoln Hospital, Tanger Outlets, Gleneden Beach, Depoe Bay, and Newport.

Lincoln City's Dial-A-Ride service provides public transportation to seniors and persons with disabilities who are unable to use regular fixed route buses. Curb to curb Dial-A-Ride service, in wheelchair lift equipped mini-buses, is available generally between 8:00 a.m. and 3:30 p.m. Monday through Friday.



4 Existing Transit Facilities

Lincoln City
Transportation System Plan

Transit Facilities

Bus Routes
- LINC (Lincoln City Loop)
- Newport-Lincoln City County Route

Daily Boardings/ Alightings

LINC (Lincoln City Loop)	Newport-Lincoln City County Route
0 - 15	0 - 15
16 - 30	16 - 30
31 - 33	31 - 40

- School
- Activity Generator
- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

Driving

The major transportation route through Lincoln City, US 101, runs north to south bisecting the city. Lincoln City roadways are fairly well connected and generally follow a grid pattern on both sides of US 101 where practical. The Pacific Ocean, Siletz Bay, Devils Lake, D River, and hilly topography, however, limit continuous north to south routes parallel to US 101. At several locations, US 101 is the only north-south street, forcing most drivers to use it for longer trips within the city. A detailed inventory of roadways in Lincoln City is in the appendix in Table A1, along with a map of pavement conditions in Figure A4, and a map of public parking in Figure A5.

How do we manage the roadway network in Lincoln City? To manage the roadway network, the city classified the roadways based on a hierarchy according to the intended purpose of each road (as shown in Figure 5). From highest to lowest intended usage, the classifications are principal arterial, minor arterial, major collector, minor collector, and local streets. Roadways intended for high usage generally provide more efficient traffic movement (or mobility) through the city; roadways that primarily provide access to local destinations, such as businesses or residences, have lower usage.

- **Principal Arterials** serve as the main travel routes through the city. The only roadway in the city classified as a principal arterial is US 101, which serves the highest volume of motor vehicle traffic. Although US 101 is an exception in that it also serves as Lincoln City's main street, since principal arterials are generally for longer motor vehicle trips with limited local access. About 25 percent of trips entering Lincoln City are motorists driving through the city without stopping.[6] Posted speed limits on the highway range from 30 to 45 miles per hour.
- **Minor Arterial Roadways** connect many parts of the city and serve traffic traveling to and from US 101. These roadways provide greater accessibility to neighborhoods, connect to major activity generators, and provide efficient through movement for local traffic. In Lincoln City, East Devils Lake Road and 14th Street/West Devils Lake Road are minor arterials. Posted speeds on minor arterial roadways in Lincoln City typically range between 25 and 35 miles per hour.
- **Major Collector Roadways** connect neighborhoods to minor arterials. These roadways serve as major neighborhood routes and generally provide more direct property access or driveways than arterial roadways. In Lincoln City, NW Logan Road and SE High School Drive are examples of major collector roadways. Posted speeds on major collector roadways in Lincoln City are typically 25 miles per hour.
- **Minor Collector Roadways** provide more direct access to residences in Lincoln City and only serve limited-through travel. These roadways generally

NW Logan Road is an example of a Major Collector.

---

[6] Analysis of Bluetooth data by DKS Associates

are lined with residences and serve lower volumes of traffic. In Lincoln City, NW 30th Street and SW Coast Avenue are examples of minor collector roadways. Posted speeds on minor collector roadways in Lincoln City are typically 25 miles per hour.

- **Local Roadways** provide more direct access to residences without serving through travel in Lincoln City. These roadways generally are lined with residences and are designed to serve lower volumes of traffic with a statutory speed limit of 25 miles per hour.

ODOT and Lincoln County classify roadways in Lincoln City under their jurisdiction. US 101 is the only street in the city under ODOT jurisdiction (see Figure A6 in the appendix). US 101 is classified by the state as a Statewide Highway. Its characteristics vary, as shown in Table 4.

NE East Devils Lake Road, SE Schooner Creek Road, and much of NW Logan Road are outside of the city limits and under County jurisdiction, but within the Lincoln City Urban Growth Boundary (see Figure A6 in the appendix). The County classifies NE East Devils Lake Road as a minor arterial, and the other two as major collectors.

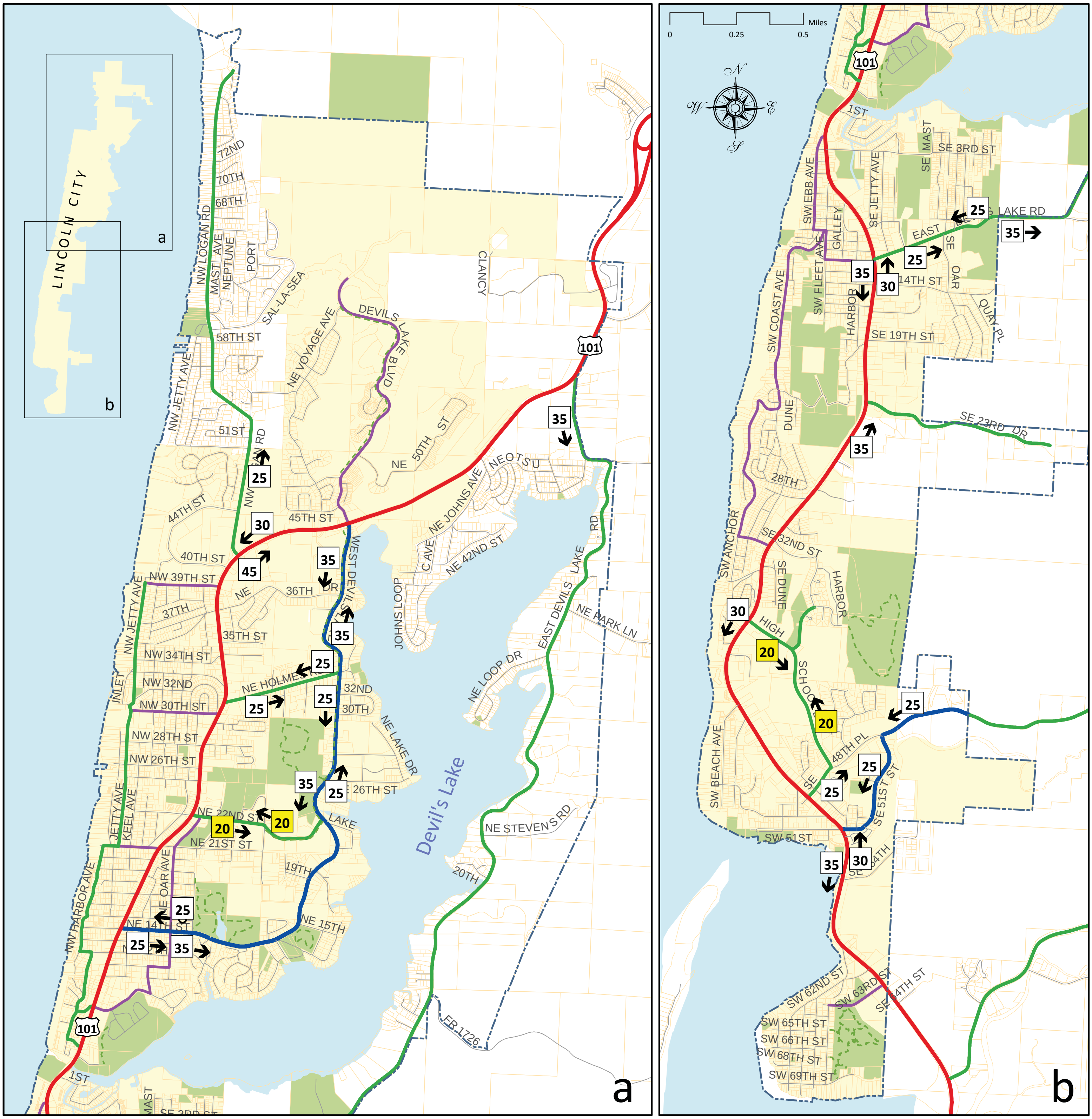
Table 4: US 101 Roadway Characteristics

Roadway (limits)	Special Designations*	Cross section	Posted Speed
US 101 (NE East Devils Lake Road to NW Logan Road)	-	2 lanes	45 mph
US 101 (NW Logan Road to East Devils Lake Road)	-	3 to 5 lanes	30 mph
US 101 (East Devils Lake Road to SE 23rd Drive)	-	4 to 5 lanes	35 mph
US 101 (SE 23rd Drive to SW Beach Avenue)	-	2 to 3 lanes	30 mph
US 101 (SW Beach Avenue to SE 51st Street)	Special Transportation Area (STA)**	4 to 5 lanes	30 mph
US 101 (SE 51st Street to SW 63rd Avenue)	-	2 to 3 lanes	35 mph

Source: Oregon Highway Plan (OHP), Appendix D

*US 101 through Lincoln City is part of the National Highway System, and is a designated truck route and Scenic Byway.

**STA designation on US 101 from SE 48th Place to SW 51st Street.



5 Existing Functional Classification and Speed Limits

Lincoln City
Transportation System Plan

Functional Classification

- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local

XX Posted Speed Limit

XX Posted School Zone Speed Limit

- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

Bridges

Lincoln City has a total of nine bridges (seven of which are inventoried by ODOT), as shown in Figure A7 in the appendix. The three US 101 bridges are located on a Priority 1 Seismic Lifeline Route, and are therefore critically important to maintain. ODOT has flagged two bridges (one along East Devils Lake Road and the other on West Devils Lake Road) as structurally deficient with serious substructure issues (see Table 5). None of the bridges have defined load restrictions.

Table 5: Lincoln City Bridge Inventory

Roadway	Crosses	Maintenance Responsibility	Sufficiency Rating	Notes
US 101	Schooner Creek	ODOT	80.0	Functionally Obsolete; Unstable Scour; Poor Rail
US 101	Pedestrian Pass	ODOT	41.3	Minor Culvert Deterioration
US 101	Devils Lake Outlet	ODOT	39.4	Functionally Obsolete; Poor Rail
E Devils Lake Rd	Creek	Lincoln County	36.7	Structurally Deficient; Serious Substructure
E Devils Lake Rd	Rock Creek	Lincoln County	71.7	-
W Devils Lake Rd	Devils Lake Creek	Lincoln City	40.8	Structurally Deficient; Serious Substructure; Poor Rail
NE 1st St	Drainage Channel	State Park	83.4	-

Source: ODOT Owned Properties, ODOT Unified Access Gateway

Freight

Efficient truck movement plays a vital role in the economical movement of raw materials and finished products. The designation of through truck routes provides for this efficient movement, while maintaining neighborhood livability, public safety, and minimizing maintenance costs of the roadway system. US 101 through Lincoln City is not classified by ODOT as a freight route, but it is designated as a truck route by the federal government. Federal Truck Routes generally require 12-foot travel lanes, but allow 11-foot travel lanes within STA's with lower trucks volumes. Heavy vehicles account for approximately five percent of the traffic on US 101 through Lincoln City during an average weekday.

Rail

Lincoln City has no railroad tracks. Riders on the Lincoln County Newport-Rose Lodge bus route can transfer in Newport to the Coast to Valley Express (managed by Benton and Lincoln Counties), which connects users to the Amtrak Station in Albany.

Air

Lincoln City does not have an airport. The closest general aviation airport, Siletz Bay State Airport, is three miles south of Lincoln City. Other airports within a 30-mile radius of Lincoln City include Newport Municipal Airport, Toledo State Airport, and Pacific City Airport. Portland International Airport (PDX) approximately 100 miles (2.5 hours) northeast of Lincoln City, provides regional and international air service for passengers and freight.

Waterway

Lincoln City is bordered by the Pacific Ocean on the west and Devils Lake on the east. Siletz Bay separates Taft and Cutler City at the south end of the city. These waterways are for recreation only.

Pipeline

A natural gas pipeline main and feeder lines, operated by Northwest Natural Gas, serves Lincoln City. No other major regional pipeline facilities are within the city limits.

Transportation System Management and Operations

Transportation System Management and Operations (TSMO) is a set of integrated transportation solutions for improving the performance of existing transportation infrastructure through a combination of system and demand management strategies and programs.

Transportation System Management (TSM): TSM solutions attempt to better manage the flow of traffic to achieve maximum efficiency of the current roadway system, possibly resulting in an increase in facility capacity. Lincoln City's regional roadway facility, US 101, benefits from TSM infrastructure, as described below:

- Communication infrastructure along US 101
- Coordinated time of day traffic signal control. This control was once in place along US 101 from NE 22nd Street to SE 1st Street, which now operate under actuated control (i.e., traffic signals operate independently of each other). Lincoln City has plans to return the corridor to coordinated signal control, which will allow for better progression and reduced delay along the highway
- Cameras at the US 101 and NW Logan Road intersection for monitoring travel conditions
- A "Traffic Info Tune to 1650 AM" sign with flashing beacons facing northbound traffic at the intersection of NE West Devils Lake and US 101 to alert motorists of important travel information

Transportation Demand Management (TDM): TDM solutions encourage travelers to choose alternatives to driving alone in their car by providing services, incentives, supportive infrastructure and awareness of travel options. These strategies improve the performance of the existing infrastructure and services, and may result in fewer vehicles on the roadway system. TDM measures in use in Lincoln City include:

- Investment in pedestrian/bicycle facilities
- Cascades West Rideshare: This program, operated by the Oregon Cascade West Council of Governments (CWACT), helps inform and educate the public about transportation options, and helps match and organize commuter vanpools
- Cascades West RideLine: This program, operated by the CWACT, coordinates transportation services for eligible Oregon Health Plan and Medicaid clients traveling to and from medical services

Environmental Justice

The Environmental Protection Agency states, "Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.[7]" Within the context of the TSP, environmental justice is an effort to identify underserved and vulnerable populations, so the city can improve transportation services and avoid future negative impacts. Figure A8 in the appendix identifies the locations of low-income populations most likely to be dependent on public transportation and minority groups. The area bound between US 101, NE West Devils Lake Road, and NE 22nd Street includes a significant population of low income and minority populations. In addition, low income residents are generally spread throughout portions of southern Lincoln City, including Taft. The areas west of US 101 between NW 30th Street and NE 14th Street, and East of US 101 between NE 22nd Street and NE14th Street/NE West Devils Lake Road have a significant population over 65.

[7] U.S. EPA, Environmental Justice, Compliance and Enforcement, Website, 2007

HOW IS THE TRANSPORTATION SYSTEM MANAGED?

A variety of measures used to monitor Lincoln City's transportation system helps to ensure acceptable quality for its residents. These measures include:

- **Collision Evaluation:** Collision data is useful in monitoring the safety of the roadways and intersections in Lincoln City. The data identifies patterns of motor vehicle, pedestrian, and bicyclist collisions
- **Pedestrian, Bicycle, and Public Transportation Facilities:** The TSP update reviewed facilities for non-motorized transportation to identify deficits or potential connectivity or access improvement opportunities.
- **Roadway Jurisdiction**: In Lincoln City, roadways are under the jurisdiction of Lincoln City, Lincoln County, or ODOT (Figure A6 in the appendix). Each responsible jurisdiction sets various standards for the roadways to maintain its intended functional classification.
- **Intersection Mobility Targets:** The TSP compares intersections in Lincoln City to mobility targets intended to maintain a minimum level of efficiency for motor vehicle travel. Two methods to gauge intersection operations include volume-to-capacity (v/c) ratios and level of service (LOS).

  Volume-to-capacity (V/C) ratio: A decimal representation (between 0.00 and 1.00) of the proportion of occupied capacity (capacity defined as the theoretical maximum vehicle throughput in a given time frame) at a turn movement, approach leg, or intersection. It is the peak hour traffic volume divided by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. A ratio approaching 1.00 indicates increased congestion and reduced performance. A ratio greater than 1.00 indicates the turn movement, approach leg, or intersection is oversaturated, which usually results in excessive queues and long delays. ODOT mobility targets for intersections along US 101 are based on v/c ratios.

  Level of service (LOS): A "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and traffic is highly congested.

  Table 6 lists applicable mobility targets in the city, both adopted (ODOT facilities) and not adopted, but assumed for this study (city and county facilities). The TSP will compare intersection operations to these targets. Intersections that do not meet the mobility targets shown will require mitigation.

  Intersection mobility targets vary by jurisdiction of the roadways. All intersections under state jurisdiction in Lincoln City must comply with the v/c ratios in the Oregon Highway Plan (OHP). The ODOT v/c targets for US 101 are based on highway classification and posted speeds. A Level of Service (LOS) D is being considered as the temporary minimum performance target for both signalized and unsignalized

DKS

intersections under Lincoln City jurisdiction. The Lincoln County TSP[8] applied the ODOT mobility target for District/Local Interest Roads (0.95 v/c) to intersections under county jurisdiction. This target will be applied to intersections along East Devils Lake Road, NW Logan Road, and SE Schooner Creek Road.

Table 6: Intersection Mobility Targets

Roadway	Signalized Intersections	City/ County Unsignalized Intersections	US 101 Unsignalized Intersections: US 101 Approaches	US 101 Unsignalized Intersections: Side Street Approaches to US 101
Roadways under Lincoln City Jurisdiction*	LOS D	LOS D	N/A	N/A
Roadways under Lincoln County Jurisdiction**	0.95 v/c	0.95 v/c	N/A	N/A
US 101 from the North UGB (near Clancy Road) to just northeast of Logan Road	0.80 v/c	N/A	0.80 v/c	0.90 v/c
US 101 from just northeast of Logan Road to just north of SW Fleet Avenue	0.90 v/c	N/A	0.90 v/c	0.95 v/c
US 101 from just north of SW Fleet Avenue to just south of SE 51st Street	0.95 v/c	N/A	0.95 v/c	1.00 v/c
US 101 from just south of SE 51st Street to just south of SW 63rd Street	0.90 v/c	N/A	0.90 v/c	0.95 v/c
US 101 from just south of SW 63rd Street to the south UGB (just north of SE 64th Street)	0.80 v/c	N/A	0.80 v/c	0.90 v/c

Source: Oregon Highway Plan (OHP), Policy 1F, Table 6

* Lincoln City is considering adopting a mobility target as part of the TSP process. For comparison purposes, a Level of Service (LOS) D will be assumed as the temporary minimum performance target for both its signalized and unsignalized intersections for the TSP update.

** The Lincoln County TSP applied the ODOT mobility target for District/Local Interest Roads (0.95 v/c) to intersections under county jurisdiction and, therefore, the Lincoln City TSP update is using it for county intersections.

[8] Lincoln County Transportation System Plan, Page 3-7

- **Access Spacing:** Proper access spacing balances efficient, safe, and timely travel with access to individual destinations. Proper spacing between accesses (driveways and streets) reduces congestion, collision rates, and the need for additional highway capacity. ODOT applies its adopted access spacing standards to roadways under state jurisdiction.

  ODOT access spacing standards for driveways and approaches to US 101 are based on state highway classification and vary with posted speed (see Table 7). Generally, the faster the speed limit, the greater the minimum required distance between accesses.

  The City of Lincoln City and Lincoln County do not identify minimum intersection spacing standards for driveways or public roadways under their jurisdiction.

Table 7: Lincoln City Access Spacing Standards for US 101

Roadway Segment	Posted Speed Limit, Designation	Minimum Driveway Spacing
US 101 from the North UGB (near Clancy Road) to just east of Logan Road	45 mph	800 feet
US 101 from just east of Logan Road to SE 48th Place	30 to 35 mph	500 feet
US 101 from SE 48th Place to SW 51st Street	30 to 35 mph, STA	*see note for spacing in STAs
US 101 from SW 51st Street just south of 63rd Street	30 to 35 mph	500 feet
US 101 from just south of 63rd Street to the south UGB (just north of 64th Street)	45 mph	800 feet

Source: 1999 Oregon Highway Plan, Appendix C Revisions to Address Senate Bill 264
*In STAs driveways are discouraged. However, where driveways are allowed and where land use patterns permit, the minimum spacing for driveways is 150 feet or mid-block if the current city block is less than 300 feet.

- **Seismic Lifeline Routes:** Oregon Highway Plan (OHP) Goal 1, Policy 1E designates routes for emergency response in the event of an earthquake. In Lincoln City, US 101, SE 51st Street and Schooner Creek Road are classified in the ODOT Emergency Operations Plan as Priority 1 Lifeline Routes (see Figure A7 in the appendix), considered essential for emergency response within the first 72 hours after an event. Local emergency coordinators originally identified the Seismic Lifeline Routes in 1995. Based on the geological analysis available at the time, they determined these routes most likely to be available after a seismic event. The routes initially were used to assess the need for retrofitting state and local bridges. ODOT is currently in the process of updating the list of designated routes. US 101 is the best route for emergency response. It includes three bridges, however, that are vulnerable to damage. Any bridge that fails would block the highway, leaving no alternative route.

- **Tsunami Evacuation Routes:** The city of Lincoln City has developed a tsunami evacuation plan that details evacuation routes, evacuation sites, shelters, and evacuation areas (see Figure A9 in the appendix). Along evacuation routes, the city has installed signs and street markers to help guide residents to safety.

WHAT TRAVEL CONDITIONS DO PEOPLE FACE?

The assessment of transportation infrastructure in Lincoln City, which used the measures described in the previous section, is summarized below.

Safety Evaluation

Review of collision data identified patterns of motor vehicle, pedestrian, and bicyclist collisions.

ODOT's collision data from 2007 to 2011 (the most recent five years of available data) for all roadways in Lincoln City showed a total of 532 collisions (an average of over 105 collisions a year) in the city. A majority of these (about 67 percent) were either rear-end or turning type collisions (see Figure 6). Three percent of the collisions (about three a year), involved pedestrians and two percent (about two a year) involved bicycles.

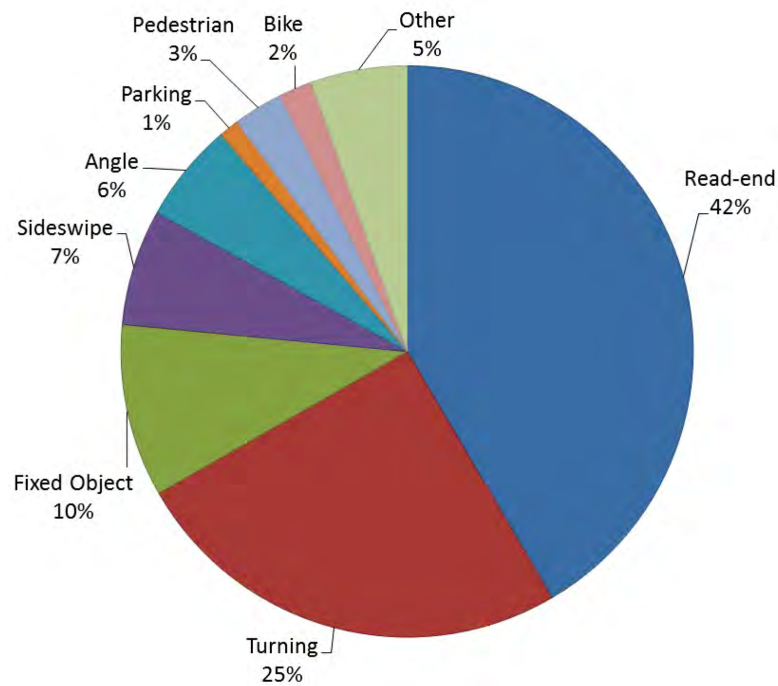


Figure 6: Collision Types (2007 to 2011)

Although two fatalities occurred during this period, severity of the collisions in Lincoln City over the past five years was generally low, with 80 percent involving property damage only (no injuries) or minor injuries.

Pedestrian Safety: Twelve of the fifteen collisions involving a pedestrian took place along US 101 and three along local roads (see Figure 7). Five of the collisions along US 101 occurred in Oceanlake between NW 15th Street and NW 18th Street, and another three occurred in Delake in a three-block section between SW 5th Street and City Hall.

One collision resulted in a fatality when a driver struck a pedestrian in dark clothing at the US 101/NE 35th Street intersection. Overall, 11 of the 15 pedestrian involved collisions from 2007 to 2011 were caused by drivers failing to yield the right of way. Pedestrians sustained at least moderate injuries in 10 of these collisions.

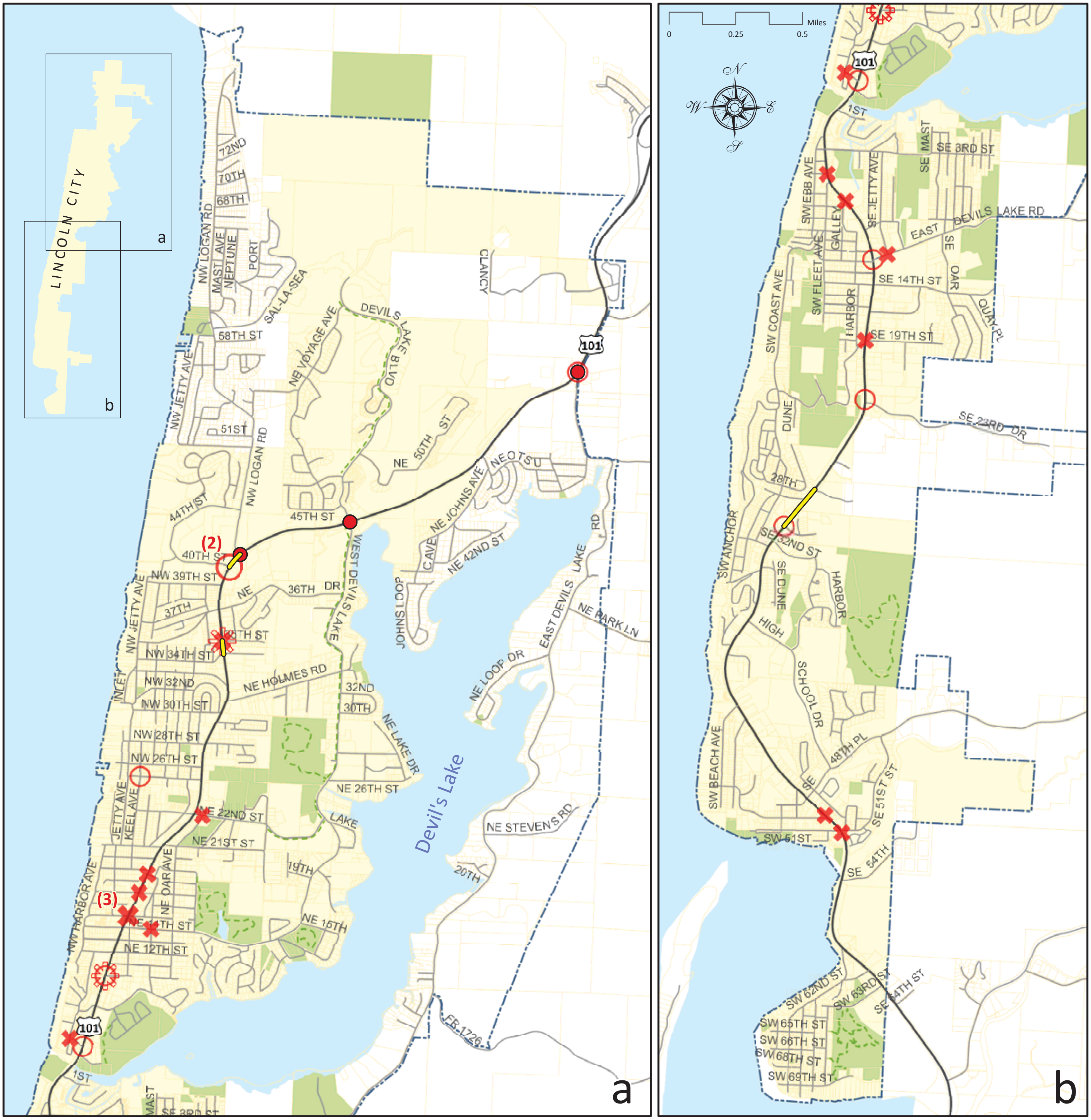
In 2012, another pedestrian was fatally struck while attempting to cross US 101 just north of NE 29th Street.

Bicycle Safety: From 2007 to 20011, ten collisions involved bicyclists. Of the 10 collisions, nine occurred along US 101 and one at the NW 25th Street/Keel Avenue intersection (see Figure 7). Three of the collisions involving a bicyclist occurred along US 101 between NW 40th Street and NW 39th Street. Most of the collisions were a result of the motorist failing to yield the right of way to the bicyclist when turning. One of the collisions resulted in a fatality (at the US 101/NE 10th Street intersection). Bicyclists sustained at least moderate injuries in 8 of the 10 collisions in this five year time period.

Intersection Safety: Collision rates (based on 2007-2011 collision data) for each of the 40 intersections reviewed in Lincoln City are in Table A2 in the appendix and summarized in Figure 7. Crash rates at three of the study intersections were high compared to similar intersections in the city:

- The US 101/NE East Devils Lake Road intersection is unsignalized; East Devils Lake Road yields the right-of-way. The intersection lacks left-turn lanes; therefore, drivers turning left onto East Devils Lake Road from southbound US 101 must stop in the travel lane when yielding to oncoming traffic. More than half (9 of the 15) of the collisions at this intersection were rear-end type in the southbound US 101 approach to NE East Devils Lake Road. This may indicate that drivers are caught off guard by stopped vehicles on the highway. The severity of the collisions was generally low, with most involving property damage only (no injuries) or minor injuries (12 of the 15). A bicyclist involved in one of the collisions sustained moderate injuries.
- The US 101/NE West Devils Lake Road signalized intersection is located in the portion of US 101 with a posted speed limit of 45 miles per hour. This is the first signalized intersection when traveling into Lincoln city from the north. Nearly half of the collisions (11 of the 23) involved drivers hitting a stopped vehicle when approaching the signal on US 101. This may indicate that drivers are caught off guard by queues from the intersection after traveling at uninterrupted higher speeds for an extended period of time. Major or moderate injuries resulted in nearly 35 percent of the collisions (8 of the 23). There were no fatalities.
- The US 101/NW Logan Road signalized intersection is one of the main routes to the Chinook Winds Casino Resort. Most of the collisions (23 of the 31) at this intersection were rear-end or turning type. The severity of the collisions was generally low, with no major injuries or fatalities, and 90 percent property damage only (no injuries) or minor injuries.

The crash rate for the SE High School Drive/ SE 48th Place intersection was slightly greater than similar intersections in the city; however, the two collisions from 2007 to 2011 at this location were not statistically significant for developing a collision trend.



7 High Collision Locations

Lincoln City
Transportation System Plan

High Collision Locations

- High Collision Location
- Hazardous Roadway (SPIS) Segment
- Collision Involving Bicycle
- Collision Involving Pedestrian
- Fatal Collision

note: 1 collision per location except where indicated.

- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

Roadway Segment Safety: Table 9 shows crash rates identifying the number of collisions per million vehicle-miles traveled on US 101 through the city. As shown, each of the segments of US 101 experienced crash rates below the statewide averages for similar facilities.

Table 9: Roadway Segment Analysis

US 101 Segment	Collisions (2007 to 2011)	Crash Rate per Million Vehicle Miles
Oregon Average Rate- Other Urban Principal Arterial		**2.49**
North city limits to North 22nd Street	127	1.79
North 22nd Street to South 32nd Street	208	1.70
South 32nd Street to Schooner Creek	46	1.04
Schooner Creek to south city limits	15	1.16

Source: US 101 Collision Data (2007-2011), ODOT Crash Analysis and Reporting Unit

The Safety Priority Index System (SPIS) is a method developed by ODOT for identifying hazardous locations on state highways. The score for each 0.10-mile segment of highway is based on three years of crash data, considering crash frequency, rate, and severity. SPIS compares each segment to the overall safety of the highways throughout the state.

According to ODOT 2011 SPIS ratings, three 0.10-mile segments of US 101 in Lincoln City rank among the top ten percent of the most hazardous sections of state highways in Oregon. The identified locations are shown in Figure 7 and summarized below.

- US 101 from NW Logan Road to just north of NW 39th Street

  This segment, which includes the US 101/NW Logan Road intersection, is frequented by visitors to the Chinook Winds Casino Resort—many of whom may be unfamiliar with the street network in the area, and therefore could be contributing to the amount of collisions. This segment experienced 3 of the 10 bicycle-related collisions over the past five years in Lincoln City.

- US 101 from NE 35th Street to NE 34th Street

  This segment experienced a pedestrian fatality at the NE 35th Street intersection, and 12 other collisions that occurred during the three-year SPIS analysis period. Several accesses within a short distance could be contributing to the amount of collisions.

- US 101 from SE 28th Street to just north of SE 31st Street

  This segment of US 101 includes several driveway and public street accesses within a short distance. In addition, one travel lane in each direction with no turn lanes requires drivers wanting to turn left from US 101 into a driveway or street to stop in the travel lane when yielding to oncoming traffic. These factors could be contributing to the amount of collisions.

Walking Conditions

The Lincoln City Walking and Biking Plan[9] identifies a number of conditions that provide challenges to pedestrians. These include:

Sidewalk gaps along US 101: The city has a relatively built-out sidewalk network in much of the major employment and shopping areas within the pearls along US 101. Sidewalk gaps along stretches of US 101 between each of the pearls include US 101 between NE East Devils Lake Road and NW Logan Road, NW 39th Street and NW 25th Street (through the Wecoma Pearl and connecting to the Oceanlake Pearl), SE 19th Street and SW Beach Avenue (through the Nelscott Pearl and connecting to the Delake and Taft Pearls), SE 54th Drive and SE 64th Street (through the Cutler City pearl and connecting to the Taft pearl).Gaps either lack sidewalks completely, or on one side for extended distances.

Discontinuous pedestrian facilities along US 101 at NE 36nd Drive

Residential neighborhood sidewalk connectivity: Sidewalk provides limited connections to and within the neighborhoods in the pearls. Several major streets connecting to and within the residential neighborhoods of the city, including NE East Devils Lake Road, NW Logan Road, NE Holmes Road, NE 14th Street, and SE 48th Place, either lack sidewalks completely, or on one side for extended distances. Sidewalk gaps are notable near the beach access points in Lincoln City, including along NW Jetty Avenue, NW Harbor Avenue, SW Ebb Avenue, SW Anchor Drive, SW Beach Avenue and SW 62nd Street. In addition, sidewalk gaps are evident around Oceanlake Elementary School and Taft Elementary-Middle School.

Pedestrian roadway crossings: US 101 has pedestrian crosswalks at a large number of intersections in Lincoln City where pedestrian activity is the highest. The Walking and Biking Plan identifies the need for further crosswalk enhancements. Most notable is the need for additional or improved crossings of US 101, where high motor vehicle volumes and speeds limit opportunities for safe pedestrian crossings.

Signalized crossings across US 101 are available at intersections with NE West Devils Lake Road, NE Logan Road, NW 22nd Street, NW 17th Street, NW 14th Street, NW 6th Drive, SE 1st Street, City Hall, SE East Devils Lake Road, SW 48th Street and SW 51st Street. Unsignalized marked crosswalks are available at NW 21st Street, NW 18th Street (midblock), NW 16th Street (midblock), NW 15th Street, NW 13th Street and NW 12th Street in the Oceanlake Pearl, NE 11th Street and SW 3rd Street in the Delake Pearl and SW 50th Street in the Taft Pearl. US 101 has no marked pedestrian crossings (signalized or unsignalized) for over one mile between NW Logan Road and NW 22nd Street (including through the Wecoma pearl), for over two miles between SE East Devils Lake Road

---

[9] Lincoln City Walking and Biking Plan, November 2012

and SW 48th Street (including through the Nelscott pearl), and south of SW 51st Street through Cutler City, a distance of three-quarters of a mile.

Bicycling Conditions

The Lincoln City Walking and Biking Plan[10] identifies a number of conditions that provide challenges to bicyclists. These include:

Bicycle facilities gaps along US 101: Despite being the primary north/south biking route, bike lanes are available only along a few short segments of US 101, and shoulder facilities are available intermittently through the city. Bike lane gaps on US 101 should be addressed to provide connectivity for bicyclists through the city.

Neighborhood bicycle connectivity: Facilities for bicyclists offer limited connections to the pearls and within the neighborhoods. Bicycle facilities are available on portions of NE Logan Road, NE West Devils Lake Road (via a shared-use path), NW 21st Street, SE 3rd Street, and SE East Devils Lake Road.

Lack of bicycle facilities at US 101 and Logan Road

Driving Conditions

The motor vehicle conditions in Lincoln City vary based on the time of year. During the summer (typically in August), traffic volumes are much higher than during the average weekday (typically in late May and early September) and, therefore, intersection operations are worse. For this reason, the transportation system plan evaluated the motor vehicle conditions at the 40 study intersections during both summer and average weekday conditions. The evaluation utilized 2000 Highway Capacity Manual methodology[11] for signalized intersections and 2010 Highway Capacity Manual methodology[12] for unsignalized intersections.

Summer p.m. peak hour intersection operations are within the adopted/considered mobility targets, as shown in Figure 8a and summarized in Table A3 in the appendix. Most of the intersections operate with v/c ratios of 0.75 or less, indicating that they have a significant amount of reserve capacity to accommodate future growth. The US 101/NE Logan Road intersection is operating with the highest v/c ratio at 0.82, eight percent less than its mobility target of 0.90 v/c.

---

[10] Ibid
[11] *2000 Highway Capacity Manual*, Transportation Research Board, Washington DC, 2000
[12] *2010 Highway Capacity Manual*, Transportation Research Board, Washington DC, 2010

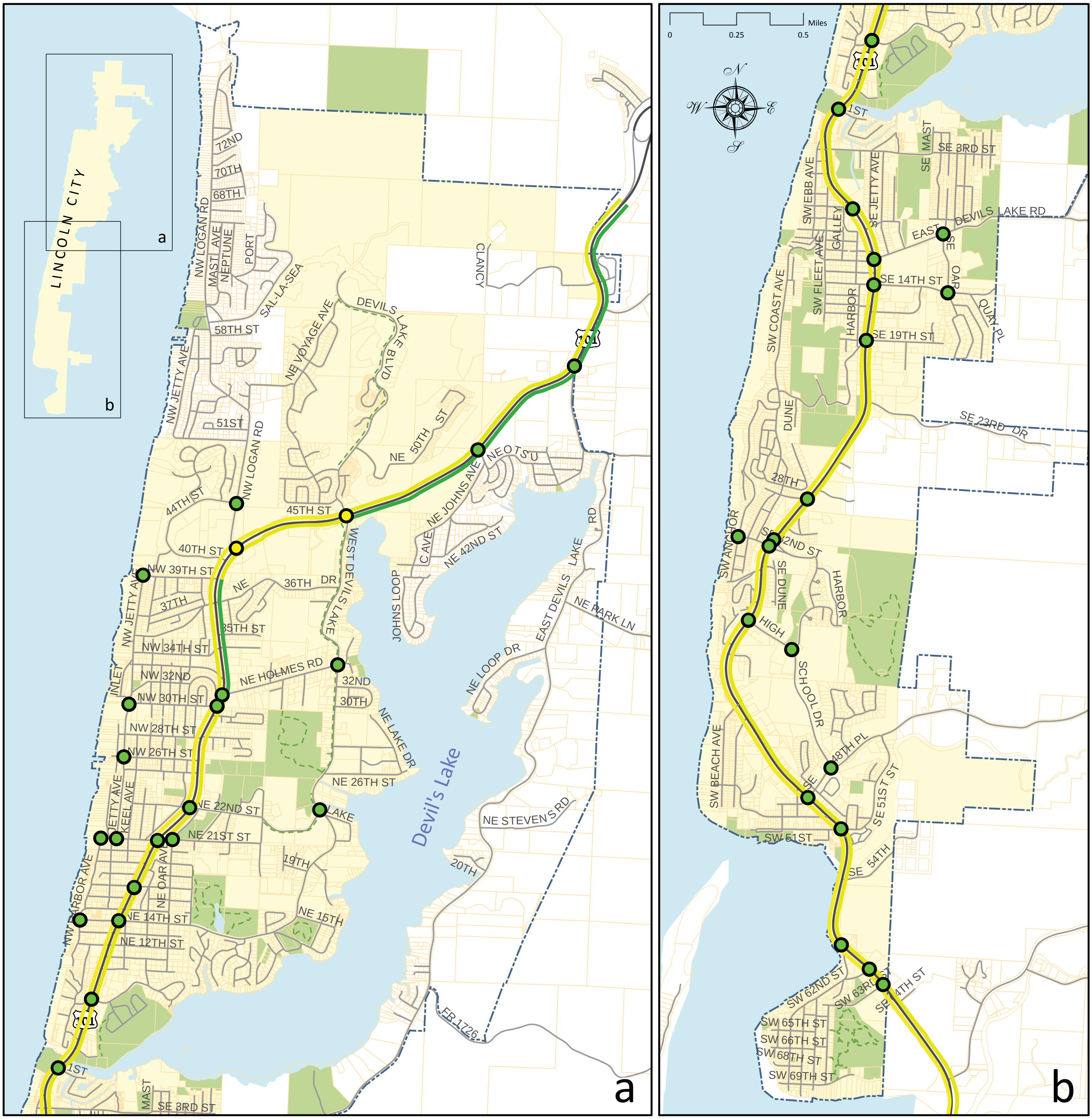
Based on peak hour analysis, summer conditions appear to be uncongested. However, higher traffic volumes and worse congestion occurs during summer weekends. On Sundays from late July through early September, generally within the hours of 12 p.m. and 4 p.m., traffic volumes are approximately 10 percent higher than on weekdays. This corresponds with check-out times for hotels and vacation rentals, and likely represents visitors leaving the city after their stay.

Summer p.m. peak hour motor vehicle speeds were compared to free-flow travel speeds[13] using historical traffic speed data on US 101 through the city. The data, obtained from ODOT, is based on three years of collected speed values between 2008 and 2010. As shown in Figure 8a, drivers generally experienced reasonably unimpeded travel speeds along US 101 during the summer evening peak hour. This means that drivers experienced some congestion when compared to travel during non-peak months, however, were able to reach speeds about 75 to 85 percent of free-flow conditions.

Average weekday p.m. peak hour intersection operations (shown in Figure 8b and summarized in Table A3 in the appendix) are generally better than the summer operations at all intersections reviewed. In addition, all intersections operate within the adopted mobility targets. Only one intersection (US 101/NE Logan Road) operates with a v/c ratio greater than 0.60. Its v/c ratio is about 22 percent less than the v/c ratio during the summer. Overall, the intersections have a significant amount of reserve capacity to accommodate future growth during average weekday conditions.

Average weekday p.m. peak hour motor vehicle speeds show that drivers generally were able to experience free-flow travel speeds along US 101 (based on the three years of data) during the evening peak hour, as shown in Figure 8b. Overall, drivers during an average weekday were able to travel at speeds approximately 10 percent higher than those during the summer.

[13] Inrix free-flow travel speed is based on the 85th percentile speed over the entire year



8a Motor Vehicle Operating Conditions (P.M. Peak) - Summer

Lincoln City
Transportation System Plan

Roadway Travel Speed compared to Free-Flow Speed

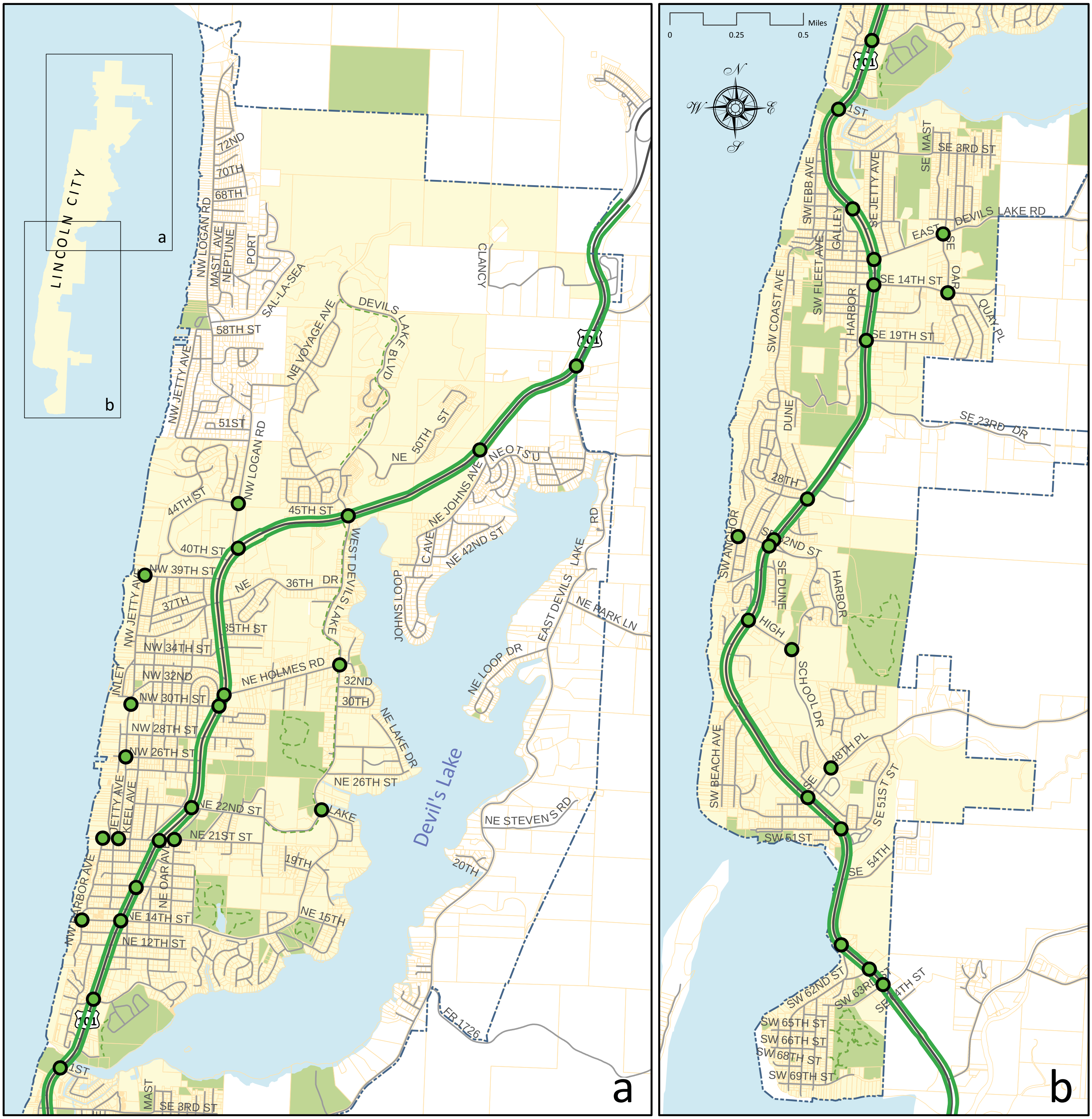
- Free-Flowing Conditions (LOS A)
- Reasonably Unimpeded Conditions (LOS B)
- Slowing Conditions (LOS C)
- Unstable Conditions (LOS D)
- Congested Conditions (LOS E/F)

Peak Seasonal Intersections Operations

- Good
- Approaching Target
- Does Not Meet Target

- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS



8b Motor Vehicle Operating Conditions (P.M. Peak) - Average Weekday

Lincoln City
Transportation System Plan

Roadway Travel Speed compared to Free-Flow Speed

- Free-Flowing Conditions (LOS A)
- Reasonably Unimpeded Conditions (LOS B)
- Slowing Conditions (LOS C)
- Unstable Conditions (LOD D)
- Congested Conditions (LOS E/F)

Peak Seasonal Intersections Operations

- Good
- Approaching Target
- Does Not Meet Target

- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

SUMMARY OF EXISTING DEFICIENCIES

Several existing transportation system gaps and deficiencies were noted in the previous sections.

Key transportation system gaps for pedestrians in Lincoln City include:

- Lack of sidewalks and enhanced pedestrian crossings along portions of US 101
- Lack of sidewalks/crossings along key routes to the pearls and other shopping areas (e.g., NW 15th Street and NE 14th Street in Oceanlake, SW 35th Street in Nelscott, and SE 48th Place and SW 50th Street in Taft)
- Lack of sidewalks along routes to parks and open spaces (e.g., NW Logan Road near Roads End State Park, and NE 14th Street near Regetta Park)
- Gaps in the sidewalk network along portions of transit routes (e.g., US 101, NE Holmes Road, SW 32nd Street, NE West Devils Lake Road, and SE High School Drive)

Key transportation system gaps for bicyclists in Lincoln City include:

- Lack of bike lanes or sufficient shoulders along portions of US 101
- Lack of bike lanes or sufficient shoulders on arterial and major collector streets in Lincoln City (e.g., NW Logan Road, NE East Devils Lake Road, NE 14th Street, SE High School Drive, and SE 48th Place)
- Lack of bicycle wayfinding signage and shared-lane pavement markings on streets off US 101
- Limited bicycle parking near destinations

Key transportation system gaps for transit users in Lincoln City include:

- Limited number of bus stops with shelters and other amenities
- Lack of pedestrian crossings near bus stops (e.g., across US 101 near NW 34th Street, NW 25th Street, SW Ebb Avenue, SE 19th Street, SW 32nd Street, and SE 64th Street)
- Lack of transit service in the Roads End neighborhood

Key transportation system issues for drivers in Lincoln City include:

- Summer weekends often result in increased traffic congestion at intersections in the city

The crash rates at the following three intersections were identified as high when compared to similar intersections in the city:

- US 101/NE East Devils Lake Road
- US 101/NE West Devils Lake Road
- US 101/NW Logan Road

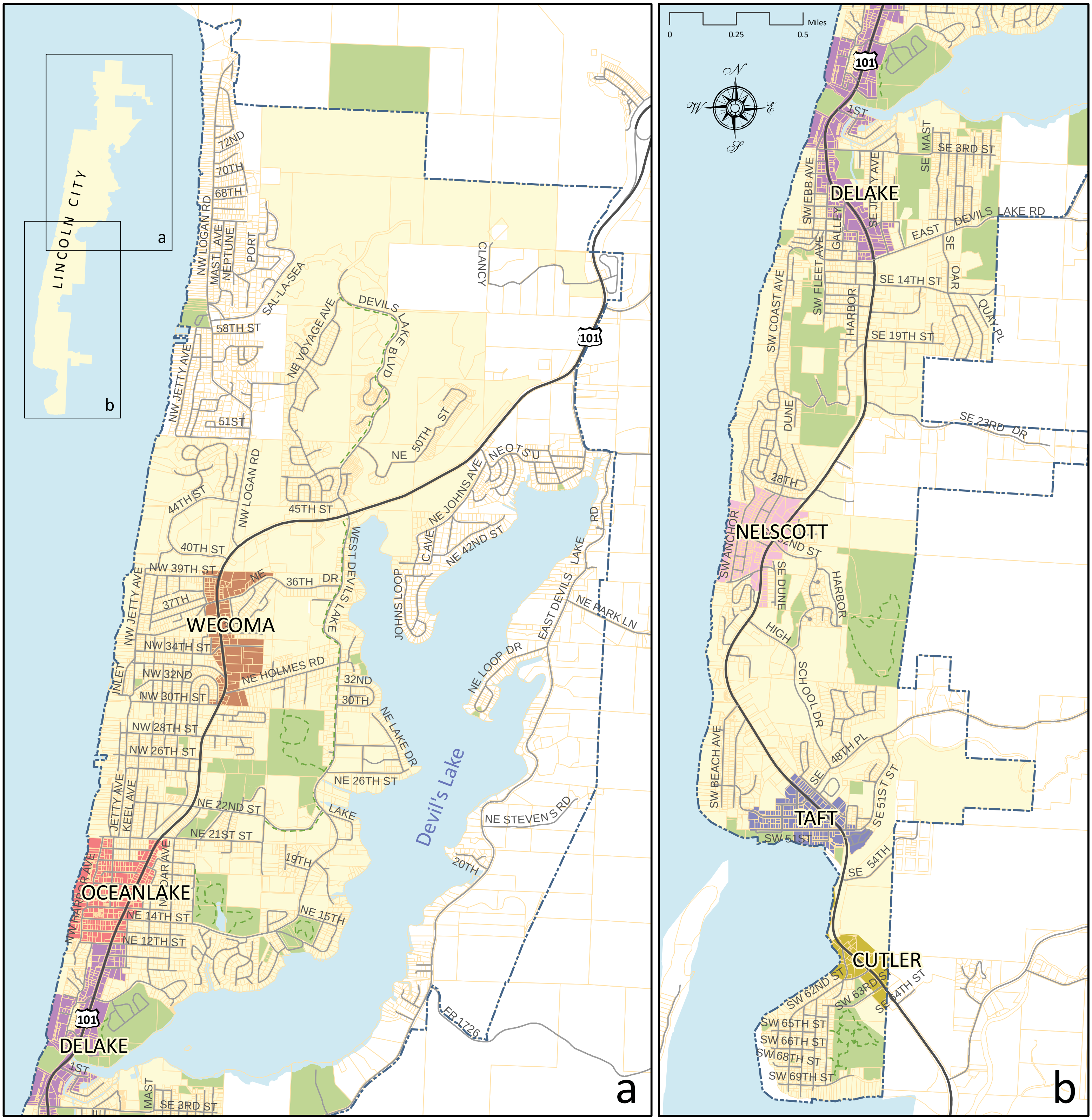
According to ODOT's 2011 Safety Priority Index System ratings, the following three segments of US 101 were identified as hazardous locations and rank among the top ten percent of state highways in Oregon:

- US 101 from NW Logan Road to just north of NW 39th Street
- US 101 from NE 35th Street to NE 34th Street
- US 101 from SE 28th Street to just north of SE 31st Street

Technical Memorandum #6 Appendix

Lincoln City Transportation System Plan
Existing Transportation Conditions

May 29, 2013



A1 Lincoln City Pearls

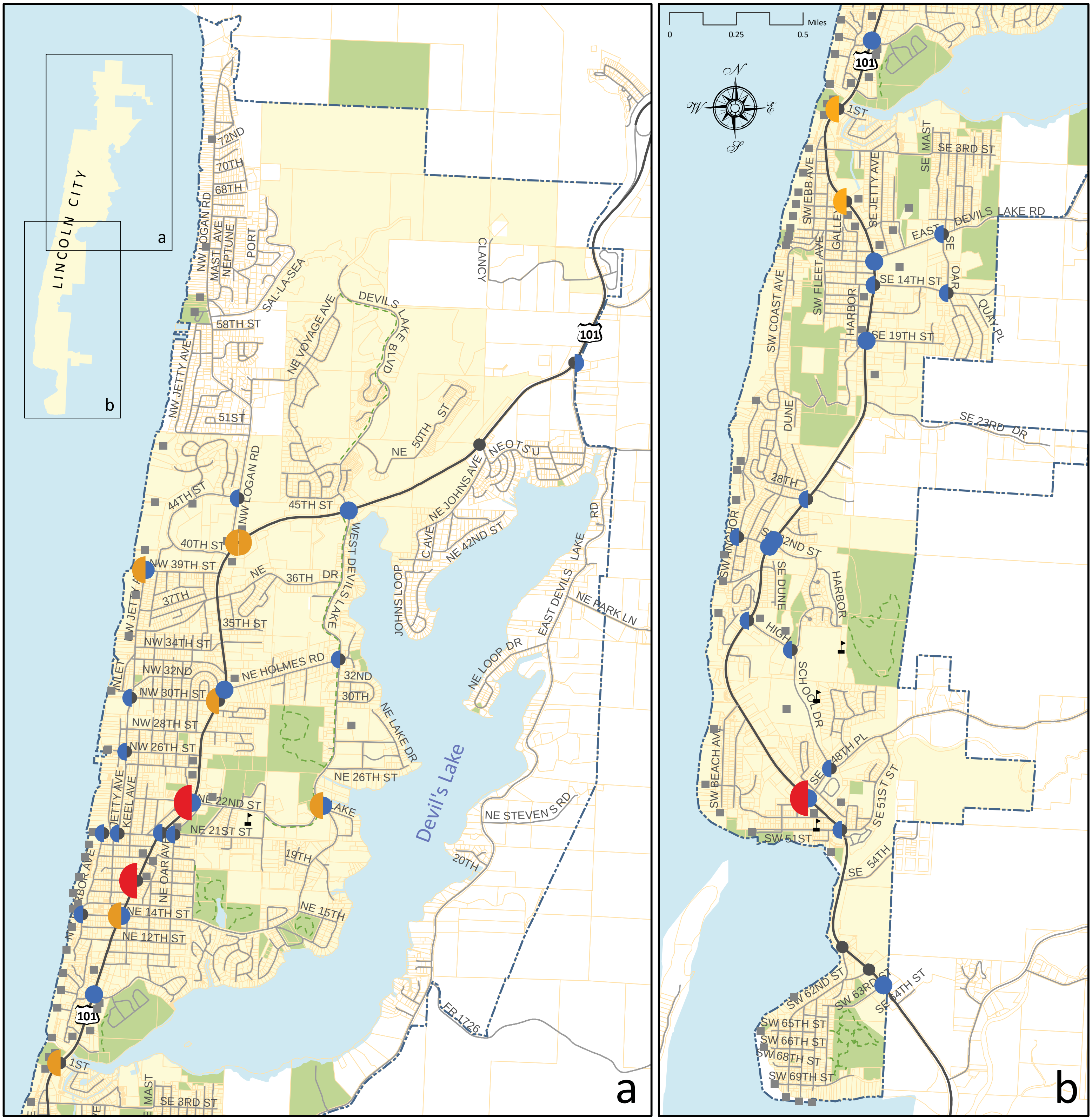
Lincoln City
Transportation System Plan

Pearls

- Wecoma
- Oceanlake
- Delake
- Nelscott
- Taft
- Cutler

- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS



A2 Pedestrian and Bicycle Evening Peak Hour Activity

Lincoln City
Transportation System Plan

Pedestrian Activity	*Bicycle Volume*
None	None
Low (1 - 15)	Low (1 - 15)
Moderate (16 - 29)	Moderate (16 - 29)
High (30 - 110)	*note: maximum bicycle count is 24*

School

Activity Generator

Shared-Use Path

Park

City Limit

Parcel

Urban Growth Boundary

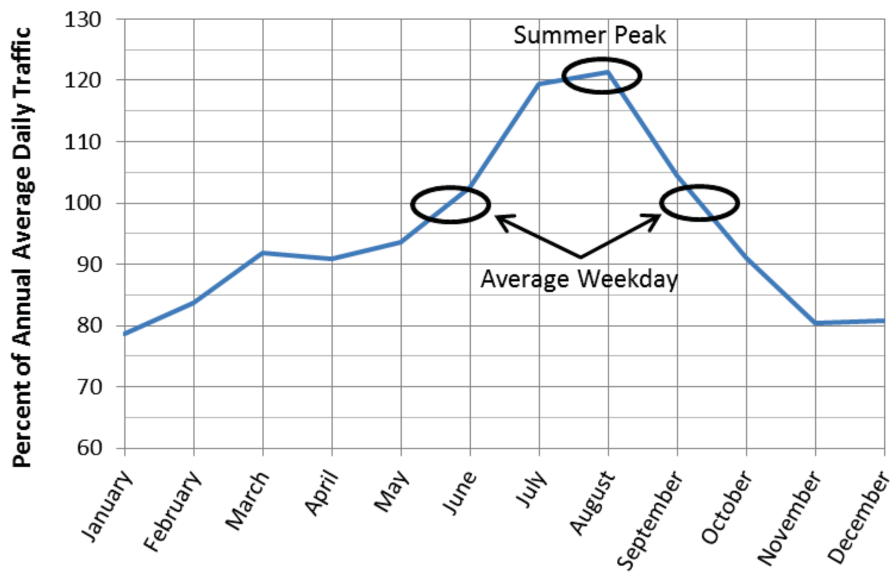
DKS

MOTOR VEHICLE VOLUMES

The traffic count data collected in Lincoln City during the fall generally represented the period between the summer and average weekday conditions, and required adjustment to reach the desired conditions using methodology from the ODOT Analysis Procedures Manual . Using average annual daily traffic volumes from the Automatic Traffic Recorder (ATR) on US 101 near NE Devils Lake Boulevard (ATR #21-007) for study intersections north of the US 101/NW 39th Street intersection and ATR 21-008 (on US 101 near SE 1st Street) for study intersections south of the US 101/NW 39th Street intersection, two seasonal factors were developed and applied to the count data to represent summer (referred to as the 30th highest annual hour (30 HV) volume) and average weekday traffic volumes. The summer condition was further calibrated by developing a factor based on the percent difference between the seasonally factored count data and the actual 30 HV obtained from ATR historical data. The final p.m. peak summer and average weekday traffic volumes developed for the reviewed intersections are displayed in Figure A3.

Summer Motor Vehicle Volumes: The collected count data was factored upward to replicate the conditions when traffic volumes are typically highest. This occurs in August in Lincoln City as shown in the image on the right. Using average annual daily traffic volumes from the ATR's, two seasonal factors were established.

Average Weekday Motor Vehicle Volumes: The collected count data was factored to replicate average weekday traffic volumes for the year. In Lincoln City, average weekday traffic volumes occurred in late May and early September along US 101 (as shown in the image above). Using average annual daily traffic volumes from the ATR's, two seasonal factors were established.



Summer volumes are generally 20 percent higher than those along the highway during an average weekday

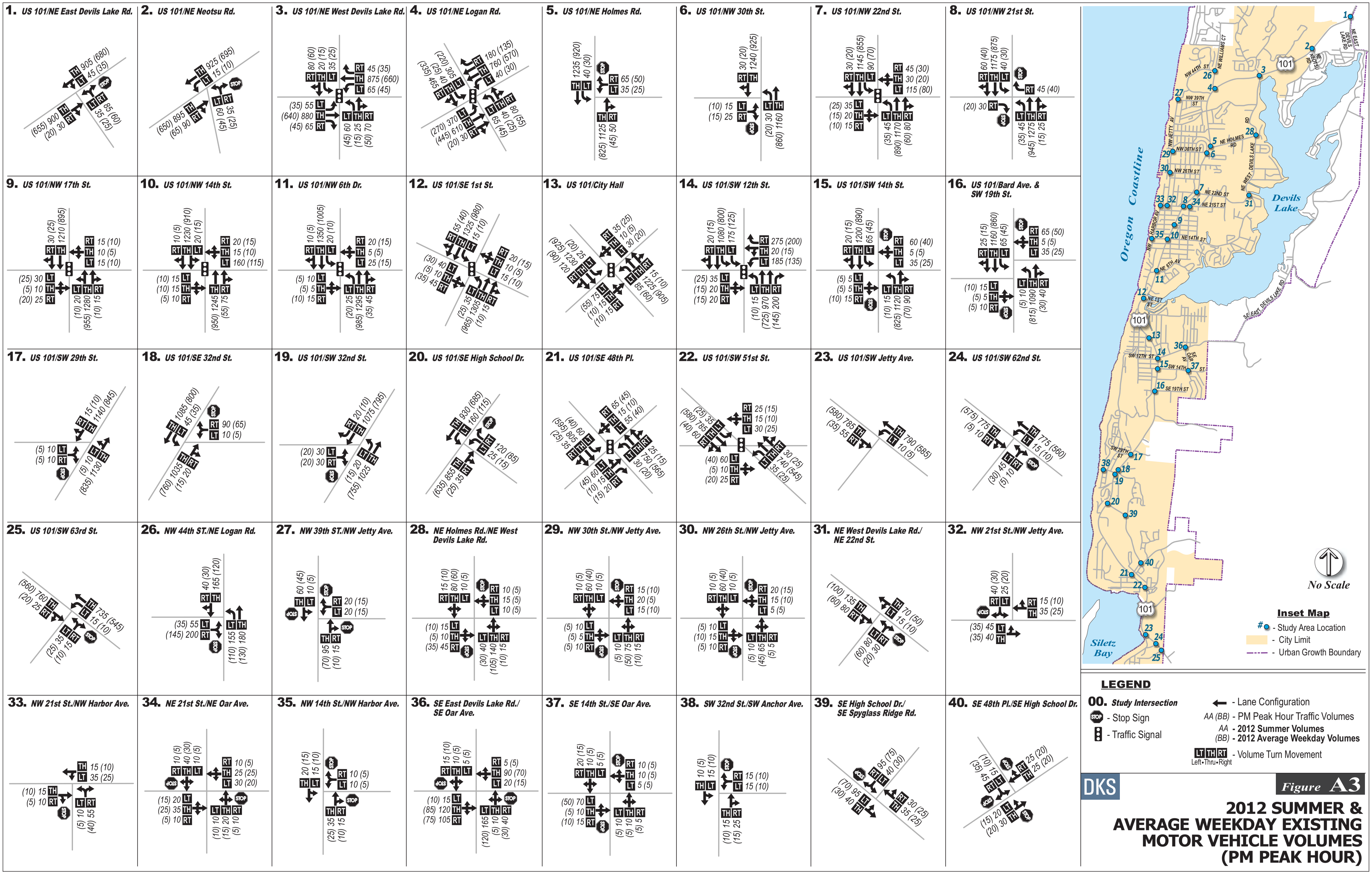


Figure A3

2012 SUMMER & AVERAGE WEEKDAY EXISTING MOTOR VEHICLE VOLUMES (PM PEAK HOUR)

Table A1 Roadway Inventory

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
US 101										
Drift Creek Road to S. 64th Street	Arterial	State		38	2	Shoulder	No	Bike Route	55	V. Good
S. 64th Street to S. 54th Drive	Arterial	State		38	3	Shoulder	No	Bike Route	35	V. Good
S. 54th Drive to S. 52nd Court	Arterial	State		37	2	Shoulder	6'	Bike Route	30	V. Good
S. 52nd Court to S. 48th Street	Arterial	State		62	4	Both Sides	8-10' Both Sides	Bike Route	30	V. Good
S. 48th Street to Beach Avenue	Arterial	State		67	4	Shoulder	No	Bike Route	30	V. Good
Beach Avenue to S. 32nd Street	Arterial	State		47	3	Shoulder	No	Bike Route	35	V. Good
S. 32nd Street to S. 19th Street	Arterial	State		39	2	Shoulder	No	Bike Route	35	V. Good
S. 19 Street to East Devils Lake Road	Arterial	State		82	4	Shoulder	No	Bike Route	35	V. Good
East Devils Lake Road to Galley	Arterial	State		71	5	Shoulder	No	Bike Route	35	V. Good
Galley Street to Fleet Street	Arterial	State		63	4	Shoulder	No	Bike Route	35	V. Good
Fleet Street to Ebb Street	Arterial	State		65	4	Both Sides	8' Both Sides	Bike Route	35	V. Good
Ebb Street to S. 1st Street	Arterial	State		65	4	No	No	Bike Route	35	V. Good
S. 1st Street to 'D' River Bridge	Arterial	State		65	4	No	6' Both Sides	Bike Route	35	V. Good
D' River Bridge to N. 1st Street	Arterial	State		60	4	No	No	Bike Route	30	V. Good
N. 1st Street to N. 10the	Arterial	State		60	5	No	4'-9' Both	Bike	30	V. Good

DKS

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
Street							Sides	Route		
N. 10th Street to N. 16th Street	Arterial	State		60	5	No	4'-9' Both Sides	Bike Route	30	V. Good
N. 16th Street to N. 17th Street	Arterial	State		60	5	Westbound	4'-9' Both Sides	Bike Route	30	V. Good
N 17th Street to N. 18th Street	Arterial	State		60	5	Eastbound	4'-9' Both Sides	Bike Route	30	V. Good
N 18th Street to N. 21st Street	Arterial	State		60	4	Both Sides	4'-9' Both Sides	Bike Route	30	V. Good
N. 21st Street to N. 22nd Street	Arterial	State		78	5	Westbound	4'-9' Both Sides	Bike Route	30	V. Good
N. 22nd Street to N. 26th Street	Arterial	State		80	4	No	4'-9' Both Sides	Bike Route	30	V. Good
N. 26th Street to N. 34th Street	Arterial	State		60	3	No	4'-9' Both Sides	Bike Route	30	V. Good
N. 34th Street to N. 36th Street	Arterial	State		55	3	No	No	Bike Route	30	V. Good
N. 36th Street to Logan Road	Arterial	State		77	3	No	4'-9' Both Sides	Bike Route	30	V. Good
Logan Road to East Devils Lake Road	Arterial	State		31	2	No	4'-9' Both Sides	Bike Route	45	V. Good
SW 69th Street										
SW Fleet Avenue to SW Galley Avenue	Minor Collector	City	50	16	2	No	No	Bike Route	25	V. Good
SW Galley Avenue to SW Harbor Avenue	Minor Collector	City	50	16	2	No	No	Bike Route	25	V. Good
SW Harbor Avenue to SW Inlet Avenue	Minor Collector	City	30	20	2	No	No	Bike Route	25	V. Good
SW Inlet Avenue										
SW 63rd Street to SW 64th Street	Minor Collector	City		29	2	Both Sides	No	Bike Route	25	V. Bad

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
SW 64th Street to SW 65th Street	Minor Collector	City		29	2	Both Sides	No	Bike Route	25	Good
SW 65th Street to SW 66th Street	Minor Collector	City		29	2	Both Sides	No	Bike Route	25	Good
SW 66th Street to SW 67th Street	Minor Collector	City		28	2	Both Sides	No	Bike Route	25	V. Bad
SW 63rd Street										
SW Inlet Avenue to SW Keel Avenue	Minor Collector	City	50	30	2	Shoulder	No	Bike Route	25	V. Good
SW Inlet Avenue to West to Dead End	Minor Collector	City	40	24	2	Shoulder	No	Bike Route	25	V. Good
SW Keel Avenue to S. Hwy. 101	Minor Collector	City	40	29	2	Shoulder	No	Bike Route	25	V. Good
W 68th Street										
West End to SW Fleet Avenue	Minor Collector	City	50	17	2	No	No	No	25	V. Good
SW Fleet Avenue/62nd Street										
S. Hwy. 101 to SW 50th Street	Minor Collector	City		24	2	Shoulder	No	Bike Route	25	V. Good
SW 62nd Street to SW 69th Street	Minor Collector	City		17	2	Shoulder	No	Bike Route	25	V. Good
SW Jetty Avenue										
US 101 to SW 62nd	Minor Collector	City		13	1	Shoulder	No	Bike Route	25	V. Good
SE Schooner Creek Road										
US 101 to Keel Avenue	Minor Collector	City		31	2	Westbound	No	No	35	V. Good
Keel Avenue to City Limits	Minor Collector	City	50	24	2	Shoulder	No	No	35	V. Good
SW 51st Street										

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
West End to US 101	Minor Collector	City	50	36	2	Both Sides	6' Both Sides	No	25	V. Good
SW 50th Street/SW 48th Street										
US 101 to Galley Avenue	Minor Collector	City	50	40	2	Both Sides	6' Westbound	Bike Route	25	V. Good
Galley Avenue to Ebb Avenue	Minor Collector	City	50	27	2	Shoulder	Shoulder	Bike Route	25	V. Good
Ebb Avenue to Beach Avenue	Minor Collector	City	50	22	2	Shoulder	No	Bike Route	25	V. Good
SW Beach Avenue										
SW 48th Street to S. Hwy. 101	Minor Collector	City	40	22	2	Shoulder	No	Bike Route	25	V. Good
SW Coast Avenue										
SW 48th Street South to Dead End	Minor Collector	City	45	24	2	No	No	No	25	Fair
SW 48th Street to Access	Minor Collector	City	45	22	2	Shoulder	No	No	25	V. Good
Access to S. Hwy. 101	Minor Collector	City	45	18	2	Shoulder	No	No	25	V. Good
SW 32nd Street to SW 29th Street	Minor Collector	City	40	22	2	Shoulder	No	No	25	V. Good
SW 29th Street to SW 28th Street	Minor Collector	City	40	17	2	No	No	No	25	V. Good
SW 28th Street to SW Beach Avenue	Minor Collector	City	40	19	2	No	No	No	25	V. Good
SW 24th Drive to SW Bard Loop	Major Collector	City	40	20	2	No	No	No	25	V. Good
SW Bard Loop to SW 14th Street	Major Collector	City	40	17	2	No	No	No	25	Bad
SW 14th Street to SW	Major	City	40	17	2	No	No	No	25	V. Good

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
Terrace Drive	Collector									
SE High School Drive										
S. Hwy. 101 to SE Spyglass Ridge Drive	Minor Collector	City	50	26	2	No	No	Bike Route	25	V. Good
SE Spyglass Ridge Drive to SE 48th Place	Minor Collector	City	50	26	2	No	No	Bike Route	25	V. Good
SW 35th Street										
S. Hwy. 101 to Anchor Avenue	Major Collector	City	50	20	2	No	No	No	25	V. Good
SW Anchor Avenue										
SW 24th Street to SW Anchor Court	Major Collector	City	40	20	2	No	No	No	25	Good
SW 30th Street to SW 32nd Street	Major Collector	City	35	20	2	No	No	No	25	Good
SW 32nd Street to Access to Beach Avenue	Major Collector	City	55	28	2	No	No	No	25	V. Good
SW 33rd Street to SW 34th Street	Major Collector	City	55	28	2	No	No	No	25	V. Good
SW 34th Street to SW 35th Street	Major Collector	City	55	28	2	No	No	No	25	V. Good
SW 24th Drive										
SW Anchor Avenue to SW Coast Avenue	Major Collector	City	40	15	2	No	No	No	25	V. Good
SW 11th Drive										
SW Coast Avenue to SW Fleet Drive	Major Collector	City	40	19	2	No	No	No	15	V. Bad
SW Fleet Avenue to SW Galley Avenue	Major Collector	City	40		2	No	No	No	15	Bad
SW Galley Avenue to SW Harbor Avenue	Major Collector	City	50	12	2	No	No	No	15	Gravel

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
SW Harbor Avenue to Hwy. 101	Major Collector	City	40		2	No	No	No	15	Bad
SW 11th Drive										
S. 48th Place and S. 51st Street	Minor Collector	City	40	19	2	Shoulder	No	No	25	Good
SE 32nd Street										
S. Hwy. 101 to East End	Minor Collector	City	50	35	2	Yes	5' South Side	No	25	V. Good
SW 32nd Street										
SW Anchor to SW Beach Avenue	Minor Collector	City	50	33	2	No	No	No	25	V. Bad
SW Beach to SW Coast Avenue	Minor Collector	City	50	27	2	No	No	No	25	Bad
SW Coast Avenue to S. Hwy. 101	Minor Collector	City	50	28	2	No	No	No	25	V. Good
SW Bard Road										
SW Coast Avenue to SW Fleet Avenue	Minor Collector	City	40	17	2	No	No	No	20	Gravel
SW Fleet Avenue to SW Harbor Avenue	Minor Collector	City	30	17	2	No	No	No	20	Gravel
SW Harbor Avenue to Hwy. 101	Minor Collector	City	30	16	2	No	No	No	20	Gravel
SW Harbor Road										
SW Bard to Hwy. 101	Minor Collector	City		20	2	Shoulder	No	No	25	V. Good
SW 19th Street										
US 101 to "Chapel by the Sea"	Local Street	City		23	2	No	No	No	25	V. Good
"Chapel by the Sea" to east end	Local Street	City		23	2	Westbound	Yes	No	25	V. Good

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
SW 14th Street										
US 101 to east end of "Factory Outlet"	Local Street	City		28	2	No	Eastbound	No	25	V. Good
East end of "Factory Outlet" to Oar Street	Local Street	City		23	2	No	No	No	25	V. Good
Oar Street to Fleet Street	Local Street	City		22	2	No	No	No	25	V. Good
SW 12th Street										
US 101 to SW Fleet Avenue	Major Collector	City		23	2	Shoulder	No	No	25	V. Good
SW 9th Street										
SW Ebb Avenue to SW Fleet Avenue	Major Collector	City	40	8	2	Both Sides	No	No	25	V. Good
SW Ebb Avenue										
Hwy. 101 to SW 6th Street	Major Collector	City		36	2	Shoulder	No	No	25	V. Good
SW 6th Street to SW 8th Street	Major Collector	City		20	2	Shoulder	No	No	25	V. Good
SW 8th Street t oSW 10th Plaza	Major Collector	City		20	2	No	No	No	25	V. Good
SE 3rd Street										
Jetty Avenue to Neptune Avenue	Minor Collector	City	35	22	2	No	No	No	25	V. Good
Neptune Avenue to Port Avenue	Minor Collector	City	40	18	2	Shoulder	No	No	25	V. Good
SE Port Avenue										
SE 3rd Street to North to Dead End	Minor Collector	City	40	Gravel	2	Shoulder	No	No	25	Bad
SE 3rd Street to SE 5th Street	Minor Collector	City	40	18	2	Shoulder	No	No	25	V. Good
SE 55th Street to SE 56th	Minor	City	60	22	2	Shoulder	No	No	25	V. Good

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
Street	Collector									
SE 55th Street to WW Treatment Plant	Minor Collector	City	60	22	2	Shoulder	No	No	25	V. Good
SE 56th Street to SE 57th Street	Minor Collector	City	60	18	2	Shoulder	No	No	25	V. Good
SE 8th Street to EDL Road	Minor Collector	City	40	18	2	Shoulder	No	No	25	V. Good
SE East Devils Lake Road										
US 101 (South end) to Port Avenue	Major Collector	City	60	24	2	No	No	Bike Route	25	V. Good
City Limits to Port Avenue	Major Collector	City	60	22	2	No	No	Bike Route	35	V. Good
Port Avenue to US 101 (North end)	Major Collector	County	60	25	2	No	No	Bike Route	35	V. Good
NE 14th/West Devils Lake Road										
US 101 (North end) to Holmes Road	Major Collector	City	60	24	2	No	No	Bike Route	35	V. Good
NE 26th Street to NE 22nd Street	Major Collector	City	60	24	2	Shoulder	No	Bike Route	25	V. Good
NE 22nd Street to NE Port Avenue	Major Collector	City		24	2	No	No	No	25	V. Good
NE Port Avenue to US 101 (Flasher at Oar Avenue)	Major Collector	City		24	2	No	No	No	25	V. Good
NW 14th Street										
US 101 to Harbor Avenue	Minor Collector	City	40	21	2	No	No	No	25	V. Good
NE 6th Drive										
US 101 to Devils Lake State Park Access	Minor Collector	City	50	24	2	No	No	No	25	V. Good
Devils Lake State Park Acess to NE Mast Avenue	Minor Collector	City	50	22	2	No	No	No	25	Good

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
NE 7th Drive to NE Mast Avenue	Minor Collector	City	60	18	2	No	No	No	25	V. Good
NW Inlet Avenue										
NW 1st Street to NW 5th Street	Major Collector	City	30	24	2	No	No	Bike Route	25	V. Good
NW 5th Street to 6th Street	Major Collector	City	30	19	2	No	No	Bike Route	25	V. Good
NW 6th Drive to NW 6th Court	Major Collector	City	30	24	2	No	No	Bike Route	25	V. Good
NW 6th Court to Access to Harbor	Major Collector	City	30	23	2	No	No	Bike Route	25	V. Good
SW 12th Street South to Access	Major Collector	City	30	22	2	No	No	Bike Route	25	V. Good
NW Harbor Avenue										
NW 12th Street to Access West	Major Collector	City	40	22	2	No	No	Bike Route	25	V. Good
NW 12th Street to South to Access Beach	Major Collector	City	30	30	2	No	No	Bike Route	25	V. Bad
NW 13th Street to NW 14th Street	Major Collector	City	40	22	2	No	No	Bike Route	25	V. Good
NW 14th Street NW 15th Street	Major Collector	City	40	29	2	No	No	Bike Route	25	V. Good
NW 15th Street to Access to Beach	Major Collector	City	40	30	2	Curbing	No	Bike Route	25	V. Good
NW 16th Street to NW 17th Street	Major Collector	City	40	30	2	Curbing	No	Bike Route	25	V. Good
NW 17th Street to NW Pacific Walk	Major Collector	City	40	30	2	Curbing	No	Bike Route	25	V. Good
NW 18th Street to Beach Walk	Major Collector	City	40	30	2	Curbing	No	Bike Route	25	V. Good
NW 19th Street to Fern	Major	City	40	30	2	Curbing	No	Bike	25	V. Good

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
Walk	Collector							Route		
NW 20th Street to NW 21st Street	Major Collector	City	40	30	2	Curbing	No	Bike Route	25	V. Good
NW Jetty Avenue										
NW 21st Street to NW 23rd Street	Major Collector	City	30	21	2	Yes	No	Bike Route	25	V. Good
NW 23rd Street to NW 25th Street	Major Collector	City	30	20	2	No	No	Bike Route	25	V. Good
NW 26th Street to NW 25th Street	Major Collector	City	50	29	2	No	No	Bike Route	25	V. Good
NW 26th Street to NW 28th Street	Major Collector	City	50	28	2	No	No	Bike Route	25	V. Good
NW 28th Street to NW 30th Street	Major Collector	City	40	30	2	No	No	Bike Route	25	V. Good
NW 30th Street to NW 31st Street	Major Collector	City	40	36	2	No	No	Bike Route	25	V. Good
NW 31st Place to NW 33rd Street	Major Collector	City	30	24	2	No	No	Bike Route	25	V. Good
NW 33rd Place to NW Inlet Avenue	Major Collector	City	40	28	2	No	No	Bike Route	25	V. Good
NW 34th Street to NW 35th Street	Major Collector	City	40	27	2	No	No	Bike Route	25	V. Good
NW 35th Court to NW 35th Place	Major Collector	City	30	27	2	Both Sides	No	Bike Route	25	V. Good
NW 35th Street to NW 37th Street	Major Collector	City	50	39	2	Both Sides	No	Bike Route	25	Fair
NW 37th Street to NW 39th Street	Major Collector	City	50	38	2	Both Sides	No	Bike Route	25	Good
NE Oar Avenue										
NE 10th Street to NE 11th Street	Minor Collector	City	40	21	2	No	No	No	25	V. Good

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
NE 11th Street to NE 12th Street	Minor Collector	City	40	20	2	No	No	No	25	V. Good
NE 12th Street to NE 13th Street	Minor Collector	City	40	20	2	No	No	No	25	V. Good
NE 13th Street to NE 14th Street	Minor Collector	City	40	20	2	No	No	No	25	V. Good
NE 14th Street to NE 15th Street	Minor Collector	City	40	20	2	No	No	No	25	V. Good
NE 15th Street to NE 16th Street	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NE 16th Street to NE 17th Street	Minor Collector	City	40	20	2	No	No	No	25	V. Good
NE 17th Street to NE 18th Street	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NE 18th Street to NE 19th Street	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NE 20th Street to NE 21st Street	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NE 21st Street to NE 22nd Street	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NE Port Avenue										
NE 14th Street to NE 15th Street	Minor Collector	City	20	Gravel	1	No	No	No	25	Bad
NE 15th Street to NE 16th Street	Minor Collector	City	40	Gravel	1	No	No	No	25	Bad
NE 16th Street to NE 17th Street	Minor Collector	City	40	Gravel	1	No	No	No	25	Bad
NE 17th Street to NE 18th Street	Minor Collector	City	40	Gravel	1	No	No	No	25	Bad
NE 18th Street to Access Road to East	Minor Collector	City	40	Gravel	1	No	No	No	25	Bad

DKS

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
NE 19th Street to NE 20th Street	Minor Collector	City	40	Gravel	1	No	No	No	25	Bad
NE 20th Street to NE 21st Street	Minor Collector	City	40	Gravel	1	No	No	No	25	Bad
NE Quay Plaza										
NE 21st Street to NE 22nd Street	Minor Collector	City	60	33	2	No	Both Sides	No	25	V. Good
NW 21st Street										
NW Jetty Avenue North to US 101	Major Collector	City	60	29	2	No	No	Bike Route	25	V. Good
Beach to NW Jetty Avenue South	Major Collector	City	40	37	2	No	No	No	25	V. Good
Reef Avenue to Surf Avenue	Major Collector	City	40	Gravel	2	No	No	No	25	Bad
NW Mast Plaza										
NW 21st Street to NW Mast Avenue	Minor Collector	City	40	36	2	No	No	No	25	V. Good
NW Mast Avenue to NW 22nd Street	Minor Collector	City	40	36	2	No	No	No	25	V. Good
NW 22nd Street										
NW Keel Avenue to NW Lee Avenue	Minor Collector	City	50	20	2	No	4' Eastbound	No	25	V. Good
NW Lee Avenue to NW Mast Avenue	Minor Collector	City	50	32	2	No	4' Eastbound	No	25	V. Good
NW Mast Avenue to NW Mast Place	Minor Collector	City	70	32	2	No	4' Eastbound	No	25	V. Good
NW Mast Place to US 101	Minor Collector	City	70	36	2	No	4' Eastbound	No	25	V. Good
NE 22nd Street										
US 101 to NE Oar Place	Minor Collector	City	70	40	2	Both Sides	5' Eastbound	No	25	Bad

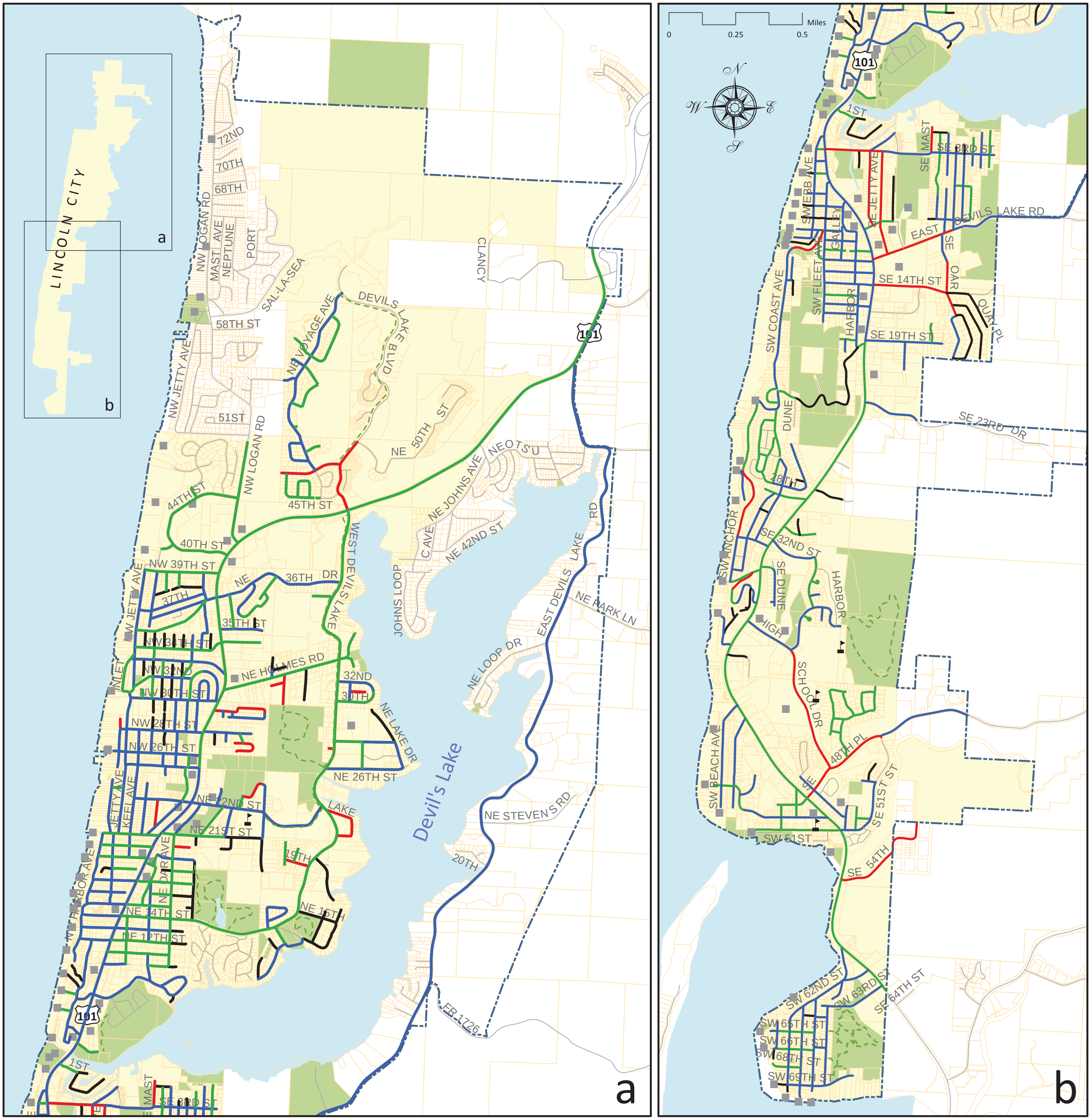
Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
NE Oar Place to NE Quay Avenue	Minor Collector	City	70	40	2	Both Sides	5' Eastbound	No	25	V. Bad
NE Quay Avenue to NE Quay Place	Minor Collector	City	70	40	2	Both Sides	5' Eastbound	No	20	V. Bad
NE Quay Place to NE Reef Avenue South	Minor Collector	City	70	40	2	Both Sides	5' Eastbound	No	20	V. Bad
NE Reef Avenue North to NE Surf Avenue	Minor Collector	City	70	40	2	Both Sides	5' Eastbound	No	20	Fair
NE Reef Avenue South to NE Reef Avenue North	Minor Collector	City	70	40	2	Both Sides	5' Eastbound	No	25	V. Bad
West Devils Lake Road to NE Surf	Minor Collector	City	60	25	2	No	No	No	25	V. Good
NW 25th Street										
NW Jetty Avenue North to NW Jetty Avenue South	Local Street	City	40	29	2	No	No	No	25	V. Good
NW Jetty South to NW Keel Avenue North	Local Street	City	40	20	2	No	No	No	25	Good
NW Keel Avenue South to NW Lee Avenue	Local Street	City	40	20	2	No	No	No	25	V. Bad
NW Keel Avenue North to NW Keel Avenue South	Local Street	City	40	20	2	No	No	No	25	V. Good
NW Lee Avenue to NW Mast Avenue North	Local Street	City	40	20	2	No	No	No	25	V. Good
NW Mast Avenue North to NW Mast Avenue South	Local Street	City	40	20	2	No	No	No	25	V. Good
NW Mast Avenue South to NW Neptune Avenue	Local Street	City	40	20	2	No	No	No	25	V. Bad
NW Neptune Avenue to NW Oar Place	Local Street	City	40	20	2	No	No	No	25	V. Bad
NW Oar Avenue to US 101	Local Street	City	40	27	2	No	South Side 5' Curb	No	25	V. Good

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
NW 26th Street										
Beach to NW Inlet Avenue	Minor Collector	City	50	40	2	Both Sides	No	No	25	V. Good
NW Jetty Avenue to NW Inlet Avenue	Minor Collector	City	50	28	2	South Side	No	No	25	V. Good
NW Jetty Avenue to NW Keel Avenue	Minor Collector	City	50	20	2	No	No	No	25	V. Good
NW Keel Avenue to NW Lee Avenue	Minor Collector	City	50	20	2	No	No	No	25	V. Good
NW Lee Avenue to NE Mast Avenue	Minor Collector	City	50	20	2	No	No	No	25	V. Good
NW Mast Avenue North to NW Neptune Avenue North	Minor Collector	City	50	20	2	No	No	No	25	V. Good
NW Mast Avenue South to NW Mast Avenue North	Minor Collector	City	50	20	2	No	No	No	25	V. Good
NW Neptune Avenue to NW Oar Avenue North	Minor Collector	City	50	20	2	No	No	No	25	V. Good
NW Oar Avenue North to NW Oar Avenue South	Minor Collector	City	50	20	2	No	No	No	25	V. Good
NW Oar Avenue South to US 101	Minor Collector	City	50	20	2	No	No	No	25	V. Good
NW 28th Street										
NW Inlet Avenue South to NW Jetty Avenue North	Local Street	City	30	23	2	No	No	No	25	V. Good
NW Inlet North to NW Inlet South	Local Street	City	30		2	No	No	No	25	V. Good
NW Jetty Avenue North to NW Jetty Avenue South	Local Street	City	50	30	2	No	No	No	25	V. Good
NW Jetty Avenue South to NW Keel Avenue	Local Street	City	50	30	2	No	No	No	25	V. Good

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
NW Keel Avenue to NW Lee Avenue	Local Street	City	50	30	2	No	No	No	25	V. Good
NW Lee Avenue to NW Mast Avenue	Local Street	City	50	30	2	No	No	No	25	V. Good
NW Mast Avenue North to NW Mast Avenue South	Local Street	City	50	30	2	No	No	No	25	V. Good
NW Mast Avenue South to NW Neptune Avenue North	Local Street	City	50	30	2	No	No	No	25	V. Good
NW Neptune Avnue North to NW Neptune Avenue South	Local Street	City	50	30	2	No	No	No	25	V. Good
NW Neptune Avenue South to NW Oar Avenue	Local Street	City	50	30	2	No	No	No	25	V. Good
NW Oar Avenue to NW Port Avenue	Local Street	City	50	30	2	Shoulder	No	No	25	V. Good
NW Port Avenue to US 101	Local Street	City	50	30	2	Shoulder	No	No	25	V. Good
NW 30th Street										
NW Jetty Avenue to NW Keel Avenue	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NW Keel Avenue to NW Lee Avenue	Minor Collector	City	40	22	2	North Shoulder	No	No	25	Fair
NW Lee Avenue North t oNW Lee Avenue South	Minor Collector	City	40	22	2	North Shoulder	No	No	25	V. Good
NW Lee Avenue South to NW Marine Avenue	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NW Marine Avenue to NW Mast Avenue	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NW Mast Avenue North to NW Neptune Avenue	Minor Collector	City	40	22	2	No	No	No	25	V. Good

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
South										
NW Mast Avenue South to NW Mast Avenue North	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NW Neptune North to NW Oar Avenue South	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NW Neptune South to NW Neptune North	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NW Oar Avenue North to NW Port Avenue South	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NW Oar Avenue South to NW Oar Avenue North	Minor Collector	City	40	22	2	No	No	No	25	V. Good
NW Port Avenue South to NW Port Drive	Minor Collector	City	40	22	2	No	No	No	20	V. Good
NW Port Drive to US 101	Minor Collector	City	40	22	2	No	No	No	20	V. Good
NE Holmes Road										
US 101 to NE Surf Avenue	Minor Collector	City	60	26	2	Shoulder	No	Bike Route	25	V. Good
NE Surf Avenue to NE Tide	Minor Collector	City	60	26	2	Shoulder	No	Bike Route	25	V. Good
NE Tide to NE Union Avenue	Minor Collector	City	60	26	2	Shoulder	No	Bike Route	25	V. Good
NE Union Avenue to NE Voyage Avenue	Minor Collector	City	60	26	2	Shoulder	No	Bike Route	25	V. Good
NE Voyage to West Lake Road	Minor Collector	City	60	26	2	Shoulder	No	Bike Route	25	V. Good
NW 39th Street										
NW Jetty Avenue North to NW Jetty Avenue South	Major Collector	City	40	20	2	No	No	Bike Route	20	V. Good
NW Jetty Avenue South to NW Keel Avenue	Major Collector	City	40	20	2	No	No	Bike Route	20	V. Good

Street Segment	Classification	Jurisdiction	ROW Width	Street Width	Number of travel lanes	On-Street Parking	Sidewalk	Bike Lanes	Speed Limit	Pavement Condition
NW Keel Avenue to NW Lee Avenue	Major Collector	City	40	20	2	No	No	Bike Route	20	V. Good
NW Lee Avenue to NW Mast Avenue	Major Collector	City	40	20	2	No	No	Bike Route	20	V. Good
NW Mast Avenue to NW Port Avenue	Major Collector	City	40	19	2	No	No	Bike Route	20	V. Good
NW Port Avenue to US 101	Major Collector	City	40	20	2	No	No	Bike Route	20	V. Good
Logan Road										
North of Northern	Major Collector	City		40	4	No	Mp	No	35	V. Good
South of northern Shopping Center	Major Collector	City		48	4	No	6' Northboun d	No	35	V. Good
South of Safeway Drive	Major Collector	City		56	4	No	6' Northboun d	No	35	V. Good



A4 Roadway Pavement Conditions (2008 Assessment)

Lincoln City
Transportation System Plan

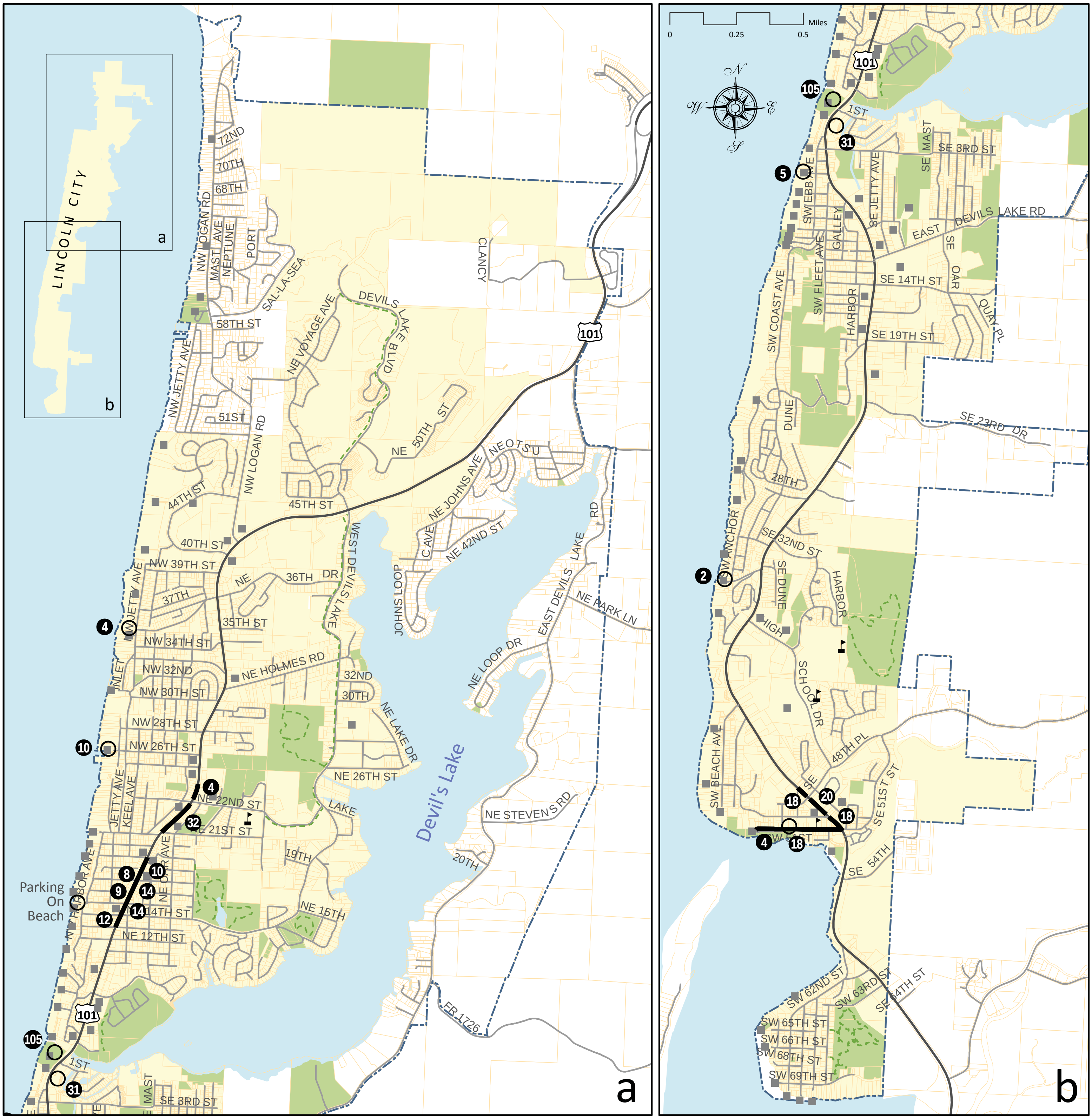
Roadway Conditions

- Good
- Fair
- Poor
- Gravel

- School
- Activity Generator

- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS



A5 Existing Public Parking

Lincoln City

Transportation System Plan

Public Parking

- On-Street Public Parking.
- Off-Street Public Parking
- Number of Parking Spaces
- School
- Activity Generator
- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

A6 Roadway Jurisdiction

Lincoln City

Transportation System Plan

Roadway Jurisdiction

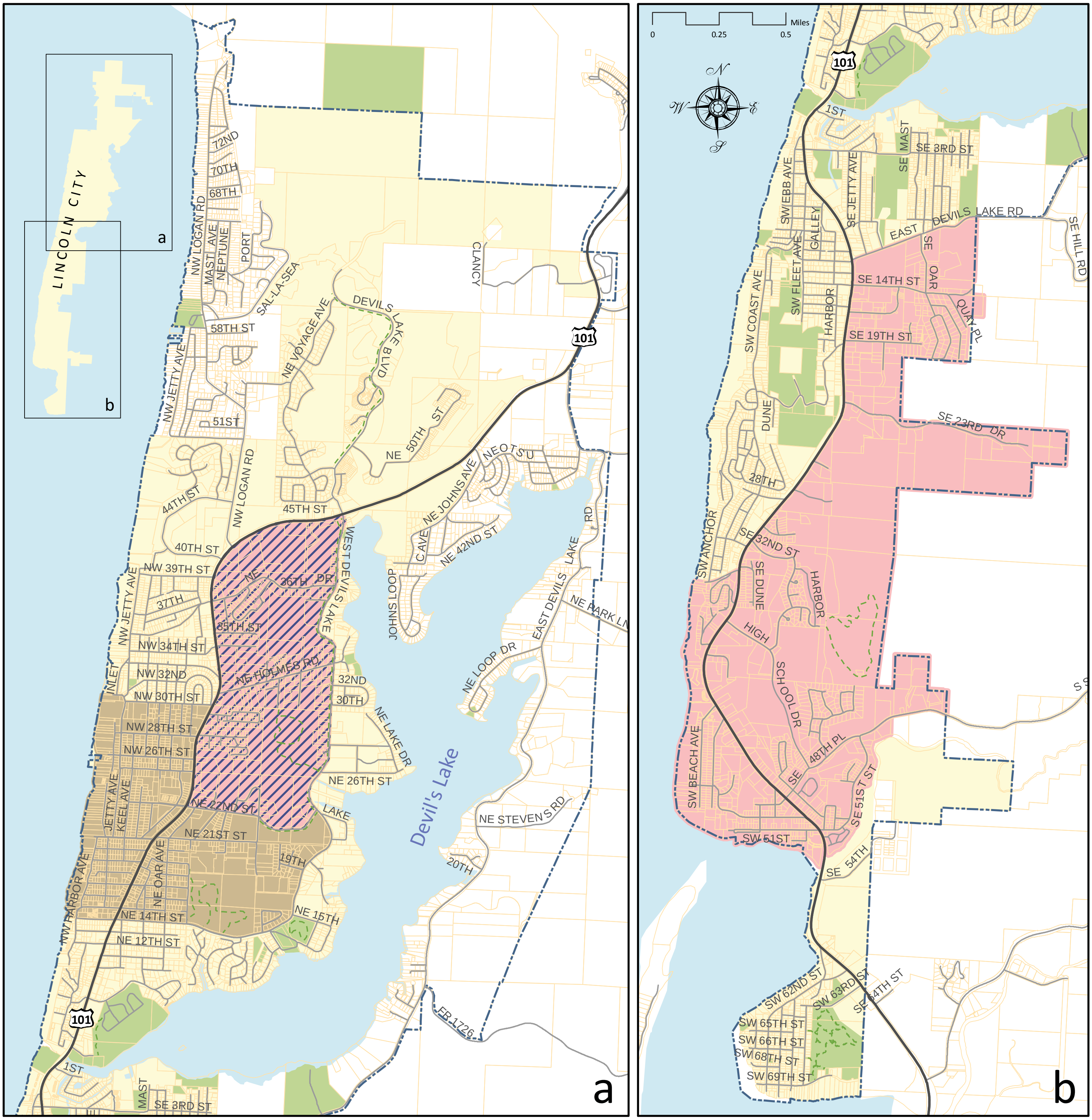
- ODOT
- Lincoln County
- Lincoln City
- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

A7 Transportation System Physical Constraints

Lincoln City
Transportation System Plan

Priority 1 Lifeline Route
Bridge
Shared-Use Path
Park
City Limit
Parcel
Urban Growth Boundary

DKS



A8 Environmental Justice

Lincoln City

Transportation System Plan

Environmental Justice Populations

- Significant Low Income Populations
- Significant Minority Group Populations
- Significant Elderly Population
- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

Figure A9: Tsunami Evacuation Route Brochure

CONTACTS

Oregon Emergency Management
PO Box 14370
Salem, OR 97309
(503) 378-2911
http://www.oregon.gov/OOHS/OEM/

Lincoln County emergency Services
Courthouse, Room 103, 225 West Olive Street
Newport, OR 97365
(541) 265-4199
24 hour # (541) 265-4231
http://www.lincolncoemergencyservices.us/

City of Lincoln City
PO Box 50
Lincoln City, OR 97367
Public Works (541) 996-2154
24 hour # Police Department (541) 994-3636
http://www.lincolncity.org/

Oregon Department of Geology & Mineral Industries
800 NE Oregon Street #28, Suite 965
Portland, OR 97232
(972) 673-1555
http://www.oregongeology.com/

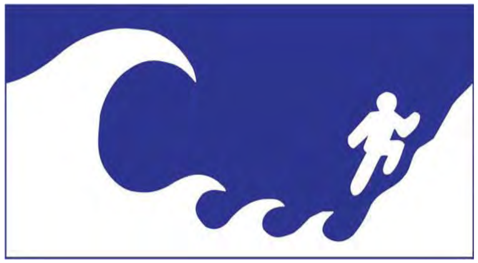
KBCH Radio
820 SE Hwy 101, Suite C
1400 AM
(541) 994-2181
http://www.kbcham.com/

West Coast & Alaska Tsunami Warning Center (NOAA)
910 S Felton St
Palmer, AK 99645 USA
http://wcatwc.arh.noaa.gov/

National Weather Service – Portland Office
525 NE Oregon Street
Portland, OR 97230
(503) 261-9246
http://weather.gov/Portland/

April 2011

TSUNAMI
Evacuation Map



LINCOLN CITY

IF YOU FEEL AN EARTHQUAKE:

- **DROP, COVER, & HOLD** until the earthquake is over; protect yourself.
- **MOVE IMMEDIATELY INLAND** to high ground and away from low lying coastal areas.
- **GO ON FOOT** if at all possible.
- **DO NOT WAIT** for an official warning.
- **DO NOT PACK** or delay.
- **WAIT** for an "all clear" from local emergency officials before returning to low-lying areas.

A TSUNAMI MAY BE COMING IN A FEW MINUTES. LARGE WAVES MAY CONTINUE TO COME ONSHORE FOR SEVERAL HOURS.

The information in this brochure may save your life. Please read it and share it with your family and friends.

Tsunami: What to know and what to do.

A tsunami is a series of sea waves, usually caused by a displacement of the ocean floor by an undersea earthquake. As tsunamis enter shallow water near land, they increase in height and can cause great loss of life and property damage.

Recent research indicates that tsunamis have struck the Oregon coast on a regular basis. They can occur any time, day or night. Typical wave heights from tsunamis occurring in the Pacific over the last 80 years have been 20-45 feet at the shoreline. However, because of local conditions a few waves have been much higher.

We distinguish between a tsunami caused by an undersea earthquake **near** the Oregon coast (LOCAL TSUNAMI) and an undersea earthquake **far away from** the Oregon coast (DISTANT TSUNAMI).

A **LOCAL TSUNAMI** could come onshore within 15-20 minutes after the earthquake – before there is time for official warning from the national warning system. Ground-shaking from the earthquake may be the only warning you have. **Evacuate quickly!**

A **DISTANT TSUNAMI** may take three to four hours or more to come onshore. You will feel no earthquake, and the tsunami will generally be smaller than that from a local earthquake. Typically there is time for an official warning and evacuation to safety.

Evacuation for a distant tsunami will generally be indicated by a **STEADY 3-MINUTE SIREN BLAST** and an announcement over NOAA weather radio that the local area has been put into an official **TSUNAMI WARNING**. In isolated areas along beaches and bays you may not hear a warning. **A SUDDEN CHANGE OF SEA LEVEL** (a dramatic and sudden receding of the ocean) should prompt you to move immediately inland to high ground. If you hear the 3-minute blast or see sudden sea level change, evacuate away from shoreline areas, then turn on your local broadcast media (KYTE 102.7 the Official Emergency Station for the coast) or check your NOAA weather radio tuned to frequency 162.55 for further information. Be sure Specific Area Message Encoding (SAME) is set to 041041 on your NOAA Radio.

FOR BOTH DISTANT AND LOCAL TSUNAMIS:

- **Evacuate on foot** if at all possible because of potential traffic jams.
- **If you need help evacuating, tie something WHITE (sheet or towel) to the front door knob**. Make it large enough to be visible from the street. If the emergency is a distant tsunami, then help may arrive. In the event of a local earthquake and tsunami, it is unlikely that anyone will help you, so make a plan and be prepared!
- **Stay away from potentially hazardous areas until you receive an ALL CLEAR** from local officials. Dangerous waves can persist for several hours, and local officials must inspect all flooded or earthquake damaged structures before anyone can go back into them.
- **After evacuation**, check with the local emergency officials if you think that you have special skills and can help, or if you need assistance in locating lost family members.

Be prepared! Assemble emergency kits with at least a 3-day supply for each member of your family.

1. First aid kit and reference guide
2. Water – 1 gallon per person per day; for drinking, hygiene and cooking
3. Food – packaged, canned, no-cook, as well as baby food, and food for special diets & pets
4. Can opener (non-electric)
5. Blankets or sleeping bags
6. Fire extinguisher (Standard)
7. Essential medications
8. Money
9. Portable radio, NOAA weather radio, flashlights, and batteries
10. Alternate cooking source & matches
11. Heavy gloves and sturdy shoes
12. Crescent wrench (12" or longer for utility shutoff)
13. Pet food, leashes, pet carrier

An Emergency Automobile kit and a Grab-and-Go kit containing food and water should also be assembled.

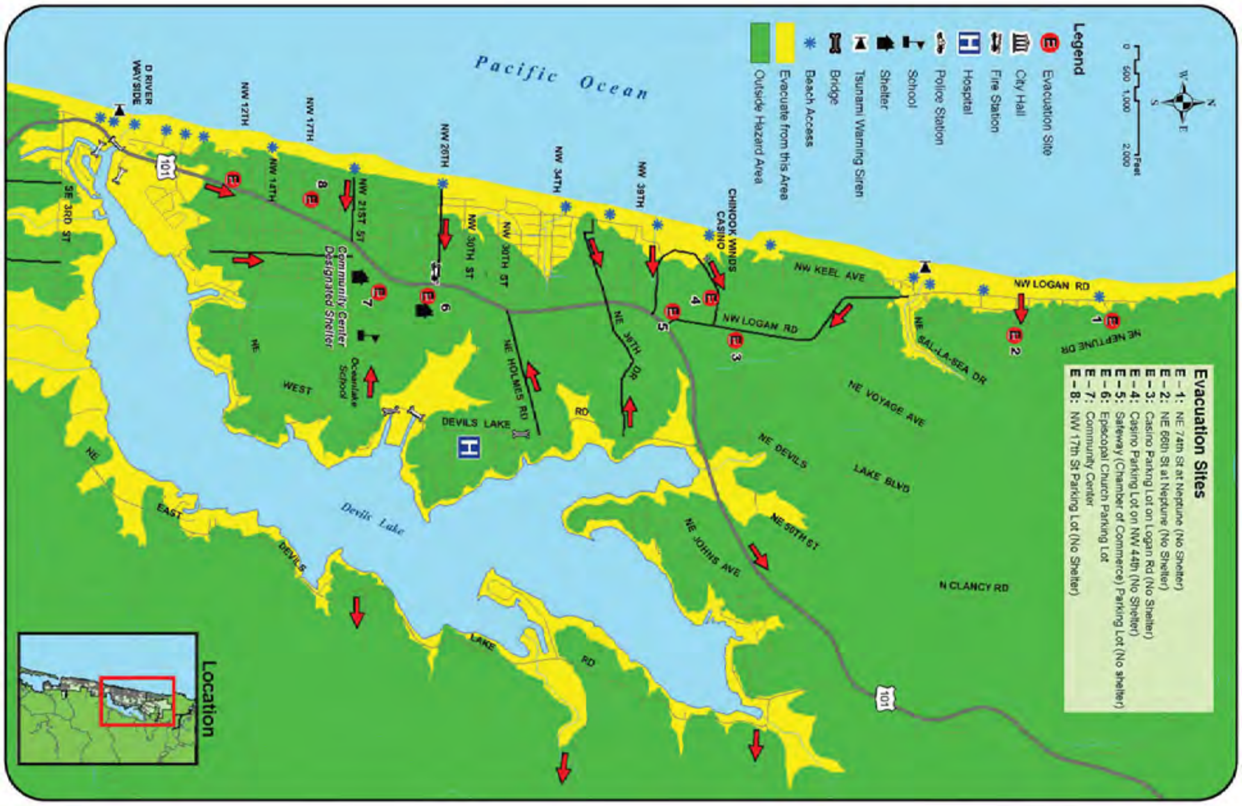
The Bottom Line is: Have in your kit what YOU will need.

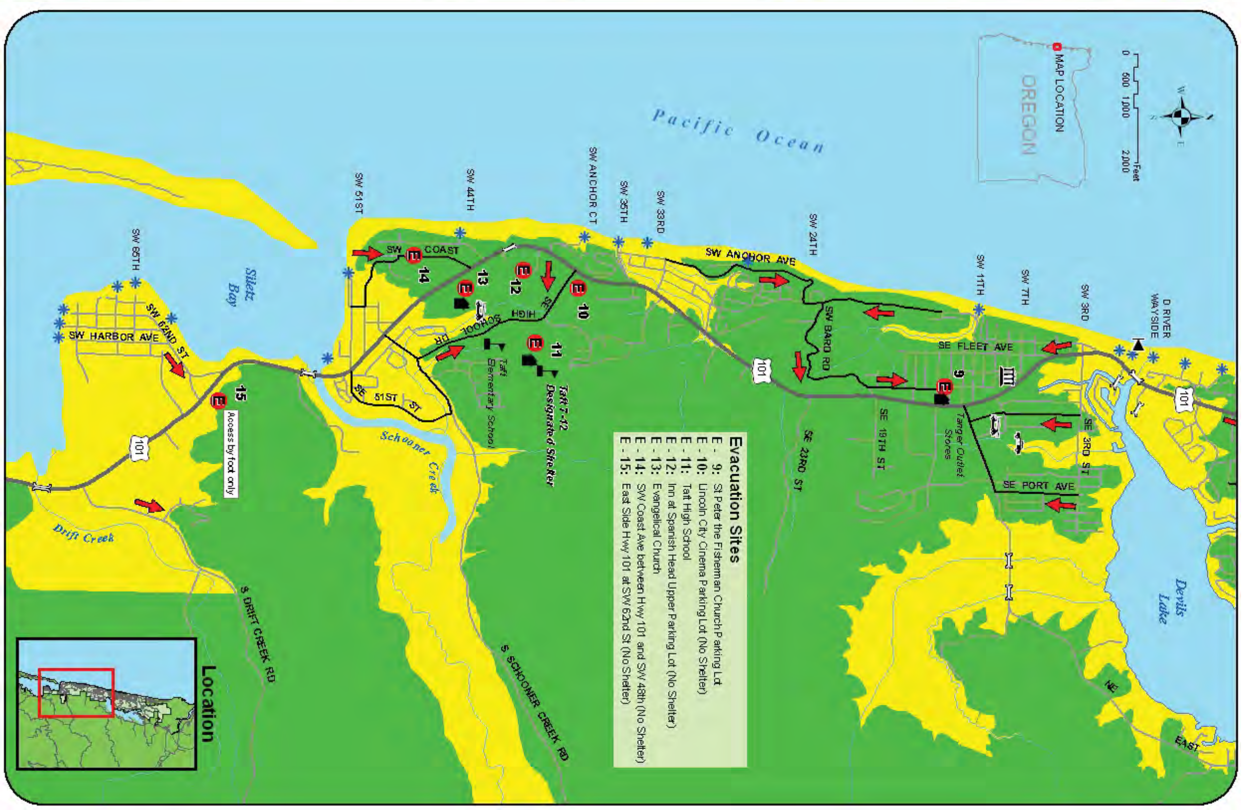
Tsunami Evacuation Map for Lincoln City

Notice

The evacuation zone on this map was developed by the Oregon Department of Geology and Mineral Industries (DOGAMI) in consultation with local emergency officials. It is intended to represent a worst-case scenario for a local tsunami from an earthquake near the Oregon coast. The evacuation routes were developed by local emergency officials and reviewed by the Oregon Department of Emergency Management.

The map is intended for emergency response and should not be used for site-specific planning. The City recommends that all citizens, whether in the Tsunami Evacuation Zone or not, should formulate their own emergency procedures in case of a tsunami event along the Oregon coast.





Intersection Collisions

The total number of crashes experienced at an intersection is typically proportional to the number of vehicles entering it. Therefore, a crash rate describing the frequency of crashes per million entering vehicles (MEV) is used to evaluate the intersection. This crash rate (referred to as the observed crash rate) is compared to the critical crash rate, which is unique to each intersection and is a factor of crash rates at similar sites within the study area, traffic volume, and a statistical confidence level. Intersections with an observed crash rate greater than the critical crash rate warrant further review. The crash rates calculated (based on the past five years of collision data) for each of the 40 intersections reviewed in Lincoln City can be seen in Table A2.

Table A2: Intersection Collision Evaluation

Intersection	Total Collisions (2007 to 2011)	Critical Crash Rate (per MEV)	Observed Crash Rate (per MEV)
US 101/East Devils Lake Rd	15	0.32	**0.45**
US 101/Neotsu Rd	1	0.32	0.03
US 101/NE West Devils Lake Rd	23	0.53	**0.59**
US 101/NW Logan Rd	31	0.51	**0.63**
US 101/NE Holmes Rd	9	0.31	0.23
US 101/NE 30th St	4	0.31	0.10
US 101/NE 22nd St	19	0.52	0.47
US 101/NE 21st St	10	0.30	0.24
US 101/NE 17th St	13	0.52	0.31
US 101/NE 14th St	11	0.52	0.25
US 101/NE 6th St	8	0.52	0.19
US 101/SE 1st St	11	0.51	0.24
US 101/Burger King/City Hall	8	0.51	0.18
US 101/East Devils Lake Rd/SW 12th St	13	0.51	0.29
US 101/SE 14th St	3	0.30	0.07
US 101/SW Bard Ave/SE 19th St	11	0.31	0.29
US 101/SE 29th St	11	0.31	0.30
US 101/SE 32nd St	4	0.31	0.11
US 101/SW 32nd St	1	0.32	0.03
US 101/SE High School Dr	5	0.32	0.15
US 101/SW 48th St	12	0.55	0.39
US 101/SW 51st St	12	0.55	0.40
US 101/SW Jetty Ave	2	0.21	0.07
US 101/SW 62nd St	1	0.18	0.02
US 101/SW 63rd St	4	0.22	0.16
NW Logan Rd/NW 44th St	3	0.27	0.22
NW Jetty Ave/NW 39th St	0	0.52	0.00
NE Holmes Rd/NE West Devils Lake Rd	2	0.38	0.33
NW Jetty Ave/NW 30th St	0	0.48	0.00

NW Jetty Ave/NW 26th St	0	0.53	0.00
NE West Devils Lake Rd/NE 22nd St	0	0.37	0.00
NW Jetty Ave/NW 21st St	1	0.51	0.29
NW Harbor Ave/NW 21st St	0	0.71	0.00
NE 21st St/NE Oar Ave	0	0.48	0.00
NW Harbor Ave/NW 14th St	0	0.63	0.00
Oar Ave/SE Devil's Lake Rd	0	0.30	0.00
Oar St/SE 14 St	0	0.63	0.00
SW Anchor Dr/SW 32nd St	0	0.79	0.00
SE High School Dr/Spyglass Ridge Dr	2	0.38	0.31
SE High School Dr/SE 48th Pl	2	0.52	**0.60***

Bolded Red and Shaded indicates the observed crash rate exceeds the critical crash rate

MEV= Collisions per million entering vehicles

*The SE High School Drive/ SE 48th Place intersection was slightly greater than similar intersections in the City. However, there were only two collisions over the past five years at this location, which was not statistically significant to develop a collision trend.

Motor Vehicle Operations

Intersection Mobility Targets: The intersections in Lincoln City are monitored through mobility targets intended to maintain a minimum level of efficiency for motor vehicle travel. Two methods to gauge intersection operations include volume-to-capacity (v/c) ratios and level of service (LOS).

> **Volume-to-capacity (V/C) ratio:** A decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used (i.e., the saturation) at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays. ODOT mobility targets for intersections along US 101 are based on v/c ratios.
>
> **Level of service (LOS):** A "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and traffic is highly congested. LOS is being considered as the minimum performance standard for intersections under Lincoln City jurisdiction.

All intersections in Lincoln City must operate at or below the performance measures shown Table A3 or mitigation would be necessary to approve future growth. The intersection mobility targets vary by jurisdiction of the roadways. All intersections under State jurisdiction in Lincoln City must comply with the v/c ratios in the Oregon Highway Plan (OHP). A Level of Service (LOS) D is being considered as the minimum performance standard for both signalized and unsignalized intersections under Lincoln City jurisdiction and therefore will be assumed as the city standard for the Lincoln City TSP update. The Lincoln County[1] TSP applied the ODOT mobility target for District/Local Interest Roads (0.95 v/c) to intersections under county jurisdiction. This standard will be applied to intersections along East Devils Lake Road, NW Logan Road, and SE Schooner Creek Road for the Lincoln City TSP update. The ODOT v/c targets for US 101 are based on highway classification and posted speeds. The targets in Lincoln City range from a v/c ratio of 0.80 to 1.00.

Summer and average weekday intersection operations are summarized in Table A3.

---

[1] Lincoln County Transportation System Plan, Page 3-7

Table A3: Intersection Operations (2012 p.m. peak)

Intersection	Mobility Target	Summer v/c Ratio	Summer LOS	Summer Delay (sec/veh)	Average Weekday v/c Ratio	Average Weekday LOS	Average Weekday Delay (sec/veh)
Signalized Intersections under ODOT Jurisdiction							
US 101/NE West Devils Lake Rd	0.80	0.75	C	26.5	0.56	B	17.9
US 101/NW Logan Rd	0.90	0.82	D	51.5	0.66	D	35.1
US 101/NE 22nd St	0.90	0.65	B	16.9	0.58	B	12.5
US 101/NE 17th St	0.90	0.53	A	3.9	0.40	A	3.5
US 101/NE 14th St	0.90	0.62	A	9.9	0.48	A	8.0
US 101/NE 6th St	0.90	0.54	A	6.6	0.44	A	5.7
US 101/SE 1st St	0.90	0.57	A	8.3	0.48	A	6.6
US 101/Burger King/City Hall	0.90	0.65	B	11.2	0.57	A	9.1
US 101/East Devils Lake Rd/SW 12th St	0.90	0.58	C	20.2	0.53	B	17.1
US 101/SW 48th St	0.95	0.44	A	5.4	0.33	A	4.8
US 101/SW 51st St	0.95	0.40	A	4.9	0.31	A	3.6
Unsignalized Intersections under ODOT Jurisdiction*							
US 101/East Devils Lake Rd	0.90	0.6	D	31	0.44	C	17.4
US 101/Neotsu Rd	0.90	0.63	D	28.6	0.46	C	17.6
US 101/NE Holmes Rd	0.95	0.74	E	38.7	0.55	C	20.1
US 101/NE 30th St	0.95	0.79	D	31.3	0.59	C	19.3
US 101/NE 21st St	0.95	0.54	B	13.6	0.40	B	13.0
US 101/SE 14th St	0.95	0.72	F	63.8	0.53	C	23.9
US 101/SW Bard Ave/SE 19th St	0.95	0.71	F	103.2	0.53	D	25.6
US 101/SE 29th St	0.95	0.74	D	25.4	0.55	C	17.3
US 101/SE 32nd St	0.95	0.7	D	34.7	0.52	C	18.3
US 101/SW 32nd St	0.95	0.66	D	26.4	0.49	C	17.2
US 101/SE High School Dr	0.95	0.59	D	33.3	0.44	C	16.6
US 101/SW Jetty Ave	0.95	0.53	A	9.8	0.39	A	0.1
US 101/SW 62nd St	0.95	0.49	C	19.2	0.36	B	14.6
US 101/SW 63rd St	0.95	0.52	C	19.6	0.39	B	14.7
Unsignalized Intersections under Lincoln City Jurisdiction*							
NW Logan Rd/NW 44th St	D	0.39	B	13.3	0.24	B	10.9
NW Jetty Ave/NW 39th St	D	0.14	A	7.7	0.10	A	7.4
NE Holmes Rd/NE West Devils Lake Rd	D	0.1	B	12.2	0.06	B	10.9
NW Jetty Ave/NW 30th St	D	0.08	B	10.3	0.03	A	9.4
NW Jetty Ave/NW 26th St	D	0.05	B	10	0.04	A	9.5
NE West Devils Lake Rd/NE 22nd St	D	0.17	B	11.6	0.12	B	10.5
NW Jetty Ave/NW 21st St	D	0.08	A	9.3	0.06	A	9.1

Intersection	Mobility Target	Summer v/c Ratio	Summer LOS	Summer Delay (sec/veh)	Average Weekday v/c Ratio	Average Weekday LOS	Average Weekday Delay (sec/veh)
NW Harbor Ave/NW 21st St	D	0.03	A	9.1	0.02	A	8.9
NE 21st St/NE Oar Ave	D	0.11	B	10.9	0.07	B	10.2
NW Harbor Ave/NW 14th St	D	0.07	A	9.5	0.05	A	7.1
Oar Ave/SE Devil's Lake Rd	D	0.41	C	15.5	0.25	B	12.0
Oar St/SE 14 St	D	0.13	A	9.8	0.08	A	9.3
SW Anchor Dr/SW 32nd St	D	0.05	A	9	0.03	A	8.8
SE High School Dr/Spyglass Ridge Dr	D	0.32	B	12.3	0.22	B	10.7
SE High School Dr/SW 48th St	D	0.09	A	7.9	0.07	A	7.4

*V/C ratio, LOS and delay reported for the worst stop controlled approach

2012 Highway Capacity Manual (HCM) Intersection Capacity Analysis Results

Summer Conditions

The following pages are the operational reports of signalized and unsignalized intersections in Lincoln City. The operations are summarized in Table A3.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	900	30	45	905	35	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	989	33	49	995	38	93
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1022		2099	1005
vC1, stage 1 conf vol					1005	
vC2, stage 2 conf vol					1093	
vCu, unblocked vol			1022		2099	1005
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.4
p0 queue free %			93		83	67
cM capacity (veh/h)			687		229	287

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1022	1044	132
Volume Left	0	49	38
Volume Right	33	0	93
cSH	1700	687	267
Volume to Capacity	0.60	0.07	0.49
Queue Length 95th (ft)	0	6	64
Control Delay (s)	0.0	2.3	31.0
Lane LOS		A	D
Approach Delay (s)	0.0	2.3	31.0
Approach LOS			D

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	60	35	895	90	15	925
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	38	973	98	16	1005
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2060	1022			1071	
vC1, stage 1 conf vol	1022					
vC2, stage 2 conf vol	1038					
vCu, unblocked vol	2060	1022			1071	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4			2.3	
p0 queue free %	73	86			97	
cM capacity (veh/h)	242	277			618	

Direction, Lane #	NW 1	NE 1	SW 1	SW 2
Volume Total	103	1071	16	1005
Volume Left	65	0	16	0
Volume Right	38	98	0	0
cSH	254	1700	618	1700
Volume to Capacity	0.41	0.63	0.03	0.59
Queue Length 95th (ft)	47	0	2	0
Control Delay (s)	28.6	0.0	11.0	0.0
Lane LOS	D		B	
Approach Delay (s)	28.6	0.0	0.2	
Approach LOS	D			

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	880	65	65	875	45	60	25	70	35	20	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.89		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1792	1549	1687	1776	1514	1687	1581		1736	1553	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1752	1792	1549	1687	1776	1514	1687	1581		1736	1553	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	926	68	68	921	47	63	26	74	37	21	84
RTOR Reduction (vph)	0	0	28	0	0	19	0	67	0	0	78	0
Lane Group Flow (vph)	58	926	40	68	921	28	63	33	0	37	27	0
Confl. Peds. (#/hr)	10		1	1		10	1					1
Confl. Bikes (#/hr)												3
Heavy Vehicles (%)	3%	6%	2%	7%	7%	3%	7%	15%	4%	4%	0%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	6.6	54.6	54.6	7.2	55.2	55.2	7.0	9.0		4.5	6.5	
Effective Green, g (s)	6.6	54.6	54.6	7.2	55.2	55.2	7.0	9.0		4.5	6.5	
Actuated g/C Ratio	0.07	0.59	0.59	0.08	0.60	0.60	0.08	0.10		0.05	0.07	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.5	4.5	4.5	2.5	4.5	4.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	125	1060	916	131	1062	905	127	154		84	109	
v/s Ratio Prot	0.03	0.52		c0.04	c0.52		c0.04	c0.02		0.02	0.02	
v/s Ratio Perm			0.03			0.02						
v/c Ratio	0.46	0.87	0.04	0.52	0.87	0.03	0.50	0.22		0.44	0.25	
Uniform Delay, d1	41.2	15.9	7.9	40.9	15.5	7.6	41.0	38.4		42.7	40.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	8.6	0.0	2.6	8.1	0.0	2.2	0.5		2.7	0.9	
Delay (s)	43.1	24.5	7.9	43.5	23.6	7.6	43.2	38.9		45.3	41.4	
Level of Service	D	C	A	D	C	A	D	D		D	D	
Approach Delay (s)		24.5			24.2			40.6			42.5	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	92.3	Sum of lost time (s)	17.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	305	40	465	65	40	80	370	610	30	40	760	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.90		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1736	1573		1805	1675		1787	3310		1719	3312	1508
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1736	1573		1805	1675		1787	3310		1719	3312	1508
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	332	43	505	71	43	87	402	663	33	43	826	196
RTOR Reduction (vph)	0	266	0	0	46	0	0	2	0	0	0	58
Lane Group Flow (vph)	332	282	0	71	84	0	402	694	0	43	826	138
Confl. Peds. (#/hr)	5		8	8		5	2		4	4		2
Confl. Bikes (#/hr)			1						2			21
Heavy Vehicles (%)	4%	0%	2%	0%	0%	0%	1%	8%	10%	5%	9%	2%
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases												2
Actuated Green, G (s)	32.0	32.0		11.2	11.2		30.8	70.5		7.2	46.9	46.9
Effective Green, g (s)	32.0	32.0		11.2	11.2		30.8	70.5		7.2	46.9	46.9
Actuated g/C Ratio	0.23	0.23		0.08	0.08		0.22	0.51		0.05	0.34	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	6.0		2.5	6.0	6.0
Lane Grp Cap (vph)	402	365		146	136		399	1692		89	1126	512
v/s Ratio Prot	c0.19	0.18		0.04	c0.05		c0.22	0.21		0.03	c0.25	
v/s Ratio Perm												0.09
v/c Ratio	0.83	0.77		0.49	0.62		1.01	0.41		0.48	0.73	0.27
Uniform Delay, d1	50.3	49.5		60.6	61.3		53.6	20.8		63.5	40.0	33.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.7	9.3		1.9	7.0		46.9	0.5		3.0	3.4	0.8
Delay (s)	63.0	58.9		62.5	68.2		100.5	21.3		66.5	43.5	33.9
Level of Service	E	E		E	E		F	C		E	D	C
Approach Delay (s)		60.4			66.2			50.3			42.6	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	137.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	35	65	1125	50	40	1235
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	36	66	1148	51	41	1260
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2515	1173			1199	
vC1, stage 1 conf vol	1173					
vC2, stage 2 conf vol	1342					
vCu, unblocked vol	2515	1173			1199	
tC, single (s)	6.4	6.3			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4			2.2	
p0 queue free %	80	71			93	
cM capacity (veh/h)	176	225			589	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	102	1199	41	1260
Volume Left	36	0	41	0
Volume Right	66	51	0	0
cSH	205	1700	589	1700
Volume to Capacity	0.50	0.71	0.07	0.74
Queue Length 95th (ft)	62	0	6	0
Control Delay (s)	38.7	0.0	11.6	0.0
Lane LOS	E		B	
Approach Delay (s)	38.7	0.0	0.4	
Approach LOS	E			

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	15	25	30	1160	1240	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	26	32	1221	1305	32
Pedestrians	7					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2612	1328	1344			
vC1, stage 1 conf vol	1328					
vC2, stage 2 conf vol	1284					
vCu, unblocked vol	2612	1328	1344			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4	2.2			
p0 queue free %	91	86	94			
cM capacity (veh/h)	169	185	516			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	42	32	1221	1337
Volume Left	16	32	0	0
Volume Right	26	0	0	32
cSH	179	516	1700	1700
Volume to Capacity	0.24	0.06	0.72	0.79
Queue Length 95th (ft)	22	5	0	0
Control Delay (s)	31.3	12.4	0.0	0.0
Lane LOS	D	B		
Approach Delay (s)	31.3	0.3		0.0
Approach LOS	D			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	20	15	115	30	45	45	1170	80	90	1145	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Frt		0.97			0.97		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1676			1672		1703	3364		1752	3426	
Flt Permitted		0.82			0.79		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1405			1368		1703	3364		1752	3426	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	36	21	15	119	31	46	46	1206	82	93	1180	31
RTOR Reduction (vph)	0	7	0	0	9	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	65	0	0	187	0	46	1284	0	93	1210	0
Confl. Peds. (#/hr)	9		12	12		9	6		9	9		6
Confl. Bikes (#/hr)									5			1
Heavy Vehicles (%)	3%	0%	25%	7%	0%	6%	6%	6%	6%	3%	5%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		19.1			19.1		4.6	54.4		7.6	57.4	
Effective Green, g (s)		19.1			19.1		4.6	54.4		7.6	57.4	
Actuated g/C Ratio		0.21			0.21		0.05	0.58		0.08	0.62	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.0		2.5	6.0	
Lane Grp Cap (vph)		288			280		84	1965		143	2112	
v/s Ratio Prot							0.03	c0.38		c0.05	c0.35	
v/s Ratio Perm		0.05			c0.14							
v/c Ratio		0.23			0.67		0.55	0.65		0.65	0.57	
Uniform Delay, d1		30.8			34.1		43.2	13.0		41.5	10.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			5.4		5.7	1.3		9.1	0.8	
Delay (s)		31.1			39.4		48.9	14.3		50.5	11.3	
Level of Service		C			D		D	B		D	B	
Approach Delay (s)		31.1			39.4			15.5			14.1	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	93.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	30	0	0	45	45	1275	25	40	1175	60
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	33	0	0	49	49	1386	27	43	1277	65
Pedestrians					8						2	
Lane Width (ft)					12.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					1						0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								1009			913	
pX, platoon unblocked	0.84	0.84	0.80	0.84	0.84	0.92	0.80			0.92		
vC, conflicting volume	2238	2916	671	2263	2935	717	1342			1421		
vC1, stage 1 conf vol	1397	1397		1505	1505							
vC2, stage 2 conf vol	842	1519		758	1429							
vCu, unblocked vol	1654	2461	83	1684	2483	513	924			1280		
tC, single (s)	7.5	6.5	7.1	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	96	100	100	89	92			91		
cM capacity (veh/h)	161	114	746	125	124	466	597			501		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	33	49	49	924	489	43	851	491
Volume Left	0	0	49	0	0	43	0	0
Volume Right	33	49	0	0	27	0	0	65
cSH	746	466	597	1700	1700	501	1700	1700
Volume to Capacity	0.04	0.11	0.08	0.54	0.29	0.09	0.50	0.29
Queue Length 95th (ft)	3	9	7	0	0	7	0	0
Control Delay (s)	10.0	13.6	11.6	0.0	0.0	12.9	0.0	0.0
Lane LOS	B	B	B			B		
Approach Delay (s)	10.0	13.6	0.4			0.4		
Approach LOS	B	B						

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	10	25	15	10	15	20	1280	15	0	1210	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.95			0.95			1.00			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1730			1744			3461			3416	
Flt Permitted		0.89			0.86			0.92			1.00	
Satd. Flow (perm)		1584			1537			3186			3416	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	32	11	27	16	11	16	21	1362	16	0	1287	32
RTOR Reduction (vph)	0	25	0	0	15	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	45	0	0	28	0	0	1399	0	0	1318	0
Confl. Peds. (#/hr)	19		6	6		19	50		35	35		50
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6					
Actuated Green, G (s)		6.8			6.8			81.0			81.0	
Effective Green, g (s)		6.8			6.8			81.0			81.0	
Actuated g/C Ratio		0.07			0.07			0.85			0.85	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		2.5			2.5			6.0			6.0	
Lane Grp Cap (vph)		112			109			2693			2888	
v/s Ratio Prot											0.39	
v/s Ratio Perm		c0.03			0.02			c0.44				
v/c Ratio		0.40			0.26			0.52			0.46	
Uniform Delay, d1		42.6			42.1			2.0			1.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.7			0.9			0.1			0.5	
Delay (s)		44.3			43.0			2.2			2.4	
Level of Service		D			D			A			A	
Approach Delay (s)		44.3			43.0			2.2			2.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	95.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	15	10	160	15	20	0	1245	75	20	1230	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.99			0.99			1.00	
Flt Protected		0.98			0.96			1.00			1.00	
Satd. Flow (prot)		1682			1719			3401			3427	
Flt Permitted		0.90			0.78			1.00			0.92	
Satd. Flow (perm)		1549			1393			3401			3146	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	15	15	10	163	15	20	0	1270	77	20	1255	10
RTOR Reduction (vph)	0	8	0	0	4	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	32	0	0	194	0	0	1344	0	0	1284	0
Confl. Peds. (#/hr)	12		1	1		12	11		3	3		11
Confl. Bikes (#/hr)			1						1			1
Heavy Vehicles (%)	0%	17%	0%	4%	0%	10%	0%	5%	6%	0%	5%	25%
Turn Type	Perm	NA		Perm	NA			NA		Prot	NA	
Protected Phases		8			4			6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		18.3			18.3			75.1			75.1	
Effective Green, g (s)		18.3			18.3			75.1			75.1	
Actuated g/C Ratio		0.18			0.18			0.74			0.74	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		2.5			2.5			6.0			6.0	
Lane Grp Cap (vph)		279			251			2518			2330	
v/s Ratio Prot								0.40				
v/s Ratio Perm		0.02			c0.14						c0.41	
v/c Ratio		0.11			0.77			0.53			10.00dl	
Uniform Delay, d1		34.8			39.6			5.6			5.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			13.2			0.5			0.6	
Delay (s)		34.9			52.8			6.2			6.4	
Level of Service		C			D			A			A	
Approach Delay (s)		34.9			52.8			6.2			6.4	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	101.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	5	15	25	5	20	25	1295	45	20	1350	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1741			1742		1583	3418		1641	3501	
Flt Permitted		0.92			0.83		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1628			1473		1583	3418		1641	3501	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	5	16	27	5	22	27	1392	48	22	1452	11
RTOR Reduction (vph)	0	15	0	0	20	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	17	0	0	34	0	27	1439	0	22	1463	0
Confl. Peds. (#/hr)	2					2	5		1	1		5
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	14%	5%	5%	10%	3%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		5.8			5.8		2.7	59.7		2.5	59.5	
Effective Green, g (s)		5.8			5.8		2.7	59.7		2.5	59.5	
Actuated g/C Ratio		0.07			0.07		0.03	0.75		0.03	0.74	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.0		2.5	6.0	
Lane Grp Cap (vph)		118			106		53	2550		51	2603	
v/s Ratio Prot							c0.02	c0.42		0.01	0.42	
v/s Ratio Perm		0.01			c0.02							
v/c Ratio		0.15			0.32		0.51	0.56		0.43	0.56	
Uniform Delay, d1		34.8			35.2		38.0	4.4		38.1	4.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			1.3		5.5	0.6		4.2	0.6	
Delay (s)		35.2			36.5		43.5	5.0		42.3	5.1	
Level of Service		D			D		D	A		D	A	
Approach Delay (s)		35.2			36.5			5.8			5.6	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	40	10	45	15	10	20	35	1305	15	15	1325	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.94		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1698			1616		1805	3465		1805	3447	
Flt Permitted		0.89			0.88		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1539			1447		1805	3465		1805	3447	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	11	47	16	11	21	37	1374	16	16	1395	58
RTOR Reduction (vph)	0	26	0	0	19	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	74	0	0	29	0	37	1390	0	16	1452	0
Confl. Peds. (#/hr)	12		6	6		12	2		9	9		2
Heavy Vehicles (%)	3%	0%	0%	0%	0%	17%	0%	4%	0%	0%	4%	4%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		8.0			8.0		4.3	60.8		2.3	58.8	
Effective Green, g (s)		8.0			8.0		4.3	60.8		2.3	58.8	
Actuated g/C Ratio		0.10			0.10		0.05	0.73		0.03	0.71	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	5.6		2.5	5.6	
Lane Grp Cap (vph)		148			139		93	2535		49	2439	
v/s Ratio Prot							c0.02	0.40		0.01	c0.42	
v/s Ratio Perm		c0.05			0.02							
v/c Ratio		0.50			0.21		0.40	0.55		0.33	0.60	
Uniform Delay, d1		35.6			34.6		38.1	5.0		39.6	6.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.9			0.5		2.0	0.5		2.8	0.7	
Delay (s)		37.6			35.2		40.2	5.5		42.5	6.8	
Level of Service		D			D		D	A		D	A	
Approach Delay (s)		37.6			35.2			6.4			7.2	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	83.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	75	15	15	30	10	35	25	1230	120	85	1225	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1767			1738		1805	3426		1805	3433	
Flt Permitted		0.79			0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1445			1539		1805	3426		1805	3433	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	80	16	16	32	11	37	27	1309	128	90	1303	16
RTOR Reduction (vph)	0	8	0	0	33	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	104	0	0	47	0	27	1432	0	90	1318	0
Confl. Peds. (#/hr)			16	16			4		3	3		4
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	4%	1%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4								
Actuated Green, G (s)		8.8			8.8		2.6	45.0		7.1	49.5	
Effective Green, g (s)		8.8			8.8		2.6	45.0		7.1	49.5	
Actuated g/C Ratio		0.12			0.12		0.04	0.62		0.10	0.68	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.1		2.5	6.1	
Lane Grp Cap (vph)		174			185		64	2114		175	2331	
v/s Ratio Prot							0.01	c0.42		c0.05	0.38	
v/s Ratio Perm		c0.07			0.03							
v/c Ratio		0.60			0.26		0.42	0.68		0.51	0.57	
Uniform Delay, d1		30.4			29.1		34.4	9.2		31.3	6.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.6			0.5		3.2	1.4		1.9	0.7	
Delay (s)		34.9			29.6		37.7	10.5		33.2	6.8	
Level of Service		C			C		D	B		C	A	
Approach Delay (s)		34.9			29.6			11.0			8.5	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	72.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	20	20	185	20	275	15	970	200	175	1080	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	
Frpb, ped/bikes		0.99		1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1676		1618	1628	1556	1805	3406	1477	3433	3464	
Flt Permitted		0.98		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1676		1618	1628	1556	1805	3406	1477	3433	3464	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	36	21	21	191	21	284	15	1000	206	180	1113	21
RTOR Reduction (vph)	0	9	0	0	0	199	0	0	75	0	0	0
Lane Group Flow (vph)	0	69	0	105	107	85	15	1000	131	180	1134	0
Confl. Peds. (#/hr)	1		8	8		1			5	5		
Confl. Bikes (#/hr)			3			2			1			
Heavy Vehicles (%)	3%	15%	0%	6%	9%	3%	0%	6%	8%	2%	4%	0%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		4	4	5	1	6	4	5	2	
Permitted Phases						4			6			
Actuated Green, G (s)		7.4		11.8	11.8	22.0	2.3	39.0	50.8	10.2	46.9	
Effective Green, g (s)		7.4		11.8	11.8	22.0	2.3	39.0	50.8	10.2	46.9	
Actuated g/C Ratio		0.09		0.14	0.14	0.25	0.03	0.45	0.59	0.12	0.54	
Clearance Time (s)		5.0		5.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0	
Vehicle Extension (s)		2.5		2.5	2.5	2.5	2.5	5.2	2.5	2.5	5.2	
Lane Grp Cap (vph)		143		220	222	396	48	1537	868	405	1880	
v/s Ratio Prot		c0.04		0.06	c0.07	0.03	0.01	c0.29	0.02	c0.05	c0.33	
v/s Ratio Perm						0.03			0.07			
v/c Ratio		0.48		0.48	0.48	0.21	0.31	0.65	0.15	0.44	0.60	
Uniform Delay, d1		37.7		34.5	34.5	25.4	41.3	18.4	8.1	35.5	13.4	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.9		1.2	1.2	0.2	2.7	1.4	0.1	0.6	0.8	
Delay (s)		39.5		35.6	35.7	25.6	44.0	19.8	8.1	36.0	14.3	
Level of Service		D		D	D	C	D	B	A	D	B	
Approach Delay (s)		39.5			29.9			18.1			17.2	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	86.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	5	15	35	5	60	15	1120	90	65	1200	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	5	16	38	5	66	16	1231	99	71	1319	22
Pedestrians											2	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											4.0	
Percent Blockage											0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											497	
pX, platoon unblocked	0.78	0.78	0.78	0.78	0.78		0.78					
vC, conflicting volume	2807	2835	670	2085	2747	1233	1341			1330		
vC1, stage 1 conf vol	1473	1473		1264	1264							
vC2, stage 2 conf vol	1334	1363		821	1484							
vCu, unblocked vol	2753	2789	21	1830	2677	1233	878			1330		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.6	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	76	95	98	76	96	61	97			86		
cM capacity (veh/h)	23	111	827	158	140	168	608			526		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	27	110	16	1231	99	71	879	462
Volume Left	5	38	16	0	0	71	0	0
Volume Right	16	66	0	0	99	0	0	22
cSH	89	163	608	1700	1700	526	1700	1700
Volume to Capacity	0.31	0.67	0.03	0.72	0.06	0.14	0.52	0.27
Queue Length 95th (ft)	29	98	2	0	0	12	0	0
Control Delay (s)	62.5	63.8	11.1	0.0	0.0	12.9	0.0	0.0
Lane LOS	F	F	B			B		
Approach Delay (s)	62.5	63.8	0.1			0.7		
Approach LOS	F	F						

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	5	10	35	5	65	10	1090	40	65	1160	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	16	5	11	37	5	69	11	1160	43	69	1234	27
Pedestrians		1			3			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2639	2613	633	1976	2605	1184	1262			1205		
vC1, stage 1 conf vol	1387	1387		1205	1205							
vC2, stage 2 conf vol	1253	1226		771	1400							
vCu, unblocked vol	2639	2613	633	1976	2605	1184	1262			1205		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	58	96	98	77	96	62	98			88		
cM capacity (veh/h)	38	126	426	159	139	181	557			585		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	32	112	11	1202	69	823	438
Volume Left	16	37	11	0	69	0	0
Volume Right	11	69	0	43	0	0	27
cSH	66	171	557	1700	585	1700	1700
Volume to Capacity	0.49	0.65	0.02	0.71	0.12	0.48	0.26
Queue Length 95th (ft)	48	94	1	0	10	0	0
Control Delay (s)	103.2	59.0	11.6	0.0	12.0	0.0	0.0
Lane LOS	F	F	B		B		
Approach Delay (s)	103.2	59.0	0.1		0.6		
Approach LOS	F	F					

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	10	10	10	1130	1140	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	11	11	1228	1239	16
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2498	1248	1256			
vC1, stage 1 conf vol	1248					
vC2, stage 2 conf vol	1250					
vCu, unblocked vol	2498	1248	1256			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	94	95	98			
cM capacity (veh/h)	186	213	496			

Direction, Lane #	EB 1	NE 1	SW 1
Volume Total	22	1239	1255
Volume Left	11	11	0
Volume Right	11	0	16
cSH	199	496	1700
Volume to Capacity	0.11	0.02	0.74
Queue Length 95th (ft)	9	2	0
Control Delay (s)	25.4	1.1	0.0
Lane LOS	D	A	
Approach Delay (s)	25.4	1.1	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	10	90	1035	20	45	1085
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	11	99	1137	22	49	1192
Pedestrians			3			2
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			0			0
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2443	1150			1159	
vC1, stage 1 conf vol	1148					
vC2, stage 2 conf vol	1294					
vCu, unblocked vol	2443	1150			1159	
tC, single (s)	6.4	6.3			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4			2.2	
p0 queue free %	94	58			92	
cM capacity (veh/h)	183	234			592	

Direction, Lane #	NW 1	NE 1	SW 1	SW 2
Volume Total	110	1159	49	1192
Volume Left	11	0	49	0
Volume Right	99	22	0	0
cSH	228	1700	592	1700
Volume to Capacity	0.48	0.68	0.08	0.70
Queue Length 95th (ft)	60	0	7	0
Control Delay (s)	34.7	0.0	11.6	0.0
Lane LOS	D		B	
Approach Delay (s)	34.7	0.0	0.5	
Approach LOS	D			

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	30	30	20	1025	1075	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	31	31	21	1068	1120	21
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2230	1120	1141			
vC1, stage 1 conf vol	1120					
vC2, stage 2 conf vol	1110					
vCu, unblocked vol	2230	1120	1141			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4	2.2			
p0 queue free %	86	87	97			
cM capacity (veh/h)	217	244	602			

Direction, Lane #	EB 1	NE 1	NE 2	SW 1	SW 2
Volume Total	62	21	1068	1120	21
Volume Left	31	21	0	0	0
Volume Right	31	0	0	0	21
cSH	230	602	1700	1700	1700
Volume to Capacity	0.27	0.03	0.63	0.66	0.01
Queue Length 95th (ft)	27	3	0	0	0
Control Delay (s)	26.4	11.2	0.0	0.0	0.0
Lane LOS	D	B			
Approach Delay (s)	26.4	0.2		0.0	
Approach LOS	D				

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	25	120	855	35	160	930
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	130	929	38	174	1011
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2311	952			971	
vC1, stage 1 conf vol	952					
vC2, stage 2 conf vol	1359					
vCu, unblocked vol	2311	952			971	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)	5.5					
tF (s)	3.6	3.4			2.2	
p0 queue free %	82	57			75	
cM capacity (veh/h)	154	301			703	

Direction, Lane #	WB 1	WB 2	NE 1	SW 1	SW 2
Volume Total	27	130	967	174	1011
Volume Left	27	0	0	174	0
Volume Right	0	130	38	0	0
cSH	154	301	1700	703	1700
Volume to Capacity	0.18	0.43	0.57	0.25	0.59
Queue Length 95th (ft)	15	52	0	24	0
Control Delay (s)	33.3	25.7	0.0	11.8	0.0
Lane LOS	D	D		B	
Approach Delay (s)	27.0		0.0	1.7	
Approach LOS	D				

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	60	805	35	30	750	25	60	15	20	55	15	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1666	3292		1623	3361			1776	1578		1651	
Flt Permitted	0.35	1.00		0.32	1.00			0.81	1.00		0.83	
Satd. Flow (perm)	610	3292		542	3361			1490	1578		1401	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	62	830	36	31	773	26	62	15	21	57	15	67
RTOR Reduction (vph)	0	4	0	0	3	0	0	0	17	0	40	0
Lane Group Flow (vph)	62	862	0	31	796	0	0	77	4	0	99	0
Confl. Peds. (#/hr)	10		7	7		10	14		7	7		14
Confl. Bikes (#/hr)			11									
Heavy Vehicles (%)	8%	9%	5%	11%	7%	0%	3%	0%	0%	0%	14%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	20.4	20.4		20.4	20.4			6.6	6.6		6.6	
Effective Green, g (s)	20.4	20.4		20.4	20.4			6.6	6.6		6.6	
Actuated g/C Ratio	0.57	0.57		0.57	0.57			0.19	0.19		0.19	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.0	4.0		4.0	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			3.0	3.0		3.0	
Lane Grp Cap (vph)	350	1891		311	1931			277	293		260	
v/s Ratio Prot		c0.26			0.24							
v/s Ratio Perm	0.10			0.06				0.05	0.00		c0.07	
v/c Ratio	0.18	0.46		0.10	0.41			0.28	0.01		0.38	
Uniform Delay, d1	3.6	4.4		3.4	4.2			12.4	11.8		12.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.1		0.1	0.1			0.5	0.0		0.9	
Delay (s)	3.7	4.4		3.5	4.3			13.0	11.8		13.6	
Level of Service	A	A		A	A			B	B		B	
Approach Delay (s)		4.4			4.2			12.7			13.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	35.5	Sum of lost time (s)	8.5
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	10	25	30	15	25	35	740	30	35	785	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.95		1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1768			1687		1804	3354		1640	3408	
Flt Permitted		0.78			0.87		0.31	1.00		0.34	1.00	
Satd. Flow (perm)		1418			1507		585	3354		588	3408	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	64	11	27	32	16	27	37	787	32	37	835	64
RTOR Reduction (vph)	0	16	0	0	23	0	0	3	0	0	7	0
Lane Group Flow (vph)	0	86	0	0	52	0	37	816	0	37	892	0
Confl. Peds. (#/hr)	3		6	6		3	2		2	2		2
Heavy Vehicles (%)	0%	0%	0%	10%	0%	0%	0%	6%	29%	10%	5%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		6.5			6.5		30.7	30.7		30.7	30.7	
Effective Green, g (s)		6.5			6.5		30.7	30.7		30.7	30.7	
Actuated g/C Ratio		0.14			0.14		0.67	0.67		0.67	0.67	
Clearance Time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		2.5			2.5		5.4	5.4		5.4	5.4	
Lane Grp Cap (vph)		201			214		392	2253		395	2289	
v/s Ratio Prot								0.24			c0.26	
v/s Ratio Perm		c0.06			0.03		0.06			0.06		
v/c Ratio		0.43			0.24		0.09	0.36		0.09	0.39	
Uniform Delay, d1		17.9			17.4		2.6	3.3		2.6	3.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1			0.4		0.3	0.2		0.2	0.3	
Delay (s)		19.0			17.8		2.9	3.5		2.9	3.6	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		19.0			17.8			3.5			3.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	45.7	Sum of lost time (s)	8.5
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	55	10	790	785	55
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	59	11	840	835	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1726	864	894			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1726	864	894			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	83	99			
cM capacity (veh/h)	96	354	763			

Direction, Lane #	NB 1	NB 2	SB 1
Volume Total	11	840	894
Volume Left	11	0	0
Volume Right	0	0	59
cSH	763	1700	1700
Volume to Capacity	0.01	0.49	0.53
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.1		0.0
Approach LOS			

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Volume (veh/h)	15	755	775	10	45	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	795	816	11	47	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	None			
Median storage veh)		2				
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	826				1647	821
vC1, stage 1 conf vol					821	
vC2, stage 2 conf vol					826	
vCu, unblocked vol	826				1647	821
tC, single (s)	4.1				6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)	2.2				3.6	3.4
p0 queue free %	98				84	97
cM capacity (veh/h)	813				302	357

Direction, Lane #	NB 1	NB 2	SB 1	NE 1
Volume Total	16	795	826	58
Volume Left	16	0	0	47
Volume Right	0	0	11	11
cSH	813	1700	1700	311
Volume to Capacity	0.02	0.47	0.49	0.19
Queue Length 95th (ft)	1	0	0	17
Control Delay (s)	9.5	0.0	0.0	19.2
Lane LOS	A			C
Approach Delay (s)	0.2		0.0	19.2
Approach LOS				C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	760	25	15	735	35	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	864	28	17	835	40	17
Pedestrians	1				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			893		1749	879
vC1, stage 1 conf vol					879	
vC2, stage 2 conf vol					870	
vCu, unblocked vol			893		1749	879
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.3
p0 queue free %			98		86	95
cM capacity (veh/h)			767		287	349

Direction, Lane #	SE 1	NW 1	NW 2	NE 1
Volume Total	892	17	835	57
Volume Left	0	17	0	40
Volume Right	28	0	0	17
cSH	1700	767	1700	304
Volume to Capacity	0.52	0.02	0.49	0.19
Queue Length 95th (ft)	0	2	0	17
Control Delay (s)	0.0	9.8	0.0	19.6
Lane LOS		A		C
Approach Delay (s)	0.0	0.2		19.6
Approach LOS				C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	55	200	155	180	165	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	217	168	196	179	43
Pedestrians	1			2	1	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				TWLTL	None	
Median storage veh)				2		
Upstream signal (ft)				903		
pX, platoon unblocked						
vC, conflicting volume	736	204	224			
vC1, stage 1 conf vol	202					
vC2, stage 2 conf vol	534					
vCu, unblocked vol	736	204	224			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)	5.5					
tF (s)	3.6	3.3	2.2			
p0 queue free %	87	74	87			
cM capacity (veh/h)	465	829	1332			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	277	168	196	223
Volume Left	60	168	0	0
Volume Right	217	0	0	43
cSH	710	1332	1700	1700
Volume to Capacity	0.39	0.13	0.12	0.13
Queue Length 95th (ft)	46	11	0	0
Control Delay (s)	13.3	8.1	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	13.3	3.7		0.0
Approach LOS	B			

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	20	20	95	15	10	60
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	23	23	108	17	11	68

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	45	125	80
Volume Left (vph)	23	0	11
Volume Right (vph)	23	17	0
Hadj (s)	-0.11	-0.01	0.03
Departure Headway (s)	4.2	4.1	4.1
Degree Utilization, x	0.05	0.14	0.09
Capacity (veh/h)	810	863	850
Control Delay (s)	7.5	7.7	7.6
Approach Delay (s)	7.5	7.7	7.6
Approach LOS	A	A	A

Intersection Summary			
Delay	7.6		
Level of Service	A		
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	10	45	10	15	10	40	140	15	10	80	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	16	11	48	11	16	11	43	151	16	11	86	16
Pedestrians					1							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	379	369	94	415	369	160	102			168		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	379	369	94	415	369	160	102			168		
tC, single (s)	7.2	6.5	6.2	7.4	6.5	7.2	4.3			5.1		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.3	3.8	4.0	4.2	2.4			3.1		
p0 queue free %	97	98	95	98	97	98	97			99		
cM capacity (veh/h)	524	539	963	450	539	682	1390			983		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	75	38	210	113
Volume Left	16	11	43	11
Volume Right	48	11	16	16
cSH	745	541	1390	983
Volume to Capacity	0.10	0.07	0.03	0.01
Queue Length 95th (ft)	8	6	2	1
Control Delay (s)	10.4	12.2	1.8	0.9
Lane LOS	B	B	A	A
Approach Delay (s)	10.4	12.2	1.8	0.9
Approach LOS	B	B		

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Volume (veh/h)	10	5	10	15	20	15	10	75	15	10	60	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.92	0.85	0.92	0.85	0.85	0.85	0.85	0.92
Hourly flow rate (vph)	11	5	11	18	22	18	11	88	18	12	71	11
Pedestrians								2			4	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	251	227	78	234	224	101	81			106		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	251	227	78	234	224	101	81			106		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	98	99	99	97	97	98	99			99		
cM capacity (veh/h)	663	662	981	675	665	957	1516			1498		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	57	117	93
Volume Left	11	18	11	12
Volume Right	11	18	18	11
cSH	761	738	1516	1498
Volume to Capacity	0.04	0.08	0.01	0.01
Queue Length 95th (ft)	3	6	1	1
Control Delay (s)	9.9	10.3	0.7	1.0
Lane LOS	A	B	A	A
Approach Delay (s)	9.9	10.3	0.7	1.0
Approach LOS	A	B		

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	18.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	15	10	5	15	20	10	65	5	10	60	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	11	17	11	6	17	22	11	72	6	11	67	11
Pedestrians		4						2				
Lane Width (ft)		12.0						12.0				
Walking Speed (ft/s)		4.0						4.0				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	226	198	78	213	201	75	82			78		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	226	198	78	213	201	75	82			78		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	99	99	98	98	99			99		
cM capacity (veh/h)	692	688	983	715	686	992	1523			1534		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	39	44	89	89
Volume Left	11	6	11	11
Volume Right	11	22	6	11
cSH	754	816	1523	1534
Volume to Capacity	0.05	0.05	0.01	0.01
Queue Length 95th (ft)	4	4	1	1
Control Delay (s)	10.0	9.7	1.0	1.0
Lane LOS	B	A	A	A
Approach Delay (s)	10.0	9.7	1.0	1.0
Approach LOS	B	A		

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	17.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	135	80	15	70	80	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	169	100	19	88	100	38
Pedestrians					19	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						1
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			288		363	238
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			288		363	238
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			99		83	95
cM capacity (veh/h)			1265		598	793

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	269	106	138
Volume Left	0	19	100
Volume Right	100	0	38
cSH	1700	1265	823
Volume to Capacity	0.16	0.01	0.17
Queue Length 95th (ft)	0	1	15
Control Delay (s)	0.0	1.5	11.6
Lane LOS		A	B
Approach Delay (s)	0.0	1.5	11.6
Approach LOS			B

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	45	40	35	15	25	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	48	43	37	16	27	43
Pedestrians		2	2		3	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	56				189	50
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56				189	50
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				97	96
cM capacity (veh/h)	1558				777	1019

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	90	53	69
Volume Left	48	0	27
Volume Right	0	16	43
cSH	1558	1700	910
Volume to Capacity	0.03	0.03	0.08
Queue Length 95th (ft)	2	0	6
Control Delay (s)	4.0	0.0	9.3
Lane LOS	A		A
Approach Delay (s)	4.0	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	10	55	35	15	15	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	11	59	38	16	16	11
Pedestrians		3	5		3	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	57				134	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	57				134	52
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	99
cM capacity (veh/h)	1557				852	1017

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	70	54	27
Volume Left	11	0	16
Volume Right	0	16	11
cSH	1557	1700	911
Volume to Capacity	0.01	0.03	0.03
Queue Length 95th (ft)	1	0	2
Control Delay (s)	1.2	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	1.2	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	21.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	35	10	30	25	10	10	20	10	10	40	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	26	46	13	39	33	13	13	26	13	13	53	13
Pedestrians					3							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	46			59			263	230	56	253	230	39
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	46			59			263	230	56	253	230	39
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			98	96	99	98	92	99
cM capacity (veh/h)	1575			1437			621	644	1014	650	644	1038

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	86	86	53	79
Volume Left	26	39	13	13
Volume Right	13	13	13	13
cSH	1575	1437	701	688
Volume to Capacity	0.02	0.03	0.08	0.11
Queue Length 95th (ft)	1	2	6	10
Control Delay (s)	2.3	3.6	10.5	10.9
Lane LOS	A	A	B	B
Approach Delay (s)	2.3	3.6	10.5	10.9
Approach LOS			B	B

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	16.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	35	15	10	10	15	20
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	43	18	12	12	18	24
Pedestrians			7		1	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			1		0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	68	56	68	8	7	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	68	56	68	8	7	
tC, single (s)	7.1	6.5	6.5	6.2	4.2	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.3	
p0 queue free %	95	98	98	99	99	
cM capacity (veh/h)	888	824	812	1073	1541	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	61	24	43
Volume Left	43	0	18
Volume Right	0	12	24
cSH	868	924	1541
Volume to Capacity	0.07	0.03	0.01
Queue Length 95th (ft)	6	2	1
Control Delay (s)	9.5	9.0	3.2
Lane LOS	A	A	A
Approach Delay (s)	9.5	9.0	3.2
Approach LOS	A	A	

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	120	105	20	90	5	165	10	40	5	10	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	16	132	115	22	99	5	181	11	44	5	11	16
Pedestrians		1										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	104			247			391	371	190	418	426	103
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	104			247			391	371	190	418	426	103
tC, single (s)	4.2			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			66	98	95	99	98	98
cM capacity (veh/h)	1433			1262			537	546	847	502	509	957

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	264	126	236	33
Volume Left	16	22	181	5
Volume Right	115	5	44	16
cSH	1433	1262	576	662
Volume to Capacity	0.01	0.02	0.41	0.05
Queue Length 95th (ft)	1	1	50	4
Control Delay (s)	0.6	1.5	15.5	10.7
Lane LOS	A	A	C	B
Approach Delay (s)	0.6	1.5	15.5	10.7
Approach LOS			C	B

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	10	15	5	10	10	10	10	5	5	10	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	84	12	18	6	12	12	12	12	6	6	12	24
Pedestrians		1										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	94	79	25	99	88	15	37			18		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	94	79	25	99	88	15	37			18		
tC, single (s)	7.1	6.8	6.3	7.1	6.5	7.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.3	3.4	3.5	4.0	4.2	2.2			2.2		
p0 queue free %	90	98	98	99	98	99	99			100		
cM capacity (veh/h)	857	746	1033	853	796	839	1585			1612		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	114	30	30	42
Volume Left	84	6	12	6
Volume Right	18	12	6	24
cSH	867	824	1585	1612
Volume to Capacity	0.13	0.04	0.01	0.00
Queue Length 95th (ft)	11	3	1	0
Control Delay (s)	9.8	9.5	2.9	1.1
Lane LOS	A	A	A	A
Approach Delay (s)	9.8	9.5	2.9	1.1
Approach LOS	A	A		

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	22.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	15	15	15	25	15	10
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	22	22	22	36	22	14
Pedestrians	4		2			4
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	104	48			62	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	104	48			62	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	98	98			98	
cM capacity (veh/h)	881	1020			1440	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	43	58	36
Volume Left	22	0	22
Volume Right	22	36	0
cSH	945	1700	1440
Volume to Capacity	0.05	0.03	0.02
Queue Length 95th (ft)	4	0	1
Control Delay (s)	9.0	0.0	4.6
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	4.6
Approach LOS	A		

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	19.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	95	40	35	30	40	95
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.58	0.58	0.58	0.58	0.58	0.58
Hourly flow rate (vph)	164	69	60	52	69	164
Pedestrians					2	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	114				485	88
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	114				485	88
tC, single (s)	4.2				6.6	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	89				85	83
cM capacity (veh/h)	1424				457	955

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	233	112	233
Volume Left	164	0	69
Volume Right	0	52	164
cSH	1424	1700	722
Volume to Capacity	0.11	0.07	0.32
Queue Length 95th (ft)	10	0	35
Control Delay (s)	5.8	0.0	12.3
Lane LOS	A		B
Approach Delay (s)	5.8	0.0	12.3
Approach LOS			B

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	20	30	25	25	15	45
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	27	40	33	33	20	60

Direction, Lane #	EB 1	WB 1	SE 1
Volume Total (vph)	67	67	80
Volume Left (vph)	27	0	20
Volume Right (vph)	0	33	60
Hadj (s)	0.10	0.35	-0.33
Departure Headway (s)	4.2	4.5	3.9
Degree Utilization, x	0.08	0.08	0.09
Capacity (veh/h)	827	783	892
Control Delay (s)	7.6	7.9	7.2
Approach Delay (s)	7.6	7.9	7.2
Approach LOS	A	A	A

Intersection Summary			
Delay	7.6		
Level of Service	A		
Intersection Capacity Utilization	19.6%	ICU Level of Service	A
Analysis Period (min)	15		

2012 Highway Capacity Manual (HCM) Intersection Capacity Analysis Results

Average Weekday Conditions

The following pages are the operational reports of signalized and unsignalized intersections in Lincoln City. The operations are summarized in Table A3.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	655	20	35	680	25	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	720	22	38	747	27	66
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			742		1555	731
vC1, stage 1 conf vol					731	
vC2, stage 2 conf vol					824	
vCu, unblocked vol			742		1555	731
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.4
p0 queue free %			96		92	84
cM capacity (veh/h)			874		328	414

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	742	786	93
Volume Left	0	38	27
Volume Right	22	0	66
cSH	1700	874	384
Volume to Capacity	0.44	0.04	0.24
Queue Length 95th (ft)	0	3	23
Control Delay (s)	0.0	1.2	17.4
Lane LOS		A	C
Approach Delay (s)	0.0	1.2	17.4
Approach LOS			C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	650	65	10	695	45	25
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	707	71	11	755	49	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			777		1519	742
vC1, stage 1 conf vol					742	
vC2, stage 2 conf vol					777	
vCu, unblocked vol			777		1519	742
tC, single (s)			4.2		6.4	6.3
tC, 2 stage (s)					5.4	
tF (s)			2.3		3.5	3.4
p0 queue free %			99		86	93
cM capacity (veh/h)			801		343	403

Direction, Lane #	NB 1	SB 1	SB 2	NW 1
Volume Total	777	11	755	76
Volume Left	0	11	0	49
Volume Right	71	0	0	27
cSH	1700	801	1700	362
Volume to Capacity	0.46	0.01	0.44	0.21
Queue Length 95th (ft)	0	1	0	20
Control Delay (s)	0.0	9.6	0.0	17.6
Lane LOS		A		C
Approach Delay (s)	0.0	0.1		17.6
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	640	45	45	660	35	45	15	50	25	15	60
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00		1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	1651	1428	1554	1636	1399	1554	1453		1599	1436	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	1651	1428	1554	1636	1399	1554	1453		1599	1436	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	674	47	47	695	37	47	16	53	26	16	63
RTOR Reduction (vph)	0	0	11	0	0	8	0	47	0	0	58	0
Lane Group Flow (vph)	37	674	36	47	695	29	47	22	0	26	21	0
Confl. Peds. (#/hr)	10		1	1		10	1					1
Confl. Bikes (#/hr)												3
Heavy Vehicles (%)	3%	6%	2%	7%	7%	3%	7%	15%	4%	4%	0%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	3.8	42.4	42.4	4.2	42.8	42.8	4.2	8.3		2.3	6.4	
Effective Green, g (s)	3.8	42.4	42.4	4.2	42.8	42.8	4.2	8.3		2.3	6.4	
Actuated g/C Ratio	0.05	0.57	0.57	0.06	0.58	0.58	0.06	0.11		0.03	0.09	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.5	4.5	4.5	2.5	4.5	4.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	83	943	816	88	944	807	88	163		50	124	
v/s Ratio Prot	0.02	0.41		c0.03	c0.42		c0.03	c0.02		0.02	0.01	
v/s Ratio Perm			0.03			0.02						
v/c Ratio	0.45	0.71	0.04	0.53	0.74	0.04	0.53	0.13		0.52	0.17	
Uniform Delay, d1	34.2	11.5	7.0	34.0	11.5	6.8	34.0	29.7		35.4	31.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	3.0	0.0	4.8	3.4	0.0	4.8	0.3		7.2	0.5	
Delay (s)	36.9	14.5	7.0	38.8	15.0	6.8	38.8	30.0		42.7	31.9	
Level of Service	D	B	A	D	B	A	D	C		D	C	
Approach Delay (s)		15.1			16.0			33.6			34.6	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	74.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	220	25	335	45	25	55	270	445	20	30	570	135
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.90		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1599	1448		1662	1535		1646	3052		1583	3050	1389
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1599	1448		1662	1535		1646	3052		1583	3050	1389
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	27	364	49	27	60	293	484	22	33	620	147
RTOR Reduction (vph)	0	289	0	0	50	0	0	2	0	0	0	54
Lane Group Flow (vph)	239	102	0	49	37	0	293	504	0	33	620	93
Confl. Peds. (#/hr)	5		8	8		5	2		4	4		2
Confl. Bikes (#/hr)			1						2			21
Heavy Vehicles (%)	4%	0%	2%	0%	0%	0%	1%	8%	10%	5%	9%	2%
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases												2
Actuated Green, G (s)	23.5	23.5		8.7	8.7		27.8	59.5		4.8	36.5	36.5
Effective Green, g (s)	23.5	23.5		8.7	8.7		27.8	59.5		4.8	36.5	36.5
Actuated g/C Ratio	0.21	0.21		0.08	0.08		0.24	0.52		0.04	0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	6.0		2.5	6.0	6.0
Lane Grp Cap (vph)	331	300		127	118		403	1600		67	981	447
v/s Ratio Prot	c0.15	0.07		c0.03	0.02		c0.18	0.17		0.02	c0.20	
v/s Ratio Perm												0.07
v/c Ratio	0.72	0.34		0.39	0.31		0.73	0.32		0.49	0.63	0.21
Uniform Delay, d1	42.0	38.4		49.9	49.6		39.4	15.4		53.2	32.8	28.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.1	0.5		1.4	1.1		6.0	0.3		4.1	2.2	0.7
Delay (s)	49.1	38.9		51.3	50.7		45.4	15.7		57.3	35.0	28.6
Level of Service	D	D		D	D		D	B		E	D	C
Approach Delay (s)		42.8			50.9			26.6			34.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	35.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	113.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	25	50	825	45	30	920
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	26	51	842	46	31	939
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1865	865			888	
vC1, stage 1 conf vol	865					
vC2, stage 2 conf vol	1000					
vCu, unblocked vol	1865	865			888	
tC, single (s)	6.4	6.3			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4			2.2	
p0 queue free %	91	85			96	
cM capacity (veh/h)	269	342			771	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	77	888	31	939
Volume Left	26	0	31	0
Volume Right	51	46	0	0
cSH	314	1700	771	1700
Volume to Capacity	0.24	0.52	0.04	0.55
Queue Length 95th (ft)	23	0	3	0
Control Delay (s)	20.1	0.0	9.9	0.0
Lane LOS	C		A	
Approach Delay (s)	20.1	0.0	0.3	
Approach LOS	C			

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	15	20	860	925	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	16	21	905	974	21
Pedestrians	7					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1939	991	1002			
vC1, stage 1 conf vol	991					
vC2, stage 2 conf vol	947					
vCu, unblocked vol	1939	991	1002			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4	2.2			
p0 queue free %	96	95	97			
cM capacity (veh/h)	260	292	695			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	26	21	905	995
Volume Left	11	21	0	0
Volume Right	16	0	0	21
cSH	278	695	1700	1700
Volume to Capacity	0.09	0.03	0.53	0.59
Queue Length 95th (ft)	8	2	0	0
Control Delay (s)	19.3	10.3	0.0	0.0
Lane LOS	C	B		
Approach Delay (s)	19.3	0.2		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	15	10	80	20	30	35	890	60	70	855	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.97		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1551			1543		1568	3099		1614	3157	
Flt Permitted		0.87			0.79		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1377			1255		1568	3099		1614	3157	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	26	15	10	82	21	31	36	918	62	72	881	21
RTOR Reduction (vph)	0	7	0	0	9	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	44	0	0	125	0	36	976	0	72	901	0
Confl. Peds. (#/hr)	9		12	12		9	6		9	9		6
Confl. Bikes (#/hr)									5			1
Heavy Vehicles (%)	3%	0%	25%	7%	0%	6%	6%	6%	6%	3%	5%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		12.4			12.4		4.2	39.6		6.9	42.3	
Effective Green, g (s)		12.4			12.4		4.2	39.6		6.9	42.3	
Actuated g/C Ratio		0.17			0.17		0.06	0.56		0.10	0.60	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.0		2.5	6.0	
Lane Grp Cap (vph)		241			219		93	1731		157	1884	
v/s Ratio Prot							0.02	c0.31		c0.04	c0.29	
v/s Ratio Perm		0.03			c0.10							
v/c Ratio		0.18			0.57		0.39	0.56		0.46	0.48	
Uniform Delay, d1		24.9			26.8		32.1	10.1		30.2	8.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			2.9		1.9	0.9		1.5	0.5	
Delay (s)		25.2			29.7		34.1	11.0		31.8	8.6	
Level of Service		C			C		C	B		C	A	
Approach Delay (s)		25.2			29.7			11.8			10.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	40	35	945	15	30	875	40
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	22	0	0	43	38	1027	16	33	951	43
Pedestrians					8						2	
Lane Width (ft)					12.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					1						0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								1009			913	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90		0.90					
vC, conflicting volume	1673	2166	497	1682	2179	532	995			1051		
vC1, stage 1 conf vol	1038	1038		1119	1119							
vC2, stage 2 conf vol	635	1128		562	1060							
vCu, unblocked vol	1522	2071	212	1532	2086	532	766			1051		
tC, single (s)	7.5	6.5	7.1	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	91	95			95		
cM capacity (veh/h)	226	190	690	197	195	493	769			665		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	22	43	38	685	359	33	634	361
Volume Left	0	0	38	0	0	33	0	0
Volume Right	22	43	0	0	16	0	0	43
cSH	690	493	769	1700	1700	665	1700	1700
Volume to Capacity	0.03	0.09	0.05	0.40	0.21	0.05	0.37	0.21
Queue Length 95th (ft)	2	7	4	0	0	4	0	0
Control Delay (s)	10.4	13.0	9.9	0.0	0.0	10.7	0.0	0.0
Lane LOS	B	B	A			B		
Approach Delay (s)	10.4	13.0	0.3			0.3		
Approach LOS	B	B						

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	5	20	10	5	10	10	955	10	5	895	25
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.99			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.95			0.94			1.00			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1584			1593			3188			3143	
Flt Permitted		0.83			0.90			0.94			0.95	
Satd. Flow (perm)		1340			1467			3009			2991	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	27	5	21	11	5	11	11	1016	11	5	952	27
RTOR Reduction (vph)	0	20	0	0	10	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	33	0	0	17	0	0	1038	0	0	983	0
Confl. Peds. (#/hr)	19		6	6		19	50		35	35		50
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		6.4			6.4			83.6			83.6	
Effective Green, g (s)		6.4			6.4			83.6			83.6	
Actuated g/C Ratio		0.07			0.07			0.85			0.85	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		2.5			2.5			6.0			6.0	
Lane Grp Cap (vph)		88			96			2567			2552	
v/s Ratio Prot												
v/s Ratio Perm		c0.02			0.01			c0.34			0.33	
v/c Ratio		0.38			0.17			0.40			0.39	
Uniform Delay, d1		43.9			43.3			1.6			1.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.0			0.6			0.1			0.4	
Delay (s)		45.9			43.9			1.7			2.0	
Level of Service		D			D			A			A	
Approach Delay (s)		45.9			43.9			1.7			2.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	5	115	10	15	0	950	55	15	910	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.99			0.99			1.00	
Flt Protected		0.98			0.96			1.00			1.00	
Satd. Flow (prot)		1552			1582			3134			3160	
Flt Permitted		0.91			0.75			1.00			0.93	
Satd. Flow (perm)		1440			1229			3134			2951	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	10	10	5	117	10	15	0	969	56	15	929	5
RTOR Reduction (vph)	0	4	0	0	4	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	21	0	0	138	0	0	1023	0	0	949	0
Confl. Peds. (#/hr)	12		1	1		12	11		3	3		11
Confl. Bikes (#/hr)			1						1			1
Heavy Vehicles (%)	0%	17%	0%	4%	0%	10%	0%	5%	6%	0%	5%	25%
Turn Type	Perm	NA		Perm	NA			NA		Prot	NA	
Protected Phases		8			4			6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		15.9			15.9			76.3			76.3	
Effective Green, g (s)		15.9			15.9			76.3			76.3	
Actuated g/C Ratio		0.16			0.16			0.76			0.76	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		2.5			2.5			6.0			6.0	
Lane Grp Cap (vph)		229			195			2386			2247	
v/s Ratio Prot								c0.33				
v/s Ratio Perm		0.01			c0.11						0.32	
v/c Ratio		0.09			0.71			0.43			15.00dl	
Uniform Delay, d1		36.0			39.9			4.2			4.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			10.3			0.4			0.4	
Delay (s)		36.1			50.3			4.6			4.6	
Level of Service		D			D			A			A	
Approach Delay (s)		36.1			50.3			4.6			4.6	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	5	10	15	5	15	20	985	35	10	1005	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1607			1603		1458	3148		1511	3226	
Flt Permitted		0.91			0.85		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1474			1393		1458	3148		1511	3226	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	5	5	11	16	5	16	22	1059	38	11	1081	5
RTOR Reduction (vph)	0	10	0	0	15	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	11	0	0	22	0	22	1096	0	11	1086	0
Confl. Peds. (#/hr)	2					2	5		1	1		5
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	14%	5%	5%	10%	3%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		3.7			3.7		1.2	43.1		1.0	42.9	
Effective Green, g (s)		3.7			3.7		1.2	43.1		1.0	42.9	
Actuated g/C Ratio		0.06			0.06		0.02	0.72		0.02	0.72	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.0		2.5	6.0	
Lane Grp Cap (vph)		91			86		29	2269		25	2314	
v/s Ratio Prot							c0.02	c0.35		0.01	0.34	
v/s Ratio Perm		0.01			c0.02							
v/c Ratio		0.12			0.26		0.76	0.48		0.44	0.47	
Uniform Delay, d1		26.5			26.7		29.2	3.6		29.1	3.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			1.1		69.1	0.5		8.7	0.4	
Delay (s)		26.9			27.9		98.3	4.0		37.9	4.0	
Level of Service		C			C		F	A		D	A	
Approach Delay (s)		26.9			27.9			5.9			4.4	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	30	5	35	10	5	15	25	965	10	10	980	40
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.93		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1557			1460		1662	3192		1662	3175	
Flt Permitted		0.85			0.92		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1345			1363		1662	3192		1662	3175	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	5	37	11	5	16	26	1016	11	11	1032	42
RTOR Reduction (vph)	0	29	0	0	14	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	45	0	0	18	0	26	1027	0	11	1072	0
Confl. Peds. (#/hr)	12		6	6		12	2		9	9		2
Heavy Vehicles (%)	3%	0%	0%	0%	0%	17%	0%	4%	0%	0%	4%	4%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		6.0			6.0		2.5	42.9		1.0	41.4	
Effective Green, g (s)		6.0			6.0		2.5	42.9		1.0	41.4	
Actuated g/C Ratio		0.10			0.10		0.04	0.69		0.02	0.67	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	5.6		2.5	5.6	
Lane Grp Cap (vph)		130			132		67	2212		27	2124	
v/s Ratio Prot							c0.02	0.32		0.01	c0.34	
v/s Ratio Perm		c0.03			0.01							
v/c Ratio		0.35			0.13		0.39	0.46		0.41	0.50	
Uniform Delay, d1		26.1			25.6		29.0	4.3		30.2	5.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2			0.3		2.7	0.4		7.1	0.5	
Delay (s)		27.3			25.9		31.7	4.7		37.3	5.6	
Level of Service		C			C		C	A		D	A	
Approach Delay (s)		27.3			25.9			5.4			5.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	61.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	55	10	10	20	5	25	20	925	90	60	905	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.93		1.00	0.99		1.00	1.00	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1628			1591		1662	3156		1662	3162	
Flt Permitted		0.79			0.89		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1333			1450		1662	3156		1662	3162	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	59	11	11	21	5	27	21	984	96	64	963	11
RTOR Reduction (vph)	0	7	0	0	24	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	74	0	0	29	0	21	1075	0	64	973	0
Confl. Peds. (#/hr)			16	16			4		3	3		4
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	4%	1%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4								
Actuated Green, G (s)		7.6			7.6		1.2	39.8		4.6	43.2	
Effective Green, g (s)		7.6			7.6		1.2	39.8		4.6	43.2	
Actuated g/C Ratio		0.12			0.12		0.02	0.62		0.07	0.68	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.1		2.5	6.1	
Lane Grp Cap (vph)		158			172		31	1963		119	2134	
v/s Ratio Prot							0.01	c0.34		c0.04	c0.31	
v/s Ratio Perm		c0.06			0.02							
v/c Ratio		0.47			0.17		0.68	0.55		0.54	0.46	
Uniform Delay, d1		26.3			25.4		31.2	6.9		28.7	4.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.6			0.3		42.1	0.7		3.6	0.4	
Delay (s)		27.9			25.7		73.4	7.7		32.3	5.3	
Level of Service		C			C		E	A		C	A	
Approach Delay (s)		27.9			25.7			8.9			7.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	15	15	135	15	200	10	725	145	125	800	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0		5.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	
Frpb, ped/bikes		0.99		1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1544		1490	1499	1433	1662	3137	1361	3162	3191	
Flt Permitted		0.98		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1544		1490	1499	1433	1662	3137	1361	3162	3191	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	26	15	15	139	15	206	10	747	149	129	825	15
RTOR Reduction (vph)	0	9	0	0	0	154	0	0	68	0	0	0
Lane Group Flow (vph)	0	47	0	76	78	52	10	747	81	129	840	0
Confl. Peds. (#/hr)	1		8	8		1			5	5		
Confl. Bikes (#/hr)			3			2			1			
Heavy Vehicles (%)	3%	15%	0%	6%	9%	3%	0%	6%	8%	2%	4%	0%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		4	4	5	1	6	4	5	2	
Permitted Phases						4			6			
Actuated Green, G (s)		6.2		9.6	9.6	18.3	1.0	29.9	39.5	8.7	37.6	
Effective Green, g (s)		6.2		9.6	9.6	18.3	1.0	29.9	39.5	8.7	37.6	
Actuated g/C Ratio		0.09		0.13	0.13	0.25	0.01	0.41	0.55	0.12	0.52	
Clearance Time (s)		5.0		5.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0	
Vehicle Extension (s)		2.5		2.5	2.5	2.5	2.5	5.2	2.5	2.5	5.2	
Lane Grp Cap (vph)		132		198	199	362	23	1296	743	380	1657	
v/s Ratio Prot		c0.03		0.05	c0.05	0.02	0.01	c0.24	0.01	c0.04	c0.26	
v/s Ratio Perm						0.02			0.05			
v/c Ratio		0.35		0.38	0.39	0.14	0.43	0.58	0.11	0.34	0.51	
Uniform Delay, d1		31.2		28.7	28.7	21.0	35.4	16.4	7.9	29.2	11.3	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		1.2		0.9	0.9	0.1	9.3	1.0	0.0	0.4	0.5	
Delay (s)		32.4		29.6	29.7	21.1	44.7	17.4	8.0	29.6	11.9	
Level of Service		C		C	C	C	D	B	A	C	B	
Approach Delay (s)		32.4			24.8			16.2			14.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	72.4	Sum of lost time (s)	22.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	5	10	25	5	40	10	825	70	45	890	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	5	11	27	5	44	11	907	77	49	978	16
Pedestrians											2	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											4.0	
Percent Blockage											0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											497	
pX, platoon unblocked	0.85	0.85	0.85	0.85	0.85		0.85					
vC, conflicting volume	2062	2091	497	1530	2022	909	995			984		
vC1, stage 1 conf vol	1085	1085		929	929							
vC2, stage 2 conf vol	977	1005		602	1093							
vCu, unblocked vol	1897	1931	56	1271	1850	909	641			984		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.6	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	97	99	89	98	84	99			93		
cM capacity (veh/h)	147	209	854	257	235	277	810			710		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	22	77	11	907	77	49	652	342
Volume Left	5	27	11	0	0	49	0	0
Volume Right	11	44	0	0	77	0	0	16
cSH	287	267	810	1700	1700	710	1700	1700
Volume to Capacity	0.08	0.29	0.01	0.53	0.05	0.07	0.38	0.20
Queue Length 95th (ft)	6	29	1	0	0	6	0	0
Control Delay (s)	18.6	23.9	9.5	0.0	0.0	10.4	0.0	0.0
Lane LOS	C	C	A			B		
Approach Delay (s)	18.6	23.9	0.1			0.5		
Approach LOS	C	C						

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	5	5	25	5	50	5	815	30	45	860	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	11	5	5	27	5	53	5	867	32	48	915	16
Pedestrians		1			3			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1953	1932	468	1460	1924	886	932			902		
vC1, stage 1 conf vol	1020	1020		897	897							
vC2, stage 2 conf vol	934	913		563	1028							
vCu, unblocked vol	1953	1932	468	1460	1924	886	932			902		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	98	99	90	98	81	99			94		
cM capacity (veh/h)	144	216	545	254	227	287	742			760		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	21	85	5	899	48	610	321
Volume Left	11	27	5	0	48	0	0
Volume Right	5	53	0	32	0	0	16
cSH	196	271	742	1700	760	1700	1700
Volume to Capacity	0.11	0.31	0.01	0.53	0.06	0.36	0.19
Queue Length 95th (ft)	9	32	1	0	5	0	0
Control Delay (s)	25.6	24.2	9.9	0.0	10.1	0.0	0.0
Lane LOS	D	C	A		B		
Approach Delay (s)	25.6	24.2	0.1		0.5		
Approach LOS	D	C					

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	5	5	5	835	845	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	5	5	908	918	11
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1843	925	930			
vC1, stage 1 conf vol	925					
vC2, stage 2 conf vol	918					
vCu, unblocked vol	1843	925	930			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	98	98	99			
cM capacity (veh/h)	280	329	666			

Direction, Lane #	EB 1	NE 1	SW 1
Volume Total	11	913	929
Volume Left	5	5	0
Volume Right	5	0	11
cSH	302	666	1700
Volume to Capacity	0.04	0.01	0.55
Queue Length 95th (ft)	3	1	0
Control Delay (s)	17.3	0.2	0.0
Lane LOS	C	A	
Approach Delay (s)	17.3	0.2	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	5	65	760	15	35	800
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	71	835	16	38	879
Pedestrians			3			2
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			0			0
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1802	845			852	
vC1, stage 1 conf vol	843					
vC2, stage 2 conf vol	959					
vCu, unblocked vol	1802	845			852	
tC, single (s)	6.4	6.3			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4			2.2	
p0 queue free %	98	80			95	
cM capacity (veh/h)	278	353			774	

Direction, Lane #	NW 1	NE 1	SW 1	SW 2
Volume Total	77	852	38	879
Volume Left	5	0	38	0
Volume Right	71	16	0	0
cSH	346	1700	774	1700
Volume to Capacity	0.22	0.50	0.05	0.52
Queue Length 95th (ft)	21	0	4	0
Control Delay (s)	18.3	0.0	9.9	0.0
Lane LOS	C		A	
Approach Delay (s)	18.3	0.0	0.4	
Approach LOS	C			

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	20	20	15	755	795	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	21	21	16	786	828	10
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1647	828	839			
vC1, stage 1 conf vol	828					
vC2, stage 2 conf vol	819					
vCu, unblocked vol	1647	828	839			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4	2.2			
p0 queue free %	93	94	98			
cM capacity (veh/h)	315	362	783			

Direction, Lane #	EB 1	NE 1	NE 2	SW 1	SW 2
Volume Total	42	16	786	828	10
Volume Left	21	16	0	0	0
Volume Right	21	0	0	0	10
cSH	337	783	1700	1700	1700
Volume to Capacity	0.12	0.02	0.46	0.49	0.01
Queue Length 95th (ft)	10	2	0	0	0
Control Delay (s)	17.2	9.7	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	17.2	0.2		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	15	85	635	25	115	685
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	92	690	27	125	745
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1702	708			721	
vC1, stage 1 conf vol	708					
vC2, stage 2 conf vol	995					
vCu, unblocked vol	1702	708			721	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)	5.5					
tF (s)	3.6	3.4			2.2	
p0 queue free %	94	78			86	
cM capacity (veh/h)	258	419			873	

Direction, Lane #	WB 1	WB 2	NE 1	SW 1	SW 2
Volume Total	16	92	717	125	745
Volume Left	16	0	0	125	0
Volume Right	0	92	27	0	0
cSH	258	419	1700	873	1700
Volume to Capacity	0.06	0.22	0.42	0.14	0.44
Queue Length 95th (ft)	5	21	0	12	0
Control Delay (s)	19.9	16.0	0.0	9.8	0.0
Lane LOS	C	C		A	
Approach Delay (s)	16.6		0.0	1.4	
Approach LOS	C				

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	40	595	25	20	565	15	45	10	15	40	10	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1532	3032		1493	3098			1633	1451		1523	
Flt Permitted	0.43	1.00		0.41	1.00			0.75	1.00		0.84	
Satd. Flow (perm)	688	3032		643	3098			1267	1451		1302	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	41	613	26	21	582	15	46	10	15	41	10	46
RTOR Reduction (vph)	0	4	0	0	2	0	0	0	13	0	39	0
Lane Group Flow (vph)	41	635	0	21	595	0	0	56	2	0	58	0
Confl. Peds. (#/hr)	10		7	7		10	14		7	7		14
Confl. Bikes (#/hr)			11									
Heavy Vehicles (%)	8%	9%	5%	11%	7%	0%	3%	0%	0%	0%	14%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	22.3	22.3		22.3	22.3			5.9	5.9		5.9	
Effective Green, g (s)	22.3	22.3		22.3	22.3			5.9	5.9		5.9	
Actuated g/C Ratio	0.61	0.61		0.61	0.61			0.16	0.16		0.16	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.0	4.0		4.0	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			3.0	3.0		3.0	
Lane Grp Cap (vph)	418	1842		391	1882			204	233		209	
v/s Ratio Prot		c0.21			0.19							
v/s Ratio Perm	0.06			0.03				0.04	0.00		c0.04	
v/c Ratio	0.10	0.34		0.05	0.32			0.27	0.01		0.28	
Uniform Delay, d1	3.0	3.6		2.9	3.5			13.5	12.9		13.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.0		0.0	0.0			0.7	0.0		0.7	
Delay (s)	3.0	3.6		2.9	3.5			14.3	13.0		14.3	
Level of Service	A	A		A	A			B	B		B	
Approach Delay (s)		3.6			3.5			14.0			14.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	36.7	Sum of lost time (s)	8.5
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	5	20	25	10	15	25	545	25	25	580	40
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.96		1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1619			1553		1661	3083		1510	3141	
Flt Permitted		1.00			1.00		0.40	1.00		0.42	1.00	
Satd. Flow (perm)		1670			1592		701	3083		671	3141	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	43	5	21	27	11	16	27	580	27	27	617	43
RTOR Reduction (vph)	0	19	0	0	15	0	0	4	0	0	5	0
Lane Group Flow (vph)	0	50	0	0	39	0	27	603	0	27	655	0
Confl. Peds. (#/hr)	3		6	6		3	2		2	2		2
Heavy Vehicles (%)	0%	0%	0%	10%	0%	0%	0%	6%	29%	10%	5%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		2.7			2.7		26.1	26.1		26.1	26.1	
Effective Green, g (s)		2.7			2.7		26.1	26.1		26.1	26.1	
Actuated g/C Ratio		0.07			0.07		0.70	0.70		0.70	0.70	
Clearance Time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		2.5			2.5		5.4	5.4		5.4	5.4	
Lane Grp Cap (vph)		121			115		491	2157		470	2198	
v/s Ratio Prot								0.20			c0.21	
v/s Ratio Perm		c0.03			0.02		0.04			0.04		
v/c Ratio		0.41			0.34		0.05	0.28		0.06	0.30	
Uniform Delay, d1		16.5			16.5		1.7	2.1		1.8	2.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.6			1.3		0.1	0.2		0.1	0.2	
Delay (s)		18.2			17.7		1.9	2.3		1.9	2.3	
Level of Service		B			B		A	A		A	A	
Approach Delay (s)		18.2			17.7			2.2			2.3	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	37.3	Sum of lost time (s)	8.5
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBR	EBR2	NBL	NBR	NWL2	NWL
Lane Configurations						
Volume (veh/h)	580	35	0	0	5	585
Sign Control	Free		Stop			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	630	38	0	0	5	636
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1296	649	668	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1296	649	668	
tC, single (s)			6.4	6.2	4.1	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.2	
p0 queue free %			100	100	99	
cM capacity (veh/h)			178	469	921	

Direction, Lane #	EB 1	NW 1	NW 2
Volume Total	668	5	636
Volume Left	0	5	0
Volume Right	38	0	0
cSH	1700	921	1700
Volume to Capacity	0.39	0.01	0.37
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	8.9	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.1	
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	575	5	10	560	30	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	605	5	11	589	32	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			611		1218	608
vC1, stage 1 conf vol					608	
vC2, stage 2 conf vol					611	
vCu, unblocked vol			611		1218	608
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			99		92	99
cM capacity (veh/h)			978		403	474

Direction, Lane #	SE 1	NW 1	NW 2	NE 1
Volume Total	611	11	589	37
Volume Left	0	11	0	32
Volume Right	5	0	0	5
cSH	1700	978	1700	412
Volume to Capacity	0.36	0.01	0.35	0.09
Queue Length 95th (ft)	0	1	0	7
Control Delay (s)	0.0	8.7	0.0	14.6
Lane LOS		A		B
Approach Delay (s)	0.0	0.2		14.6
Approach LOS				B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	560	20	10	545	25	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	636	23	11	619	28	11
Pedestrians	1				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			660		1292	649
vC1, stage 1 conf vol					649	
vC2, stage 2 conf vol					643	
vCu, unblocked vol			660		1292	649
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.3
p0 queue free %			99		93	98
cM capacity (veh/h)			937		389	473

Direction, Lane #	SE 1	NW 1	NW 2	NE 1
Volume Total	659	11	619	40
Volume Left	0	11	0	28
Volume Right	23	0	0	11
cSH	1700	937	1700	410
Volume to Capacity	0.39	0.01	0.36	0.10
Queue Length 95th (ft)	0	1	0	8
Control Delay (s)	0.0	8.9	0.0	14.7
Lane LOS		A		B
Approach Delay (s)	0.0	0.2		14.7
Approach LOS				B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	35	145	110	130	120	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	158	120	141	130	33
Pedestrians	1			2	1	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				TWLTL	None	
Median storage veh)				2		
Upstream signal (ft)				903		
pX, platoon unblocked						
vC, conflicting volume	529	150	164			
vC1, stage 1 conf vol	148					
vC2, stage 2 conf vol	381					
vCu, unblocked vol	529	150	164			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)	5.5					
tF (s)	3.6	3.3	2.2			
p0 queue free %	93	82	91			
cM capacity (veh/h)	575	889	1401			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	196	120	141	163
Volume Left	38	120	0	0
Volume Right	158	0	0	33
cSH	804	1401	1700	1700
Volume to Capacity	0.24	0.09	0.08	0.10
Queue Length 95th (ft)	24	7	0	0
Control Delay (s)	10.9	7.8	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	10.9	3.6		0.0
Approach LOS	B			

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	15	15	70	10	5	45
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	17	17	80	11	6	51

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	34	91	57
Volume Left (vph)	17	0	6
Volume Right (vph)	17	11	0
Hadj (s)	-0.11	-0.01	0.02
Departure Headway (s)	4.1	4.0	4.1
Degree Utilization, x	0.04	0.10	0.06
Capacity (veh/h)	845	875	867
Control Delay (s)	7.3	7.5	7.4
Approach Delay (s)	7.3	7.5	7.4
Approach LOS	A	A	A

Intersection Summary			
Delay	7.4		
HCM Level of Service	A		
Intersection Capacity Utilization	17.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	5	35	5	5	5	30	105	10	5	60	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	11	5	38	5	5	5	32	113	11	5	65	11
Pedestrians					1							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	272	270	70	305	270	119	75			125		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	272	270	70	305	270	119	75			125		
tC, single (s)	7.2	6.5	6.2	7.4	6.5	7.2	4.3			5.1		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.3	3.8	4.0	4.2	2.4			3.1		
p0 queue free %	98	99	96	99	99	99	98			99		
cM capacity (veh/h)	640	622	993	552	622	723	1423			1026		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	54	16	156	81
Volume Left	11	5	32	5
Volume Right	38	5	11	11
cSH	848	625	1423	1026
Volume to Capacity	0.06	0.03	0.02	0.01
Queue Length 95th (ft)	5	2	2	0
Control Delay (s)	9.5	10.9	1.7	0.6
Lane LOS	A	B	A	A
Approach Delay (s)	9.5	10.9	1.7	0.6
Approach LOS	A	B		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Volume (veh/h)	5	5	5	10	5	10	5	50	10	5	40	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.92	0.85	0.92	0.85	0.85	0.85	0.85	0.92
Hourly flow rate (vph)	5	5	5	12	5	12	5	59	12	6	47	5
Pedestrians								2			4	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	156	143	52	147	140	69	52			71		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	156	143	52	147	140	69	52			71		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	99	98	99	99	100			100		
cM capacity (veh/h)	790	743	1014	780	746	997	1553			1543		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	29	76	58
Volume Left	5	12	5	6
Volume Right	5	12	12	5
cSH	834	848	1553	1543
Volume to Capacity	0.02	0.03	0.00	0.00
Queue Length 95th (ft)	1	3	0	0
Control Delay (s)	9.4	9.4	0.5	0.8
Lane LOS	A	A	A	A
Approach Delay (s)	9.4	9.4	0.5	0.8
Approach LOS	A	A		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	16.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	10	5	5	10	15	5	45	5	5	40	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	11	6	6	11	17	6	50	6	6	44	6
Pedestrians		4						2				
Lane Width (ft)		12.0						12.0				
Walking Speed (ft/s)		4.0						4.0				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	148	129	53	135	129	53	54			56		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	148	129	53	135	129	53	54			56		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	99	99	99	98	100			100		
cM capacity (veh/h)	793	757	1015	819	757	1020	1559			1562		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	22	33	61	56
Volume Left	6	6	6	6
Volume Right	6	17	6	6
cSH	818	882	1559	1562
Volume to Capacity	0.03	0.04	0.00	0.00
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	9.5	9.2	0.7	0.8
Lane LOS	A	A	A	A
Approach Delay (s)	9.5	9.2	0.7	0.8
Approach LOS	A	A		

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	15.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	100	60	10	50	60	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	125	75	12	62	75	25
Pedestrians					19	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						1
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			219		269	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			219		269	182
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			99		89	97
cM capacity (veh/h)			1341		682	853

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	200	75	100
Volume Left	0	12	75
Volume Right	75	0	25
cSH	1700	1341	909
Volume to Capacity	0.12	0.01	0.11
Queue Length 95th (ft)	0	1	9
Control Delay (s)	0.0	1.3	10.5
Lane LOS		A	B
Approach Delay (s)	0.0	1.3	10.5
Approach LOS			B

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	22.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	35	35	25	10	20	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	37	37	27	11	21	32
Pedestrians		2	2		3	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	40				149	37
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	40				149	37
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				97	97
cM capacity (veh/h)	1578				825	1037

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	74	37	53
Volume Left	37	0	21
Volume Right	0	11	32
cSH	1578	1700	940
Volume to Capacity	0.02	0.02	0.06
Queue Length 95th (ft)	2	0	4
Control Delay (s)	3.8	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	3.8	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	21.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	5	5	40	25	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	11	5	5	43	27	11
Pedestrians	5				3	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	94	37	43			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	94	37	43			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	901	1036	1573			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	48	38
Volume Left	11	5	0
Volume Right	5	0	11
cSH	942	1573	1700
Volume to Capacity	0.02	0.00	0.02
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.9	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	16.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	25	5	20	25	5	10	15	5	5	30	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	20	33	7	26	33	7	13	20	7	7	39	7
Pedestrians					3							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	39			39			191	168	39	184	168	36
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	39			39			191	168	39	184	168	36
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			98	97	99	99	94	99
cM capacity (veh/h)	1583			1462			719	707	1036	741	707	1042

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	59	66	39	53
Volume Left	20	26	13	7
Volume Right	7	7	7	7
cSH	1583	1462	751	741
Volume to Capacity	0.01	0.02	0.05	0.07
Queue Length 95th (ft)	1	1	4	6
Control Delay (s)	2.5	3.1	10.1	10.2
Lane LOS	A	A	B	B
Approach Delay (s)	2.5	3.1	10.1	10.2
Approach LOS			B	B

Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	15.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	5	5	25	10	10	15
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	6	6	30	12	12	18

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	12	43	30
Volume Left (vph)	6	0	12
Volume Right (vph)	6	12	0
Hadj (s)	-0.20	-0.13	0.16
Departure Headway (s)	3.9	3.8	4.1
Degree Utilization, x	0.01	0.05	0.03
Capacity (veh/h)	911	935	864
Control Delay (s)	6.9	7.0	7.3
Approach Delay (s)	6.9	7.0	7.3
Approach LOS	A	A	A

Intersection Summary			
Delay	7.1		
HCM Level of Service	A		
Intersection Capacity Utilization	18.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	85	75	15	70	5	120	5	30	5	5	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	11	93	82	16	77	5	132	5	33	5	5	11
Pedestrians		1										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	82			176			284	272	135	305	310	81
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	82			176			284	272	135	305	310	81
tC, single (s)	4.2			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			80	99	96	99	99	99
cM capacity (veh/h)	1460			1342			646	626	909	614	596	984

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	187	99	170	22
Volume Left	11	16	132	5
Volume Right	82	5	33	11
cSH	1460	1342	683	749
Volume to Capacity	0.01	0.01	0.25	0.03
Queue Length 95th (ft)	1	1	25	2
Control Delay (s)	0.5	1.4	12.0	10.0
Lane LOS	A	A	B	A
Approach Delay (s)	0.5	1.4	12.0	10.0
Approach LOS			B	A

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	5	10	5	5	5	5	5	5	5	5	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	60	6	12	6	6	6	6	6	6	6	6	18
Pedestrians		1										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	58	52	16	63	58	9	25			12		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	58	52	16	63	58	9	25			12		
tC, single (s)	7.1	6.8	6.3	7.1	6.5	7.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.3	3.4	3.5	4.0	4.2	2.2			2.2		
p0 queue free %	93	99	99	99	99	99	100			100		
cM capacity (veh/h)	920	776	1045	914	830	846	1601			1620		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	78	18	18	30
Volume Left	60	6	6	6
Volume Right	12	6	6	18
cSH	924	862	1601	1620
Volume to Capacity	0.08	0.02	0.00	0.00
Queue Length 95th (ft)	7	2	0	0
Control Delay (s)	9.3	9.3	2.4	1.5
Lane LOS	A	A	A	A
Approach Delay (s)	9.3	9.3	2.4	1.5
Approach LOS	A	A		

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	18.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	10	10	10	15	10	5
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	14	14	14	22	14	7
Pedestrians	4		2			4
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	68	33			40	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	68	33			40	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	98	99			99	
cM capacity (veh/h)	928	1039			1467	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	29	36	22
Volume Left	14	0	14
Volume Right	14	22	0
cSH	981	1700	1467
Volume to Capacity	0.03	0.02	0.01
Queue Length 95th (ft)	2	0	1
Control Delay (s)	8.8	0.0	5.0
Lane LOS	A		A
Approach Delay (s)	8.8	0.0	5.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	70	30	25	25	30	75
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.58	0.58	0.58	0.58	0.58	0.58
Hourly flow rate (vph)	121	52	43	43	52	129
Pedestrians					2	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	88				360	67
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	88				360	67
tC, single (s)	4.2				6.6	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	92				91	87
cM capacity (veh/h)	1456				560	981

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	172	86	181
Volume Left	121	0	52
Volume Right	0	43	129
cSH	1456	1700	808
Volume to Capacity	0.08	0.05	0.22
Queue Length 95th (ft)	7	0	21
Control Delay (s)	5.6	0.0	10.7
Lane LOS	A		B
Approach Delay (s)	5.6	0.0	10.7
Approach LOS			B

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	15	20	20	20	10	35
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	20	27	27	27	13	47

Direction, Lane #	EB 1	WB 1	SE 1
Volume Total (vph)	47	53	60
Volume Left (vph)	20	0	13
Volume Right (vph)	0	27	47
Hadj (s)	0.11	0.35	-0.36
Departure Headway (s)	4.2	4.4	3.8
Degree Utilization, x	0.05	0.07	0.06
Capacity (veh/h)	841	798	921
Control Delay (s)	7.4	7.7	7.0
Approach Delay (s)	7.4	7.7	7.0
Approach LOS	A	A	A

Intersection Summary			
Delay	7.4		
HCM Level of Service	A		
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		

(This page intentionally left blank)

Section H

Memo 7: Traffic Growth Assumptions

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

TECHNICAL MEMORANDUM #7

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

DATE: May 29, 2013

TO: Lincoln City TSP Project Management Team

FROM: John Bosket, P.E.
Kevin Chewuk, P.T.P.
Ben Fuller, E.I.T.

SUBJECT: **Lincoln City Transportation System Plan**
Traffic Growth Assumptions P11086-010

Traffic forecasting is an important step in the transportation planning process because it provides estimates of future travel demand. The horizon year for Lincoln City's transportation system plan (TSP) is 2035. This memorandum describes the forecasting methodology and assumptions that will be used to estimate transportation growth and provide traffic volumes for study intersections in 2035.

METHODOLOGY OVERVIEW

The forecasting methodology is based on the cumulative analysis approach, as defined in the Oregon Department of Transportation's (ODOT) Analysis Procedures Manual (APM)[1]. The cumulative analysis approach is used to estimate new traffic growth, which when added to existing traffic volumes, provides estimates of future traffic demand. Due to significant differences in summer volumes (e.g., a typical Friday in August) and average weekday volumes (e.g., a typical Tuesday in May) in Lincoln City, the forecast includes projects for both scenarios for the 2035 horizon year.

In the context of the traditional four-step travel demand model approach, cumulative analysis is used only for trip generation and trip distribution of new trips. The result of cumulative analysis is a table of new trips. The trip table is a matrix of origin-destination pairs for trips traveling through the city, trips traveling into and out of the city, and trips made within the city. A computer modeling program called Traffix is used to assign the trips represented in the trip table to specific travel routes.

The following sections detail the travel forecasting methodology and assumptions including transportation analysis zones (TAZs), anticipated land use changes and future travel demand.

---

[1] *Analysis Procedures Manual (APM)*, Oregon Department of Transportation (ODOT) Transportation Planning Analysis Unit (TPAU), Last Updated October 2012, pgs. 4-31 to 4-43

TRANSPORTATION ANALYSIS ZONES

Transportation Analysis Zones (TAZ) divide the Lincoln City Urban Growth Boundary (UGB) into areas that represent sources of vehicle trip generation within the city, based on a combination of the existing roadway network, land use data, UGB, zoning, and comprehensive plan designations. As shown in Figure 1, the TAZ system includes 53 zones and two external gateways. The two external gateways, on US 101 just north of the city and just south of the city, account for vehicle trips that enter and exit the Lincoln City UGB.

LAND USE CHANGES

Land use is a key factor affecting the traffic demands on Lincoln City's transportation system. The location, density, type, and mixture of land uses have direct impacts on traffic levels and patterns. The land use inventory, described in Technical Memorandum #3, approximates the existing number of households and amount of employment in each TAZ. The 2035 land use projection is an estimate of the amount of each land use type that the TAZ could accommodate at expected build-out of vacant or underdeveloped lands, based on population and employment forecasts presented in Technical Memorandum #4. Table 1 summarizes estimates of existing land use and 2035 projections for the area within the UGB.

Table 1: Lincoln City UGB Area Land Use Summary

Land Use	Existing Land Use (2012)	Projected Growth through 2035	Projected 2035 Land Use	Percent Growth through 2035
Households				
Fulltime Residential Dwelling Units	5,119	718	5,837	14%
Seasonal Dwelling Units	2,063	208	2,271	10%
Vacation Rental Dwelling Units	418	83	501	20%
Total Dwelling Units	**7,600**	**1,009**	**8,609**	**13%**
Employees				
Retail Employees	1,173	358	1,531	31%
Service Employees	4,456	2,047	6,503	46%
Other Employees	578	203	781	35%
Total Employees	**6,207**	**2,607**	**8,814**	**42%**

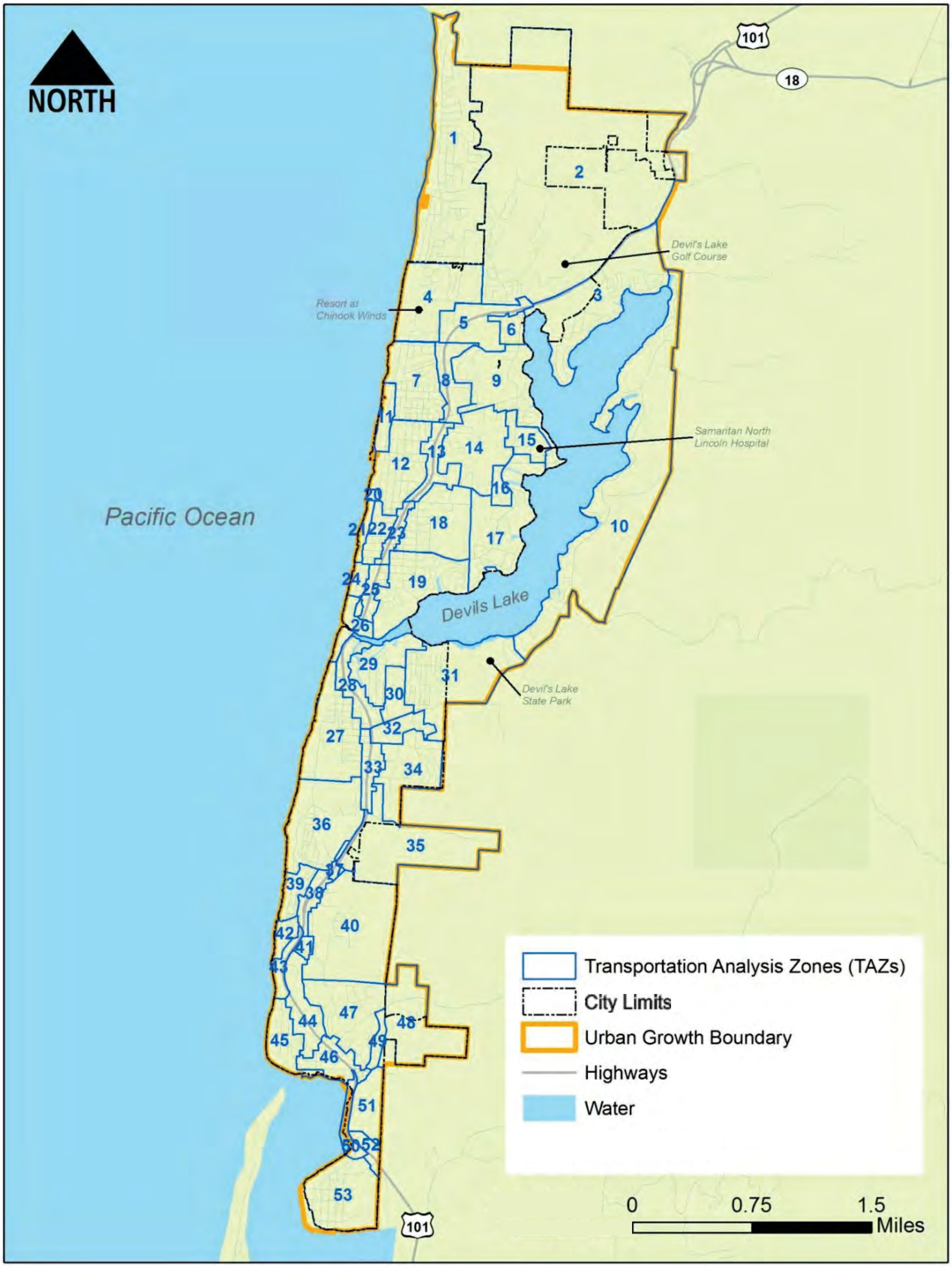


Figure 1 - Lincoln City Transportation Analysis Zones (TAZs)

FUTURE TRAVEL DEMAND

The cumulative analysis, based on ODOT's Analysis Procedures Manual (APM)[2], provides estimates of future travel demand on roadways and at intersection in Lincoln City. The methodology, adjusted to better reflect peak trip distribution patterns by reducing the proportion of household-to-household trips (especially in the p.m. peak hour, households do not typically attract trips, but produce trips related to employment, shopping, and school), estimates summer and average weekday conditions for the year 2035.

The future travel demand analysis translates Lincoln City's projected land use information into motor vehicle trips for each of the city's transportation analysis zones (TAZs). Data from the ODOT Highway Future Volume Table and trip data collected via Bluetooth devices estimate 2035 trips traveling to and from the external TAZs.

Trip Types

Travel demand projections estimate the number of three distinct types of trips:

- **External-External (E-E) Trips** do not have an origin or destination in Lincoln City and do not stop while passing through the Lincoln City UGB. These are through traffic trips.
- **Internal-External (I-E) Trips** originate in Lincoln City and travel to a location outside of the Lincoln City UGB, and **External-Internal (E-I) Trips** originate outside of the Lincoln City UGB and travel to a location within Lincoln City.
- **Internal-Internal (I-I) Trips** travel from one location within the Lincoln City UGB to another location within the UGB.

External Trip Ends

External trip ends involve travel beyond the UGB, including trips that enter or leave Lincoln City (i.e., Internal-External and External-Internal trips) and through trips (i.e., External-External trips).

Traffic counts during the summer and average weekday at the gateways (the US 101/ NE East Devils Lake Road intersection and the US 101/ SW 63rd Street intersection) provide the number of 2012 external trip ends. External trip forecasts based on the ODOT Highway Future (2031) Volume Table project a growth trend in average daily traffic (ADT) volumes on US 101 north and south of the city from 2011 and 2031 volumes (Table 2) of over 1.0 percent annually.

---

[2] Ibid

Table 2: Growth Rates at External Gateways along US 101

Location	2009 ADT*	2031 ADT*	Annual Growth Rate (Linear Growth)
US 101: West Devils Lake Automatic Traffic Recorder (M.P. 112.35)**	16,000	20,300	1.16%
US 101: On Siletz River Bridge (M.P. 120.16)**	13,000	16,100	1.19%

Source: ODOT 2031 Highway Future Volume Table
*ADT= Average Daily Traffic
**These locations are representative of traffic characteristics at the north and south ends of the city and have acceptable R-squared values

Average daily traffic volumes at the north and south ends of the city show the same amount of traffic at both gateways throughout the day, with nearly a 50-50 percent split in volume by direction.

Bluetooth device data collected in October 2012 at the north and south gateways show that about 10 percent of the northbound and 12 percent of the southbound trips entering the city on US 101 are External-External (i.e., through trips). Projections assume that the proportion of External-External traffic will be the same in 2035. The difference between the total external volume and the External-External traffic is the Internal-External/External-Internal trip volume.

Internal Trip Ends

Internal trips begin and end in Lincoln City without passing through a gateway. Trip generation translates land use quantities (i.e., number of dwelling units or number of employees) into vehicle trip ends (number of vehicles entering or leaving a TAZ) using land use-specific trip generation rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual[3].The analysis adjusts trip rates for seasonal and vacation rental households and hospitality services to reflect the different occupancy rates in Lincoln City during the summer and average weekday conditions. The assumed vehicle trips for vacation rentals (ITE Code 265) and hospitality services (ITE Code 310), based on information from Lincoln City property management companies, are 25 percent lower during the average weekday compared to the summer. The assumed trip generation characteristics for seasonal households are similar to that of vacation rentals during the summer; therefore, the analysis uses the timeshare land use (ITE Code 265) for the summer and the recreational homes land use (ITE Code 260) for the average weekday. By applying the trip generation rates to projected 2035 TAZ land uses, the analysis forecasts the increase in number of trips entering and exiting each TAZ in Lincoln City were estimated for 2035.

Trip Distribution

Trip distribution determines the number of trips between each of the internal and external TAZs. The External-External share of all trips entering and/or leaving the city is used to determine the number of through trips

[3] *Trip Generation Manual,* 9th Edition, Institute of Transportation Engineers, 2012.

between the external TAZs. The relative attractiveness of each zone, based upon the number of new trip ends generated in each zone, is used to determine the number of trips between the TAZs with an origin and/or destination in Lincoln City. Separate weighting percentages are applied to household and non-household trip ends to avoid a disproportionate distribution of household-to-household trips during the PM peak hour.

Trip Assignment

Using manual routing within the Traffix software, the methodology assigns each projected trip arriving from a TAZ or external gateway to a route. The methodology selects the route from the multiple potential routes by evaluating travel distances, segment speeds, and directness between routes.

FORECASTED 2035 INTERSECTION VOLUMES

Projected 2035 motor vehicle volumes at study intersections are the sum of the existing traffic volumes (see 2012 volumes in Technical Memorandum #6) and forecasted traffic volume growth. The 2035 volumes will be basis for assessing future study intersection operations in Technical Memorandum #8.

Figure 2 shows projected volumes for both the summer and average weekday conditions. An additional 2,750 motor vehicle trips are forecast for the average weekday and an additional 3,000 motor vehicle trips are forecast for summer conditions. Many of these additional trips (approximately 40 percent) are related to anticipated growth in retail employment. The forecasted growth in trips generated by seasonal households, vacation rental households, and hospitality services have minimal impacts during the evening peak period, accounting for only about 15 percent of the new trips.

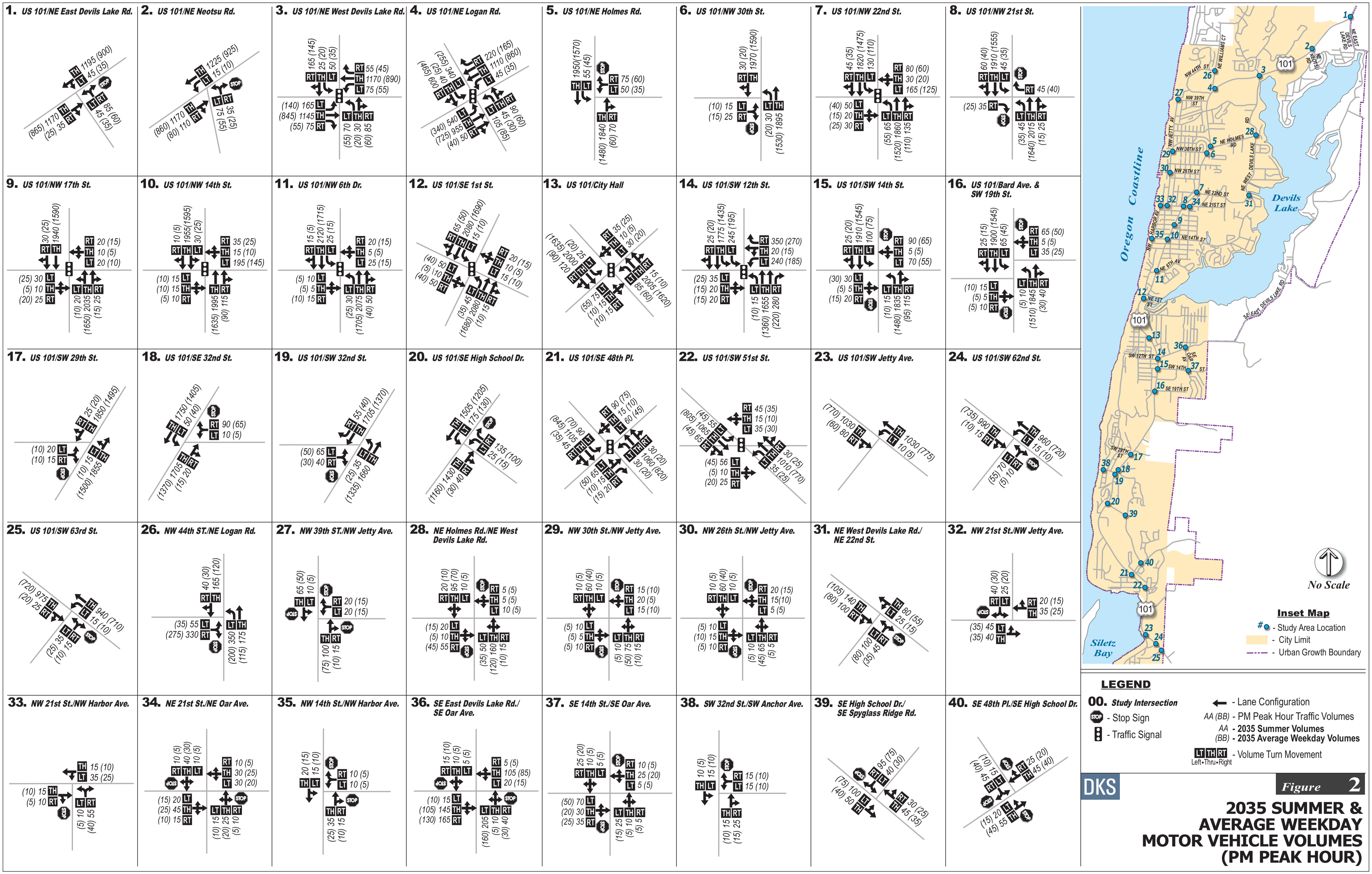


Figure 2

2035 SUMMER & AVERAGE WEEKDAY MOTOR VEHICLE VOLUMES (PM PEAK HOUR)

(This page intentionally left blank)

Section I

Memo 8: Future Transportation Conditions

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

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

TECHNICAL MEMORANDUM #8

DATE: June 12, 2013

TO: Lincoln City TSP Project Management Team

FROM: John Bosket, P.E.
Kevin Chewuk, P.T.P.
Ben Fuller, E.I.T.

SUBJECT: **Lincoln City Transportation System Plan**
Future Transportation Conditions P11086-010

The condition of Lincoln City's future transportation system depends on the growth in population and employment, future travel patterns (e.g., choice of modes, routes, and frequency of trips), and community investment decisions. Growth in population and the number of jobs is forecast based on trends and knowledge of the city and region. Future travel patterns are more difficult to predict as the community's investment decisions and the economy can have significant affects on choice of modes and routes. The objective of the transportation planning process is to generate information necessary for making decisions that will result in safe and efficient travel options through 2035.

METHODOLOGY FOR ESTIMATING FUTURE TRAVEL

The 2035 transportation conditions in Lincoln City were forecasted based on trips that new growth will generate, assuming:

- No new investments in transportation infrastructure beyond what already is funded for construction,
- Continuation of the same modal distribution (i.e., private motor vehicle, transit, walking, biking) of trips, and
- Continuation of current travel behaviors, based on decisions and preferences of existing residents, employers, tourists, and institutions around the region.

It describes where the transportation system will perform satisfactorily and areas of the street network likely to be congested and in need of investments to function adequately in the future. Subsequent memos will explore solutions for addressing future transportation system needs. For more detail on the travel forecasting process, refer to Technical Memorandum #7.

Future Estimates of Walking, Biking, and Transit

Methodology for determining future needs for walking, biking, and transit in Lincoln City begins with an assessment of who is walking, biking, and taking transit now and where they are traveling. The city's recently adopted Walking and Biking Plan answers these questions for pedestrians and bicyclists and details existing conditions of the infrastructure for pedestrians and bicycles. These modes, in addition to transit, were further summarized in Technical Memorandum #6 (Existing Transportation Conditions).

The existing facilities were then compared to major growth areas of the city, and in proximity to key destinations, such as schools, parks, transit stops, shopping and employment. A review of the city shows that the walking and biking infrastructure is inadequate in anticipated major growth areas. It is also deficient in proximity to key destinations, which have the potential to attract significant walking and biking trips. The inadequate walking and biking infrastructure further hinders transit riders, as these users typically utilize these facilities at the beginning and end of their trip.

BASELINE STREET NETWORK PERFORMANCE

The baseline condition reflects the street network performance for motor vehicles, assuming that only transportation projects that already have secured funding will be built. Funded projects include:

- **US 101 ODOT STIP project:** This project will expand US 101 from two lanes to three lanes from SE 23rd Drive to SE 32nd Street. The project will realign SE 32nd Street to meet SW 32nd Street as a four-leg, signalized intersection.
- **US 101 signal coordination:** Five intersections in Lincoln City lost coordination due to technical issues. It is anticipated that these five intersections along US 101 (NE 22nd Street, NE 17th Street, NE 14th Street, NE 6th Street, and SE 1st Street) will be coordinated by summer of 2013[1].

SNAPSHOT OF LINCOLN CITY IN 2035

Rising Population and Employment

Today, Lincoln City is home to 7,600 households and accounts for over 6,200 jobs. Between now and 2035, projected employment growth will increase about two percent a year, outpacing the rate of household growth over the same period, which will increase about a half percent a year. Lincoln City will have about 8,600[2] households and about 8,800 jobs[3] by 2035, a 13 and 42 percent increase respectively from 2012. With more people and more jobs in Lincoln City, and more tourism activity on the coast, the transportation network will face increasing demand through 2035.

---

[1] Correspondence with the Oregon Department of Transportation Region 2 Signal Operations Engineer, October 17, 2012

[2] US Census, Portland State University Population Research Center

[3] *Comprehensive Economic Opportunities and Buildable Land Needs Assessment, Johnson Gardner, 2005 for 2005 and 2025 estimates*

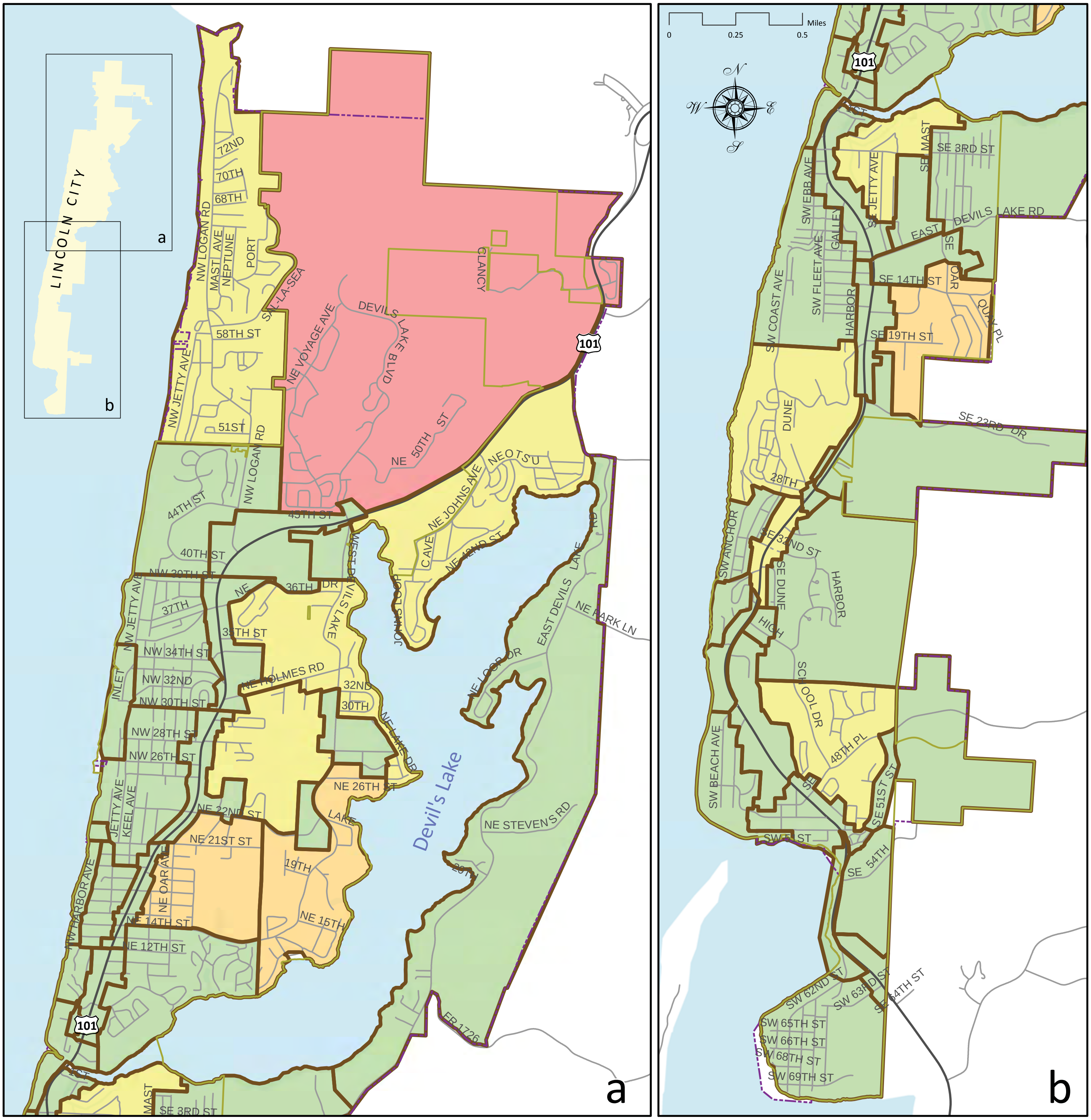
Figures 1 and 2 show expected distribution of housing and employment growth throughout the city. They show highest household growth north of US 101 and east of Roads End (e.g., along NE West Devils Lake Boulevard) and high household growth bordering Devils Lake and in the area south of SE 14th Street and the factory outlets.

The figures show employment growth will be highest near the casino on NW 44th Street and along US 101 between SW 29th Street and SE 48th Place in the south end of the city. They also show high employment growth near the hospital along West Devils Lake Road), along US 101 from NW 30th Street to NE 21st Street, and east of US 101 between East Devils Lake Road (near the factory outlets) and SE 28th Street.

More Travel and Tourism

With more jobs, residents, tourists, and through travel, the street network in Lincoln City must accommodate an additional 2,700 motor vehicle trips during the evening peak hour on an average weekday and 3,000 trips during the summer weekend peak hour. Today, the Lincoln City street network is generally able to handle the evening peak hour trips; however, the evening peak hour motor vehicle trips are likely to increase over 50 percent at intersections along US 101 by the end of 2035. Figure 3A and Figure 3B illustrate how the population and employment growth through 2035 translates into motor vehicle travel by transportation analysis zone (TAZ) during the evening peak hour. As shown, much of the increased travel will begin or end in zones located in major residential and/or employment growth areas, including areas near the casino and along US 101 south of SW 28th Street.

Year 2035 motor vehicle volumes for both summer and average weekday conditions were utilized to determine areas on the baseline roadway network that will be congested and may require future investments to accommodate forecasted growth. The 2035 baseline motor vehicle volumes for study intersections in Figure A1 in the appendix show volumes are anticipated to be highest along US 101, which connects the surrounding region to the employment areas in Lincoln City. Other roadways expected to experience significant traffic increases include NW 44th Street, NW Logan Road, NE West Devils Lake Boulevard, SE East Devils Lake Road, and SE 14th Street. Each of these roadways connects a major residential and/or employment growth area in the city to US 101.



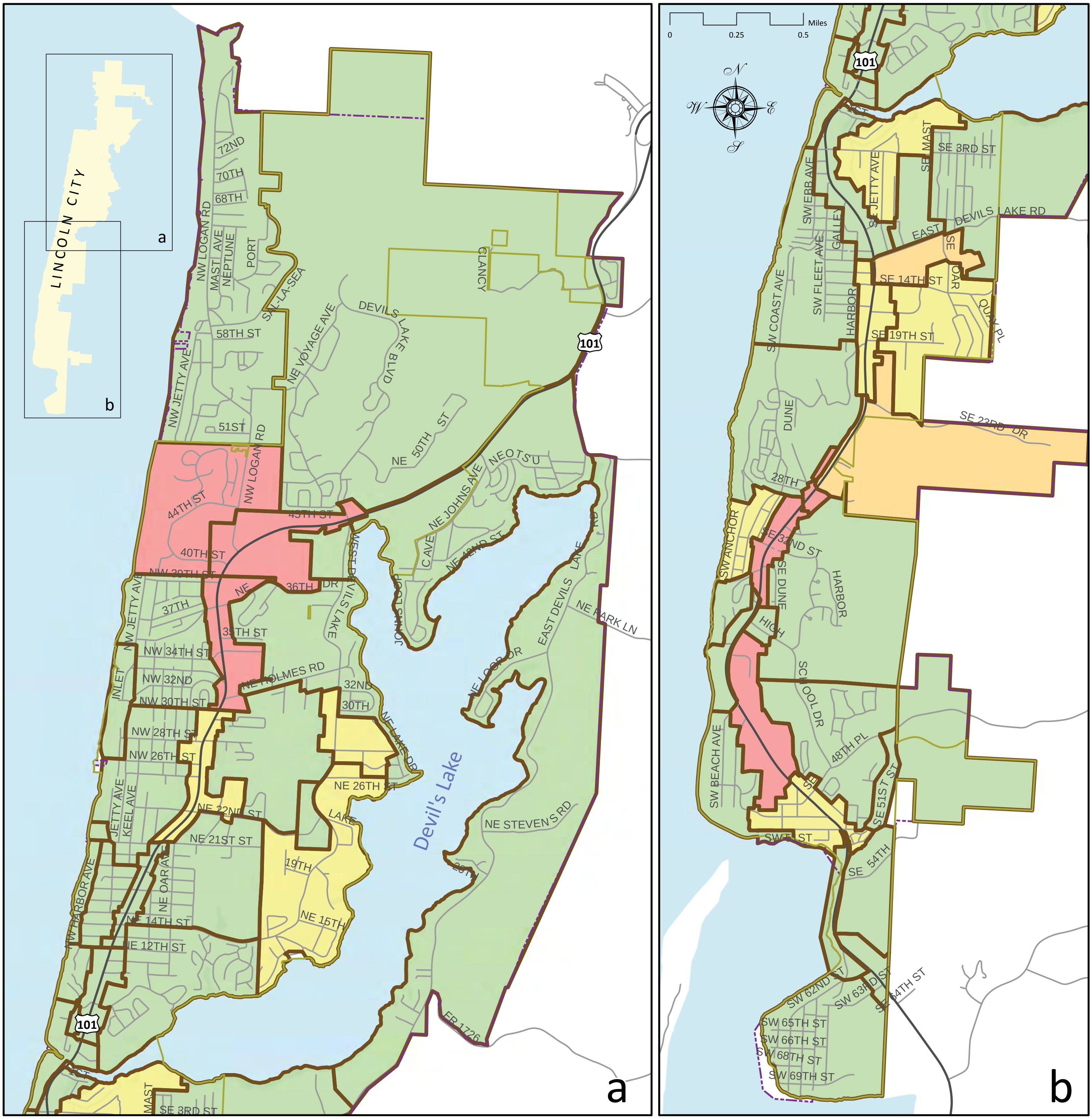
1 Household Growth (2012 - 2035)

Lincoln City
Transportation System Plan

Household Growth between 2012 and 2035 (by Zone)

- Increase of less than 25 households
- Increase between 25 and 50 households
- Increase between 50 and 75 households
- Increase of more than 75 households
- Traffic Analysis Zone
- City Limit
- Urban Growth Boundary
- Proposed Alignment

DKS



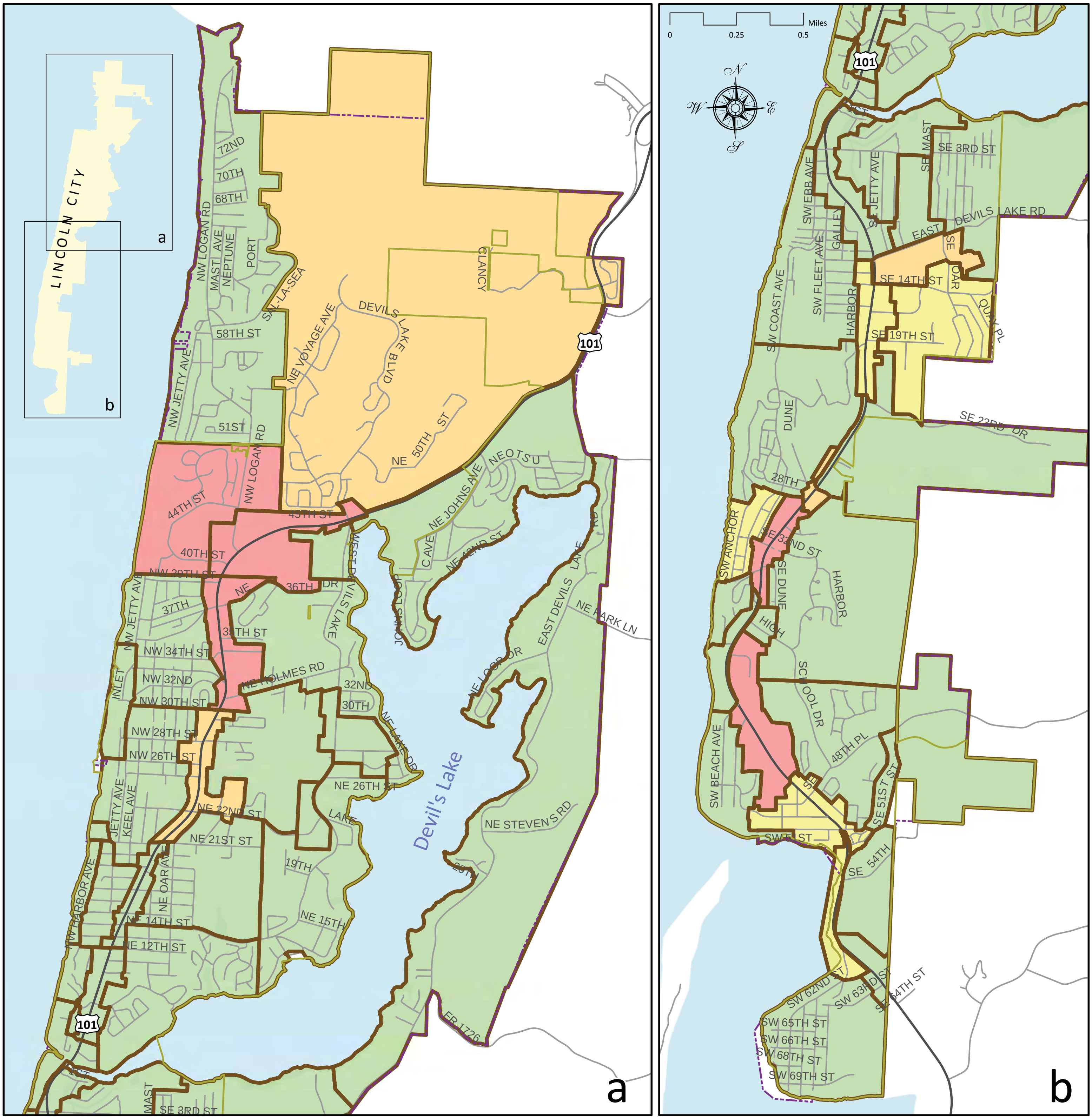
2 Employment Growth (2012 - 2035)

Lincoln City
Transportation System Plan

Employment Growth between 2012 and 2035 (by Zone)

- Increase of less than 50 jobs
- Increase between 50 and 100 jobs
- Increase between 100 and 150 jobs
- Increase of more than 150 jobs
- Traffic Analysis Zone
- City Limit
- Urban Growth Boundary
- Proposed Alignment

DKS



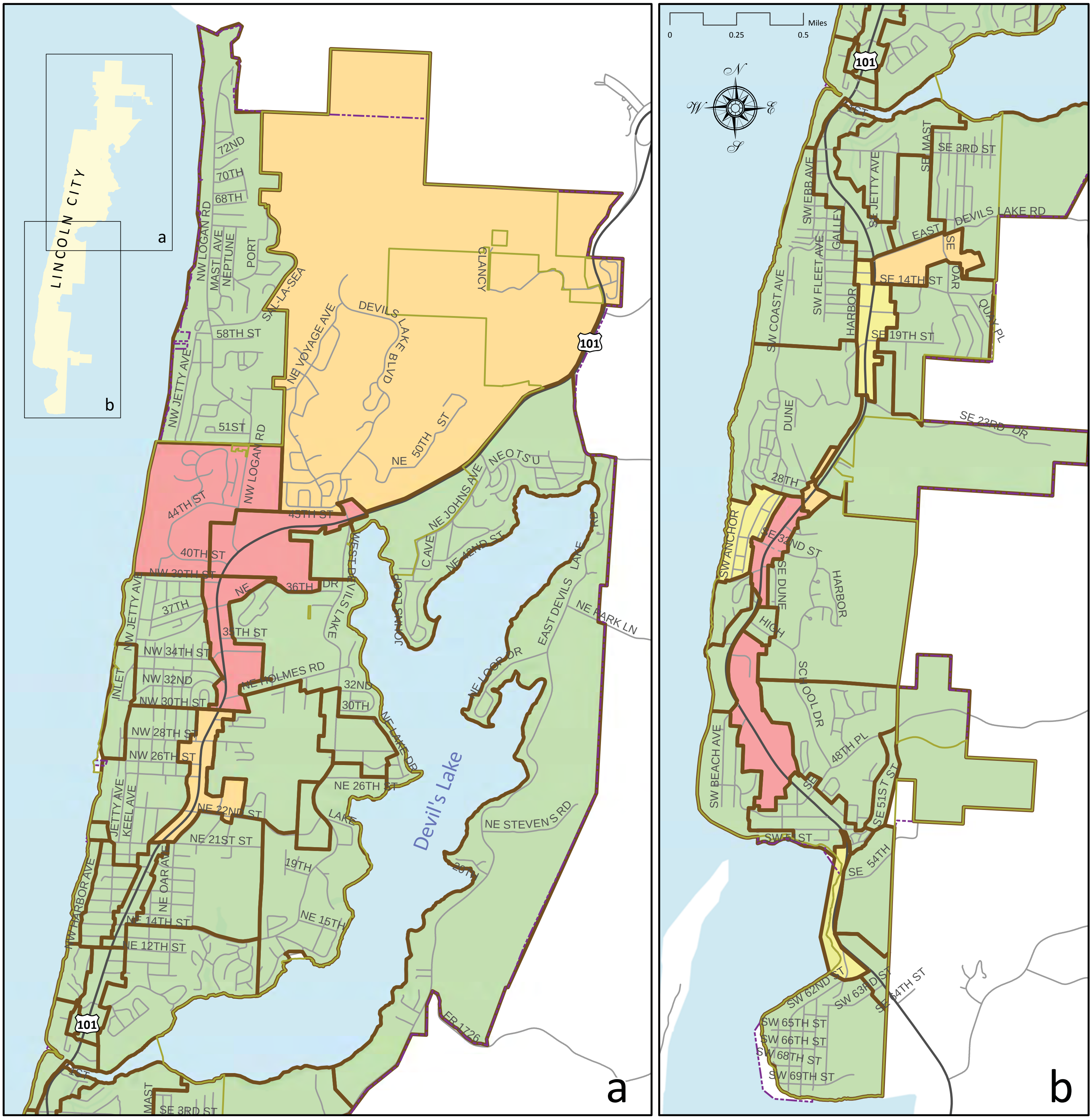
3A Summer Traffic Volume Growth by Zone (2012 - 2035)

Lincoln City
Transportation System Plan

Change in Traffic Volumes to and from Zone between 2012 and 2035

- Increase of less than 100 vehicles during the P.M. peak hour
- Increase between 100 and 200 vehicles during the P.M. peak hour
- Increase between 200 and 300 vehicles during the P.M. peak hour
- Increase of more than 300 vehicles during the P.M. peak hour
- Traffic Analysis Zone
- City Limit
- Urban Growth Boundary
- Proposed Alignment

DKS



3B Average Weekday Traffic Volume Growth by Zone (2012 - 2035)

Lincoln City

Transportation System Plan

Change in Traffic Volumes to and from Zone between 2012 and 2035

- Increase of less than 100 vehicles during the P.M. peak hour
- Increase between 100 and 200 vehicles during the P.M. peak hour
- Increase between 200 and 300 vehicles during the P.M. peak hour
- Increase of more than 300 vehicles during the P.M. peak hour

- Traffic Analysis Zone
- City Limit
- Urban Growth Boundary
- Proposed Alignment

DKS

Increasing Congestion

An increase in motor vehicle travel leads to an increase in congestion. Travel activity, as reflected by evening peak hour motor vehicle trips beginning or ending in Lincoln City, is expected to increase significantly through 2035. Through trips (i.e., trips that neither begin nor end in Lincoln City) are also expected to increase through 2035 and are generally representative of increased tourism activity and growth in Oregon and in neighboring cities such as Newport. Figures 4A and 4B show that most future congested locations are expected to be along US 101 from the West Devils Lake Road intersection to the NE 22nd Street intersection and from SE 14th Street to High School Drive.

2035 Baseline Summer intersection operations, summarized in Figure 4A and shown in Table A1 in the appendix, show that with the increased street network congestion, six signalized intersections and seven unsignalized intersections along US 101 will fail to meet ODOT's existing mobility targets during the summer evening peak period (see appendix for more detail). By 2035, the following unsignalized intersections likely will fail to meet existing Oregon Highway Plan (OHP) mobility targets. Infrequent gaps in the steady volumes of highway traffic will result in long delays for travelers on these side streets. The following intersections are expected to not meet mobility targets:

Signalized Intersections

- US 101/NE West Devils Lake Road
- US 101/NW Logan Road
- US 101/NE 22nd Street
- US 101/NE 14th Street
- US 101/Burger King/City Hall
- US 101/SW 32nd Street

Unsignalized Intersections

- US 101/NE Neotsu Drive
- US 101/NE Holmes Road
- US 101/NE 30th Street
- US 101/SE 14th Street
- US 101/SW Bard Avenue/SE 19th Street
- US 101/SE 29th Street
- US 101/SE High School Drive

Forecasts indicate the US 101/NE East Devils Lake Road intersection is expected to meet its existing OHP mobility target for overall intersection performance; however, its side street will experience a high level of delay (equal to a level of service of 'F').

2035 Baseline Average Weekday intersection operations, summarized in Figure 4B and shown in Table A1 in the appendix, show the average weekday operations are better than the summer condition. However, five intersections are still expected to fail to meet existing OHP mobility targets. These include:

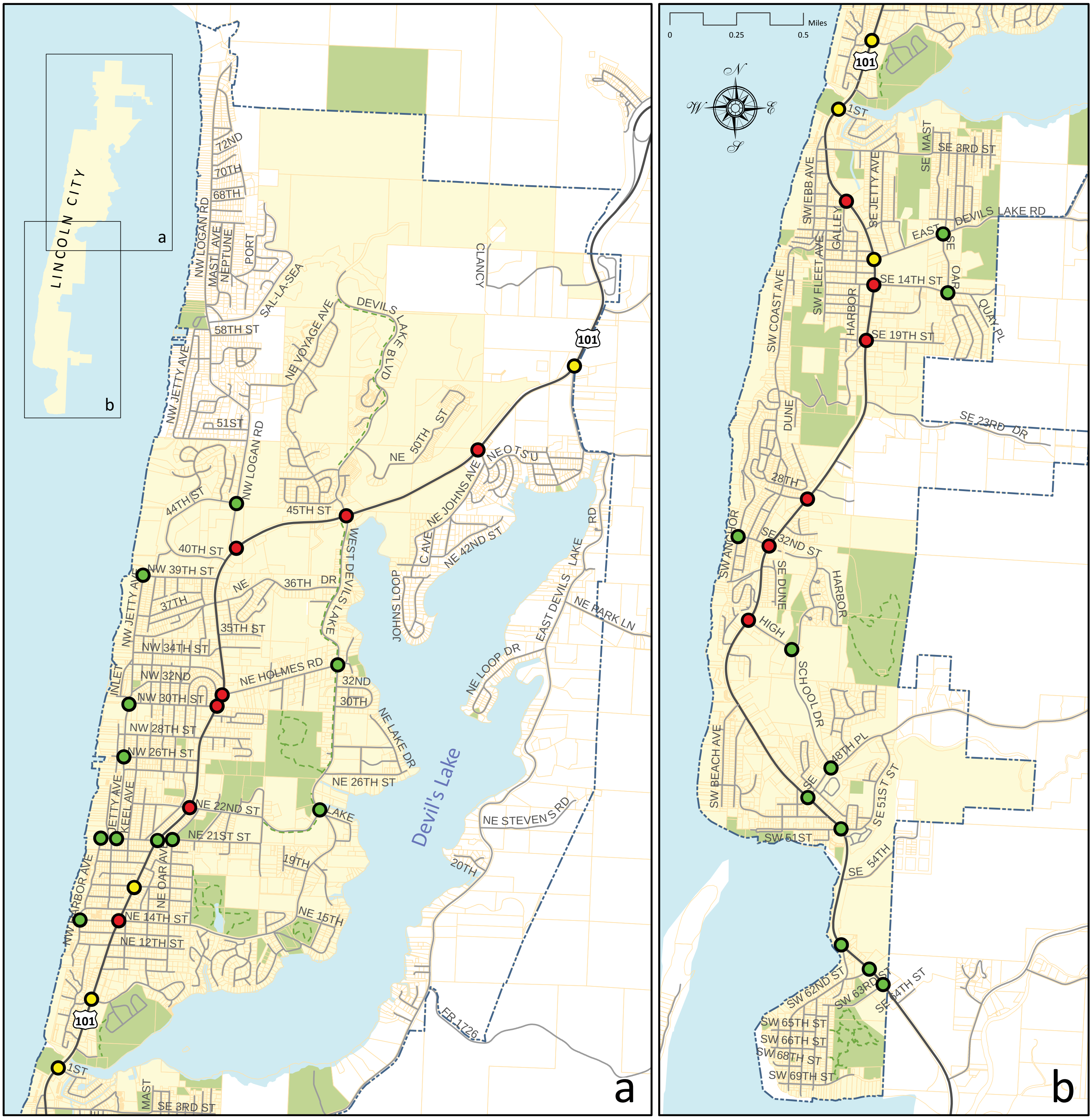
Signalized Intersections

- US 101/NE West Devils Lake Road
- US 101/SW 32nd Street

Unsignalized Intersections

- US 101/NE 30th Street
- US 101/SE 14th Street
- US 101/SW Bard Avenue/SE 19th Street

Forecasts indicate the US 101/NE Neotsu Drive intersection is expected to meet its existing OHP mobility target for overall intersection performance; however, its side street will experience a high level of delay (equal to a level of service of 'F').



4A 2035 Motor Vehicle Operating Conditions (P.M. Peak) - Summer

Lincoln City

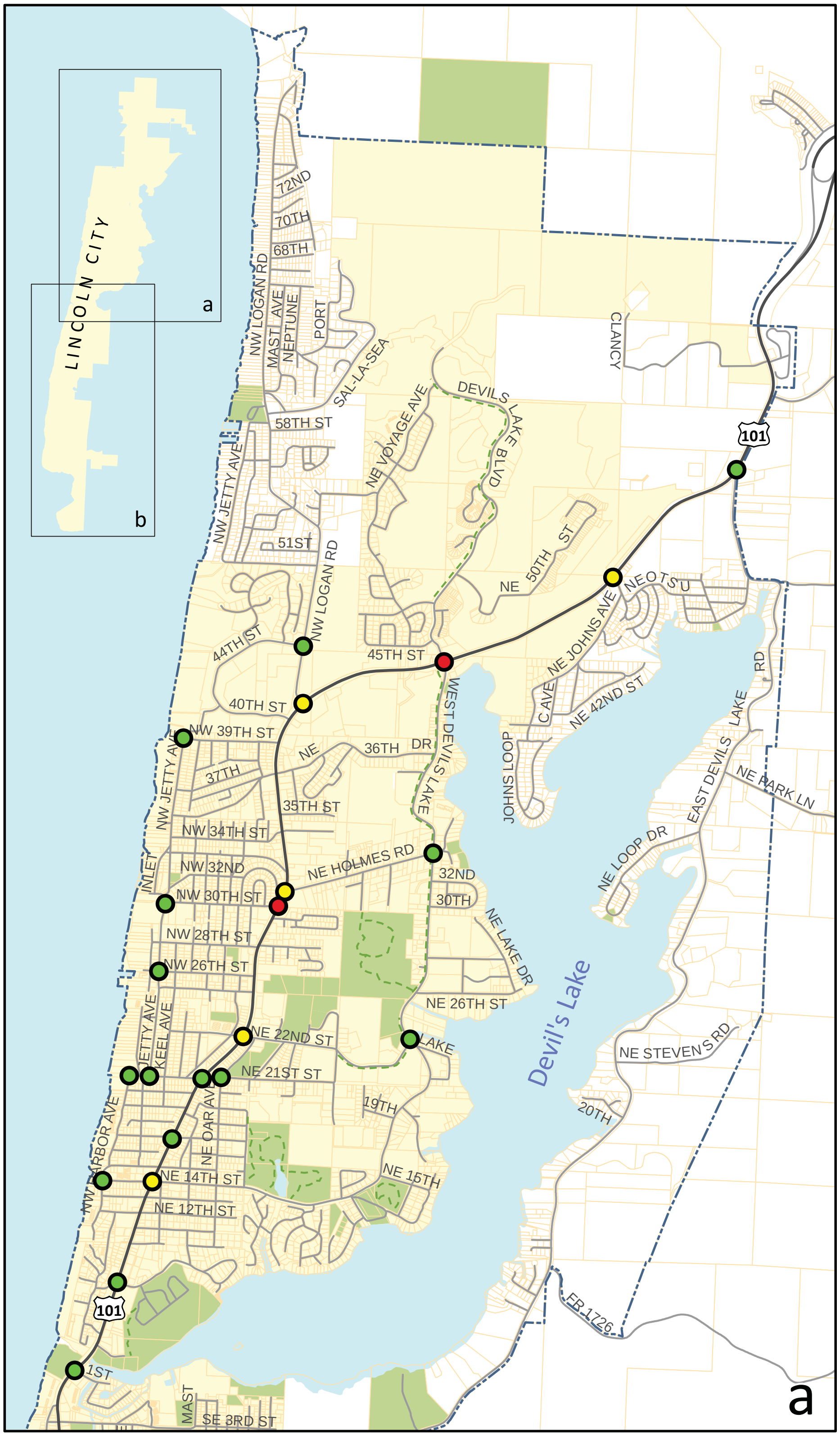
Transportation System Plan

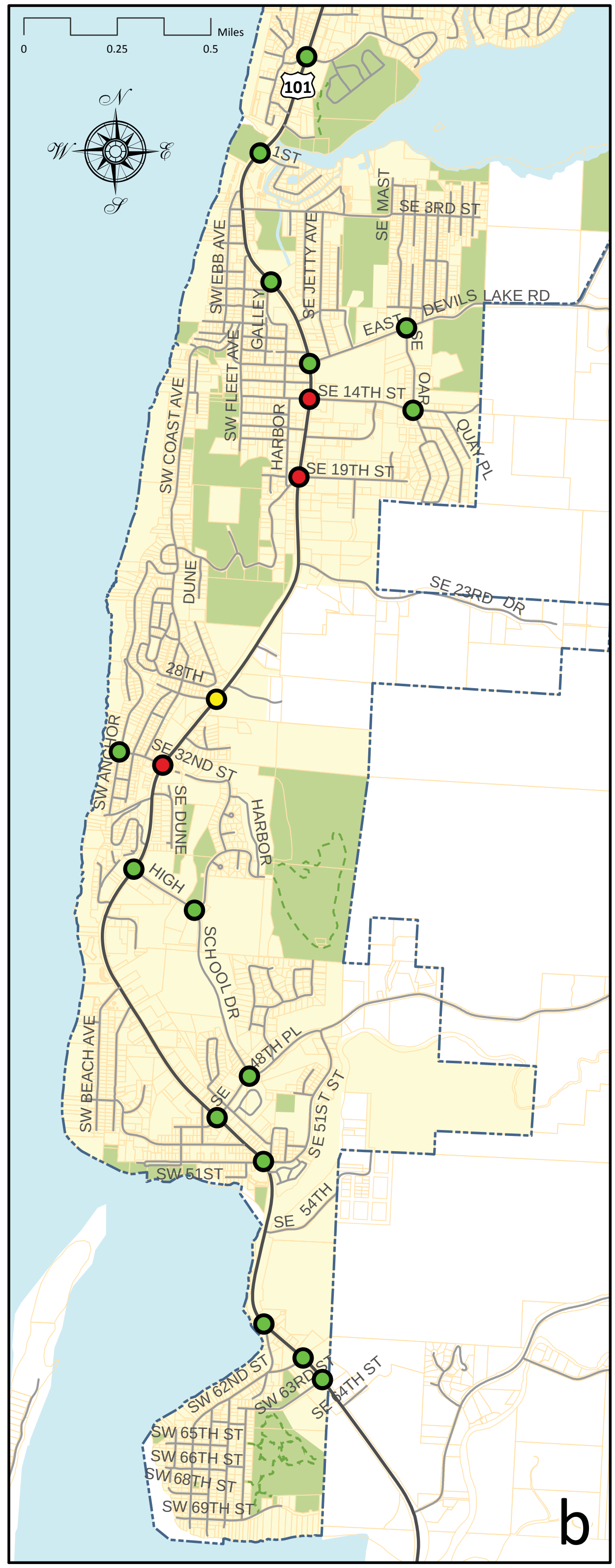
Peak Seasonal Intersections Operations

- Good
- Approaching Target
- Does Not Meet Target

- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary
- Proposed Alignment

DKS





4B 2035 Motor Vehicle Operating Conditions (P.M. Peak) - Average Weekday

Lincoln City
Transportation System Plan

Peak Seasonal Intersections Operations

- Good
- Approaching Target
- Does Not Meet Target

- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary
- Proposed Alignment

DKS

WHERE TRANSPORTATION IMPROVEMENTS MAY BE NEEDED

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

Walking Needs

Pedestrian network deficiencies are present throughout the city and will become more evident as the city's population, employment and tourism continues to increase through 2035. Placing more walking demand on an underbuilt existing walking network could potentially put more users in vulnerable situations, and discourage non-motorized travel in the city. For an inventory of walking facilities, refer to Technical Memorandum #6 and the Walking and Biking Plan. Key transportation system needs for pedestrians in Lincoln City include:

- **Sidewalks and enhanced pedestrian crossings along portions of US 101:** With as many as five travel lanes and high traffic volumes, US 101 is a major barrier to pedestrians. With housing, shopping and employment growth expected to occur on both sides of the highway, providing safe walking accommodations will be crucial for the safety of those walking along and across the street. Gaps in the sidewalk network along US 101 occur throughout several expected growth areas, including: the Nelscott Pearl, east of NW Logan Road, from NE 21st Street to NW 39th Street, and south of SE 54th Street.

  Those walking along the highway will also face increased motor vehicle traffic, creating more potential conflicts in areas with inadequate facilities or highway crossings. Placing additional demand on some of the existing highway crossings may necessitate enhanced elements such as pedestrian refuge islands, curb extensions, high visibility markings, increased signage or lighting, or pedestrian activated signals.

An example of an enhanced pedestrian crossing with a Rectangular Rapid Flashing Beacon

- **Sidewalks/crossings along routes that provide access to shopping, parks, open space, and beaches:** The increased tourism, housing and shopping opportunities through 2035 means more people will be within walking distance of their destination. Much of the growth will require those walking to travel down streets with existing sidewalk gaps and inconvenient street crossing opportunities. These streets, including NW 14th Street in the Oceanlake Pearl, SW 35th Street in the Nelscott Pearl, SE 48th Place in the Taft Pearl, NW Logan Road near Roads End State Park, and NE 14th Street near Regatta Park) will need sidewalk infill and enhanced street crossings (such as high visibility markings or increased street lighting) to encourage walking to these destinations.

- **Addressing difficulties for pedestrians with physical impairments:** Existing non-ADA compliant curb ramps and pedestrian throughway obstacles (e.g., shrubbery, utility poles) will likely become barriers to more residents as the population ages and those with visual or mobility impairments increases. Retrofitting these non-compliant curb ramps and sidewalks will greatly improve mobility and accessibility for mobility-impaired users. It will also improve the walking environment for pedestrians with strollers, delivery carts, and other "wheel" devices.

An example of a retrofitted curb ramp to an existing sidewalk

Biking Needs

The existing bicycle network is limited in the city. With increased motor vehicle volumes along major biking routes in the city through 2035, designating separate spaces for bicycle and motor vehicle travel will become more critical to ensuring the safety of cyclists and encouraging biking in the city. For an inventory of bicycle facilities, refer to Technical Memorandum #6 and the Walking and Biking Plan. Key transportation system needs for bicyclists in Lincoln City include:

- **Bike accommodations along portions of US 101 and other major streets:** Bicycle facilities are limited along US 101, and other major streets throughout the city including NW Logan Road, NE East Devils Lake Road, NE 14th Street, SE High School Drive, and SE 48th Place. These streets form the backbone of the biking network in the city, linking much of the residential areas with major destinations. With increased motor vehicle traffic expected along these streets through 2035, providing accommodations for bicycle travel will be critical to ensuring a safe and complete transportation system. Accommodations should be provided via on-street bike lanes, wide shoulders, off-street shared-use paths, or with facilities on adjacent streets.
- **Increasing the visibility of bicyclists at traffic signals:** With housing, employment and tourism growth on both sides of US 101, turning maneuvers at intersections in the city will likely increase through 2035. Potential conflicts between drivers turning right to side streets from the highway and cyclists traveling through the intersections will likely increase.
- **Bike accommodations for left-turns at traffic signals:** Many signalized intersections along US 101 restrict left-turns from the highway or require a bicyclist to veer across the travel lanes to make a left turn, sometimes without a left-turn lane. While this is effective approach for accommodating motor vehicle circulation along the highway, it creates uncomfortable or inconvenient barriers for biking. With increased motor vehicle volumes expected along the highway through 2035, these left-turns for cyclists will become increasingly more difficult.
- **Bikeways off US 101:** Many residents or visitors may feel increasingly uncomfortable biking on the major streets in the city with the expected motor vehicle volumes by 2035. Bike routes that are parallel to major streets in the city provide these users an option with lower motor vehicle travel speeds and volumes. These bike routes can be enhanced with shared-lane markings, 'Share the Road' signage, or pavement markings to guide cyclists to and along the route.
- **Bicycle wayfinding signage:** Many of the existing biking routes in the city lack signage to orient users and direct them to major destinations like the pearls, schools, or major beach access points. Residents or

visitors may be unaware that they are within a reasonable bike ride to key destinations in the city or that a local biking route is nearby. Directional signage indicating locations of destinations and travel time/distance to those destinations increases users' comfort and accessibility to the pedestrian and bicycle systems.

- **Bicycle parking near destinations:** Short and long term parking is needed to accommodate bicyclists at destinations in the city. Short-term parking is meant to accommodate visitors, customers and others expected to depart within two hours. This parking should include a standard rack with an appropriate location and placement, and weather protection. Long-term parking is meant to accommodate employees, students, residents, commuters, and others expected to park more than two hours. This parking should be provided in a secure, weather-protected manner and location. New development in the city with a high potential for generating or attracting bike trips (including shopping, employment, multi-family housing, parks and schools) should be required to provide bicycle parking.

Transit Needs

The highway network in Lincoln City is expected to become congested to a point beyond capacity by 2035. To counter increasing congestion, motor vehicle demand management solutions may be necessary. Lincoln City's transit system could play a key role in reducing the city's motor vehicle demand. For instance, seasonal transit service can provide tourists with an appealing alternative mode of transportation between key locations within the city.

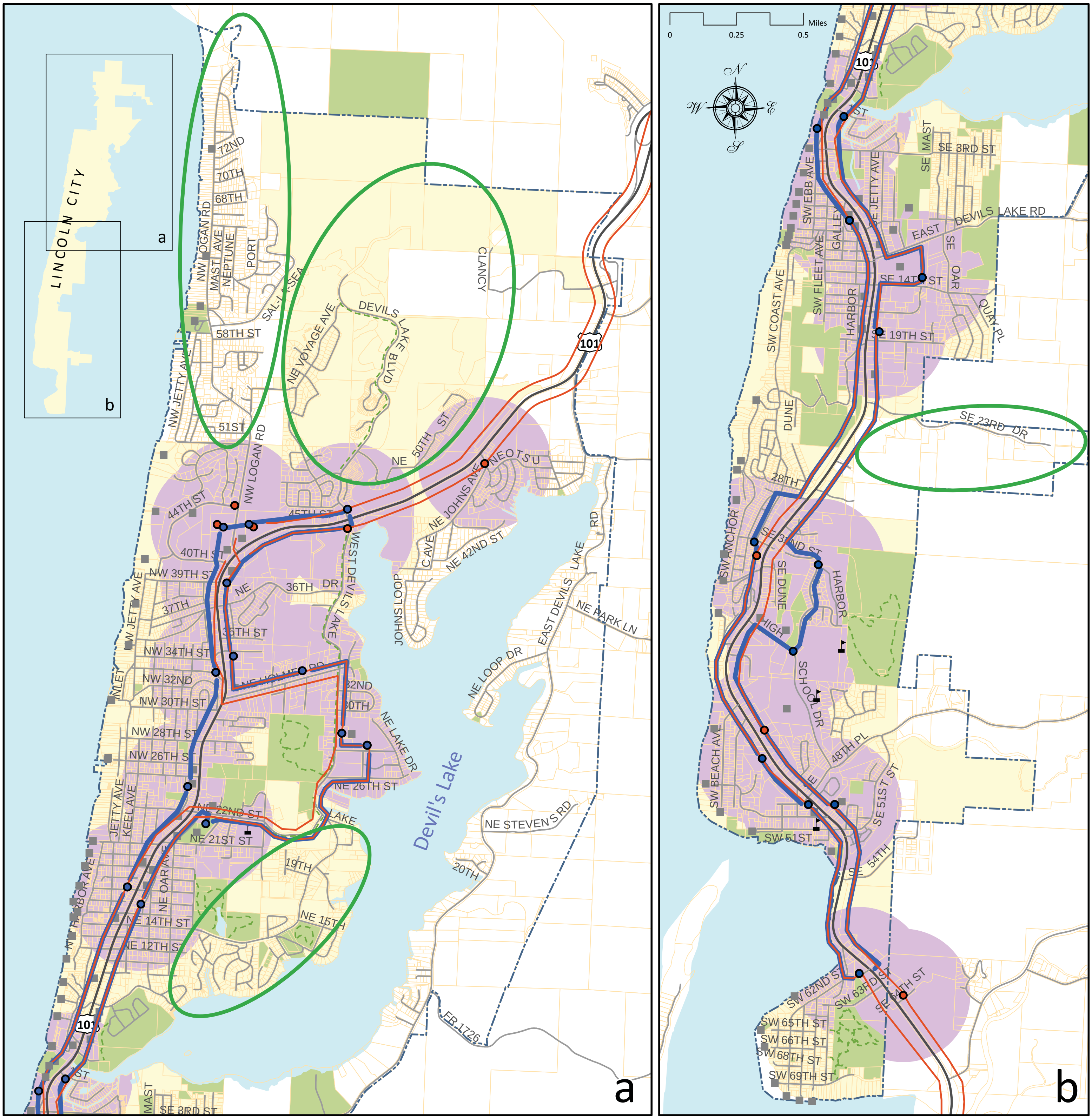
Increasing congestion will increase bus cycle times, thus increasing travel times on transit and increasing headways (which are already about an hour) between buses. To maintain the same quality of service, the transit system will likely have to increase service levels or purchase additional buses, potentially increasing the cost of the system. In addition to preventing degradation of the existing transit system, transit in Lincoln City will need to expand service to accommodate the city's growth.

The locations in Lincoln City with significant expected housing and employment growth that are unserved by transit, as shown in Figure 5, include Roads End, the area north of US 101 along West Devils Lake Road, the area along the southern end of West Devils Lake Road, and the area along SE 23rd Drive. The figure includes a ¼ mile buffer around each stop to indicate the areas of the city within comfortable walking distance to existing bus stops. While biking can increase access to transit for people living in neighborhoods distant from bus stops, gaps in the existing bicycle network limits the attractiveness of biking to transit. Other transit needs include:

- **Sidewalk connections to transit stops:** With an aging population and increased motor vehicle congestion, more residents and visitors will likely turn to the transit system as a means of traveling in the city. The inadequate walking infrastructure connecting much of these potential users to transit stops will make this travel mode more inconvenient, as these users typically utilize these facilities at the beginning and end of their trip. Sidewalk infill along these routes, including US 101, NE Holmes Road, SW 32nd Street, NE West Devils Lake Road, and SE High School Drive, is needed to encourage more ridership.
- **Pedestrian crossings near bus stops:** Many bus stops in the city lack convenient and safe street crossings nearby. Pedestrians will generally not walk significantly out of direction to cross a street. They will likely either avoid the area, or cross illegally at mid-block locations. With an expected increase in transit ridership, more street crossing demand will likely occur near bus stops. New or enhanced street crossings

will be needed, especially near bus stops along US 101. Enhancements may include pedestrian refuge islands, curb extensions, high visibility markings, increased signage or lighting, or pedestrian activated signals. Development of additional pedestrian crossings near bus stops should be done in consultation with Lincoln County Transit.

- **Bus stops with shelters and other amenities:** Many bus stops in Lincoln City consist of a pole indicating the bus route serving the stop. Provision of passenger amenities at bus stops creates a more pleasant and attractive environment for bus riders and may encourage people to use the transit system. Common amenities include: shelters, benches, trash cans, and bus route information. Shelters should be placed at least 2 feet from the curb when facing away from the street and at least 4 feet away when facing toward it. The adjacent sidewalk must still have a 5-foot clear passage. Orientation of the shelter should consider prevailing winter winds.



5 Key Growth Areas Unserved by Transit

Lincoln City
Transportation System Plan

Transit Facilities

Bus Routes	LINC (Lincoln City Loop)	Newport-Lincoln City County Route
Bus Stops		

1/4 - Mile Buffer

Expected Growth Areas Unserved by Existing Transit

School

Activity Generator

Shared-Use Path

Park

City Limit

Parcel

Urban Growth Boundary

Proposed Alignment

DKS

Driving Needs

With the previously stated assumptions (i.e., the projected population, employment, and tourism growth in Lincoln City, no street improvements, and the same split of travel modes), thirteen intersections during the summer peak travel periods, and five intersections during an average annual weekday will not meet existing OHP Mobility Targets and City LOS targets by 2035 during the evening peak period.

Conditions will not be as congested during an average annual weekday as in summer. While traffic volumes at several intersections are expected to exceed existing OHP Mobility Target and City LOS target thresholds, the only signalized intersection forecasted to experience traffic volumes that exceed its hourly capacity during the average annual peak hour is the US 101/SW 32nd Street intersection.

Transportation system management solutions (e.g., traveler information, traffic signal coordination) and transportation demand management solutions (e.g., improved parking management, improved transit service) will be investigated in subsequent memos to mitigate expected intersection capacity deficiencies.

Intersection capacity deficiencies, compared to existing adopted OHP mobility targets and City LOS standards, during the summer peak hour (see appendix for more detail) are expected at the following intersections by 2035 (see Figure 4A):

Signalized Intersections
- US 101/NE West Devils Lake Road
- US 101/NW Logan Road
- US 101/NE 22nd Street
- US 101/NE 14th Street
- US 101/Burger King/City Hall
- US 101/SW 32nd Street

Unsignalized Intersections
- US 101/NE Neotsu Drive
- US 101/NE Holmes Road
- US 101/NE 30th Street
- US 101/SE 14th Street
- US 101/SW Bard Avenue/SE 19th Street
- US 101/SE 29th Street
- US 101/SE High School Drive

During the summer peak travel periods, some intersections may exceed capacity by 15 to 30 percent during the peak hour and may not be able to serve all drivers during a single hour. Congestion at these intersections would "push" much of the demand that could not be served during the summer peak hour to either the hours before or the hours after the peak hour, meaning some intersections would exceed mobility targets for more than one hour. This is a condition known as "peak spreading." Based on a sketch level analysis, some intersections could exceed mobility targets for as much as six hours during the summer peak travel periods in 2035.

Intersection capacity deficiencies, compared to existing adopted OHP mobility targets and City LOS standards, during the average annual weekday peak hour (see appendix for more detail) are expected at several intersections by 2035 (see Figure 4B), including:

Signalized Intersections
- US 101/NE West Devils Lake Road
- US 101/SW 32nd Street

Unsignalized Intersections
- US 101/NE 30th Street
- US 101/SE 14th Street
- US 101/SW Bard Avenue/SE 19th Street

Projected conditions during the average annual weekday peak hour are far less congested than during the summer peak hours, with the peak period lasting no more than a single hour.

Connectivity

The lack of connecting routes impacts the effectiveness of the regional system by forcing local trips onto US 101. In Lincoln City, through motor vehicle trips should use the highway and local trips should have the option of alternative routes or alternative modes. Street system connectivity is also critical to achieve a high level of access, comfort, and convenience for bicyclists and walkers.

Topography, environmental constraints, and existing development limit connectivity in Lincoln City. These factors may not prevent connections, but could affect what modes the connections could accommodate and the financial viability. In general, street connectivity needs in Lincoln City include:

- Providing north-south route alternatives to US 101
- Filling gaps in the local street network
- Improving connectivity north of US 101, especially connections between NW Logan Road and US 101

Safety Needs

Several locations were identified in Technical Memorandum #6 as high collision locations. With growing traffic volumes, these problematic areas likely will persist, and may even become progressively worse. Identified high collision locations include the three intersections and three roadway segments below:

Intersection Locations

- US 101/NE East Devils Lake Road
- US 101/NE West Devils Lake Road
- US 101/NW Logan Road

Roadway Segment Locations

- US 101 from NW Logan Road to just north of NW 39th Street
- US 101 from NE 35th Street to NE 34th Street
- US 101 from SE 28th Street to just north of SE 31st Street

The STIP project, which will add a two-way left-turn lane on US 101 from SE 28th Street to just north of SE 31st Street, will likely resolve safety problems at that high collision location.

Freight Needs

US 101 throughout Lincoln City is designated as a federal truck route. The six signalized intersections along US 101 that will be over capacity during the summer of 2035 potentially will increase travel times for freight movement along the facility. Freight activity, currently about five percent of traffic along US 101, could increase by 2035 as much of the employment growth areas are adjacent to the highway.

Air, Rail, Pipeline, and Water Transportation Needs

No system investment needs have been identified for Lincoln City's waterway or pipeline system through 2035. No air or rail infrastructure exists in Lincoln City, and the city anticipates no investments for these systems in the foreseeable future.

DEVELOPING TRANSPORTATION SOLUTIONS

This project will propose investments to address the needs of the transportation system through 2035. The transportation solutions will be of two types. Those likely to be funded by 2035 will be in the Financially Constrained Transportation System. Projects not likely to be funded by 2035 will be in the Planned Transportation System. Lincoln City must make investment decisions to develop a set of transportation improvements that will likely be funded to best meet identified needs through 2035.

APPENDIX

Technical Memorandum #8: Future Transportation Conditions

Motor Vehicle Operations

Intersection Mobility Targets: The intersections in Lincoln City are monitored through mobility targets intended to maintain a minimum level of efficiency for motor vehicle travel. Two methods to gauge intersection operations include volume-to-capacity (v/c) ratios and level of service (LOS).

> **Volume-to-capacity (V/C) ratio:** A decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used (i.e., the saturation) at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays. ODOT mobility targets for intersections along US 101 are based on v/c ratios.

> **Level of service (LOS):** A "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and traffic is highly congested. LOS is being considered as the minimum performance standard for intersections under Lincoln City jurisdiction.

All intersections in Lincoln City must operate at or below the performance measures shown in Table A1 or mitigation is necessary. The intersection mobility targets vary by jurisdiction of the roadways. All intersections under State jurisdiction in Lincoln City must comply with the v/c ratios in the Oregon Highway Plan (OHP). A Level of Service (LOS) D is being considered as the minimum performance standard for both signalized and unsignalized intersections under Lincoln City jurisdiction and therefore will be assumed as the city standard for the Lincoln City TSP update. The Lincoln County[1] TSP applied the ODOT mobility target for District/Local Interest Roads (0.95 v/c) to intersections under county jurisdiction. This standard will be applied to intersections along East Devils Lake Road, NW Logan Road, and SE Schooner Creek Road for the Lincoln City TSP update. The ODOT v/c targets for US 101 are based on highway classification and posted speeds. The targets in Lincoln City range from a v/c ratio of 0.80 to 1.00.

Summer and average weekday intersection operations are summarized in Table A1.

[1] Lincoln County Transportation System Plan, Page 3-7

Table A1: Intersection Operations (2035 p.m. peak)

		Summer						Average Weekday					
		2012 Existing Conditions			2035 Baseline Conditions			2012 Existing Conditions			2035 Baseline Conditions		
Intersection	Mobility Target	v/c Ratio	LOS	Delay (sec/ veh)	v/c Ratio	LOS	Delay (sec/ veh)	v/c Ratio	LOS	Delay (sec/ veh)	v/c Ratio	LOS	Delay (sec/ veh)
Signalized Intersections under ODOT Jurisdiction													
US 101/NE West Devils Lake Rd	0.80	0.75	C	26.5	**1.11**	F	87.3	0.56	B	17.9	**0.88**	D	38.7
US 101/NW Logan Rd	0.90	0.82	D	51.5	**1.15**	F	>100	0.66	D	35.1	0.84	D	46.8
US 101/NE 22nd St	0.90	0.65	B	16.9	**1.07**	E	60.2	0.58	B	12.5	0.87	C	24.4
US 101/NE 17th St	0.90	0.53	A	3.9	0.89	A	5.5	0.40	A	3.5	0.69	A	2.1
US 101/NE 14th St	0.90	0.62	A	9.9	**1.12**	D	35.3	0.48	A	8.0	0.83	B	13.5
US 101/NE 6th St	0.90	0.54	A	6.6	0.84	A	9.4	0.44	A	5.7	0.70	A	6.1
US 101/SE 1st St	0.90	0.57	A	8.3	0.88	B	16.6	0.48	A	6.6	0.72	A	7.4
US 101/Burger King/City Hall	0.90	0.65	B	11.2	**0.96**	C	33.0	0.57	A	9.1	0.77	B	12.3
US 101/East Devils Lake Rd/SW 12th St	0.90	0.58	C	20.2	0.90	D	40.8	0.53	B	17.1	0.73	C	22.9
US 101/SE 32nd St	0.90*	0.70	D	34.7	**1.31**	F	>100	0.52	C	18.3	**1.03**	D	38.1
US 101/SW 32nd St		0.66	D	26.4				0.49	C	17.2			
US 101/SW 48th St	0.95	0.44	A	5.4	0.60	A	7.6	0.33	A	4.8	0.46	A	5.3
US 101/SW 51st St	0.95	0.40	A	4.9	0.52	A	5.5	0.31	A	3.6	0.39	A	4.2
Unsignalized Intersections under ODOT Jurisdiction**													
US 101/East Devils Lake Rd	0.90	0.60	D	31.0	0.72	F	61.3	0.44	C	17.4	0.55	C	23.6
US 101/Neotsu Dr	0.90	0.63	D	28.6	**>1.50**	F	>100	0.46	C	17.6	0.90	F	>100
US 101/NE Holmes Rd	0.95	0.74	E	38.7	**>1.50**	F	>100	0.55	C	20.1	0.94	F	94.1
US 101/NE 30th St	0.95	0.79	D	31.3	**1.24**	F	>100	0.59	C	19.3	**1.00**	E	47.2
US 101/NE 21st St	0.95	0.54	B	13.6	0.83	C	23.3	0.40	B	13.0	0.68	C	15.5
US 101/SE 14th St	0.95	0.72	F	63.8	**>1.50**	F	>100	0.53	C	23.9	**>1.50**	F	>100
US 101/SW Bard Ave/SE 19th St	0.95	0.71	F	103.2	**>1.50**	F	>100	0.53	D	25.6	**>1.50**	F	>100
US 101/SE 29th St	0.95	0.74	D	25.4	**>1.50**	F	>100	0.55	C	17.3	0.94	F	>100
US 101/SE High School Dr	0.95	0.59	D	33.3	**1.04**	F	>100	0.44	C	16.6	0.75	E	40.2
US 101/SW Jetty Ave	0.95	0.53	A	9.8	0.69	B	11.1	0.39	A	0.10	0.51	A	9.7
US 101/SW 62nd St	0.95	0.49	C	19.2	0.62	D	29.2	0.36	B	14.6	0.46	C	18.7
US 101/SW 63rd St	0.95	0.52	C	19.6	0.62	C	23.4	0.39	B	14.7	0.46	C	16.5

Intersection	Mobility Target	Summer 2012 Existing Conditions v/c Ratio	Summer 2012 Existing Conditions LOS	Summer 2012 Existing Conditions Delay (sec/veh)	Summer 2035 Baseline Conditions v/c Ratio	Summer 2035 Baseline Conditions LOS	Summer 2035 Baseline Conditions Delay (sec/veh)	Average Weekday 2012 Existing Conditions v/c Ratio	Average Weekday 2012 Existing Conditions LOS	Average Weekday 2012 Existing Conditions Delay (sec/veh)	Average Weekday 2035 Baseline Conditions v/c Ratio	Average Weekday 2035 Baseline Conditions LOS	Average Weekday 2035 Baseline Conditions Delay (sec/veh)
Unsignalized Intersections under Lincoln City Jurisdiction**													
NW Logan Rd/NW 44th St	D	0.39	B	13.3	0.68	C	22.1	0.24	B	10.9	0.42	B	12.8
NW Jetty Ave/NW 39th St	D	0.14	A	7.7	0.15	A	7.8	0.10	A	7.4	0.11	A	7.5
NE Holmes Rd/NE West Devils Lake Rd	D	0.10	B	12.2	0.13	B	13.2	0.06	B	10.9	0.09	B	11.3
NW Jetty Ave/NW 30th St	D	0.08	B	10.3	0.07	B	10.2	0.03	A	9.4	0.03	A	9.4
NW Jetty Ave/NW 26th St	D	0.05	B	10.0	0.05	B	10.0	0.04	A	9.5	0.04	A	9.5
NE West Devils Lake Rd/NE 22nd St	D	0.17	B	11.6	0.19	B	11.7	0.12	B	10.5	0.13	B	10.6
NW Jetty Ave/NW 21st St	D	0.08	A	9.3	0.08	A	9.3	0.06	A	9.1	0.06	A	9.1
NW Harbor Ave/NW 21st St	D	0.03	A	9.1	0.03	A	9.1	0.02	A	8.9	0.02	A	8.9
NE 21st St/NE Oar Ave	D	0.11	B	10.9	0.10	B	10.8	0.07	B	10.2	0.06	B	10.1
NW Harbor Ave/NW 14th St	D	0.07	A	9.5	0.07	A	9.4	0.05	A	7.1	0.05	A	9.1
Oar Ave/SE Devil's Lake Rd	D	0.41	C	15.5	0.55	C	20.5	0.25	B	12.0	0.35	B	14.1
Oar St/SE 14 St	D	0.13	A	9.8	0.20	B	10.5	0.08	A	9.3	0.13	A	9.8
SW Anchor Dr/SW 32nd St	D	0.05	A	9.0	0.04	A	8.9	0.03	A	8.8	0.02	A	8.7
SE High School Dr/Spyglass Ridge Dr	D	0.32	B	12.3	0.20	B	10.6	0.22	B	10.7	0.14	A	9.9
SE High School Dr/SW 48th St	D	0.09	A	7.9	0.10	A	8.0	0.07	A	7.4	0.09	A	7.9

* The US 101/SE 32nd St and US 101/SW 32nd St intersections were assumed to be realigned to a single intersection and signalized by 2035.

**V/C ratio, LOS and delay reported for the worst stop controlled approach

Bolded and red shading indicates an intersection that fails to meet the mobility target

2035 HCM Capacity Analysis Results (Summer Conditions)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1170	35	45	1195	45	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1232	37	47	1258	47	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1268		2603	1250
vC1, stage 1 conf vol					1250	
vC2, stage 2 conf vol					1353	
vCu, unblocked vol			1268		2603	1250
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.4
p0 queue free %			91		72	57
cM capacity (veh/h)			555		167	206

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1268	1305	137
Volume Left	0	47	47
Volume Right	37	0	89
cSH	1700	555	190
Volume to Capacity	0.75	0.09	0.72
Queue Length 95th (ft)	0	7	114
Control Delay (s)	0.0	4.3	61.3
Lane LOS		A	F
Approach Delay (s)	0.0	4.3	61.3
Approach LOS			F

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	122.9%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	75	35	1170	110	15	1225
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	79	37	1232	116	16	1289
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2611	1289			1347	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2611	1289			1347	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	0	81			97	
cM capacity (veh/h)	26	192			483	

Direction, Lane #	NW 1	NE 1	SW 1	SW 2
Volume Total	116	1347	16	1289
Volume Left	79	0	16	0
Volume Right	37	116	0	0
cSH	36	1700	483	1700
Volume to Capacity	3.18	0.79	0.03	0.76
Queue Length 95th (ft)	Err	0	3	0
Control Delay (s)	Err	0.0	12.7	0.0
Lane LOS	F		B	
Approach Delay (s)	Err	0.0	0.2	
Approach LOS	F			

Intersection Summary			
Average Delay	418.3		
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	165	1145	75	75	1170	55	70	30	85	50	25	165
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00		1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.89		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	1651	1427	1554	1636	1392	1554	1456		1599	1397	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	1651	1427	1554	1636	1392	1554	1456		1599	1397	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	174	1205	79	79	1232	58	74	32	89	53	26	174
RTOR Reduction (vph)	0	0	23	0	0	19	0	84	0	0	143	0
Lane Group Flow (vph)	174	1205	56	79	1232	39	74	37	0	53	57	0
Confl. Peds. (#/hr)	10		1	1		10	1					1
Confl. Bikes (#/hr)												3
Heavy Vehicles (%)	3%	6%	2%	7%	7%	3%	7%	15%	4%	4%	0%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	9.0	76.0	76.0	5.0	72.0	72.0	3.0	6.0		3.0	6.0	
Effective Green, g (s)	9.0	76.0	76.0	5.0	72.0	72.0	3.0	6.0		3.0	6.0	
Actuated g/C Ratio	0.08	0.71	0.71	0.05	0.67	0.67	0.03	0.06		0.03	0.06	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.5	4.5	4.5	2.5	4.5	4.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	135	1172	1013	72	1100	936	43	81		44	78	
v/s Ratio Prot	c0.11	c0.73		0.05	c0.75		c0.05	0.03		0.03	c0.04	
v/s Ratio Perm			0.04			0.03						
v/c Ratio	1.29	1.03	0.06	1.10	1.12	0.04	1.72	0.46		1.20	0.72	
Uniform Delay, d1	49.0	15.5	4.7	51.0	17.5	5.9	52.0	48.9		52.0	49.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	174.4	33.7	0.0	135.1	66.4	0.0	404.6	3.0		201.9	26.6	
Delay (s)	223.4	49.2	4.7	186.1	83.9	5.9	456.6	51.9		253.9	76.3	
Level of Service	F	D	A	F	F	A	F	D		F	E	
Approach Delay (s)		67.6			86.5			205.4			113.5	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	87.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	107.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	107.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	340	40	600	105	45	90	540	955	50	45	1110	220
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.97		1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.90		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1599	1441		1662	1530		1646	3047		1583	3050	1391
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1599	1441		1662	1530		1646	3047		1583	3050	1391
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	358	42	632	111	47	95	568	1005	53	47	1168	232
RTOR Reduction (vph)	0	335	0	0	45	0	0	2	0	0	0	56
Lane Group Flow (vph)	358	339	0	111	97	0	568	1056	0	47	1168	176
Confl. Peds. (#/hr)	5		8	8		5	2		4	4		2
Confl. Bikes (#/hr)			1						2			21
Heavy Vehicles (%)	4%	0%	2%	0%	0%	0%	1%	8%	10%	5%	9%	2%
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases												2
Actuated Green, G (s)	31.0	31.0		8.0	8.0		47.0	99.3		7.5	59.8	59.8
Effective Green, g (s)	31.0	31.0		8.0	8.0		47.0	99.3		7.5	59.8	59.8
Actuated g/C Ratio	0.19	0.19		0.05	0.05		0.29	0.61		0.05	0.37	0.37
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	6.0		2.5	6.0	6.0
Lane Grp Cap (vph)	304	274		81	75		475	1858		72	1120	510
v/s Ratio Prot	0.22	c0.24		c0.07	0.06		c0.35	0.35		0.03	c0.38	
v/s Ratio Perm												0.13
v/c Ratio	1.18	1.24		1.37	1.30		1.20	0.57		0.65	1.04	0.35
Uniform Delay, d1	65.9	65.9		77.4	77.4		57.9	19.0		76.4	51.5	37.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	108.8	133.8		227.0	202.9		107.1	0.8		17.3	38.7	1.2
Delay (s)	174.7	199.7		304.4	280.3		165.0	19.8		93.7	90.2	38.5
Level of Service	F	F		F	F		F	B		F	F	D
Approach Delay (s)		191.0			290.9			70.5			82.1	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	115.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	162.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	129.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	50	75	1840	70	55	1950
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	51	77	1878	71	56	1990
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	4015	1913			1949	
vC1, stage 1 conf vol	1913					
vC2, stage 2 conf vol	2102					
vCu, unblocked vol	4015	1913			1949	
tC, single (s)	6.4	6.3			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4			2.2	
p0 queue free %	23	5			82	
cM capacity (veh/h)	66	81			304	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	128	1949	56	1990
Volume Left	51	0	56	0
Volume Right	77	71	0	0
cSH	74	1700	304	1700
Volume to Capacity	1.72	1.15	0.18	1.17
Queue Length 95th (ft)	276	0	17	0
Control Delay (s)	469.8	0.0	19.5	0.0
Lane LOS	F		C	
Approach Delay (s)	469.8	0.0	0.5	
Approach LOS	F			

Intersection Summary			
Average Delay	14.8		
Intersection Capacity Utilization	126.1%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	15	25	30	1895	1970	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	26	32	1995	2074	32
Pedestrians	7					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	4154	2096	2112			
vC1, stage 1 conf vol	2096					
vC2, stage 2 conf vol	2058					
vCu, unblocked vol	4154	2096	2112			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4	2.2			
p0 queue free %	76	58	88			
cM capacity (veh/h)	65	63	261			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	42	32	1995	2105
Volume Left	16	32	0	0
Volume Right	26	0	0	32
cSH	64	261	1700	1700
Volume to Capacity	0.66	0.12	1.17	1.24
Queue Length 95th (ft)	71	10	0	0
Control Delay (s)	134.2	20.7	0.0	0.0
Lane LOS	F	C		
Approach Delay (s)	134.2	0.3		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	124.6%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	20	30	165	30	80	65	1860	135	130	1820	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Frt		0.96			0.96		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1487			1518		1568	3094		1614	3156	
Flt Permitted		0.77			0.74		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1168			1150		1568	3094		1614	3156	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	52	21	31	170	31	82	67	1918	139	134	1876	46
RTOR Reduction (vph)	0	11	0	0	10	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	93	0	0	273	0	67	2053	0	134	1921	0
Confl. Peds. (#/hr)	9		12	12		9	6		9	9		6
Confl. Bikes (#/hr)									5			1
Heavy Vehicles (%)	3%	0%	25%	7%	0%	6%	6%	6%	6%	3%	5%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		30.0			30.0		7.0	87.0		11.0	91.0	
Effective Green, g (s)		30.0			30.0		7.0	87.0		11.0	91.0	
Actuated g/C Ratio		0.21			0.21		0.05	0.62		0.08	0.65	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.0		2.5	6.0	
Lane Grp Cap (vph)		250			246		78	1922		126	2051	
v/s Ratio Prot							0.04	c0.66		c0.08	c0.61	
v/s Ratio Perm		0.08			c0.24							
v/c Ratio		0.37			1.11		0.86	1.07		1.06	0.94	
Uniform Delay, d1		47.0			55.0		66.0	26.5		64.5	21.9	
Progression Factor		1.00			1.03		1.05	1.15		1.00	1.00	
Incremental Delay, d2		0.7			89.6		35.6	37.1		98.2	9.7	
Delay (s)		47.6			146.2		105.0	67.5		162.7	31.6	
Level of Service		D			F		F	E		F	C	
Approach Delay (s)		47.6			146.2			68.7			40.1	
Approach LOS		D			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	60.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	35	0	0	45	45	2015	25	45	1910	60
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	37	0	0	47	47	2121	26	47	2011	63
Pedestrians					8						2	
Lane Width (ft)					12.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					1						0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								1009			913	
pX, platoon unblocked	0.46	0.46	0.42	0.46	0.46	0.17	0.42			0.17		
vC, conflicting volume	3341	4387	1037	3374	4405	1084	2074			2155		
vC1, stage 1 conf vol	2137	2137		2237	2237							
vC2, stage 2 conf vol	1205	2250		1137	2168							
vCu, unblocked vol	0	318	0	0	358	0	781			0		
tC, single (s)	7.5	6.5	7.1	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	92	100	100	74	87			83		
cM capacity (veh/h)	272	197	442	335	187	183	353			275		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	37	47	47	1414	733	47	1340	733
Volume Left	0	0	47	0	0	47	0	0
Volume Right	37	47	0	0	26	0	0	63
cSH	442	183	353	1700	1700	275	1700	1700
Volume to Capacity	0.08	0.26	0.13	0.83	0.43	0.17	0.79	0.43
Queue Length 95th (ft)	7	25	11	0	0	15	0	0
Control Delay (s)	13.9	31.5	16.8	0.0	0.0	20.8	0.0	0.0
Lane LOS	B	D	C			C		
Approach Delay (s)	13.9	31.5	0.4			0.5		
Approach LOS	B	D						

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	10	25	20	10	20	20	2035	25	0	1940	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.98			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.95			0.95			1.00			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1587			1589			3186			3151	
Flt Permitted		0.81			0.80			0.89			1.00	
Satd. Flow (perm)		1310			1297			2839			3151	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	11	26	21	11	21	21	2142	26	0	2042	32
RTOR Reduction (vph)	0	18	0	0	19	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	51	0	0	34	0	0	2189	0	0	2074	0
Confl. Peds. (#/hr)	19		6	6		19	50		35	35		50
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6					
Actuated Green, G (s)		9.1			9.1			122.9			122.9	
Effective Green, g (s)		9.1			9.1			122.9			122.9	
Actuated g/C Ratio		0.06			0.06			0.88			0.88	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		2.5			2.5			6.0			6.0	
Lane Grp Cap (vph)		85			84			2492			2766	
v/s Ratio Prot											0.66	
v/s Ratio Perm		c0.04			0.03			c0.77				
v/c Ratio		0.60			0.41			0.88			0.75	
Uniform Delay, d1		63.7			62.9			4.6			3.1	
Progression Factor		1.00			1.00			0.81			0.21	
Incremental Delay, d2		9.8			2.3			1.9			0.8	
Delay (s)		73.4			65.2			5.7			1.5	
Level of Service		E			E			A			A	
Approach Delay (s)		73.4			65.2			5.7			1.5	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	15	10	195	15	35	0	1995	115	30	1955	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.98			0.99			1.00	
Flt Protected		0.98			0.96			1.00			1.00	
Satd. Flow (prot)		1549			1568			3134			3160	
Flt Permitted		0.91			0.77			1.00			0.78	
Satd. Flow (perm)		1437			1253			3134			2464	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	15	15	10	199	15	36	0	2036	117	31	1995	10
RTOR Reduction (vph)	0	8	0	0	4	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	32	0	0	246	0	0	2151	0	0	2036	0
Confl. Peds. (#/hr)	12		1	1		12	11		3	3		11
Confl. Bikes (#/hr)			1						1			1
Heavy Vehicles (%)	0%	17%	0%	4%	0%	10%	0%	5%	6%	0%	5%	25%
Turn Type	Perm	NA		Perm	NA			NA		Prot	NA	
Protected Phases		8			4			6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		25.0			25.0			107.0			107.0	
Effective Green, g (s)		25.0			25.0			107.0			107.0	
Actuated g/C Ratio		0.18			0.18			0.76			0.76	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		2.5			2.5			6.0			6.0	
Lane Grp Cap (vph)		256			223			2395			1883	
v/s Ratio Prot								0.69				
v/s Ratio Perm		0.02			c0.20						c0.83	
v/c Ratio		0.12			1.10			0.90			31.00dl	
Uniform Delay, d1		48.3			57.5			12.4			16.5	
Progression Factor		1.03			1.00			0.35			0.40	
Incremental Delay, d2		0.2			90.5			3.5			43.6	
Delay (s)		49.7			148.0			7.9			50.2	
Level of Service		D			F			A			D	
Approach Delay (s)		49.7			148.0			7.9			50.2	
Approach LOS		D			F			A			D	

Intersection Summary			
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.5%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	5	15	25	5	20	30	2075	50	25	2120	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.95		1.00	1.00		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1603			1604		1458	3154		1511	3224	
Flt Permitted		0.86			0.90		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1394			1473		1458	3154		1511	3224	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	5	16	26	5	21	32	2184	53	26	2232	16
RTOR Reduction (vph)	0	15	0	0	17	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	17	0	0	35	0	32	2236	0	26	2248	0
Confl. Peds. (#/hr)	2					2	5		1	1		5
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	14%	5%	5%	10%	3%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		6.1			6.1		4.9	118.9		3.0	117.0	
Effective Green, g (s)		6.1			6.1		4.9	118.9		3.0	117.0	
Actuated g/C Ratio		0.04			0.04		0.04	0.85		0.02	0.84	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.0		2.5	6.0	
Lane Grp Cap (vph)		60			64		51	2678		32	2694	
v/s Ratio Prot							0.02	c0.71		0.02	c0.70	
v/s Ratio Perm		0.01			c0.02							
v/c Ratio		0.28			0.54		0.63	0.83		0.81	0.83	
Uniform Delay, d1		64.8			65.6		66.6	5.5		68.2	6.2	
Progression Factor		1.00			1.00		0.90	0.77		1.05	1.37	
Incremental Delay, d2		1.8			7.2		10.5	1.8		12.9	0.3	
Delay (s)		66.7			72.8		70.4	6.0		84.5	8.9	
Level of Service		E			E		E	A		F	A	
Approach Delay (s)		66.7			72.8			6.9			9.7	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	50	10	50	15	10	20	45	2080	15	15	2080	65
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.94		1.00	1.00		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1555			1481		1662	3193		1662	3180	
Flt Permitted		0.83			0.85		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1328			1282		1662	3193		1662	3180	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	11	53	16	11	21	47	2189	16	16	2189	68
RTOR Reduction (vph)	0	22	0	0	19	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	95	0	0	29	0	47	2205	0	16	2256	0
Confl. Peds. (#/hr)	12		6	6		12	2		9	9		2
Heavy Vehicles (%)	3%	0%	0%	0%	0%	17%	0%	4%	0%	0%	4%	4%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		14.4			14.4		6.7	111.4		2.2	106.9	
Effective Green, g (s)		14.4			14.4		6.7	111.4		2.2	106.9	
Actuated g/C Ratio		0.10			0.10		0.05	0.80		0.02	0.76	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	5.6		2.5	5.6	
Lane Grp Cap (vph)		136			131		79	2540		26	2428	
v/s Ratio Prot							c0.03	0.69		0.01	c0.71	
v/s Ratio Perm		c0.07			0.02							
v/c Ratio		0.70			0.22		0.59	0.87		0.62	0.93	
Uniform Delay, d1		60.7			57.7		65.3	9.4		68.5	13.5	
Progression Factor		1.00			1.00		1.00	1.00		0.92	0.71	
Incremental Delay, d2		13.3			0.6		9.7	3.8		18.9	4.7	
Delay (s)		74.0			58.3		75.0	13.3		82.2	14.3	
Level of Service		E			E		E	B		F	B	
Approach Delay (s)		74.0			58.3			14.6			14.8	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	75	15	15	30	10	35	25	2000	120	85	2005	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Frt		0.98			0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1627			1600		1662	3171		1662	3164	
Flt Permitted		0.76			0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1288			1416		1662	3171		1662	3164	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	79	16	16	32	11	37	26	2105	126	89	2111	16
RTOR Reduction (vph)	0	8	0	0	33	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	103	0	0	47	0	26	2228	0	89	2127	0
Confl. Peds. (#/hr)			16	16			4		3	3		4
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	4%	1%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4								
Actuated Green, G (s)		9.9			9.9		1.5	56.5		4.0	59.0	
Effective Green, g (s)		9.9			9.9		1.5	56.5		4.0	59.0	
Actuated g/C Ratio		0.12			0.12		0.02	0.69		0.05	0.72	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.1		2.5	6.1	
Lane Grp Cap (vph)		154			170		30	2174		80	2265	
v/s Ratio Prot							0.02	c0.70		c0.05	0.67	
v/s Ratio Perm		c0.08			0.03							
v/c Ratio		0.67			0.28		0.87	1.02		1.11	0.94	
Uniform Delay, d1		34.7			33.0		40.4	13.0		39.2	10.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		9.5			0.7		107.4	25.9		134.4	8.9	
Delay (s)		44.2			33.7		147.7	38.8		173.6	19.0	
Level of Service		D			C		F	D		F	B	
Approach Delay (s)		44.2			33.7			40.1			25.2	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	20	20	240	20	350	15	1655	280	245	1775	25
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0		5.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	
Frpb, ped/bikes		0.99		1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1541		1490	1498	1432	1662	3137	1358	3162	3192	
Flt Permitted		0.98		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1541		1490	1498	1432	1662	3137	1358	3162	3192	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	36	21	21	247	21	361	15	1706	289	253	1830	26
RTOR Reduction (vph)	0	9	0	0	0	188	0	0	49	0	0	0
Lane Group Flow (vph)	0	69	0	133	135	173	15	1706	240	253	1856	0
Confl. Peds. (#/hr)	1		8	8		1			5	5		
Confl. Bikes (#/hr)			3			2			1			
Heavy Vehicles (%)	3%	15%	0%	6%	9%	3%	0%	6%	8%	2%	4%	0%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		4	4	5	1	6	4	5	2	
Permitted Phases						4			6			
Actuated Green, G (s)		8.6		15.4	15.4	27.5	2.7	63.2	78.6	12.1	72.6	
Effective Green, g (s)		8.6		15.4	15.4	27.5	2.7	63.2	78.6	12.1	72.6	
Actuated g/C Ratio		0.07		0.13	0.13	0.23	0.02	0.54	0.67	0.10	0.62	
Clearance Time (s)		5.0		5.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0	
Vehicle Extension (s)		2.5		2.5	2.5	2.5	2.5	5.2	2.5	2.5	5.2	
Lane Grp Cap (vph)		112		195	196	335	38	1690	909	326	1975	
v/s Ratio Prot		c0.04		0.09	c0.09	0.05	0.01	c0.54	0.03	c0.08	c0.58	
v/s Ratio Perm						0.07			0.14			
v/c Ratio		0.61		0.68	0.69	0.52	0.39	1.01	0.26	0.78	0.94	
Uniform Delay, d1		52.7		48.6	48.7	39.1	56.5	27.0	7.8	51.3	20.4	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		8.2		8.7	8.9	1.0	4.9	24.2	0.1	10.6	9.8	
Delay (s)		61.0		57.3	57.5	40.1	61.4	51.3	7.9	61.9	30.1	
Level of Service		E		E	E	D	E	D	A	E	C	
Approach Delay (s)		61.0			47.5			45.1			33.9	
Approach LOS		E			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	40.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	117.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	5	20	70	5	90	15	1835	115	100	1910	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	26	5	21	74	5	95	16	1932	121	105	2011	26
Pedestrians											2	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											4.0	
Percent Blockage											0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											497	
pX, platoon unblocked	0.46	0.46	0.46	0.46	0.46		0.46					
vC, conflicting volume	4297	4318	1018	3203	4211	1934	2037			2053		
vC1, stage 1 conf vol	2234	2234		1963	1963							
vC2, stage 2 conf vol	2063	2084		1239	2247							
vCu, unblocked vol	5828	5875	0	3442	5640	1934	900			2053		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.6	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	96	0	87	0	95			62		
cM capacity (veh/h)	0	0	500	56	40	56	350			277		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	53	174	16	1932	121	105	1340	696
Volume Left	26	74	16	0	0	105	0	0
Volume Right	21	95	0	0	121	0	0	26
cSH	0	55	350	1700	1700	277	1700	1700
Volume to Capacity	Err	3.14	0.05	1.14	0.07	0.38	0.79	0.41
Queue Length 95th (ft)	Err	Err	4	0	0	43	0	0
Control Delay (s)	Err	Err	15.8	0.0	0.0	25.7	0.0	0.0
Lane LOS	F	F	C			D		
Approach Delay (s)	Err	Err	0.1			1.3		
Approach LOS	F	F						

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	124.1%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	5	10	35	5	65	10	1845	40	65	1900	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	5	11	37	5	68	11	1942	42	68	2000	26
Pedestrians		1			3			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	4185	4159	1016	3139	4151	1966	2027			1987		
vC1, stage 1 conf vol	2151	2151		1987	1987							
vC2, stage 2 conf vol	2034	2008		1152	2164							
vCu, unblocked vol	4185	4159	1016	3139	4151	1966	2027			1987		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	81	96	31	89	0	96			77		
cM capacity (veh/h)	0	28	239	53	46	53	283			293		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	32	111	11	1984	68	1333	693
Volume Left	16	37	11	0	68	0	0
Volume Right	11	68	0	42	0	0	26
cSH	0	53	283	1700	293	1700	1700
Volume to Capacity	Err	2.10	0.04	1.17	0.23	0.78	0.41
Queue Length 95th (ft)	Err	275	3	0	22	0	0
Control Delay (s)	Err	674.4	18.2	0.0	21.0	0.0	0.0
Lane LOS	F	F	C		C		
Approach Delay (s)	Err	674.4	0.1		0.7		
Approach LOS	F	F					

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	122.2%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	20	15	15	1855	1850	25
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	21	16	16	1953	1947	26
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)				1191		
pX, platoon unblocked	0.20					
vC, conflicting volume	3946	1962	1975			
vC1, stage 1 conf vol	1962					
vC2, stage 2 conf vol	1984					
vCu, unblocked vol	13950	1962	1975			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	0	80	94			
cM capacity (veh/h)	2	80	256			

Direction, Lane #	EB 1	NE 1	NE 2	SW 1
Volume Total	37	16	1953	1974
Volume Left	21	16	0	0
Volume Right	16	0	0	26
cSH	3	256	1700	1700
Volume to Capacity	11.25	0.06	1.15	1.16
Queue Length 95th (ft)	Err	5	0	0
Control Delay (s)	Err	20.0	0.0	0.0
Lane LOS	F	C		
Approach Delay (s)	Err	0.2		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	92.7		
Intersection Capacity Utilization	117.4%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	65	5	40	10	5	90	35	1640	20	50	1695	55
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.95			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1566			1509		1583	1548		1630	1750	1417
Flt Permitted		0.52			0.97		0.03	1.00		0.03	1.00	1.00
Satd. Flow (perm)		831			1473		53	1548		55	1750	1417
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	5	42	10	5	94	36	1708	21	52	1766	57
RTOR Reduction (vph)	0	14	0	0	64	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	101	0	0	45	0	36	1729	0	52	1766	54
Confl. Peds. (#/hr)	1											
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	2%	8%	2%	2%	2%	5%	13%	2%	2%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Prot
Protected Phases		4			8			2			6	6
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.5			16.5		125.5	125.5		125.5	125.5	125.5
Effective Green, g (s)		16.5			16.5		125.5	125.5		125.5	125.5	125.5
Actuated g/C Ratio		0.11			0.11		0.84	0.84		0.84	0.84	0.84
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)		2.5			2.5		4.5	4.5		4.5	4.5	4.5
Lane Grp Cap (vph)		91			162		44	1295		46	1464	1185
v/s Ratio Prot								c1.12			1.01	0.04
v/s Ratio Perm		c0.12			0.03		0.68			0.95		
v/c Ratio		1.11			0.28		0.82	1.33		1.13	1.21	0.05
Uniform Delay, d1		66.8			61.3		6.3	12.2		12.2	12.2	2.1
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		126.3			0.7		74.4	156.0		173.5	99.5	0.0
Delay (s)		193.0			62.0		80.8	168.3		185.7	111.8	2.1
Level of Service		F			E		F	F		F	F	A
Approach Delay (s)		193.0			62.0			166.5			110.5	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	137.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	117.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	25	135	1430	40	175	1505
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	26	142	1505	42	184	1584
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3483	1530			1551	
vC1, stage 1 conf vol	1530					
vC2, stage 2 conf vol	1953					
vCu, unblocked vol	3483	1530			1551	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)	5.5					
tF (s)	3.6	3.4			2.2	
p0 queue free %	56	0			56	
cM capacity (veh/h)	60	137			423	

Direction, Lane #	WB 1	WB 2	NE 1	SW 1	SW 2
Volume Total	26	142	1547	184	1584
Volume Left	26	0	0	184	0
Volume Right	0	142	42	0	0
cSH	60	137	1700	423	1700
Volume to Capacity	0.44	1.04	0.91	0.44	0.93
Queue Length 95th (ft)	42	191	0	54	0
Control Delay (s)	106.3	152.1	0.0	19.9	0.0
Lane LOS	F	F		C	
Approach Delay (s)	144.9		0.0	2.1	
Approach LOS	F				

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	108.2%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	1105	45	30	1060	30	65	15	20	60	15	90
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1536	3033		1496	3097			1633	1456		1505	
Flt Permitted	0.21	1.00		0.19	1.00			0.75	1.00		0.86	
Satd. Flow (perm)	337	3033		298	3097			1274	1456		1315	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	93	1139	46	31	1093	31	67	15	21	62	15	93
RTOR Reduction (vph)	0	4	0	0	3	0	0	0	16	0	50	0
Lane Group Flow (vph)	93	1181	0	31	1121	0	0	82	5	0	120	0
Confl. Peds. (#/hr)	10		7	7		10	14		7	7		14
Confl. Bikes (#/hr)			11									
Heavy Vehicles (%)	8%	9%	5%	11%	7%	0%	3%	0%	0%	0%	14%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	25.2	25.2		25.2	25.2			9.8	9.8		9.8	
Effective Green, g (s)	25.2	25.2		25.2	25.2			9.8	9.8		9.8	
Actuated g/C Ratio	0.58	0.58		0.58	0.58			0.23	0.23		0.23	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.0	4.0		4.0	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			3.0	3.0		3.0	
Lane Grp Cap (vph)	195	1757		172	1794			287	328		296	
v/s Ratio Prot		c0.39			0.36							
v/s Ratio Perm	0.28			0.10				0.06	0.00		c0.09	
v/c Ratio	0.48	0.67		0.18	0.63			0.29	0.01		0.41	
Uniform Delay, d1	5.3	6.3		4.3	6.0			14.0	13.1		14.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.7	0.8		0.2	0.5			0.6	0.0		0.9	
Delay (s)	6.0	7.1		4.5	6.5			14.5	13.1		15.3	
Level of Service	A	A		A	A			B	B		B	
Approach Delay (s)		7.0			6.5			14.2			15.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	43.5	Sum of lost time (s)	8.5
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	10	25	35	15	45	35	1010	30	55	1065	65
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.94		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1631			1540		1662	3101		1511	3144	
Flt Permitted		0.81			0.88		0.22	1.00		0.24	1.00	
Satd. Flow (perm)		1361			1375		377	3101		386	3144	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	11	26	37	16	47	37	1063	32	58	1121	68
RTOR Reduction (vph)	0	15	0	0	39	0	0	2	0	0	5	0
Lane Group Flow (vph)	0	90	0	0	61	0	37	1093	0	58	1184	0
Confl. Peds. (#/hr)	3		6	6		3	2		2	2		2
Heavy Vehicles (%)	0%	0%	0%	10%	0%	0%	0%	6%	29%	10%	5%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		7.3			7.3		42.2	42.2		42.2	42.2	
Effective Green, g (s)		7.3			7.3		42.2	42.2		42.2	42.2	
Actuated g/C Ratio		0.13			0.13		0.73	0.73		0.73	0.73	
Clearance Time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		2.5			2.5		5.4	5.4		5.4	5.4	
Lane Grp Cap (vph)		171			173		274	2256		280	2287	
v/s Ratio Prot								0.35			c0.38	
v/s Ratio Perm		c0.07			0.04		0.10			0.15		
v/c Ratio		0.53			0.35		0.14	0.48		0.21	0.52	
Uniform Delay, d1		23.7			23.2		2.4	3.3		2.5	3.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2			0.9		0.5	0.4		0.9	0.4	
Delay (s)		26.0			24.1		2.9	3.7		3.4	3.9	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		26.0			24.1			3.7			3.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	10	1030	1030	80
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	11	1084	1084	84
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2232	1126	1168			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2232	1126	1168			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	46	249	601			

Direction, Lane #	NB 1	NB 2	SB 1
Volume Total	11	1084	1168
Volume Left	11	0	0
Volume Right	0	0	84
cSH	601	1700	1700
Volume to Capacity	0.02	0.64	0.69
Queue Length 95th (ft)	1	0	0
Control Delay (s)	11.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	0.1		0.0
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Volume (veh/h)	15	960	990	15	70	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	1011	1042	16	74	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	None			
Median storage veh)		2				
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1058				2092	1050
vC1, stage 1 conf vol					1050	
vC2, stage 2 conf vol					1042	
vCu, unblocked vol	1058				2092	1050
tC, single (s)	4.1				6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)	2.2				3.6	3.4
p0 queue free %	98				68	96
cM capacity (veh/h)	666				227	262

Direction, Lane #	NB 1	NB 2	SB 1	NE 1
Volume Total	16	1011	1058	84
Volume Left	16	0	0	74
Volume Right	0	0	16	11
cSH	666	1700	1700	231
Volume to Capacity	0.02	0.59	0.62	0.36
Queue Length 95th (ft)	2	0	0	40
Control Delay (s)	10.5	0.0	0.0	29.2
Lane LOS	B			D
Approach Delay (s)	0.2		0.0	29.2
Approach LOS				D

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	975	25	15	940	35	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1026	26	16	989	37	16
Pedestrians	1				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1054		2063	1040
vC1, stage 1 conf vol					1040	
vC2, stage 2 conf vol					1022	
vCu, unblocked vol			1054		2063	1040
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.3
p0 queue free %			98		84	94
cM capacity (veh/h)			668		236	282

Direction, Lane #	SE 1	NW 1	NW 2	NE 1
Volume Total	1053	16	989	53
Volume Left	0	16	0	37
Volume Right	26	0	0	16
cSH	1700	668	1700	248
Volume to Capacity	0.62	0.02	0.58	0.21
Queue Length 95th (ft)	0	2	0	20
Control Delay (s)	0.0	10.5	0.0	23.4
Lane LOS		B		C
Approach Delay (s)	0.0	0.2		23.4
Approach LOS				C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	55	330	350	175	165	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	359	380	190	179	43
Pedestrians	1			2	1	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				TWLTL	None	
Median storage veh)				2		
Upstream signal (ft)				903		
pX, platoon unblocked						
vC, conflicting volume	1154	204	224			
vC1, stage 1 conf vol	202					
vC2, stage 2 conf vol	952					
vCu, unblocked vol	1154	204	224			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)	5.5					
tF (s)	3.6	3.3	2.2			
p0 queue free %	76	57	71			
cM capacity (veh/h)	245	829	1332			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	418	380	190	223
Volume Left	60	380	0	0
Volume Right	359	0	0	43
cSH	619	1332	1700	1700
Volume to Capacity	0.68	0.29	0.11	0.13
Queue Length 95th (ft)	130	30	0	0
Control Delay (s)	22.1	8.8	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	22.1	5.9		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	10.4		
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	20	20	100	15	10	65
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	23	23	114	17	11	74

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	45	131	85
Volume Left (vph)	23	0	11
Volume Right (vph)	23	17	0
Hadj (s)	-0.11	-0.01	0.03
Departure Headway (s)	4.2	4.1	4.2
Degree Utilization, x	0.05	0.15	0.10
Capacity (veh/h)	804	861	849
Control Delay (s)	7.5	7.8	7.6
Approach Delay (s)	7.5	7.8	7.6
Approach LOS	A	A	A

Intersection Summary			
Delay	7.7		
Level of Service	A		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	10	55	10	5	5	50	160	15	10	95	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	22	11	59	11	5	5	54	172	16	11	102	22
Pedestrians					1							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	430	431	113	488	434	181	124			189		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	430	431	113	488	434	181	124			189		
tC, single (s)	7.2	6.5	6.2	7.4	6.5	7.2	4.3			5.1		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.3	3.8	4.0	4.2	2.4			3.1		
p0 queue free %	96	98	94	97	99	99	96			99		
cM capacity (veh/h)	492	494	940	392	492	661	1364			962		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	91	22	242	134
Volume Left	22	11	54	11
Volume Right	59	5	16	22
cSH	712	463	1364	962
Volume to Capacity	0.13	0.05	0.04	0.01
Queue Length 95th (ft)	11	4	3	1
Control Delay (s)	10.8	13.2	2.0	0.8
Lane LOS	B	B	A	A
Approach Delay (s)	10.8	13.2	2.0	0.8
Approach LOS	B	B		

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Volume (veh/h)	10	5	10	15	20	15	10	75	15	10	60	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	5	11	16	22	16	11	82	16	11	65	11
Pedestrians								2			4	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	235	212	73	219	209	94	76			98		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	235	212	73	219	209	94	76			98		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	98	99	99	98	97	98	99			99		
cM capacity (veh/h)	680	676	988	691	678	966	1523			1508		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	54	109	87
Volume Left	11	16	11	11
Volume Right	11	16	16	11
cSH	776	749	1523	1508
Volume to Capacity	0.04	0.07	0.01	0.01
Queue Length 95th (ft)	3	6	1	1
Control Delay (s)	9.8	10.2	0.8	1.0
Lane LOS	A	B	A	A
Approach Delay (s)	9.8	10.2	0.8	1.0
Approach LOS	A	B		

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	19.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	15	10	5	15	20	10	65	5	10	60	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	11	17	11	6	17	22	11	72	6	11	67	11
Pedestrians		4						2				
Lane Width (ft)		12.0						12.0				
Walking Speed (ft/s)		4.0						4.0				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	226	198	78	213	201	75	82			78		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	226	198	78	213	201	75	82			78		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	99	99	98	98	99			99		
cM capacity (veh/h)	692	688	983	715	686	992	1523			1534		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	39	44	89	89
Volume Left	11	6	11	11
Volume Right	11	22	6	11
cSH	754	816	1523	1534
Volume to Capacity	0.05	0.05	0.01	0.01
Queue Length 95th (ft)	4	4	1	1
Control Delay (s)	10.0	9.7	1.0	1.0
Lane LOS	B	A	A	A
Approach Delay (s)	10.0	9.7	1.0	1.0
Approach LOS	B	A		

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	18.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	140	100	25	80	100	45
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	156	111	28	89	111	50
Pedestrians					19	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						1
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			286		375	230
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			286		375	230
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		81	94
cM capacity (veh/h)			1268		585	801

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	267	117	161
Volume Left	0	28	111
Volume Right	111	0	50
cSH	1700	1268	848
Volume to Capacity	0.16	0.02	0.19
Queue Length 95th (ft)	0	2	17
Control Delay (s)	0.0	2.0	11.7
Lane LOS		A	B
Approach Delay (s)	0.0	2.0	11.7
Approach LOS			B

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	45	40	35	20	25	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	48	43	37	21	27	43
Pedestrians		2	2		3	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	62				191	53
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	62				191	53
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				97	96
cM capacity (veh/h)	1551				774	1016

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	90	59	69
Volume Left	48	0	27
Volume Right	0	21	43
cSH	1551	1700	907
Volume to Capacity	0.03	0.03	0.08
Queue Length 95th (ft)	2	0	6
Control Delay (s)	4.0	0.0	9.3
Lane LOS	A		A
Approach Delay (s)	4.0	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	23.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	10	55	35	15	15	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	11	59	38	16	16	11
Pedestrians		3	5		3	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	57				134	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	57				134	52
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	99
cM capacity (veh/h)	1557				852	1017

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	70	54	27
Volume Left	11	0	16
Volume Right	0	16	11
cSH	1557	1700	911
Volume to Capacity	0.01	0.03	0.03
Queue Length 95th (ft)	1	0	2
Control Delay (s)	1.2	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	1.2	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	21.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	45	15	30	30	10	15	25	10	10	40	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	24	53	18	35	35	12	18	29	12	12	47	12
Pedestrians					3							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	47			71			256	226	65	250	229	41
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	47			71			256	226	65	250	229	41
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			97	95	99	98	93	99
cM capacity (veh/h)	1573			1423			635	650	1003	653	647	1036

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	94	82	59	71
Volume Left	24	35	18	12
Volume Right	18	12	12	12
cSH	1573	1423	694	692
Volume to Capacity	0.01	0.02	0.08	0.10
Queue Length 95th (ft)	1	2	7	8
Control Delay (s)	1.9	3.4	10.7	10.8
Lane LOS	A	A	B	B
Approach Delay (s)	1.9	3.4	10.7	10.8
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	19.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	35	15	10	10	15	20
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	41	18	12	12	18	24
Pedestrians			7		1	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			1		0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	66	54	66	8	7	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	66	54	66	8	7	
tC, single (s)	7.1	6.5	6.5	6.2	4.2	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.3	
p0 queue free %	95	98	99	99	99	
cM capacity (veh/h)	892	827	814	1073	1541	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	59	24	41
Volume Left	41	0	18
Volume Right	0	12	24
cSH	872	926	1541
Volume to Capacity	0.07	0.03	0.01
Queue Length 95th (ft)	5	2	1
Control Delay (s)	9.4	9.0	3.2
Lane LOS	A	A	A
Approach Delay (s)	9.4	9.0	3.2
Approach LOS	A	A	

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	19.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	145	165	20	105	5	205	10	40	5	10	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	16	159	181	22	115	5	225	11	44	5	11	16
Pedestrians		1										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	121			341			468	448	250	495	536	119
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	121			341			468	448	250	495	536	119
tC, single (s)	4.2			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			53	98	94	99	98	98
cM capacity (veh/h)	1413			1165			475	494	784	443	440	937

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	357	143	280	33
Volume Left	16	22	225	5
Volume Right	181	5	44	16
cSH	1413	1165	507	600
Volume to Capacity	0.01	0.02	0.55	0.05
Queue Length 95th (ft)	1	1	83	4
Control Delay (s)	0.5	1.4	20.5	11.4
Lane LOS	A	A	C	B
Approach Delay (s)	0.5	1.4	20.5	11.4
Approach LOS			C	B

Intersection Summary			
Average Delay	8.0		
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	30	35	5	25	10	25	10	5	5	10	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	82	35	41	6	29	12	29	12	6	6	12	29
Pedestrians		1										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	139	116	27	171	127	15	42			18		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	139	116	27	171	127	15	42			18		
tC, single (s)	7.1	6.8	6.3	7.1	6.5	7.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.3	3.4	3.5	4.0	4.2	2.2			2.2		
p0 queue free %	89	95	96	99	96	99	98			100		
cM capacity (veh/h)	780	704	1030	723	749	839	1578			1612		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	159	47	47	47
Volume Left	82	6	29	6
Volume Right	41	12	6	29
cSH	812	766	1578	1612
Volume to Capacity	0.20	0.06	0.02	0.00
Queue Length 95th (ft)	18	5	1	0
Control Delay (s)	10.5	10.0	4.6	0.9
Lane LOS	B	B	A	A
Approach Delay (s)	10.5	10.0	4.6	0.9
Approach LOS	B	B		

Intersection Summary			
Average Delay	8.0		
Intersection Capacity Utilization	29.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	15	15	15	25	15	10
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	18	18	18	29	18	12
Pedestrians	4		2			4
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	85	40			51	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	85	40			51	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	98	98			99	
cM capacity (veh/h)	905	1030			1454	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	35	47	29
Volume Left	18	0	18
Volume Right	18	29	0
cSH	963	1700	1454
Volume to Capacity	0.04	0.03	0.01
Queue Length 95th (ft)	3	0	1
Control Delay (s)	8.9	0.0	4.5
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	4.5
Approach LOS	A		

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	100	50	45	30	40	95
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	118	59	53	35	47	112
Pedestrians					2	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	90				367	73
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	90				367	73
tC, single (s)	4.2				6.6	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	92				92	89
cM capacity (veh/h)	1454				556	974

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	176	88	159
Volume Left	118	0	47
Volume Right	0	35	112
cSH	1454	1700	797
Volume to Capacity	0.08	0.05	0.20
Queue Length 95th (ft)	7	0	19
Control Delay (s)	5.3	0.0	10.6
Lane LOS	A		B
Approach Delay (s)	5.3	0.0	10.6
Approach LOS			B

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	20	55	45	25	15	45
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	24	65	53	29	18	53

Direction, Lane #	EB 1	WB 1	SE 1
Volume Total (vph)	88	82	71
Volume Left (vph)	24	0	18
Volume Right (vph)	0	29	53
Hadj (s)	0.07	0.37	-0.33
Departure Headway (s)	4.2	4.5	4.0
Degree Utilization, x	0.10	0.10	0.08
Capacity (veh/h)	835	780	866
Control Delay (s)	7.7	8.0	7.3
Approach Delay (s)	7.7	8.0	7.3
Approach LOS	A	A	A

Intersection Summary			
Delay	7.7		
Level of Service	A		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

2035 HCM Capacity Analysis Results (Average Weekday Conditions)

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	865	25	35	900	35	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	911	26	37	947	37	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			937		1945	924
vC1, stage 1 conf vol					924	
vC2, stage 2 conf vol					1021	
vCu, unblocked vol			937		1945	924
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.4
p0 queue free %			95		86	80
cM capacity (veh/h)			739		255	320

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	937	984	100
Volume Left	0	37	37
Volume Right	26	0	63
cSH	1700	739	293
Volume to Capacity	0.55	0.05	0.34
Queue Length 95th (ft)	0	4	37
Control Delay (s)	0.0	1.5	23.6
Lane LOS		A	C
Approach Delay (s)	0.0	1.5	23.6
Approach LOS			C

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	55	25	860	80	10	925
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	58	26	905	84	11	974
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1942	947			989	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1942	947			989	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	19	91			98	
cM capacity (veh/h)	71	306			664	

Direction, Lane #	NW 1	NE 1	SW 1	SW 2
Volume Total	84	989	11	974
Volume Left	58	0	11	0
Volume Right	26	84	0	0
cSH	94	1700	664	1700
Volume to Capacity	0.90	0.58	0.02	0.57
Queue Length 95th (ft)	126	0	1	0
Control Delay (s)	147.1	0.0	10.5	0.0
Lane LOS	F		B	
Approach Delay (s)	147.1	0.0	0.1	
Approach LOS	F			

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	845	55	55	890	45	55	20	60	35	20	145
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00		1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.89		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	1651	1427	1554	1636	1394	1554	1455		1599	1402	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	1651	1427	1554	1636	1394	1554	1455		1599	1402	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	147	889	58	58	937	47	58	21	63	37	21	153
RTOR Reduction (vph)	0	0	19	0	0	18	0	58	0	0	142	0
Lane Group Flow (vph)	147	889	39	58	937	29	58	26	0	37	32	0
Confl. Peds. (#/hr)	10		1	1		10	1					1
Confl. Bikes (#/hr)												3
Heavy Vehicles (%)	3%	6%	2%	7%	7%	3%	7%	15%	4%	4%	0%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	9.2	64.7	64.7	3.8	59.3	59.3	3.1	7.9		2.3	7.1	
Effective Green, g (s)	9.2	64.7	64.7	3.8	59.3	59.3	3.1	7.9		2.3	7.1	
Actuated g/C Ratio	0.10	0.68	0.68	0.04	0.62	0.62	0.03	0.08		0.02	0.07	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.5	4.5	4.5	2.5	4.5	4.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	155	1116	964	61	1013	863	50	120		38	104	
v/s Ratio Prot	c0.09	0.54		0.04	c0.57		c0.04	0.02		0.02	c0.02	
v/s Ratio Perm			0.03			0.02						
v/c Ratio	0.95	0.80	0.04	0.95	0.92	0.03	1.16	0.22		0.97	0.31	
Uniform Delay, d1	43.0	10.9	5.2	45.9	16.2	7.1	46.3	41.0		46.7	42.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	56.3	4.5	0.0	97.3	14.0	0.0	177.7	0.7		134.8	1.2	
Delay (s)	99.3	15.4	5.2	143.1	30.2	7.1	224.0	41.7		181.4	43.2	
Level of Service	F	B	A	F	C	A	F	D		F	D	
Approach Delay (s)		26.1			35.5			116.2			67.5	
Approach LOS		C			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	95.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	255	25	465	85	30	60	340	725	40	35	860	165
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.98		1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.90		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1599	1440		1662	1537		1646	3046		1583	3050	1392
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1599	1440		1662	1537		1646	3046		1583	3050	1392
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	268	26	489	89	32	63	358	763	42	37	905	174
RTOR Reduction (vph)	0	363	0	0	43	0	0	3	0	0	0	55
Lane Group Flow (vph)	268	152	0	89	52	0	358	802	0	37	905	119
Confl. Peds. (#/hr)	5		8	8		5	2		4	4		2
Confl. Bikes (#/hr)			1						2			21
Heavy Vehicles (%)	4%	0%	2%	0%	0%	0%	1%	8%	10%	5%	9%	2%
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases												2
Actuated Green, G (s)	28.2	28.2		8.2	8.2		35.5	81.0		6.6	52.1	52.1
Effective Green, g (s)	28.2	28.2		8.2	8.2		35.5	81.0		6.6	52.1	52.1
Actuated g/C Ratio	0.20	0.20		0.06	0.06		0.25	0.57		0.05	0.37	0.37
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	6.0		2.5	6.0	6.0
Lane Grp Cap (vph)	319	288		96	89		414	1749		74	1126	514
v/s Ratio Prot	c0.17	0.11		c0.05	0.03		c0.22	0.26		0.02	c0.30	
v/s Ratio Perm												0.09
v/c Ratio	0.84	0.53		0.93	0.58		0.86	0.46		0.50	0.80	0.23
Uniform Delay, d1	54.2	50.4		66.1	64.7		50.5	17.3		65.6	39.9	30.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	17.5	1.3		67.8	7.7		16.7	0.5		3.8	5.1	0.6
Delay (s)	71.7	51.8		133.9	72.5		67.2	17.9		69.4	44.9	31.3
Level of Service	E	D		F	E		E	B		E	D	C
Approach Delay (s)		58.6			102.2			33.1			43.6	
Approach LOS		E			F			C			D	

Intersection Summary			
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	141.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	99.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	35	60	1480	60	45	1570
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	36	61	1510	61	46	1602
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3235	1541			1571	
vC1, stage 1 conf vol	1541					
vC2, stage 2 conf vol	1694					
vCu, unblocked vol	3235	1541			1571	
tC, single (s)	6.4	6.3			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4			2.2	
p0 queue free %	68	55			89	
cM capacity (veh/h)	112	136			425	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	97	1571	46	1602
Volume Left	36	0	46	0
Volume Right	61	61	0	0
cSH	126	1700	425	1700
Volume to Capacity	0.77	0.92	0.11	0.94
Queue Length 95th (ft)	112	0	9	0
Control Delay (s)	94.1	0.0	14.5	0.0
Lane LOS	F		B	
Approach Delay (s)	94.1	0.0	0.4	
Approach LOS	F			

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	102.5%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	15	20	1530	1590	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	16	21	1611	1674	21
Pedestrians	7					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3344	1691	1702			
vC1, stage 1 conf vol	1691					
vC2, stage 2 conf vol	1653					
vCu, unblocked vol	3344	1691	1702			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4	2.2			
p0 queue free %	90	86	94			
cM capacity (veh/h)	110	112	377			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	26	21	1611	1695
Volume Left	11	21	0	0
Volume Right	16	0	0	21
cSH	111	377	1700	1700
Volume to Capacity	0.24	0.06	0.95	1.00
Queue Length 95th (ft)	22	4	0	0
Control Delay (s)	47.2	15.1	0.0	0.0
Lane LOS	E	C		
Approach Delay (s)	47.2	0.2		0.0
Approach LOS	E			

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	102.2%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	15	25	125	20	60	55	1520	110	110	1475	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Frt		0.96			0.96		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1477			1519		1568	3095		1614	3156	
Flt Permitted		0.80			0.77		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1208			1202		1568	3095		1614	3156	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	41	15	26	129	21	62	57	1567	113	113	1521	36
RTOR Reduction (vph)	0	17	0	0	15	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	65	0	0	197	0	57	1675	0	113	1556	0
Confl. Peds. (#/hr)	9		12	12		9	6		9	9		6
Confl. Bikes (#/hr)									5			1
Heavy Vehicles (%)	3%	0%	25%	7%	0%	6%	6%	6%	6%	3%	5%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		22.1			22.1		6.8	64.0		11.9	69.1	
Effective Green, g (s)		22.1			22.1		6.8	64.0		11.9	69.1	
Actuated g/C Ratio		0.20			0.20		0.06	0.58		0.11	0.63	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.0		2.5	6.0	
Lane Grp Cap (vph)		242			241		96	1800		174	1982	
v/s Ratio Prot							0.04	c0.54		c0.07	0.49	
v/s Ratio Perm		0.05			c0.16							
v/c Ratio		0.27			0.82		0.59	0.93		0.65	0.79	
Uniform Delay, d1		37.1			42.0		50.3	21.0		47.0	15.0	
Progression Factor		1.00			0.99		1.24	0.63		1.00	1.00	
Incremental Delay, d2		0.4			18.4		6.2	8.2		7.2	3.2	
Delay (s)		37.6			60.1		68.6	21.4		54.2	18.2	
Level of Service		D			E		E	C		D	B	
Approach Delay (s)		37.6			60.1			22.9			20.6	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	25	0	0	40	35	1640	15	35	1555	40
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	26	0	0	42	37	1726	16	37	1637	42
Pedestrians					8						2	
Lane Width (ft)					12.0						12.0	
Walking Speed (ft/s)					4.0						4.0	
Percent Blockage					1						0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								1009			913	
pX, platoon unblocked	0.73	0.73	0.64	0.73	0.73	0.82	0.64			0.82		
vC, conflicting volume	2713	3555	839	2734	3569	881	1679			1750		
vC1, stage 1 conf vol	1732	1732		1816	1816							
vC2, stage 2 conf vol	981	1824		918	1753							
vCu, unblocked vol	1469	2623	0	1498	2641	401	930			1467		
tC, single (s)	7.5	6.5	7.1	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	96	100	100	91	92			90		
cM capacity (veh/h)	137	82	676	88	93	489	475			378		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	26	42	37	1151	591	37	1091	588
Volume Left	0	0	37	0	0	37	0	0
Volume Right	26	42	0	0	16	0	0	42
cSH	676	489	475	1700	1700	378	1700	1700
Volume to Capacity	0.04	0.09	0.08	0.68	0.35	0.10	0.64	0.35
Queue Length 95th (ft)	3	7	6	0	0	8	0	0
Control Delay (s)	10.5	13.1	13.2	0.0	0.0	15.6	0.0	0.0
Lane LOS	B	B	B			C		
Approach Delay (s)	10.5	13.1	0.3			0.3		
Approach LOS	B	B						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	5	20	10	5	15	10	1650	15	0	1590	25
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.98			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.95			0.93			1.00			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1580			1569			3190			3153	
Flt Permitted		0.88			0.91			0.94			1.00	
Satd. Flow (perm)		1429			1450			2991			3153	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	5	21	11	5	16	11	1737	16	0	1674	26
RTOR Reduction (vph)	0	20	0	0	15	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	32	0	0	17	0	0	1764	0	0	1700	0
Confl. Peds. (#/hr)	19		6	6		19	50		35	35		50
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA			NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6					
Actuated Green, G (s)		6.7			6.7			95.3			95.3	
Effective Green, g (s)		6.7			6.7			95.3			95.3	
Actuated g/C Ratio		0.06			0.06			0.87			0.87	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		2.5			2.5			6.0			6.0	
Lane Grp Cap (vph)		87			88			2591			2731	
v/s Ratio Prot											0.54	
v/s Ratio Perm		c0.02			0.01			c0.59				
v/c Ratio		0.37			0.19			0.68			0.62	
Uniform Delay, d1		49.6			49.1			2.4			2.1	
Progression Factor		1.00			1.00			0.10			0.22	
Incremental Delay, d2		1.9			0.8			0.5			0.7	
Delay (s)		51.6			49.9			0.7			1.2	
Level of Service		D			D			A			A	
Approach Delay (s)		51.6			49.9			0.7			1.2	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	2.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	10	5	145	10	25	0	1635	90	25	1595	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.98			0.99			1.00	
Flt Protected		0.98			0.96			1.00			1.00	
Satd. Flow (prot)		1552			1569			3135			3163	
Flt Permitted		0.91			0.75			1.00			0.88	
Satd. Flow (perm)		1436			1226			3135			2798	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	10	10	5	148	10	26	0	1668	92	26	1628	5
RTOR Reduction (vph)	0	4	0	0	6	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	21	0	0	178	0	0	1757	0	0	1659	0
Confl. Peds. (#/hr)	12		1	1		12	11		3	3		11
Confl. Bikes (#/hr)			1						1			1
Heavy Vehicles (%)	0%	17%	0%	4%	0%	10%	0%	5%	6%	0%	5%	25%
Turn Type	Perm	NA		Perm	NA			NA		Prot	NA	
Protected Phases		8			4			6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		19.8			19.8			82.2			82.2	
Effective Green, g (s)		19.8			19.8			82.2			82.2	
Actuated g/C Ratio		0.18			0.18			0.75			0.75	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		2.5			2.5			6.0			6.0	
Lane Grp Cap (vph)		258			220			2342			2090	
v/s Ratio Prot								0.56				
v/s Ratio Perm		0.01			c0.15						c0.59	
v/c Ratio		0.08			0.81			0.75			26.00dl	
Uniform Delay, d1		37.5			43.3			8.0			8.6	
Progression Factor		1.06			1.00			1.23			0.94	
Incremental Delay, d2		0.1			19.3			1.7			1.7	
Delay (s)		40.0			62.6			11.5			9.8	
Level of Service		D			E			B			A	
Approach Delay (s)		40.0			62.6			11.5			9.8	
Approach LOS		D			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	5	10	15	5	15	25	1705	40	15	1715	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.94		1.00	1.00		1.00	1.00	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1606			1603		1458	3154		1511	3227	
Flt Permitted		0.96			0.85		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1559			1392		1458	3154		1511	3227	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	5	11	16	5	16	26	1795	42	16	1805	5
RTOR Reduction (vph)	0	11	0	0	15	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	10	0	0	22	0	26	1836	0	16	1810	0
Confl. Peds. (#/hr)	2					2	5		1	1		5
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	14%	5%	5%	10%	3%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8								
Actuated Green, G (s)		4.1			4.1		4.2	92.3		1.6	89.7	
Effective Green, g (s)		4.1			4.1		4.2	92.3		1.6	89.7	
Actuated g/C Ratio		0.04			0.04		0.04	0.84		0.01	0.82	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.0		2.5	6.0	
Lane Grp Cap (vph)		58			51		55	2646		21	2631	
v/s Ratio Prot							0.02	c0.58		0.01	c0.56	
v/s Ratio Perm		0.01			c0.02							
v/c Ratio		0.18			0.42		0.47	0.69		0.76	0.69	
Uniform Delay, d1		51.3			51.8		51.8	3.4		54.0	4.3	
Progression Factor		1.00			1.00		0.98	2.16		0.82	0.21	
Incremental Delay, d2		1.1			4.1		3.6	1.2		13.1	0.1	
Delay (s)		52.4			55.9		54.6	8.5		57.3	1.0	
Level of Service		D			E		D	A		E	A	
Approach Delay (s)		52.4			55.9			9.2			1.5	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	40	5	40	10	5	15	35	1680	10	10	1690	50
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.93		1.00	1.00		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1551			1453		1662	3194		1662	3181	
Flt Permitted		0.87			0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1383			1287		1662	3194		1662	3181	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	5	42	11	5	16	37	1768	11	11	1779	53
RTOR Reduction (vph)	0	34	0	0	15	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	55	0	0	17	0	37	1779	0	11	1831	0
Confl. Peds. (#/hr)	12		6	6		12	2		9	9		2
Heavy Vehicles (%)	3%	0%	0%	0%	0%	17%	0%	4%	0%	0%	4%	4%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		8.5			8.5		6.7	88.1		1.4	82.8	
Effective Green, g (s)		8.5			8.5		6.7	88.1		1.4	82.8	
Actuated g/C Ratio		0.08			0.08		0.06	0.80		0.01	0.75	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	5.6		2.5	5.6	
Lane Grp Cap (vph)		106			99		101	2558		21	2394	
v/s Ratio Prot							c0.02	c0.56		0.01	c0.58	
v/s Ratio Perm		c0.04			0.01							
v/c Ratio		0.52			0.17		0.37	0.70		0.52	0.76	
Uniform Delay, d1		48.8			47.5		49.6	4.9		54.0	7.9	
Progression Factor		1.00			1.00		1.00	1.00		1.27	0.34	
Incremental Delay, d2		3.2			0.6		1.6	1.2		13.1	1.8	
Delay (s)		51.9			48.1		51.3	6.1		81.6	4.5	
Level of Service		D			D		D	A		F	A	
Approach Delay (s)		51.9			48.1			7.0			5.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	55	10	10	20	5	25	20	1635	90	60	1620	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Frt		0.98			0.93		1.00	0.99		1.00	1.00	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1627			1591		1662	3173		1662	3164	
Flt Permitted		0.84			0.89		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1412			1446		1662	3173		1662	3164	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	11	11	21	5	26	21	1721	95	63	1705	11
RTOR Reduction (vph)	0	8	0	0	23	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	72	0	0	29	0	21	1813	0	63	1716	0
Confl. Peds. (#/hr)			16	16			4		3	3		4
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	4%	1%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4								
Actuated Green, G (s)		8.4			8.4		1.6	56.5		4.0	58.9	
Effective Green, g (s)		8.4			8.4		1.6	56.5		4.0	58.9	
Actuated g/C Ratio		0.10			0.10		0.02	0.70		0.05	0.73	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.1		2.5	6.1	
Lane Grp Cap (vph)		146			150		32	2216		82	2303	
v/s Ratio Prot							0.01	c0.57		c0.04	0.54	
v/s Ratio Perm		c0.05			0.02							
v/c Ratio		0.49			0.19		0.66	0.82		0.77	0.74	
Uniform Delay, d1		34.2			33.1		39.4	8.6		38.0	6.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.9			0.5		35.8	2.9		33.0	1.8	
Delay (s)		36.1			33.6		75.1	11.5		71.0	8.4	
Level of Service		D			C		E	B		E	A	
Approach Delay (s)		36.1			33.6			12.3			10.6	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	80.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	15	15	185	15	270	10	1360	220	195	1435	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0		5.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	
Frpb, ped/bikes		0.98		1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1539		1490	1498	1433	1662	3137	1358	3162	3192	
Flt Permitted		0.98		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1539		1490	1498	1433	1662	3137	1358	3162	3192	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	26	15	15	191	15	278	10	1402	227	201	1479	21
RTOR Reduction (vph)	0	9	0	0	0	212	0	0	46	0	0	0
Lane Group Flow (vph)	0	47	0	103	103	66	10	1402	181	201	1500	0
Confl. Peds. (#/hr)	1		8	8		1			5	5		
Confl. Bikes (#/hr)			3			2			1			
Heavy Vehicles (%)	3%	15%	0%	6%	9%	3%	0%	6%	8%	2%	4%	0%
Turn Type	Split	NA		Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		4	4	5	1	6	4	5	2	
Permitted Phases						4			6			
Actuated Green, G (s)		7.0		12.4	12.4	23.5	1.3	64.0	76.4	11.1	73.8	
Effective Green, g (s)		7.0		12.4	12.4	23.5	1.3	64.0	76.4	11.1	73.8	
Actuated g/C Ratio		0.06		0.11	0.11	0.21	0.01	0.57	0.68	0.10	0.66	
Clearance Time (s)		5.0		5.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0	
Vehicle Extension (s)		2.5		2.5	2.5	2.5	2.5	5.2	2.5	2.5	5.2	
Lane Grp Cap (vph)		95		164	165	299	19	1784	922	311	2093	
v/s Ratio Prot		c0.03		c0.07	0.07	0.02	0.01	c0.45	0.02	c0.06	0.47	
v/s Ratio Perm						0.02			0.11			
v/c Ratio		0.49		0.63	0.62	0.22	0.53	0.79	0.20	0.65	0.72	
Uniform Delay, d1		51.0		47.8	47.8	36.9	55.3	18.9	6.7	48.8	12.6	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		2.9		6.4	6.2	0.3	18.6	2.8	0.1	4.0	1.5	
Delay (s)		53.9		54.2	54.0	37.2	73.9	21.7	6.8	52.9	14.1	
Level of Service		D		D	D	D	E	C	A	D	B	
Approach Delay (s)		53.9			44.4			19.9			18.7	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	112.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	5	15	55	5	65	10	1480	95	75	1545	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	32	5	16	58	5	68	11	1558	100	79	1626	21
Pedestrians											2	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											4.0	
Percent Blockage											0	
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)											497	
pX, platoon unblocked	0.70	0.70	0.70	0.70	0.70		0.70					
vC, conflicting volume	3447	3474	824	2568	3384	1560	1647			1658		
vC1, stage 1 conf vol	1795	1795		1579	1579							
vC2, stage 2 conf vol	1652	1679		989	1805							
vCu, unblocked vol	3640	3679	0	2381	3551	1560	1061			1658		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.6	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	91	98	44	94	32	98			80		
cM capacity (veh/h)	0	59	761	103	92	101	463			394		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	53	132	11	1558	100	79	1084	563
Volume Left	32	58	11	0	0	79	0	0
Volume Right	16	68	0	0	100	0	0	21
cSH	1	101	463	1700	1700	394	1700	1700
Volume to Capacity	92.77	1.30	0.02	0.92	0.06	0.20	0.64	0.33
Queue Length 95th (ft)	Err	229	2	0	0	18	0	0
Control Delay (s)	Err	267.0	13.0	0.0	0.0	16.4	0.0	0.0
Lane LOS	F	F	B			C		
Approach Delay (s)	Err	267.0	0.1			0.8		
Approach LOS	F	F						

Intersection Summary			
Average Delay	157.3		
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	5	5	25	5	50	5	1510	30	45	1545	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	5	5	26	5	53	5	1589	32	47	1626	16
Pedestrians		1			3			2				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	3385	3365	824	2537	3357	1608	1643			1624		
vC1, stage 1 conf vol	1730	1730		1619	1619							
vC2, stage 2 conf vol	1655	1635		918	1738							
vCu, unblocked vol	3385	3365	824	2537	3357	1608	1643			1624		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	93	98	72	94	44	99			88		
cM capacity (veh/h)	1	79	320	95	91	93	399			405		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	21	84	5	1621	47	1084	558
Volume Left	11	26	5	0	47	0	0
Volume Right	5	53	0	32	0	0	16
cSH	2	94	399	1700	405	1700	1700
Volume to Capacity	9.30	0.90	0.01	0.95	0.12	0.64	0.33
Queue Length 95th (ft)	Err	126	1	0	10	0	0
Control Delay (s)	Err	146.9	14.1	0.0	15.1	0.0	0.0
Lane LOS	F	F	B		C		
Approach Delay (s)	Err	146.9	0.0		0.4		
Approach LOS	F	F					

Intersection Summary			
Average Delay	65.4		
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	10	10	10	1500	1495	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	11	11	1579	1574	21
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)				1191		
pX, platoon unblocked	0.18					
vC, conflicting volume	3185	1585	1596			
vC1, stage 1 conf vol	1585					
vC2, stage 2 conf vol	1600					
vCu, unblocked vol	10780	1585	1596			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	44	92	97			
cM capacity (veh/h)	19	135	364			

Direction, Lane #	EB 1	NE 1	NE 2	SW 1
Volume Total	21	11	1579	1595
Volume Left	11	11	0	0
Volume Right	11	0	0	21
cSH	33	364	1700	1700
Volume to Capacity	0.64	0.03	0.93	0.94
Queue Length 95th (ft)	54	2	0	0
Control Delay (s)	229.5	15.2	0.0	0.0
Lane LOS	F	C		
Approach Delay (s)	229.5	0.1		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	50	5	30	5	5	65	25	1320	15	40	1365	40
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.95			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1570			1509		1583	1548		1630	1750	1417
Flt Permitted		0.61			0.99		0.08	1.00		0.09	1.00	1.00
Satd. Flow (perm)		986			1494		127	1548		157	1750	1417
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	5	31	5	5	68	26	1375	16	42	1422	42
RTOR Reduction (vph)	0	14	0	0	62	0	0	0	0	0	0	2
Lane Group Flow (vph)	0	74	0	0	16	0	26	1391	0	42	1422	40
Confl. Peds. (#/hr)	1											
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	2%	8%	2%	2%	2%	5%	13%	2%	2%	0%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Prot
Protected Phases		4			8			2			6	6
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		13.8			13.8		125.6	125.6		125.6	125.6	125.6
Effective Green, g (s)		13.8			13.8		125.6	125.6		125.6	125.6	125.6
Actuated g/C Ratio		0.09			0.09		0.85	0.85		0.85	0.85	0.85
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)		2.5			2.5		4.5	4.5		4.5	4.5	4.5
Lane Grp Cap (vph)		92			139		108	1319		133	1491	1207
v/s Ratio Prot								c0.90			0.81	0.03
v/s Ratio Perm		c0.08			0.01		0.20			0.27		
v/c Ratio		0.81			0.12		0.24	1.05		0.32	0.95	0.03
Uniform Delay, d1		65.5			61.2		2.0	10.9		2.2	8.6	1.7
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		37.9			0.3		2.0	40.5		2.4	14.0	0.0
Delay (s)		103.4			61.5		4.0	51.4		4.6	22.6	1.7
Level of Service		F			E		A	D		A	C	A
Approach Delay (s)		103.4			61.5			50.5			21.5	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	147.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	15	100	1160	30	130	1205
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	16	105	1221	32	137	1268
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2783	1241			1257	
vC1, stage 1 conf vol	1241					
vC2, stage 2 conf vol	1542					
vCu, unblocked vol	2783	1241			1257	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)	5.5					
tF (s)	3.6	3.4			2.2	
p0 queue free %	87	48			75	
cM capacity (veh/h)	120	204			548	

Direction, Lane #	WB 1	WB 2	NE 1	SW 1	SW 2
Volume Total	16	105	1253	137	1268
Volume Left	16	0	0	137	0
Volume Right	0	105	32	0	0
cSH	120	204	1700	548	1700
Volume to Capacity	0.13	0.52	0.74	0.25	0.75
Queue Length 95th (ft)	11	66	0	24	0
Control Delay (s)	39.5	40.2	0.0	13.7	0.0
Lane LOS	E	E		B	
Approach Delay (s)	40.1		0.0	1.3	
Approach LOS	E				

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	70	845	35	20	820	20	50	10	15	45	10	75
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.98		0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	1.00			1.00	0.85		0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1534	3033		1495	3099			1631	1452		1500	
Flt Permitted	0.32	1.00		0.30	1.00			0.82	1.00		0.86	
Satd. Flow (perm)	515	3033		474	3099			1386	1452		1312	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	72	871	36	21	845	21	52	10	15	46	10	77
RTOR Reduction (vph)	0	4	0	0	2	0	0	0	12	0	60	0
Lane Group Flow (vph)	72	903	0	21	864	0	0	62	3	0	73	0
Confl. Peds. (#/hr)	10		7	7		10	14		7	7		14
Confl. Bikes (#/hr)			11									
Heavy Vehicles (%)	8%	9%	5%	11%	7%	0%	3%	0%	0%	0%	14%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	21.4	21.4		21.4	21.4			6.4	6.4		6.4	
Effective Green, g (s)	21.4	21.4		21.4	21.4			6.4	6.4		6.4	
Actuated g/C Ratio	0.59	0.59		0.59	0.59			0.18	0.18		0.18	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.0	4.0		4.0	
Vehicle Extension (s)	0.2	0.2		0.2	0.2			3.0	3.0		3.0	
Lane Grp Cap (vph)	303	1788		279	1826			244	256		231	
v/s Ratio Prot		c0.30			0.28							
v/s Ratio Perm	0.14			0.04				0.04	0.00		c0.06	
v/c Ratio	0.24	0.51		0.08	0.47			0.25	0.01		0.32	
Uniform Delay, d1	3.6	4.4		3.2	4.2			12.9	12.3		13.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.1		0.0	0.1			0.6	0.0		0.8	
Delay (s)	3.7	4.4		3.2	4.3			13.4	12.4		13.8	
Level of Service	A	A		A	A			B	B		B	
Approach Delay (s)		4.4			4.3			13.2			13.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	36.3	Sum of lost time (s)	8.5
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	5	20	30	10	35	25	770	25	45	805	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.94		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1621			1535		1661	3099		1510	3146	
Flt Permitted		0.88			0.87		0.32	1.00		0.34	1.00	
Satd. Flow (perm)		1465			1357		555	3099		536	3146	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	5	21	32	11	37	26	811	26	47	847	47
RTOR Reduction (vph)	0	19	0	0	33	0	0	3	0	0	4	0
Lane Group Flow (vph)	0	54	0	0	47	0	26	834	0	47	890	0
Confl. Peds. (#/hr)	3		6	6		3	2		2	2		2
Heavy Vehicles (%)	0%	0%	0%	10%	0%	0%	0%	6%	29%	10%	5%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		4.5			4.5		32.9	32.9		32.9	32.9	
Effective Green, g (s)		4.5			4.5		32.9	32.9		32.9	32.9	
Actuated g/C Ratio		0.10			0.10		0.72	0.72		0.72	0.72	
Clearance Time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		2.5			2.5		5.4	5.4		5.4	5.4	
Lane Grp Cap (vph)		143			133		397	2221		384	2254	
v/s Ratio Prot								0.27			c0.28	
v/s Ratio Perm		c0.04			0.03		0.05			0.09		
v/c Ratio		0.38			0.35		0.07	0.38		0.12	0.39	
Uniform Delay, d1		19.4			19.3		1.9	2.5		2.0	2.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2			1.2		0.2	0.3		0.3	0.3	
Delay (s)		20.6			20.5		2.1	2.8		2.4	2.8	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		20.6			20.5			2.8			2.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	45.9	Sum of lost time (s)	8.5
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	5	775	770	60
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	5	816	811	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1668	842	874			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1668	842	874			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	99			
cM capacity (veh/h)	105	364	777			

Direction, Lane #	NB 1	NB 2	SB 1
Volume Total	5	816	874
Volume Left	5	0	0
Volume Right	0	0	63
cSH	777	1700	1700
Volume to Capacity	0.01	0.48	0.51
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.7	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.1		0.0
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Volume (veh/h)	10	720	735	10	55	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	758	774	11	58	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	None			
Median storage veh)		2				
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	784				1558	779
vC1, stage 1 conf vol					779	
vC2, stage 2 conf vol					779	
vCu, unblocked vol	784				1558	779
tC, single (s)	4.1				6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)	2.2				3.6	3.4
p0 queue free %	99				82	99
cM capacity (veh/h)	843				322	377

Direction, Lane #	NB 1	NB 2	SB 1	NE 1
Volume Total	11	758	784	63
Volume Left	11	0	0	58
Volume Right	0	0	11	5
cSH	843	1700	1700	326
Volume to Capacity	0.01	0.45	0.46	0.19
Queue Length 95th (ft)	1	0	0	18
Control Delay (s)	9.3	0.0	0.0	18.7
Lane LOS	A			C
Approach Delay (s)	0.1		0.0	18.7
Approach LOS				C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	720	20	10	710	25	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	758	21	11	747	26	11
Pedestrians	1				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780		1539	769
vC1, stage 1 conf vol					769	
vC2, stage 2 conf vol					769	
vCu, unblocked vol			780		1539	769
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.3
p0 queue free %			99		92	97
cM capacity (veh/h)			846		331	404

Direction, Lane #	SE 1	NW 1	NW 2	NE 1
Volume Total	779	11	747	37
Volume Left	0	11	0	26
Volume Right	21	0	0	11
cSH	1700	846	1700	349
Volume to Capacity	0.46	0.01	0.44	0.11
Queue Length 95th (ft)	0	1	0	9
Control Delay (s)	0.0	9.3	0.0	16.5
Lane LOS		A		C
Approach Delay (s)	0.0	0.1		16.5
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	35	275	200	115	120	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	299	217	125	130	33
Pedestrians	1			2	1	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				TWLTL	None	
Median storage veh)				2		
Upstream signal (ft)				903		
pX, platoon unblocked						
vC, conflicting volume	709	150	164			
vC1, stage 1 conf vol	148					
vC2, stage 2 conf vol	561					
vCu, unblocked vol	709	150	164			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)	5.5					
tF (s)	3.6	3.3	2.2			
p0 queue free %	91	66	84			
cM capacity (veh/h)	443	889	1401			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	337	217	125	163
Volume Left	38	217	0	0
Volume Right	299	0	0	33
cSH	799	1401	1700	1700
Volume to Capacity	0.42	0.16	0.07	0.10
Queue Length 95th (ft)	53	14	0	0
Control Delay (s)	12.8	8.0	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	12.8	5.1		0.0
Approach LOS	B			

Intersection Summary			
Average Delay	7.2		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	15	15	75	10	5	50
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	17	17	85	11	6	57

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	34	97	63
Volume Left (vph)	17	0	6
Volume Right (vph)	17	11	0
Hadj (s)	-0.11	-0.01	0.02
Departure Headway (s)	4.1	4.0	4.1
Degree Utilization, x	0.04	0.11	0.07
Capacity (veh/h)	838	873	866
Control Delay (s)	7.3	7.5	7.4
Approach Delay (s)	7.3	7.5	7.4
Approach LOS	A	A	A

Intersection Summary			
Delay	7.4		
Level of Service	A		
Intersection Capacity Utilization	18.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	5	45	5	5	5	35	120	10	5	70	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	16	5	48	5	5	5	38	129	11	5	75	11
Pedestrians					1							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	309	307	81	353	307	135	86			141		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	309	307	81	353	307	135	86			141		
tC, single (s)	7.2	6.5	6.2	7.4	6.5	7.2	4.3			5.1		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.3	3.8	4.0	4.2	2.4			3.1		
p0 queue free %	97	99	95	99	99	99	97			99		
cM capacity (veh/h)	602	590	979	504	590	706	1410			1009		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	70	16	177	91
Volume Left	16	5	38	5
Volume Right	48	5	11	11
cSH	819	589	1410	1009
Volume to Capacity	0.09	0.03	0.03	0.01
Queue Length 95th (ft)	7	2	2	0
Control Delay (s)	9.8	11.3	1.8	0.6
Lane LOS	A	B	A	A
Approach Delay (s)	9.8	11.3	1.8	0.6
Approach LOS	A	B		

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	5	5	10	5	10	5	50	10	5	40	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	5	5	11	5	11	5	54	11	5	43	5
Pedestrians								2			4	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	145	133	48	138	130	64	49			65		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	145	133	48	138	130	64	49			65		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	99	99	99	99	100			100		
cM capacity (veh/h)	803	752	1019	792	755	1003	1558			1550		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	27	71	54
Volume Left	5	11	5	5
Volume Right	5	11	11	5
cSH	844	855	1558	1550
Volume to Capacity	0.02	0.03	0.00	0.00
Queue Length 95th (ft)	1	2	0	0
Control Delay (s)	9.4	9.3	0.6	0.8
Lane LOS	A	A	A	A
Approach Delay (s)	9.4	9.3	0.6	0.8
Approach LOS	A	A		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	16.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Volume (veh/h)	5	10	5	5	10	15	5	45	5	5	40	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	11	6	6	11	17	6	50	6	6	44	6
Pedestrians		4						2				
Lane Width (ft)		12.0						12.0				
Walking Speed (ft/s)		4.0						4.0				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	148	129	53	135	129	53	54			56		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	148	129	53	135	129	53	54			56		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	99	99	99	98	100			100		
cM capacity (veh/h)	793	757	1015	819	757	1020	1559			1562		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	22	33	61	56
Volume Left	6	6	6	6
Volume Right	6	17	6	6
cSH	818	882	1559	1562
Volume to Capacity	0.03	0.04	0.00	0.00
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	9.5	9.2	0.7	0.8
Lane LOS	A	A	A	A
Approach Delay (s)	9.5	9.2	0.7	0.8
Approach LOS	A	A		

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	15.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	105	80	15	55	80	35
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	117	89	17	61	89	39
Pedestrians					19	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						1
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			225		275	180
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			225		275	180
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			99		87	95
cM capacity (veh/h)			1335		675	854

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	206	78	128
Volume Left	0	17	89
Volume Right	89	0	39
cSH	1700	1335	970
Volume to Capacity	0.12	0.01	0.13
Queue Length 95th (ft)	0	1	11
Control Delay (s)	0.0	1.7	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	1.7	10.6
Approach LOS			B

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	35	35	25	15	20	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	37	37	27	16	21	32
Pedestrians		2	2		3	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	46				151	40
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	46				151	40
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				97	97
cM capacity (veh/h)	1571				822	1033

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	74	43	53
Volume Left	37	0	21
Volume Right	0	16	32
cSH	1571	1700	937
Volume to Capacity	0.02	0.03	0.06
Queue Length 95th (ft)	2	0	5
Control Delay (s)	3.8	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	3.8	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	21.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	5	40	25	10	10	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	5	43	27	11	11	5
Pedestrians		3	5		3	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	41				94	38
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	41				94	38
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1578				901	1034

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	48	38	16
Volume Left	5	0	11
Volume Right	0	11	5
cSH	1578	1700	942
Volume to Capacity	0.00	0.02	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.8	0.0	8.9
Lane LOS	A		A
Approach Delay (s)	0.8	0.0	8.9
Approach LOS			A

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	17.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	25	10	20	25	5	10	20	5	5	30	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	18	29	12	24	29	6	12	24	6	6	35	6
Pedestrians					3							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	35			41			174	153	38	171	156	32
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	35			41			174	153	38	171	156	32
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			98	97	99	99	95	99
cM capacity (veh/h)	1589			1460			744	722	1037	755	720	1047

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	59	59	41	47
Volume Left	18	24	12	6
Volume Right	12	6	6	6
cSH	1589	1460	762	754
Volume to Capacity	0.01	0.02	0.05	0.06
Queue Length 95th (ft)	1	1	4	5
Control Delay (s)	2.2	3.1	10.0	10.1
Lane LOS	A	A	A	B
Approach Delay (s)	2.2	3.1	10.0	10.1
Approach LOS			A	B

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	16.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	25	10	5	5	10	15
Sign Control		Stop	Stop		Free	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	29	12	6	6	12	18
Pedestrians			7		1	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			1		0	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	42	39	48	8	7	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42	39	48	8	7	
tC, single (s)	7.1	6.5	6.5	6.2	4.2	
tC, 2 stage (s)						
tF (s)	3.5	4.0	4.0	3.3	2.3	
p0 queue free %	97	99	99	99	99	
cM capacity (veh/h)	938	845	836	1073	1541	

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	41	12	29
Volume Left	29	0	12
Volume Right	0	6	18
cSH	909	940	1541
Volume to Capacity	0.05	0.01	0.01
Queue Length 95th (ft)	4	1	1
Control Delay (s)	9.1	8.9	3.0
Lane LOS	A	A	A
Approach Delay (s)	9.1	8.9	3.0
Approach LOS	A	A	

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	105	130	15	85	5	160	5	30	5	5	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	11	115	143	16	93	5	176	5	33	5	5	11
Pedestrians		1										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	99			258			353	341	187	374	409	97
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	99			258			353	341	187	374	409	97
tC, single (s)	4.2			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			70	99	96	99	99	99
cM capacity (veh/h)	1439			1250			581	572	850	551	524	964

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	269	115	214	22
Volume Left	11	16	176	5
Volume Right	143	5	33	11
cSH	1439	1250	610	690
Volume to Capacity	0.01	0.01	0.35	0.03
Queue Length 95th (ft)	1	1	39	2
Control Delay (s)	0.4	1.2	14.1	10.4
Lane LOS	A	A	B	B
Approach Delay (s)	0.4	1.2	14.1	10.4
Approach LOS			B	B

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	20	25	5	20	5	15	5	5	5	5	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	59	24	29	6	24	6	18	6	6	6	6	24
Pedestrians		1										
Lane Width (ft)		12.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	92	77	19	115	86	9	30			12		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	92	77	19	115	86	9	30			12		
tC, single (s)	7.1	6.8	6.3	7.1	6.5	7.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.3	3.4	3.5	4.0	4.2	2.2			2.2		
p0 queue free %	93	97	97	99	97	99	99			100		
cM capacity (veh/h)	855	746	1042	812	795	846	1594			1620		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	112	35	29	35
Volume Left	59	6	18	6
Volume Right	29	6	6	24
cSH	869	806	1594	1620
Volume to Capacity	0.13	0.04	0.01	0.00
Queue Length 95th (ft)	11	3	1	0
Control Delay (s)	9.8	9.7	4.4	1.2
Lane LOS	A	A	A	A
Approach Delay (s)	9.8	9.7	4.4	1.2
Approach LOS	A	A		

Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	23.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	10	10	10	15	10	5
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	12	12	12	18	12	6
Pedestrians	4		2			4
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	56	29			33	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56	29			33	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	99	99			99	
cM capacity (veh/h)	944	1045			1476	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	24	29	18
Volume Left	12	0	12
Volume Right	12	18	0
cSH	992	1700	1476
Volume to Capacity	0.02	0.02	0.01
Queue Length 95th (ft)	2	0	1
Control Delay (s)	8.7	0.0	5.0
Lane LOS	A		A
Approach Delay (s)	8.7	0.0	5.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	75	40	35	25	30	75
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	88	47	41	29	35	88
Pedestrians					2	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	73				281	58
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	73				281	58
tC, single (s)	4.2				6.6	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	94				94	91
cM capacity (veh/h)	1476				638	993

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	135	71	124
Volume Left	88	0	35
Volume Right	0	29	88
cSH	1476	1700	857
Volume to Capacity	0.06	0.04	0.14
Queue Length 95th (ft)	5	0	13
Control Delay (s)	5.1	0.0	9.9
Lane LOS	A		A
Approach Delay (s)	5.1	0.0	9.9
Approach LOS			A

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	15	45	40	20	10	40
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	18	53	47	24	12	47

Direction, Lane #	EB 1	WB 1	SE 1
Volume Total (vph)	71	71	59
Volume Left (vph)	18	0	12
Volume Right (vph)	0	24	47
Hadj (s)	0.06	0.37	-0.38
Departure Headway (s)	4.2	4.5	3.8
Degree Utilization, x	0.08	0.09	0.06
Capacity (veh/h)	846	790	896
Control Delay (s)	7.5	7.9	7.1
Approach Delay (s)	7.5	7.9	7.1
Approach LOS	A	A	A

Intersection Summary			
Delay	7.5		
Level of Service	A		
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		

(This page intentionally left blank)

Section J

Memo 9: Alternatives Evaluation Criteria

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

REVISED TECHNICAL MEMORANDUM #9

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

DATE: August 8, 2013

TO: Lincoln City TSP Project Management Team

FROM: John Bosket, P.E.
Kevin Chewuk, P.T.P.

SUBJECT: **Lincoln City Transportation System Plan Alternatives Evaluation Criteria** P11086-010

The purpose of this memorandum is to identify the transportation-related evaluation criteria for Lincoln City. These criteria will continue to evolve throughout the planning process, shaped by input received from the Project Advisory Committee and the general public.

EVALUATION CRITERIA

Alternative transportation concepts and project alternatives developed through this update will be evaluated by criteria that are an extension of the goals and objectives. These project level criteria provide a point-based technical rating method that will be used to evaluate how well proposed design alternatives meet the measure of effectiveness criteria. By summing ratings (and weighting if desired), alternatives can be compared. In this way, a consistent method will be used to evaluate and rank the alternatives.

Evaluation Criteria and Scoring Methodology

The evaluation criteria were selected based on the city's draft transportation related goals and objectives. The criteria focus on compliance with state and local plans and policies, engineering design requirements, and a desire to maximize positive and minimize negative economic, social (livability), and environmental impacts. Table 1 lists the evaluation criteria and the corresponding scoring methodology.

Table 1: Lincoln City TSP Evaluation Criteria and Scoring

Measure of Effectiveness	Evaluation Score	
Goal 1: Provide for efficient motor vehicle travel to and through the city.		
Street Connectivity Connection enhances system efficiency.	+2	Improves system efficiency
	+1	Improves efficiency of a localized area, but has no impact on efficiency of the system
	0	No change
	-1	Improves efficiency of a localized area, but may detract from the efficiency of another location
	-2	Negative impact on system efficiency
Alternative Local Routes Improvement reduces reliance on US 101 for shorter local trips.	+2	Significantly reduces reliance on US 101 for shorter local trips
	+1	Reduces reliance on US 101 for shorter local trips
	0	No change
	-1	Increases reliance on US 101 for shorter local trips
	-2	Significantly increases reliance on US 101 for shorter local trips
Daily Traffic Capacity Optimize daily traffic capacity of US 101.	+2	Significantly optimizes daily traffic capacity
	+1	Optimizes daily traffic capacity
	0	No change
	-1	Reduces daily traffic capacity
	-2	Significantly reduces daily traffic capacity
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.		
Pedestrian and Bicycle Improvements Adds pedestrian and bicycle improvements that fill in system gaps, improve system connectivity, and are accessible to all users.	+2	Significantly improves pedestrian or bicycle connectivity or accessibility
	+1	Improves pedestrian or bicycle connectivity or accessibility
	0	No change
	-1	Reduces pedestrian or bicycle connectivity or accessibility
	-2	Significantly reduces pedestrian or bicycle connectivity or accessibility
Access to Community Destinations Improve walking and biking connections to community destinations such as schools, parks and beach accesses.	+2	Significantly enhances pedestrian or bicycle access to community destinations
	+1	Enhances pedestrian or bicycle access to community destinations
	0	No change
	-1	Reduces pedestrian or bicycle access to community destinations
	-2	Significantly reduces pedestrian or bicycle access to community destinations
Facility Amenities or Furnishings Improves user experience and comfort to encourage higher levels of walking and biking trips (e.g., provide benches, planter strips, lighting, wayfinding)	+2	Significantly improves facility amenities
	+1	Improves facility amenities
	0	No change
	-1	Negatively impacts facility amenities
	-2	Significantly negative impacts on facility amenities

Table 1: Lincoln City TSP Evaluation Criteria and Scoring

Measure of Effectiveness	Evaluation Score	
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.		
Transit Access Improves access to transit facilities. Promotes transit as a viable alternative to the single occupant vehicle.	+2	Significantly improves transit facilities
	+1	Improves transit facilities
	0	No change
	-1	Negatively impacts transit facilities
	-2	Significantly negative impacts on transit facilities
Transit Amenities or Facilities Improves user experience and comfort to encourage higher levels of transit ridership (e.g., provide benches, shelters, lighting, schedules)	+2	Significantly improves amenities or facilities for transit
	+1	Improves amenities or facilities for transit
	0	No change
	-1	Negative impact on amenities or facilities for transit
	-2	Significantly negative impacts on amenities or facilities for transit
Expanded Service Provides new or expanded transit service or access in underserved areas.	+2	Significantly improves transit coverage
	+1	Improves transit coverage
	0	No change
	-1	Negatively impacts transit coverage
	-2	Significantly negative impacts on transit coverage
Goal 4: Provide an equitable, balanced and connected multimodal transportation system.		
Connected System Improves access to all areas of the city.	+2	Significantly increases access to all areas of the city
	+1	Increases access to all areas of the city
	0	No change
	-1	Decreases access to all areas of the city
	-2	Significantly decreases access to all areas of the city
Accommodate all Ages Improves accessibility for all ages and supports travel independence in the city.	+2	Connection or improvement benefits residents of all ages
	+1	Connection or improvement benefits some residents, but not all
	0	No change
	-1	Connection or improvement benefits some residents, but has a negative impact on another age group
	-2	Connection or improvement benefits some residents, but has a negative impact on more than one age group

Table 1: Lincoln City TSP Evaluation Criteria and Scoring

Measure of Effectiveness	Evaluation Score	
Multiple Travel Modes Connection or improvement serves a variety of travel modes.	+2	Serves more than two travel modes
	+1	Serves more than one travel mode
	0	Serves single travel mode
	-1	Serves single travel mode, but has a negative impact on another
	-2	Serves single travel mode, but has negative impact on more than one travel mode
Goal 5: Enhance the health and safety of residents.		
Safety Improves public safety (e.g., street lighting, emergency vehicle access)	+2	Significantly improves public safety
	+1	Improves public safety
	0	No change
	-1	Has potential for reducing public safety
	-2	Has potential for reducing public safety significantly
Health Encourages active living and physical activity.	+2	Significantly encourages active living and physical activity
	+1	Encourages active living and physical activity
	0	No change
	-1	Discourages active living and physical activity
	-2	Significantly discourages active living and physical activity
Street Crossings Enhances street crossings for walking and biking users.	+2	Significantly increases the safety of street crossings for walking and biking users
	+1	Increases the safety of street crossings for walking and biking users
	0	No change
	-1	Decreases the safety of street crossings for walking and biking users
	-2	Significantly decreases the safety of street crossings for walking and biking users
Emergency Routes Enhances awareness and reliability of tsunami evacuation and Seismic Lifeline Routes.	+2	Significantly enhances awareness and reliability of tsunami evacuation and Seismic Lifeline Routes
	+1	Enhances awareness and reliability of tsunami evacuation and Seismic Lifeline Routes
	0	No change
	-1	Worsens awareness and reliability of tsunami evacuation and Seismic Lifeline Routes
	-2	Significantly worsens awareness and reliability of tsunami evacuation and Seismic Lifeline Routes

Table 1: Lincoln City TSP Evaluation Criteria and Scoring

Measure of Effectiveness	Evaluation Score	
Goal 6: Foster a transportation system that contributes to a more livable city.		
Environment Minimizes impact to the natural environment.	+2	Significantly enhances the natural environment
	+1	Enhances the natural environment
	0	No change
	-1	Negatively impacts the natural environment
	-2	Negatively impacts the natural environment in significant ways
Improved Roadway Efficiency Implements Transportation Demand Management (TDM) and Transportation System Management (TSM) or other strategies to create greater mobility, reduce auto trips, make more efficient use of the roadway system, and minimize air pollution.	+2	Significantly improves roadway efficiency
	+1	Improves roadway efficiency
	0	No change
	-1	Negatively impacts roadway efficiency
	-2	Significantly negative impact on roadway efficiency
Livability Streets, bridges, walking and biking facilities, and other public infrastructure add aesthetic value, provide a sense of place, and support scenic overlooks and resources.	+2	Significantly contributes to an aesthetic environment
	+1	Contributes to an aesthetic environment
	0	No change
	-1	Degrades the aesthetic environment
	-2	Significantly degrades the aesthetic environment
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.		
Tourism Increases travel comfort and convenience for tourists in the city (e.g., traveler information and facility amenities).	+2	Significantly enhances travel comfort and convenience for tourists in the city.
	+1	Enhances travel comfort and convenience for tourists in the city.
	0	No change
	-1	Negative impact on travel comfort and convenience for tourists in the city.
	-2	Significantly negative impacts on travel comfort and convenience for tourists in the city.
Freight Improves freight access/connectivity and accommodates deliveries.	+2	Significantly improves freight facilities
	+1	Improves freight facilities
	0	No change
	-1	Negatively impacts freight facilities
	-2	Significantly negative impacts on freight facilities
Corridor Reliability Implements strategies to provide stable and reliable multimodal operations on US 101 and	+2	Significantly improves multimodal operational reliability
	+1	Improves multimodal operational reliability

Table 1: Lincoln City TSP Evaluation Criteria and Scoring

Measure of Effectiveness	Evaluation Score	
along corridors connecting to it.	0	No change
	-1	Negative impact on multimodal operational reliability
	-2	Significantly negative impacts on multimodal operational reliability
Goal 8: Coordinates with local and state agencies and transportation plans.		
No evaluation criteria for Goal 8, this is required for all solutions.		

(This page intentionally left blank)

Section K

Memo: Preliminary Alternatives Development

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

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

MEMORANDUM

DATE: October 24, 2013

TO: Lincoln City TSP Project Management Team

FROM: John Bosket, P.E.
Kevin Chewuk, P.T.P.
Ben Fuller, E.I.T.

SUBJECT: **Lincoln City Transportation System Plan**
Preliminary Alternatives Development Memorandum P11086-010

This memorandum identifies a preliminary set of potential transportation improvement projects to include in the TSP's aspirational project list (i.e., a master list of all projects of interest if funding were not a constraint). Many of the identified projects have not yet been fully vetted and may require further refinement or could be found to be infeasible or undesirable. The objective at this stage is to share these early ideas with community members and get feedback to facilitate the development of an improved list of draft solutions.

This preliminary set of improvements includes projects for all of the major modes of travel in the city (motor vehicle, pedestrian, bicycle, and transit). While some improvements have been identified on US 101, questions regarding the future design of the highway corridor (e.g., how many motor vehicle lanes should be provided) are still being investigated and will be discussed further as more information becomes available.

Projects in this memorandum are broken up into the following modes:

- Transportation System Management (TSM)/Transportation Demand Management (TDM) Projects
- Intersection Capacity Projects (Figure 1)
- Driving Projects (Figure 1)
- Shared-Use Path Projects (Figure 2)
- Sidewalk Projects (Figure 3)
- Bicycle Projects (Figure 4)
- US 101 Crossing Projects (Figure 5)
- Transit Projects (Figures 6, 7, 8, and 9)

Proposed Transportation System Management (TSM) and Transportation Demand Management (TDM) Projects

Project #	Project Name	Project Location	Project Description	Source
M1	Parking Mangement System	Citywide	Install message signs that display available parking at major public parking lots and install public parking signs	New Solution
M2	VMS System	North end of city and south end of city	Displays traveler information at gateways to city on Variable Message Signs (VMS)	New Solution
M3	Tourism Management Policy	Citywide	Develop a fee system that charges tourists for having multiple vehicles at vacation rentals/hotels	New Solution
M4	Business Incentives Program	Citywide	Develop an incentives program for Lincoln City businesses to promote vistors to come earlier and/or stay later, thus reducing peak traffic demands	New Solution

Proposed Intersection Capacity Solutions for the P.M. Peak Hour Summer Condition - See Figure 1

Project #	Project Name	Project Location	Project Description	Source
I1a	NE East Devils Lake Summer Solution	US 101/NE East Devils Lake	Widen west leg to three lanes	New Solution
I2a	Neotsu Summer Solution	US 101/Neotsu	Widen west leg to three lanes	New Solution
I3a	NE West Devils Lake Summer Solution	US 101/NE West Devils Lake	Widen US 101 to five lanes and run interconnect to NW Logan	New Solution
I4a	NW Logan Summer Solution	US 101/NW Logan	Add a second northbound left turn lane, reconfigure the middle eastbound lane to allow right turns, and run interconnect to NE West Devils Lake	New Solution
I5a	NE Holmes Summer Solution	US 101/NE Holmes	Widen US 101 to five lanes	New Solution
I6a	NW 30th Summer Solution	US 101/NW 30th	Widen US 101 to five lanes	New Solution
I7a	NW 22nd Summer Solution	US 101/NW 22nd	Add a northbound right turn lane and restrict the westbound left movement	New Solution
I8a	NW 14th Summer Solution	US 101/NW 14th	Restrict the southbound left movement and add either a second westbound lane or add a northbound right turn lane	New Solution
I9a	City Hall Summer Solution	US 101/City Hall	Add a southbound right turn lane	New Solution
I10a	SW 12th Summer Solution	US 101/SW 12th	Restrict the eastbound left and eastbound through movements	New Solution
I11a	SE 14th Summer Solution	US 101/SE 14th	Add a second northbound lane and install a traffic signal with protective-permissive phasing for the mainline	New Solution
I12a	SE 19th Summer Solution	US 101/SE 19th	Add a second northbound lane; note property impacts to east side	New Solution
I13a	SW 29th Summer Solution	US 101/SW 29th	Widen US 101 to five lanes; note property impacts to east side	New Solution
I14a	SW 32nd Summer Solution	US 101/SW 32nd	Implement alternative mobility target, and reduce demand through TSM and TDM projects	New Solution
I15a	High School Summer Solution	US 101/High School	Widen US 101 to five lanes	New Solution

Proposed Intersection Capacity Solutions for the P.M. Peak Hour Average Weekday Condition - See Figure 1

Project #	Project Name	Project Location	Project Description	Source
I3b	NE West Devils Lake AWD Solution	US 101/NE West Devils Lake	Widen US 101 to five lanes and run interconnect to NW Logan	New Solution
I4b	NW Logan AWD Solution	US 101/NW Logan	Run interconnect to NE West Devils Lake	New Solution
I11b	SE 14th AWD Solution	US 101/SE 14th	Add a second northbound lane and install a traffic signal	New Solution
I14b	SW 32nd AWD Solution	US 101/SW 32nd	Implement alternative mobility target, and reduce demand through TSM and TDM projects	New Solution

Proposed Driving Projects - See Figure 1

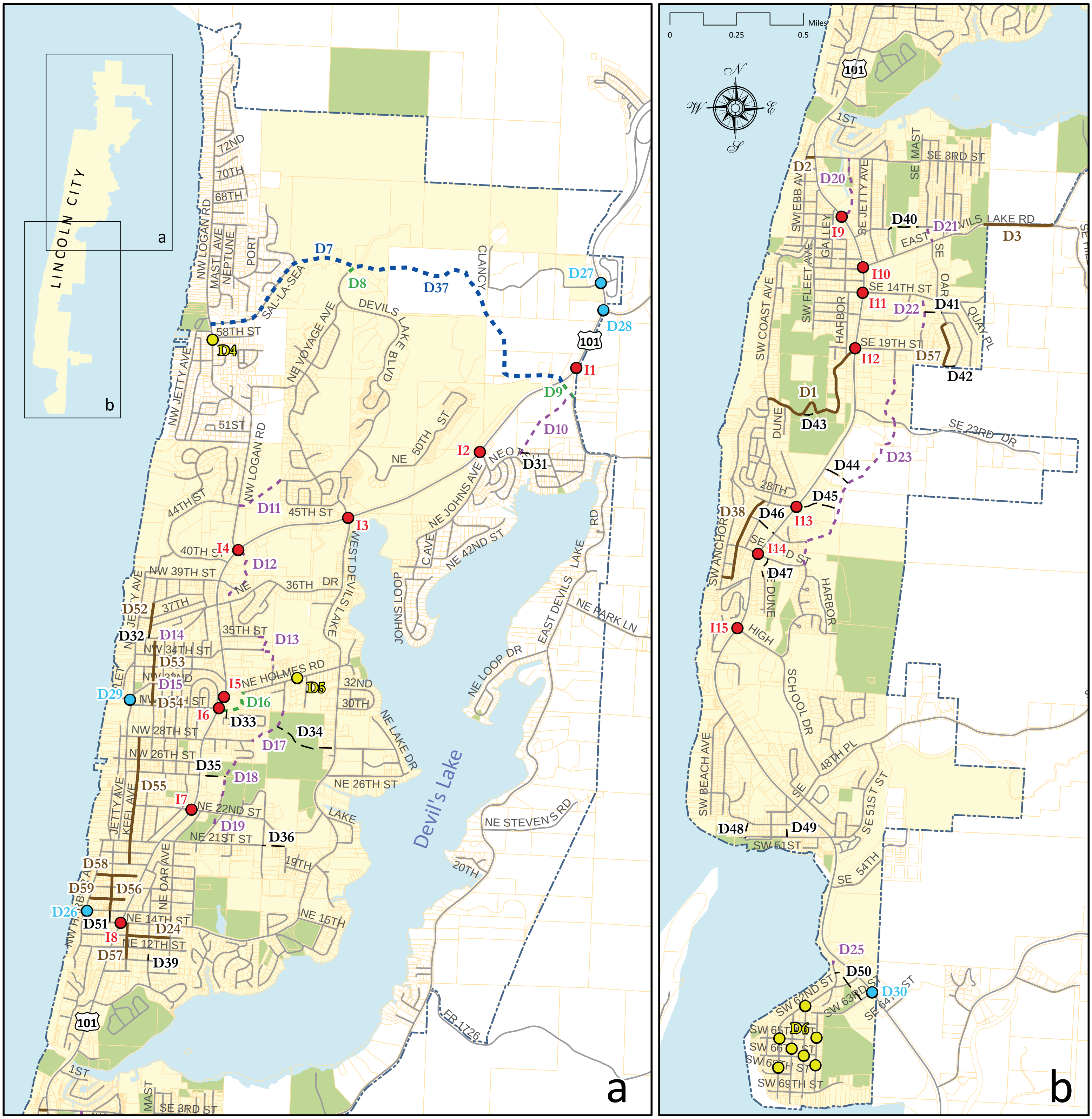
Project #	Project Name	Project Location	Project Description	Source
D1	Bard Improvements	SW Bard Rd (US 101 to SW Coast Ave)	Improve existing facilities	Lincoln City Transportation Master Plan
D2	SW 3rd One-Way Conversion	SW 3rd St (US 101 to SW Ebb Ave)	Convert SW 3rd St to one-way travel, allowing motor vehicles to only travel west; improvement includes a westbound bike lane (see project B33)	New Solution
D3	NE East Devils Lake Flood Prevention	NE East Devils Lake Rd (SE Port Ave to east of S Hill Rd)	Need to elevate roadway identified in Lincoln County TSP; work with county to develop a long-term solution to avoid flooding; improvements should include a shared-use path on the north side (see project S71)	Issue noted in Lincoln County TSP
D4	Roads End Traffic Calming	NW Logan Rd near NE 58th St	Install speed feedback signs	New Solution
D5	NE Holmes Traffic Calming	Along NE Holmes Rd	Install speed feedback signs	New Solution
D6	Cutler Traffic Calming	SW 62nd St at SW Harbor Ave; SW Fleet Ave at SW 65th St; SW Fleet Ave at playground; SW Galley Ave at church; SW Harbor Ave at SW 66th St; SW Inlet Ave at north wetland access; SW Inlet Ave at south wetland access	Install speed tables at high pedestrian demand locations throughout the Cutler area	Cutler District Community Vision & Corridor Plan
D7	Sal La Sea Extension - Phase 1	NE Sal La Sea Dr from NW Logan Road to proposed NE West Devils Lake Blvd extension	Extend Sal La Sea from NW Logan Rd to the proposed NE West Devils Lake Blvd extension, and upgrade existing facility to minor collector classification	New Solution
D8	NE West Devils Lake Extension	NE West Devils Lake Blvd to future NE Sal La Sea Dr extension	Extend West Devils Lake Blvd to connect to the future Sal La Sea Dr extension	New Solution
D9	NE East Devils Lake Realignment	NE East Devils Lake Rd at future NE Sal La Sea Dr intersection at US 101	Realign NE East Devils Lake Rd to connect with the future NE Sal La Sea Dr intersection at US 101; improvement includes developing a shared-use path along the west side of the facility (see project S66)	New Solution
D10	Neotsu Minor Collector	NE Neotsu Dr at NE I Ave to NE East Devils Lake Rd	Create new future minor collector to parallel US 101 with bike lanes and sidewalks (see projects P42 and B3)	Lincoln City Transportation Master Plan
D11	NE 47th Extension	NE 47th St to NW 44th St at NW Logan Rd	Extend NE 47th St to the intersection of NW 44th St and NW Logan Rd; improvement includes sidewalks (see project P2)	Lincoln City Transportation Master Plan

D12	McDonalds Access Extension	McDonalds Access from US 101 to NE 36th Dr at NE Quay Ave	Create a new minor collector roadway from the McDonalds driveway to NE 36th; improvement includes sidewalks (see project P4)	Lincoln City Transportation Master Plan
D13	NE Surf Extension	NE Surf Ave to NE 35th St	Extend NE Surf Ave to NE 35th St, while also connecting to NE 34th St; improvement includes sidewalks (see project P8)	New Solution
D14	North NW Lee Extension	NE Lee Ave to NW 35th Pl	Extend NE Lee Ave to NW 35th Pl as a one-way street with a shared-use path (see project S14)	New Solution
D15	South NW Lee Extension	NE Lee Ave to NW 31st Pl	Extend NE Lee Ave to NW 31st Pl as a one-ay street with a shared-use path (see project S14)	New Solution
D16	Holmes Road Realignment	NE Holmes Rd to NW 30th St	Realign NE Holmes Rd to connect with NW 30th St at US 101; improvement includes bike lanes and sidewalks (see projects P17 and B5)	Lincoln City Transportation Master Plan
D17	NE Tide Extension	NE Tide Ave to NE 28th St	Extend NE Tide Ave to NE 28th St; improvement includes bike lanes and sidewalks (see projects P18 and B8)	New Solution
D18	NE Quay Extension	NE Quay Ave from NE 22nd St to NE 27th Dr	Extend NE Quay Ave to NE 27th Drive, while also connecting to NE 25th St; improvement includes sidewalks (see project P27)	Lincoln City Transportation Master Plan
D19	NE Quay Realignment	NE Quay Pl at NE 22nd to NE Quay Ave	Realign NE Quay Pl to connect to NE Quay Ave	Lincoln City Transportation Master Plan
D20	SE Harbor Extension	SE Harbor Ave to US 101 at Burger King access	Extend SE Harbor Ave to the signalized access at Burger King; improvement includes bike lanes and sidewalks (see projects P45 and B16)	Lincoln City Transportation Master Plan
D21	SE Neptune Extension	SE Neptune Ave to SE East Devils Lake Rd at SE Oar Ave	Extend SE Neptune Ave to SE East Devils Lake Rd at SE Oar Ave; install sidewalks along the east side and a shared-use path along the west side (see projects S28 and P51)	New Solution
D22	SE Mast Extension	SE Mast Ave to SE 14th St	Extend SE Mast Ave to SE 14th St	Lincoln City Transportation Master Plan
D23	SE Lee Extension	SE Lee Ave to SE 32nd St	Extend SE Lee Ave to SE 32nd St, while also connecting to stub streets east of US 101; install sidewalks along the west side and a shared use-path along the east side (see projects S32 and P70)	Lincoln City Transportation Master Plan
D24	NE 13th One-Way Conversion	NE 13th St from NE Keel Ave to NE Oar Ave	Convert NE 13th St from NW Keel Ave to NE Oar Ave as a one-way street with a shared-use path (see project S43)	New Solution
D25	SW Jetty Realignment	SW Jetty Ave at US 101	Realign SW Jetty Ave to perdendicularly connect to US 101, and improve SW Jetty Ave as a two-way minor collector; realignment includes developing a shared-use path along the west side and sidewalks on the east side (see projects S59 and P93)	Cutler District Community Vision & Corridor Plan

D26	NW 15th Beach Access Intersection Solution	NW 15th/NW Harbor	Improve intersection alignment and widen beach access roadway	New Solution
D27	N Clancy Safety Solution	US 101/N Clancy	Add a northbound left turn refuge	Lincoln City Transportation Master Plan
D28	NE Highland Safety Solution	US 101/NE Highland	Add a southbound left turn refuge	Lincoln City Transportation Master Plan
D29	NW Jetty Realignment	NW Jetty/NW 31st	Realign roadway to smooth curves	Lincoln City Transportation Master Plan
D30	SW 63rd Turnaround	US 101/SW 63rd	Add a turnaround on the east side of US 101 to allow for southbound traffic to make safe u-turns	Cutler District Community Vision & Corridor Plan
D31	NE 50th Extension	NE 50th St to proposed Neotsu minor collector	Extend NE 50th St to the future planned minor collector in Neotsu	New Solution
D32	NW Keel Extension	NW Keel Ave to NW 35th Pl	Extend NW Keel Ave south to NW 35th Pl	Lincoln City Transportation Master Plan
D33	NE 29th Connection	NE 29th St to realigned NE Holmes Rd	Create new local connection from NE 29th St to the proposed realigned NE Holmes Rd	New Solution
D34	NE 28th Extension	NE 28th St from NE West Devils Lake Rd to proposed NE Tide Ave extension	Extend NE 28th St west from NE West Devils Lake Rd to the proposed NE Tide Ave extension; improvement includes bike lanes and sidewalks (see project P20 and B9)	New Solution
D35	NE 25th Extension	NE 25th St to proposed NE Quay Ave extension	Extend NE 25th St to the proposed NE Quay Ave extension; improvement includes sidewalks (see project P25)	New Solution
D36	NE 21st Extension	NE 21st St to NE Tide Ave	Extend NE 21st St from NE Surf Ave to NE Tide Ave; improvement includes sidewalks (see project P30)	New Solution
D37	Sal La Sea Extension - Phase 2	NE Sal La Sea Dr from proposed NE West Devils Lake Blvd extension to US 101 at NE East Devils Lake Rd	Extend Sal La Sea from the proposed NE West Devils Lake Blvd extension to US 101 at NE East Devils Lake	New Solution
D38	SW Beach Ave Conversion	SW Beach Ave from SW 29th St to SW 34th St, and SW 34th St	Convert both SW 34th St and SW Beach Ave from SW 29th St to SW 34th St as one-way streets with a shared use path on the east side of SW Beach Ave and south side of SW 34th St	New Solution
D39	NE Mast Gap	NE Mast Ave from NE 13th St to NE 12th St	Connect the NE Mast Ave gap from NE 13th St to NE 12th St	New Solution
D40	SE 8th Extension	NE 8th St from SE Netpune Ave to SE 9th St	Extend NE 8th St from SE Neptune Ave to SE 9th St; install sidewalks along the north side, and a shared-use path on the south side (see projects S27 and P48)	New Solution

D41	SE Port Extension	SE Port Ave from SE Oar Ave to proposed SE Mast Ave extension	Extend SE Port Ave from SE Oar Ave to the proposed SE Mast Ave extension	New Solution
D42	Port to Oar Extension	South end of SE Oar Dr to south end of S Port Dr	Create new one-way local connection from the south end of SE Oar Dr to the south end of S Port Dr with sidewalks on both sides (see project P61)	New Solution
D43	SW Bard Realignment	SW Bard Rd (US 101 to SW Coast Ave)	Realign SW Bard Rd	New Solution
D44	SE 27th St Extension	SE 27th St from US 101 to the proposed SE Lee Ave extension	Extend SE 27th St east to the proposed SE Lee Ave extension, and upgrade existing facility; improvement includes sidewalks (see project P72)	New Solution
D45	SE 28th St Realignment	SE 28th St from US 101 to the proposed SE Lee Ave extension	Realign SE 28th St to the intersection of US 101 and SW 29th St, extend SE 28th St east to the proposed SE Lee Ave extension, and upgrade existing facility; install sidewalks along the north side and a shared-use path along the south side (see projects S51 and P73)	Nelscott Community Vision Plan
D46	SW 30th Extension	SW 30th St from SW Coast Ave to US 101 at SE 31st St	Extend SW 30th St from SW Coast Ave to US 101 at SE 31st St; improvement includes sidewalks (see project P74)	Nelscott Community Vision Plan
D47	SE Dune Extension	SE Dune Ave from SE 35th St to the SE 32nd St	Extend SE Dune Ave from SE 35th St to SE 32nd St, and close existing US 101 access; improvement includes sidewalks (see project P78)	Nelscott Community Vision Plan
D48	Taft Beach Parking Local Connection	West end of SW 51st St to SW 50th St	Create a new local connection from the west end of SW 51st St to SW 50th St; install sidewalks on the east side of the street and a shared-use path on the west side (see projects S56 and P88)	Taft Redevelopment Plan
D49	SW Fleet Extension	SW Fleet Ave from SW 50th St to SW 51st St	Extend SW Fleet Ave from SW 50th St to SW 51st St; improvement includes sidewalks (see project P89)	Taft Redevelopment Plan
D50	SW Keel Connection	SW Keel Ave from SW 63rd St to SW Jetty Ave	Create a new local connection from SW 63rd St to SW Jetty Ave; improvements include sidewalks along the east side and a shared-use path along the west side (see project S60 and P92)	Cutler District Community Vision & Corridor Plan
D51	NW Jetty Extension	NW Jetty Ave from NW 15th St to NW 14th St	Extend NW Jetty Ave from NW 15th St to NW 14th St as a one-way street with a shared-use path on the east side and sidewalks on the west side (see projects S19 and P99)	Oceanlake Redevelopment Plan
D52	Wecoma One-Way Conversion - Phase 1	NW Keel Ave from NW 38th St to NW 35th Pl	Convert NW Keel Ave from NW 38th St to NW 35th Pl as a one-way street with a shared-use path (see project S13)	New Solution
D53	Wecoma One-Way Conversion - Phase 2	NW Lee Ave from NW 35th Pl to NW 32nd St	Convert NE Lee Ave from NW 35th Pl to NW 32nd St as a one-way street with a shared-use path (see project S14)	New Solution
D54	Wecoma One-Way Conversion - Phase 3	NW Lee Ave from NW 32nd St to NW 30th St	Convert NE Lee Ave from NW 32nd St to NW 30th St as a one-way street with a shared-use path (see project S14)	New Solution

D55	Wecoma One-Way Conversion - Phase 4	NW Keel Ave from NW 28th St to NW 19th St	Convert NW Keel Ave from NW 28th St to NW 19th St as a one-way street with a shared-use path (see project S16)	New Solution
D56	Wecoma One-Way Conversion - Phase 5	East side of NW Jetty Ave from NW 18th St to NW 15th St	Convert NW Jetty Ave from NW 18th St to NW 15th St as a one-way street with a shared-use path (see project S18)	New Solution
D57	Hillcrest Vale One-Way Conversion	SE Oar Dr	Convert SE Oar Dr to a one-way street with a shared-use path on the east side and sidewalks on the west side, and repave (see projects S30 and P61)	New Solution
D58	NW 18th Shared Roadway	NW 18th St from NW Jetty Ave to pedestrian plaza at US 101	Convert NW 18th St to a shared roadway for pedestrians and bicyclists; improvements may include raised intersections, signage, pavers, lighting, landscaping, and traffic calming (vehicles should be slowed to 10 mph)	New Solution
D59	NW 16th Shared Roadway	NW 16th St from NW Harbor Ave to pedestrian plaza at US 101	Convert NW 16th St to a shared roadway for pedestrians and bicyclists; improvements may include raised intersections, signage, pavers, lighting, landscaping, and traffic calming (vehicles should be slowed to 10 mph)	New Solution



1 Proposed Driving Improvements

Lincoln City

Transportation System Plan

Proposed Driving Improvements

- Proposed Minor Arterial
- Proposed Major Collector
- Proposed Minor Collector
- Proposed Local
- Proposed Street Upgrade
- Proposed Intersection Capacity Improvement
- Proposed Intersection Safety Improvement
- Proposed Speed Management
- X# Transportation System Plan Project #
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

Proposed Shared-Use Projects - See Figure 2

Project #	Project Name	Project Location	Project Description	Source
S1	NW Logan Path - Phase 1	East side of NW Logan Rd from NW 50th St to NE Sal La Sea Dr	Create a shared-use path on the east side of NW Logan Road from NW 50th St to NE Sal La Sea Dr	High-Use (Walking & Biking Plan)
S2	NW Logan Path - Phase 2	East side of NW Logan Rd from NE Sa La Sea Dr to north extent	Create a shared-use path on the east side of NW Logan Road from NE Sal La Sea Dr to the north end of NW Logan Road	High-Use (Walking & Biking Plan)
S3	NE Sal La Sea Path - Phase 1	South side of NE Sa La Sea Dr from NW Logan Rd to NE West Devils Lake Blvd	Create a shared-use path on the south side of NE Sa La Sea Dr from NW Logan to the proposed intersection of NE Sal La Sea Dr and NE West Devils Lake Blvd (see project D7)	New Solution (Planned High-Use)
S4	NE Sal La Sea Path - Phase 2	South side of NE Sa La Sea Dr from NE West Devils Lake Blvd to US 101	Create a shared-use path on the south side of the proposed NE Sa La Sea Dr extension from NE West Devils Lake Blvd to US 101 (see project D7)	New Solution (Planned High-Use)
S5	Head to Bay Trail Expansion - Phase 1	West side of NE West Devils Lake Blvd from US 101 to NE 47th St	Replace existing sidewalk on the west side of NE West Devils Lake Blvd from US 101 to NE 47th St with a shared-use path	Medium-Use (Walking & Biking Plan)
S6	Head to Bay Trail Expansion - Phase 2	West side of NE West Devils Lake Blvd along proposed extension	Create a shared-use path on the west side of the proposed NE West Devils Lake Blvd extension (see project D8)	New Solution (Planned Medium-Use)
S7	North City Highway Path - Phase 1	South side of US 101 form NW Logan Rd to NE West Devils Lake Rd	Create a shared-use path on the south side of US 101 from NW Logan Rd to NE West Devils Lake Rd (coordinate with potential highway widening project)	US 101 (Walking & Biking Plan)
S8	North City Highway Path - Phase 2	South side of US 101 form NE West Devils Lake Rd to NE Neotsu Dr	Create a shared-use path on the south side of US 101 from NE West Devils Lake Rd to NE Neotsu Dr (coordinate with potential highway widening project)	US 101 (Walking & Biking Plan)
S9	North City Highway Path - Phase 3	South side of US 101 form NE Neotsu Dr to NE East Devils Lake Rd	Create a shared-use path on the south side of US 101 from NE Neotsu Dr to NE East Devils Lake Rd (coordinate with potential highway widening project)	US 101 (Walking & Biking Plan)
S10	Wecoma Path - Phase 1	From the NW Mast Ave alignment at NW 40th St, north through the parking lot to NW 44th St, just east of the casino	Create a shared-use path through the casino parking lot from the NW Mast Ave alignment at NW 40th St to NW 44th St, just east of the casino	New Solution (Planned Medium-Use)
S11	Wecoma Path - Phase 2	From NW 39th St at NW Mast Ave, north to NW 40th St	Create a shared-use path from NW 39th at NW Mast Ave, north to NW 40th St	New Solution (Planned Medium-Use)

S12	Wecoma Path - Phase 3	West side of NW Mast Ave from NW 39th St to NW 38th St, and north side of NW 38th St from NW Mast Ave to NW Keel Ave	Create a shared-use path on the west side of NW Mast Ave from NW 39th St to NW 38th St, and on the north side of NW 38th St from NW Mast Ave to NW Keel Ave	Medium-Use (Walking & Biking Plan)
S13	Wecoma Path - Phase 4	West side of NW Keel Ave from NW 38th St to NW 35th Pl	Create a shared-use path on the west side of NW Keel Ave from NW 38th St to NW 35th Pl; convert NW Keel Ave to a one-way street (see project D52)	New Solution (Planned Medium-Use)
S14	Wecoma Path - Phase 5	West side of NW Lee Ave from NW 35th Pl to NW 30th St	Create a shared-use path on the west side of NW Lee Ave from NE 35th Pl to NW 30th St; convert NW Lee Ave to a one-way street (see projects D14, D15, D53 and D54)	Medium-Use (Walking & Biking Plan)
S15	Wecoma Path - Phase 6	From NW Lee Ave at NW 30th St to NW Keel Ave at NW 28th St	Create a shared-use path from NW Lee Ave at NW 30th St to NW Keel Ave at NW 28th St	New Solution (Planned Medium-Use)
S16	Wecoma Path - Phase 7	West side of NW Keel Ave from NW 28th St to NW 19th St	Create a shared-use path on the west side of NW Keel Ave from NW 28th St to NW 19th St; convert NW Keel Ave to a one-way street (see project D55)	Medium-Use (Walking & Biking Plan)
S17	Wecoma Path - Phase 8	From NW 19th St to NW 18th St, east of the church	Create a shared-use path along the east side of the church from NW 19th St to NW 18th St	New Solution (Planned Medium-Use)
S18	Wecoma Path - Phase 9	East side of NW Jetty Ave from NW 18th St to NW 15th St	Create a shared-use path along the east side of NW Jetty Ave from NW 18th St to NW 15th St; convert NW Jetty Ave to a one-way street (see project D56)	High-Use (Walking & Biking Plan)
S19	Wecoma Path - Phase 10	East side of NW Jetty extension from NW 15th St to NW 14th St	Create a shared-use path along the east side of the proposed NW Jetty Ave extension from NW 15th St to NW 14th St (see project D51)	Oceanlake Redevelopment Plan (Planned High-Use)
S20	East Delake Path - Phase 1	West side of NE Keel Ave from NE 14th St to NE 10th St	Create a shared-use path along the west side of NE Keel Ave from NE 14th St to NE 10th St; convert NE Keel from NE 14th St to NE 11th St to a one-way street (see project D57)	Medium-Use (Walking & Biking Plan)
S21	East Delake Path - Phase 2	South side of NE 10th St from NE Keel Ave to approximately 150 feet east of the dead-end, and then south to NE 6th Dr	Create a shared-use path along the south side of NE 10th St from NE Keel Ave to approximately 150 feet east of the dead-end, and then south to NE 6th Dr	New Solution (Planned Medium-Use)
S22	East Delake Path - Phase 3	South side of NE 6th Dr from approximately 150 feet east of the NE 10th St dead-end to just west of Devils Lake State Park	Create a shared-use path along the south side of NE 6th Dr from approximately 150 feet east of the NE 10th St dead-end to just west of Devils Lake State Park	Medium-Use (Walking & Biking Plan)

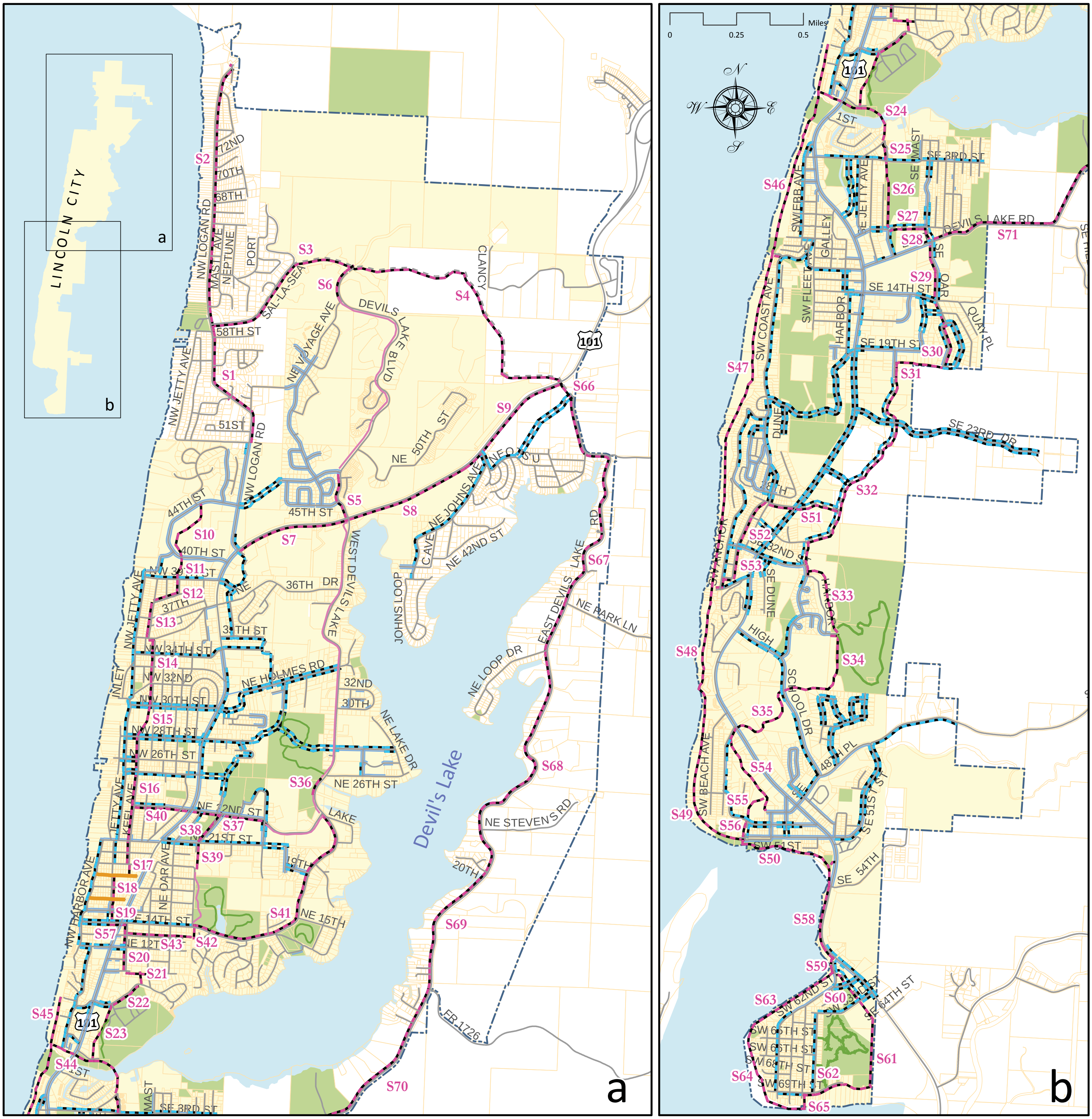
S23	East Delake Path - Phase 4	From just west of Devils Lake State Park, south to NE 1st St	Create a shared-use path from just west of Devils Lake State Park, south to NE 1st St	New Solution (Alternative US 101 Path)
S24	East Delake Path - Phase 5	Along NE 1st St from the Devils Lake State Park connection, across Devils Lake, and to SE Keel Ave	Create a shared-use path along NE 1st St from the Devils Lake State Park connection, across Devils Lake on a shared-use path bridge, and south to SE Keel Ave	New Solution (Alternative US 101 Path)
S25	East Delake Path - Phase 6	West side of SW Keel Ave from SE 2nd Pl to SE 3rd St	Create a shared-use path along the west side of SW Keel Ave from SE 2nd Pl to SE 3rd St	New Solution (Alternative US 101 Path)
S26	East Delake Path - Phase 7	From SE Keel Ave at SE 3rd St to Police Department at SE 9th St	Create a shared-use path from SE Keel Ave at SE 3rd St to Police Department at SE 9th St	New Solution (Planned Low-Use)
S27	East Delake Path - Phase 8	South side of proposed SE 8th extension	Create a shared-use path along the south side of the proposed SE 8th St extension (see project D40)	New Solution (Planned Medium-Use)
S28	East Delake Path - Phase 9	West side of proposed SE Neptune extension	Create a shared-use path along the west side of the proposed SE Neptune Ave extension (see project D21)	Medium-Use (Walking & Biking Plan)
S29	East Delake Path - Phase 10	West side of SE Oar Ave from SE East Devils Lake Rd to SE Oar Dr	Create a shared-use path along the west side of SE Oar Ave from SE East Devils Lake Rd to SE Oar Dr	Medium-Use (Walking & Biking Plan)
S30	East Delake Path - Phase 11	East side of SE Oar Dr from SE Oar Ave to dead-end	Create a shared-use path along the east side of SE Oar Dr from SE Oar Ave to the dead-end (see project D57)	Low-Use (Walking & Biking Plan)
S31	East Nelscott Path - Phase 1	South end of SE Oar Dr to SE Lee Ave via a path just north of the water tank, and then south along the east side of SE Lee Ave to the dead-end	Create a shared-use path from the south end of SE Oar Dr to SE Lee Ave via a path just north of the water tank, and then south along the east side of SE Lee Ave to the dead-end	Medium-Use (Walking & Biking Plan)
S32	East Nelscott Path - Phase 2	East side of proposed SE Lee Ave extension	Create a shared-use path along the east side of the proposed SE Lee Ave extension (see project D23)	New Solution (Planned Medium-Use)
S33	East Nelscott Path - Phase 3	East side of SE Fleet Ave from SE 32nd Ave to just north of SE Harbor Dr, and then parallel with SE Harbor Dr to the east to dead-end of SE Spy Glass Ridge Dr	Create a shared-use path along the east side of SE Fleet Ave from SE 32nd Ave to just north of SE Harbor Dr, and then parallel with SE Harbor Dr to the east to the dead-end of SE Spy Glass Ridge Dr	New Solution (Alternative US 101 Path)
S34	East Nelscott Path - Phase 4	East and south borders of the high school from SE Spy Glass Ridge Dr to SE High School near the pedestrian crossing	Create a shared-use path along the east and south borders of the highschool, connecting the dead-end of SE Spy Glass Ridge Dr to SE High School Dr near the pedestrian crossing	New Solution (Alternative US 101 Path)

S35	East Nelscott Path - Phase 5	Along existing trail that borders baseball field from SE High School Dr, and connects to US 101/SW Coast Ave intersection	Create a shared-use path along the existing trail that borders the baseball field at SE High School Dr, and connects to the US 101/SW Coast Ave intersection	New Solution (Planned Medium-Use)
S36	Head to Bay Trail Expansion - Phase 3	West side of NE West Devils Lake Rd between NE 22nd St and NE 26th St	Fill gap in Head to Bay path along the west side of NE West Devils Lake Rd between NE 22nd St and NE 26th St	High-Use (Walking & Biking Plan)
S37	Head to Bay Trail Expansion - Phase 4	South side of NE 22nd St from US 101 to NE Surf Ave	Replace existing sidewalk along the south side of NE 22nd St with a shared-use path from US 101 to NE Surf Ave	High-Use (Walking & Biking Plan)
S38	Head to Bay Trail Expansion - Phase 5	West side of NE Quay Pl from NE 22nd St to NE 21st St	Create a shared-use path along the west side of NE Quay Pl from NE 22nd St to NE 21st St	Low-Use (Walking & Biking Plan)
S39	Head to Bay Trail Expansion - Phase 6	East side of NE Port Ave from NE 21st St to NE 18th St	Create a shared-use path along the east side of NE Port Ave from NE 21st St to the existing trail at NE 18th St; improvement will include a boardwalk between approximately NE 19th St and NE 20th St	Planned Project
S40	NW 22nd Path	South side of NW 22nd St from US 101 to NW Keel Ave	Create a shared-use path along the south side of NW 22nd St from US 101 to NW Keel Ave	Medium-Use (Walking & Biking Plan)
S41	Head to Bay Trail Extension Path	West side of NE West Devils Lake from NE 22nd St to NE Port Ave	Create a shared-use path along the west side of NE West Devils Lake from NE 22nd St to NE Port Ave	High-Use (Walking & Biking Plan)
S42	NE 13th St Path - Phase 1	East from the NE 13th St dead-end, and north along the NE Port Ave right-of-way to the NE 14th St/NE Port Ave intersection	Create a shared-use path that travels east from the dead-end of NE 13th St until the NE Port Ave alignment, and the north to the NE Port Ave/NE 14th St intersection	New Solution (Planned Medium-Use)
S43	NE 13th St Path - Phase 2	North side of NE 13th St from dead-end to NE Keel Ave	Create a shared-use path along the north side of NE 13th St from the dead-end to NE Keel Ave; convert NE 13th St to a one-way street (see project D24)	Medium-Use (Walking & Biking Plan)
S44	East Delake Path to Beach Connection	South side of NE 1st St, across US 101, and to beach trail (between Shearwater Inn and Kyllo's)	Create a shared-use path along the south side of NE 1st St that crosses US 101 with a grade separation and continues to the beach trail, running between Shearwater Inn and Kyllo's	New Solution (Alternative US 101 Path)
S45	City Beach Path - Phase 1	Along beach from NW 6th Ct to south end of "D" River Beach Wayside parking lot	Create a shared-use path along the beach from NW 6th Ct to the south end of "D" River Beach Wayside parking lot; improvement will include a bridge crossing D River	New Solution (Alternative US 101 Path)

S46	City Beach Path - Phase 2	Along beach from south end of "D" River Beach Wayside parking lot to beach access at SW Coast Ave and SW 11th Dr	Create a shared-use path along the beach from the south end of "D" River Beach Wayside parking lot to the beach access at SW 11th Dr	New Solution (Alternative US 101 Path)
S47	City Beach Path - Phase 3	Along beach from beach access at SW 11th Dr to beach access at SW 35th St	Create a shared-use path along the beach from the beach access at SW 11th Dr to the beach access at SW 35th St	New Solution (Alternative US 101 Path)
S48	City Beach Path - Phase 4	Along beach from beach access at SW 35th St to beach access at SW 44th St	Create a shared-use path along the beach from the beach access at SW 35th St to SW 44th St	New Solution (Alternative US 101 Path)
S49	City Beach Path - Phase 5	Along beach from beach access at SW 44th St to west end of SW 51st St	Create a shared-use path along the beach from the beach access at SW 44th St the the west end of SW 51st St	New Solution (Alternative US 101 Path)
S50	City Beach Path - Phase 6	Along beach from west end of SW 51st St to Siletz Park	Create a shared-use path along the beach from the west end of SW 51st St to Siletz Park	New Solution (Alternative US 101 Path)
S51	SE 28th Extension Path	South side of proposed SE 28th St extension	Create a shared-use path along the south side of the proposed SE 28th St extension (see project D45)	Nelscott Community Vision Plan (Planned Medium-Use)
S52	SW 35th Beach Access Path - Phase 1	South side of SW 29th St from US 101 to SW Beach Ave	Create a shared-use path along the south side of SW 29th St from US 101 to SW Beach Ave	Medium-Use (Walking & Biking Plan)
S53	SW 35th Beach Access Path - Phase 2	East side of SW Beach Ave from SW 29th St to SW 34th St, south side of SW 34th St, and east side of SW Anchor Ave from SW 34th St to SW 35th St	Create a shared-use path along the east side of SW Beach Ave from SW 29th St to SW 34th St, south side of SW 34th St, and east side of SW Anchor Ave from SW 34th St SW 35th St; convert both SW 34th St and SW Beach Ave from SW 29th St to SW 34th St as one-way streets (see project D58)	Medium-Use (Walking & Biking Plan)
S54	Taft Path - Phase 1	Starts at east side of SW Coast Ave at US 101, and continues south behind US 101 properties to SW 48th St	Create a shared-use path that begins at the east side of SW Coast Ave at US 101, and continues south behind US 101 properties to SW 48th St	New Solution (Alternative US 101 Path)
S55	Taft Path - Phase 2	From the first couple hundred feet from SW 48th St along the Phase 1 path to the proposed terminus of Taft Beach Parking Local Connection	Create a shared-use path that connects along the Phase 1 path (a couple hundred feet out from SW 48th St) from the propsed terminus of the Taft Beach Parking Local Connection	New Solution (Alternative US 101 Path)
S56	Taft Path - Phase 3	West side of the proposed Taft Beach Parking Local Connection	Create a shared-use path along the west side of the proposed Taft Beach Parking Local Connection (see project D48)	Taft Redevelopment Plan (Planned High-Use)

S57	North 14th Parth	South side of NW 14th St/NE 14th St from the proposed NW Jetty Ave extension to NE Keel Ave	Create a shared-use path along the south side of NW 14th St/NE 14th St from the proposed NW Jetty Ave extension to NE Keel Ave	New Solution (Alternative US 101 Path)
S58	Taft to Cutler Path	West side of US 101 from Siletz Park to SW Jetty Ave	Create a shared-use path along the west side of US 101 from Siletz Park to SW Jetty Ave; improvements will include the BayWalk Bridge across Schooner Creek	Cutler Community Vision & Corridor Plan - Improved
S59	SW Jetty Path	West side of proposed SW Jetty Ave realignment	Create a shared-use path along the west side of the proposed SW Jetty Ave realignment (see project D25)	Cutler Community Vision & Corridor Plan - Improved
S60	SW Keel Path	West side of proposed SW Keel Avenue	Create a shared-use path along the west side of the proposed SW Keel Ave facility (see project D50)	Cutler Community Vision & Corridor Plan - Improved
S61	Cutler Wetland Park Path - Phase 1	East and south borders the Cutler Wetland Park, from the proposed terminus of SW Keel Ave at SW 63rd St to the east end of SW 69th St	Create a shared-use path that borders the east and south side of the Cutler Wetland Park, from the proposed terminus of SW Keel Ave at SW 63rd St to the east end of SW 69th St	Cutler Community Vision & Corridor Plan - Improved
S62	Cutler Wetland Park Path - Phase 2	South side of SW 69th St from SW Harbor Ave to the east end of SW 69th St	Create a shared-use path along the south side of SW 69th St from SW Harbor Ave to the east end of SW 69th St	Cutler Community Vision & Corridor Plan - Improved
S63	Cutler Beach Path - Phase 1	Along the beach from SW Jetty Ave to SW 65th St	Create a shared-use path along the beach from SW Jetty Ave to SW 65th St	Cutler Community Vision & Corridor Plan - Improved
S64	Cutler Beach Path - Phase 2	Along the beach from SW 65th St to SW 69th St	Create a shared-use path along the beach from SW 65th St to SW 69th St	Cutler Community Vision & Corridor Plan - Improved
S65	Cutler Beach Path - Phase 3	Along the beach from SW 69th St to SW Harbor Ave, and along the east side of SW Harbor Ave from the beach to SW 69th St	Create a shared-use path along the beach from SW 69th St to SW Harbor Ave, and along the east side of SW Harbor Ave from the beach to SW 69th St	Cutler Community Vision & Corridor Plan - Improved

S66	East Devils Lake Path - Phase 1	West side of proposed NE East Devils Lake Rd realignment at US 101	Create a shared-use path along the proposed NE East Devils Lake Rd realignment at US 101 (see project D9)	High-Use (Walking & Biking Plan)
S67	East Devils Lake Path - Phase 2	West side of NE East Devils Lake Rd from the proposed realignment to NE Loop Dr	Create a shared-use path along the west side of NE East Devils Lake Rd from the proposed realignment to NE Loop Dr	High-Use (Walking & Biking Plan)
S68	East Devils Lake Path - Phase 3	West side of NE Devils Lake Rd from NE Loop Dr to NE 20th St	Create a shared-use path along the west side of NE East Devils Lake Rd from NE Loop Dr to NE 20th St	High-Use (Walking & Biking Plan)
S69	East Devils Lake Path - Phase 4	West side of NE Devils Lake Rd from NE 20th St to NE 9th St	Create a shared-use path along the west side of NE East Devils Lake Rd from NE 20th St to NE 9th St	High-Use (Walking & Biking Plan)
S70	East Devils Lake Path - Phase 5	West side of NE Devils Lake Rd from NE 9th St to east of S Hill Rd	Create a shared-use path along the west side of NE East Devils Lake Rd from NE 9th St to S Hill Rd	High-Use (Walking & Biking Plan)
S71	East Devils Lake Path - Phase 6	North side of SE Devils Lake Rd from S Hill Rd to SE Oar Ave	Create a shared-use path along the north side of SE East Devils Lake Rd from S Hill Rd to SE Oar Ave (see project D3)	High-Use (Walking & Biking Plan)



2 Proposed Shared-Use Path Improvements

Lincoln City
Transportation System Plan

Proposed Pedestrian Improvements

- Proposed Shared-Use Path
- Proposed Sidewalk
- Proposed Shared Street
- Existing Sidewalks
- Existing Shared-Use Path
- Existing Trail
- X# Transportation System Plan Project #
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

Proposed Sidewalk Projects - See Figure 3

Project #	Project Name	Project Location	Project Description	Source
P1	NW 50th and Logan Rd Sidewalk Gap	West side of NW Logan Road from NW 50th Street to existing sidewalk	Add sidewalk to west side of road to fill gap between existing sidewalk and NW 50th Street.	High-Use (Walking & Biking Plan)
P2	NE 47th Extension Sidewalk Project	Proposed street extension of NE 47th St from NW Logan Rd to the intersection of NW 44th St	Add sidewalk to north and south side of proposed street extension of NE 47th St from NW Logan Rd to the intersection of NW 44th St. (See project D11)	New Solution (Planned Medium-Use)
P3	NW Logan Rd Sidewalk Extension	East side of NW Logan Road from McMenamins access road to US 101	Add sidewalk to address existing gap between an access road to a commercial area and US 101 intersection.	High-Use (Walking & Biking Plan)
P4	McDonalds Access Sidewalk Project-Phase 1	West side of proposed McDonalds Access Extension from US 101 to intersection of NW 39th St and US 101.	Add sidewalk to west side of proposed minor collector roadway from US 101 via the existing McDonalds driveway which bends west toward the intersection of US 101 and NW 39th Street. On east-west portion approaching highway, add sidewalk to both sides of street. (See project D12)	New Solution (Planned Medium-Use)
P5	McDonalds Access Sidewalk Project-Phase 2	East and West side of proposed McDonalds Access extension to 35th St via NE Quay Ave.	The McDonalds Access project creates a minor collector roadway. Phase 2 adds sidewalks on both east and west sides of the street until NE 36th Dr. From 36th to NE 35th Street, a sidewalk is added to the west side.	New Solution (Planned Medium-Use)
P6	NE 35th Street Sidewalk Addition	South side of NE 35th Street from US 101 until it dead ends	Add sidewalk to the south side of NE 35th Street from US 101 until the road dead ends, or reaches the proposed road project, NE Surf Ave extension.	Low-Use (Walking & Biking Plan)
P7	NE 34th Street Sidewalk Addition	North side of NE 34th Street from US 101 to dead end	Add sidewalk to the north side of NE 34th Street from US 101 until the road dead ends, or reaches the proposed road project, NE Surf Ave extension.	Medium-Use (Walking & Biking Plan)
P8	NE Surf Ave Sidewalk Addition	West side of existing and proposed NE Surf Ave	Add sidewalk to the west side of proposed NE Surf Ave extension between NE 34th and NE 35th St (See project D13). Continue sidewalk along existing NE Surf Ave from NE 35th to NE Holmes Rd.	New Solution (Planned Medium-Use)
P9	NW 40th Place Sidewalk	East side of NW 40th Place	Add sidewalk on the east side of NW 40th Place from NW 40th St to NW Jetty Ave.	High-Use (Walking & Biking Plan)
P10	NW 39th St Sidewalk Addition	North side of NW 39th St from NW Port Ave to NW Jetty Ave	Add sidewalk on north side of NW 39th St from NW Port Ave to NW Jetty Ave.	High-Use (Walking & Biking Plan)
P11	NW Jetty Ave Sidewalk Addition- Phase 1	West side of NW Jetty Ave from NW 40th Pl to NW 30th Street	Add sidewalk on west side of NW Jetty Ave. The road is a collector with some traffic calming like speed bumps. Sidewalk is to be added at inception of NW Jetty Ave near NW 40th Place to NW 30th Street.	High-Use (Walking & Biking Plan)

P12	NW Jetty Ave Sidewalk Addition- Phase 2	West side of NW Jetty Ave from NW 30th Pl to NW 19th Street	Add sidewalk on west side of NW Jetty Ave. The road is a collector with some traffic calming like speed bumps. Sidewalk is to be added from NW 30th Place to NW 19th Street.	High-Use (Walking & Biking Plan)
P13	NW 34th Street Sidewalk Addition	North side of NW 34th St from US 101 to NW Jetty Ave	Add sidewalk to north side of NW 34th St from US 101 to NW Jetty Ave.	Medium-Use (Walking & Biking Plan)
P14	OR Coast Highway Sidewalk Addition - Phase 1	East side of US 101, south of NE 34th St to proposed Holms realignment	Add sidewalk on east side of US 101. A sidewalk exists from NE 34th St to an access road to a commercial area. The project adds a sidewalk on the east side from the access road to the proposed NE Holmes Rd alignment.	US 101 (Walking & Biking Plan)
P15	OR Coast Highway Sidewalk Addition - Phase 2	East side of US 101, south of the proposed Holms realignment	Add sidewalk on east side of US 101. Add a sidewalk exists from the proposed NE Holmes Rd alignment to NE 25th St.	US 101 (Walking & Biking Plan)
P16	NW 30th St Sidewalk Addition	North and south side of NW 30th St from US 101 to NW Jetty Ave	Add sidewalk on both sides of NW 30th St from US 101 to NW Jetty Avenue.	High-Use (Walking & Biking Plan)
P17	NE Holmes Road Sidewalk Addition	NE Holmes Rd from West Devils Lake Rd to proposed modified NE Holmes Alignment	Add sidewalk on both sides of NE Holmes Rd from West Devils Lake Road to the proposed modified alignment to NE Holmes Rd (see project D16). It includes a proposed short stub sidewalk in a housing development.	High-Use (Walking & Biking Plan)
P18	NE Tide Ave Proposed Extension Sidewalk	NE Tide Ave from NE Holmes Rd along proposed alignment to NE 28th St	The project adds a sidewalk to the eastside of NE Tide Ave where a west side sidewalk exists. Project D17 extends NE Tide to NE 28th St, and P18 calls to add sidewalk on both the east and west side.	Planned High-Use
P19	NE 28th Sidewalk Gaps-Phase 1	NE 28th Street	The project adds sidewalks primarily on the north side of the street, along with adding sidewalks to small gaps in existing sidewalks on the south side of NE 28th St. NE 28th St currently runs from NE Lake Drive to West Devils Lake.	High-Use (Walking & Biking Plan)
P20	NE 28th St Extension Sidewalk- Phase 2	Proposed NE 28th St alignment (D34)	The project adds sidewalks to the proposed alignment for NE 28th St extension (See project D34). The extension reaches from West Devils Lake to the proposed Tide Ave extension.	New Solution (Planned Medium-Use)
P21	NE Yacht Ave Sidewalk Extension	West side of NE Yacht Ave between NE 27th and NE 26th St	Add sidewalk to west side of NE Yacht Ave between NE 27th and NE 26th St This completes the sidewalk network for NE Yacht Avenue.	Low-Use (Walking & Biking Plan)
P22	NW 28th St Sidewalk Addition	North and south side of NW 28th St from US 101 to NW Jetty Ave	Add sidewalk on both north and south sides of NW 28th St from US 101 to NW Jetty Ave	High-Use (Walking & Biking Plan)

P23	NW 26th St Sidewalk Addition	North and south side of NW 26th St from NW Keel Ave to NW Jetty Ave	Add sidewalk on north and south side of NW 26th St between NW Keel Ave to NW Jetty Ave	Medium-Use (Walking & Biking Plan)
P24	NW 25th St Sidewalk Addition	On NW 25th St, between NW Jetty Ave and US 101	Add sidewalk on north and south side of NW 25th between NW Inlet Ave to NW Jetty Ave, and NW Oar Ave and US 101. Between NW Oar Ave and NW Inlet Ave, add sidewalk to south side of street.	Medium-Use (Walking & Biking Plan)
P25	NE 25th St Extension Sidewalk	NE 25th Street Proposed Alignment	Add sidewalk as part of proposed NE 25th Street extension between US 101 and proposed NE Surf Ave alignment (See Project D35).	New Solution (Planned Medium-Use)
P26	NE 27th Dr Neighborhood Sidewalk	NE 27th Drive	Add sidewalk to NE 27th Street. The current alignment is a small horseshoe shape serving a residential neighborhood. The sidewalk would wrap on the inner portion of the ring, or the south-west-north side as the road curves.	Medium-Use (Walking & Biking Plan)
P27	NE Quay Ave Sidewalk	East and west side of NE Quay Street from Kirtsis Park to NE 27th Street	Extend sidewalk on east side of NE Quay Avenue between NE 22nd through the proposed Quay Ave extension project (See Project D18). Add sidewalks to east and west side of proposed Quay Avenue alignment between Kirtsis Park and NE 27th Street.	New Solution (Planned Medium-Use)
P28	NE Surf Ave/ Devils Point Sidewalk	East side of NE Surf Ave from the Adventist School south of NE 22nd sty to NE Devils Point Drive	Continue existing sidewalk on eastside of NE Surf Ave from Adventist School (south of NE 22nd St) until NE Surf becomes NE Devils Point Drive. Add sidewalk on north side of Devils Point drive to connect with existing sidewalk adjacent to Kirtsis Park.	Medium-Use (Walking & Biking Plan)
P29	NE 19th St Sidewalk Addition	North and south sides of NE 19th St	Add sidewalks to north and south side of NE 19th St between NE West Devils Lake Road and NE Tide Ave to complete network.	Medium-Use (Walking & Biking Plan)
P30	NE 21st Sidewalk Additions	Portions of north and south sides of NE 21st St from US 101 to NE Tide Ave via proposed extension	Add sidewalks to north and south portions of NE 21st St between US 101 and NE Oar Pl. Add sidewalk on south side between NE Oar Pl and NE Quay Pl. Between NE Quay Place and NE Surf Ave, build sidewalk on north side. Between NE Surf Ave and NE Tide Ave, build sidewalks on north and southern portion of proposed NE 21st St extension, (see Project D36).	New Solution (Planned Medium-Use)
P31	NE 22nd & Oar Pl Pedestrian Access	North side of NE 22nd St alongside Dairy Queen and East side of Oar Place near Elks Lodge	Provide pedestrian refuge from frequent turning vehicles by filling sidewalk gaps on north side of NE 22nd St alongside Dairy Queen, and east side sidewalk gap on Oar Place near the Elks Lodge.	High-Use (Walking & Biking Plan)
P32	NW Harbor Ave Sidewalk Addition	West side of NW Harbor Ave from NE 21st St to NW 12st St	Add sidewalk on west side of NW Harbor Ave from NW 21st St to NW 12st St.	High-Use (Walking & Biking Plan)

P33	14th St Sidewalk Addition- Phase 1	Northside of NW 14th Street from NW Harbor Ave to US 101	Add sidewalks to the north side of NW 14th Street from NW Harbor Ave to US 101.	High-Use (Walking & Biking Plan)
P34	14th St Sidewalk Addition- Phase 2	North side of NE 14th St from US 101 to NE Port Ave	Add sidewalks to NE 14th St from US 101 to NE Port Ave.	High-Use (Walking & Biking Plan)
P35	12th St Sidewalk- Phase 1	North and South side of NW 12th St	Add sidewalk on north side of NW 12st from NW Harbor Ave to US 101. Complete south side pedestrian network by adding sidewalk to NW 12th St from NW Harbor Ave to NW Inlet Ave.	High-Use (Walking & Biking Plan)
P36	12th St Sidewalk- Phase 2	North and South side of NE 12th St	Add sidewalk to south side, and complete sidewalk on north side of NE 12th street between US 101 and NE Keel Ave.	Medium-Use (Walking & Biking Plan)
P37	NW Inlet Ave Sidewalk Additions	West side of NW Inlet Ave from NW 12th St to the D River	Add sidewalk on west side of NW Inlet Ave from NW 12st St to the terminus of Inlet Ave at the D River.	High-Use (Walking & Biking Plan)
P38	6th St Sidewalk- Phase 1	South side of NW 6th St	Add sidewalk on south side of NW 6th St, from NW Inlet Ave to US 101	Medium-Use (Walking & Biking Plan)
P39	6th St Sidewalk- Phase 2	North and South side of NE 6th St	Add sidewalk on south side, and complete sidewalk on north side of NE 6th St from US 101 to Devils Lake State park.	Medium-Use (Walking & Biking Plan)
P40	NW 2nd St Sidewalk Addition	South side of NW 2nd St	Add sidewalk to NW 2nd St connection between NW Inlet Ave to US 101	High-Use (Walking & Biking Plan)
P41	NE Johns Ave Sidewalk Addition	West side of NE Johns Ave from NE Neotsu Dr to NE 38th St	Add sidewalk to west side of NE Johns Ave from NE Neotsu Drive to NE 38th St.	Medium-Use (Walking & Biking Plan)
P42	NE Neotsu Dr Sidewalk Addition	NE Neotsu Drive from US 101 to NE East Devils Lake Road via proposed Neotsu Minor Collector (see Project D10).	Add sidewalk to north and south sides of NE Neotsu Drive from US 101 to NE Johns Ave. Continue sidewalk on north side of NE Neotsu Dr, and build sidewalk on both north and south side of proposed Neotsu minor collector, where it stretches from existing NE Neotsu Drive to NE East Devils Lake Road (see Project D10).	Medium-Use (Walking & Biking Plan)
P43	SW Ebb Ave Sidewalk Addition	West side of SW Ebb Ave from US 101 to SW 9th St	Add sidewalk to west side of SW Ebb Ave from US 101 to SW 9th St. Complete sidewalk gap on east side of SW Ebb Ave between US 101 and SW 3rd St.	Medium-Use (Walking & Biking Plan)
P44	SE 3rd St Sidewalk Addition	North side of SE 3rd St from US 101 to the terminus of SE 3rd St	Add sidewalk to north side of SE 3rd St from US 101 to the terminus of SE 3rd St for a continuous pedestrian connection.	Medium-Use (Walking & Biking Plan)
P45	SE Harbor St Sidewalk Addition	East and west side of existing SE Harbor St, and proposed SE Harbor St extension	Add sidewalk to east and west side of SE Harbor St from SE 3rd St through proposed extension to US 101 at Burger King access, (see Project D20).	New Solution (Planned Medium-Use)
P46	SE Inlet Ave Sidewalk Addition	North side of SE Inlet Ave from SE 3rd St to SE 9th St	Add sidewalk to north side of SE Inlet Ave from SE 3rd St to link to existing sidewalk north of SE 9th St.	Medium-Use (Walking & Biking Plan)

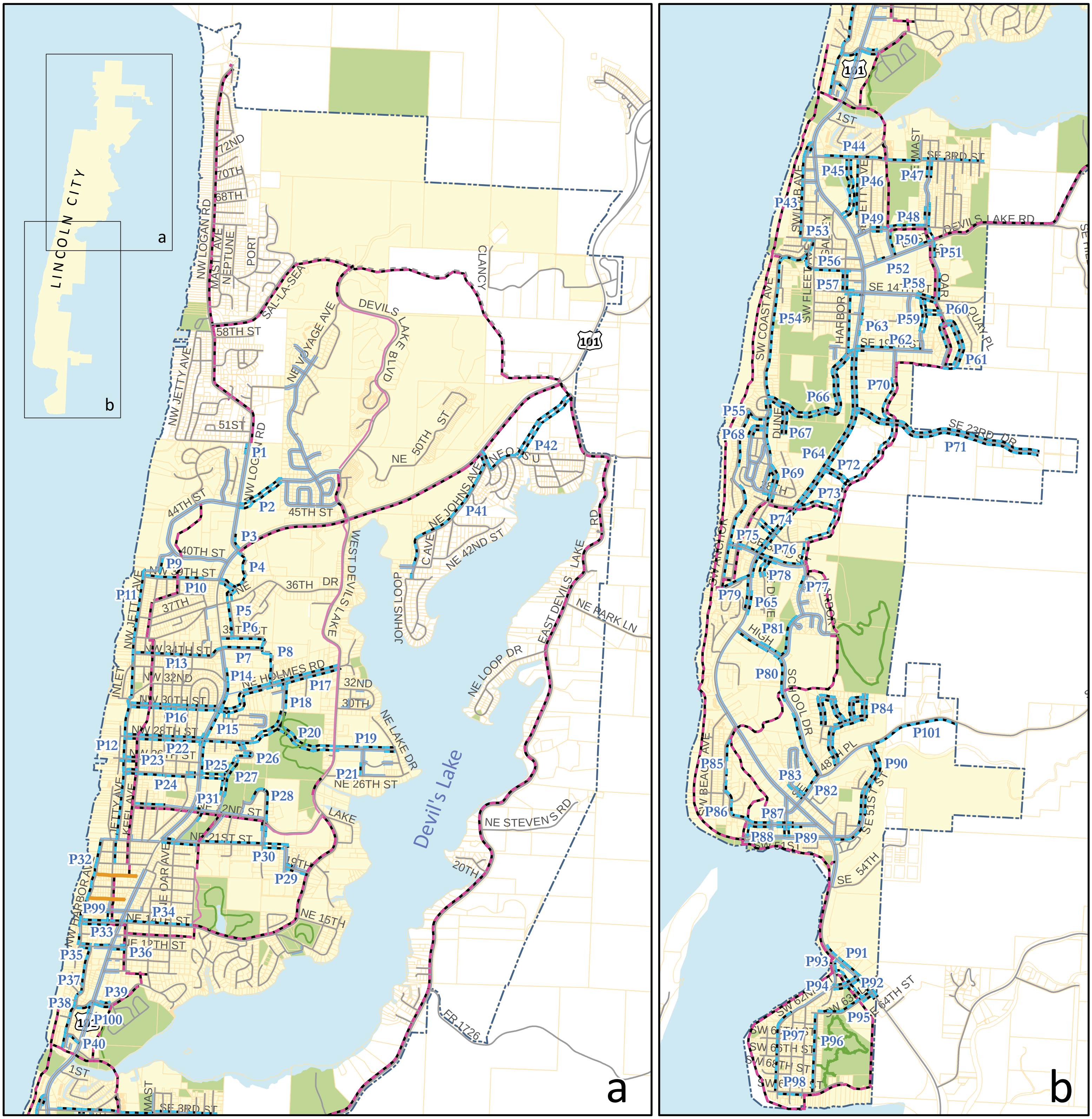
P47	SE Neptune Ave Gap Project	East and west sides of SE Neptune Ave from SE 3rd St to East Devils Lake Rd	Fill gaps in existing sidewalk infrastructure on east and west sides of NE Neptune Ave between SE 3rd St and SE 8th St. Add sidewalk to east side of NE Neptune Ave between SE 8th St and East Devils Lake Rd.	Medium-Use (Walking & Biking Plan)
P48	SE 8th St Sidewalk Addition	North side of SE 8th St from SE Neptune Ave to SE 9th St via proposed street extension	Add sidewalk to existing SE 8th St from SE Neptune Ave to its current terminus. Build sidewalk on north side of proposed street extension (See Project D40) to connect with SE 9th St.	New Solution (Planned Medium-Use)
P49	SE 9th St Sidewalk Extension	North and south side of SE 9th St between SE Jetty Ave and Police Department Ave	Complete pedestrian network by extending existing sidewalks on SE 9th St from SE Jetty Ave to Police Department Ave.	Medium-Use (Walking & Biking Plan)
P50	Police Department Ave Sidewalk Addition	East side of Police Department Ave between SE 9th St and East Devils Lake Rd	Add sidewalk to east side of Police Department Ave between SE 9th St and East Devils Lake Rd.	Low-Use (Walking & Biking Plan)
P51	SE Neptune Ave Sidewalk Extension	East side of proposed SE Neptune Ave extension	Add sidewalk to east side of the proposed Neptune Ave extension between East Devils Lake Rd and SE 14th St (See project D21).	Medium-Use (Walking & Biking Plan)
P52	East Devils Lake Rd Sidewalk Gap Project	Portion of north side of East Devils Lake Road spanning SE Jetty Ave to SE Oar Ave	Fill gaps in existing sidewalk infrastructure on north side of East Devils Lake Road spanning SE Jetty Ave to SE Oar Ave.	High-Use (Walking & Biking Plan)
P53	SW 9th St Sidewalk Addition	South side of SW 9th St between SW Ebb Ave and SW 11th Dr	Add sidewalk to South side of SW 9th St between SW Ebb Ave and SW 11th Dr to connect proposed N-S pedestrian connections via SW Ebb Ave and SW 11th Drive.	Medium-Use (Walking & Biking Plan)
P54	SW 11th & Coast Ave Pedestrian Corridor	East side of SW 11th Drive at SW 9th St, continuing as it becomes SW Coast Ave to its terminus at SW 29th St	SW 11th Drive and SW Coast Ave provide a lengthy continuous opportunity for a pedestrian corridor traveling north-south. A sidewalk should be built on east side of SW 11th Drive at SW 9th St, continuing as it becomes SW Coast Ave to its terminus at SW 29th St. Between the intersection of SW Beach Ave and SW 29th St, and in the vicinity of SW Bard Loop, sidewalks should be added to the west side of Coast Ave as well.	Medium-Use (Walking & Biking Plan)
P55	SW 24th Dr & Anchor Ave Pedestrian Corridor	South side of SW 24th Drive from SW Coast Ave to SW Anchor Ave & SW 34th St.	Continuing the pedestrian corridor in Project P54, this project provides a continuous north-south pedestrian connection. Add sidewalk to south side of SW 24th Dr until it becomes SW Anchor Drive. Continue sidewalk on east side of Anchor drive, connecting to sidewalks where they exist, until SW 34th St.	Medium-Use (Walking & Biking Plan)

P56	SW 12th St Sidewalk Addition	West & south side of SW 12th St from SW 11th Dr to US 101	Add sidewalk along SW 12th St on west and south sides from SW 11th Dr to connect with existing sidewalk west of US 101.	Medium-Use (Walking & Biking Plan)
P57	SW Harbor Drive Sidewalk Additions	East and west sides of SW Harbor Drive from SW 12th St to SW 14th St; east side only between SW 14th and SW Bard Road	Add sidewalks to both sides of SW Harbor Drive from SW 12th St to SW 14th St; add sidewalk to east side only between SW 14th and SW Bard Road.	Medium-Use (Walking & Biking Plan)
P58	SE 14th St Sidewalk Extension	North and south sides of SE 14th St, from SE 16th St to SE Oar Ave	SE 14th St currently has sidewalks on both north and south sides from US 101 to the intersection at SE 16th St. This project would extend those sidewalks to SE Oar Ave.	Medium-Use (Walking & Biking Plan)
P59	SE Mast Ave Extension Sidewalk	East and west side of proposed extension of SE Mast Ave	Build sidewalks on both sides of proposed extension of SE Mast Ave to SE 14th St. Connect to existing sidewalks on SE Mast Ave (see Project D22).	New Solution (Planned Medium-Use)
P60	SE Port Dr Extension Sidewalk	North and south sides of proposed SE Port Dr extension, between proposed SE Mast Ave extension (D22) and SE Oar Ave.	Build sidewalks on both sides of SE Port Dr extension (See Project D41) from SE Oar Ave to the proposed SE Mast Ave extension (See Project D22).	New Solution (Planned Low-Use)
P61	Hillcrest Vale Sidewalk Project	S Port Dr and SE Oar Ave in the Hillcrest Vale area	Build sidewalks in the proposed Hillcrest Vale Loop (See Projects D42 and D57).	Low-Use (Walking & Biking Plan)
P62	SE 19th St Sidewalk Gap Project	North side of SE 19th St between US 101 and SE Mast Ave. South side just east of US 101	SE 19th St has mostly continuous sidewalks on the south side between US 101 and SE Mast Ave. This project would add a sidewalk at a small gap on the southern side, just east of US 101, and add sidewalks along all gaps on the north side between the highway and SE Mast Ave.	High-Use (Walking & Biking Plan)
P63	South US 101 Sidewalk Extension- Phase 1	East side of Highway 101 from SE 14th St to SE 19th St	Build sidewalks to address gaps on east side of US 101 between SE 14th St to SE 19th St.	US 101 (Walking & Biking Plan)
P64	South US 101 Sidewalk Extension- Phase 2	East and west sides of US 101 from SE 19th St to SE 32nd Drive	Build sidewalks on both sides of US 101 to serve pedestrians on this busy corridor. This phase recommends east and west side sidewalks between SE 19th and SE 32nd St.	US 101 (Walking & Biking Plan)
P65	South US 101 Sidewalk Extension- Phase 3	East and west sides of US 101 between SE 32nd and High School Dr	Fill sidewalk gaps by adding sidewalks on east and west side of US 101, and connecting to existing sidewalk infrastructure between SE 32nd St and High School Dr.	US 101 (Walking & Biking Plan)
P66	SW Bard Ave Sidewalk Addition	East and west sides of SW Bard Ave between US 101 and SW Coast Ave	Add sidewalks to both sides of SW Bard Ave from its inception at US 101 until its terminus at SW Coast Ave.	Medium-Use (Walking & Biking Plan)
P67	SW Dune Ave Sidewalk Addition	East and West sides of SW Dune Ave	Add sidewalks to both sides of SW Dune Ave from SW Bard Rd to its terminus.	Low-Use (Walking & Biking Plan)

P68	SW Anemone Ave Sidewalk Completion	North/South and East/West sides of SW Anemone Ave	Complete sidewalk network on SW Anemone Ave by adding sidewalks near intersection of SW Coast Ave	Low-Use (Walking & Biking Plan)
P69	SW Beach Ave Neighborhood Connection	East side of SW Beach Ave between SW Coast Ave and SW 28th; south side of SW 28th between SW Beach and SW Coast Ave	Complete neighborhood missing sidewalk links by adding sidewalk to East side of SW Beach Ave between SW Coast Ave and SW 28th. Add additional sidewalk link to south side of SW 28th between SW Beach and SW Coast Ave.	Medium-Use (Walking & Biking Plan)
P70	SE Lee Ave Extension Sidewalk	West side of proposed SE Lee Ave Extension	Add sidewalk to west side of proposed SE Lee Ave Extension, from SE Lee Ave to SE 32nd St. The east side is proposed to have a shared use path. (See projects D23 and S32).	New Solution (Planned Medium-Use)
P71	SE 23rd Drive Sidewalk Addition	North and south sides of SE 23rd Drive from US 101 to terminus	Add sidewalks to north and south sides of SE 23rd Drive from US 101 to terminus of road	Low-Use (Walking & Biking Plan)
P72	SE 27th St Sidewalk Addition	North and south sides of SE 27th St from US 101 to proposed SE Lee Ave Extension	Add sidewalks to north and south sides of SE 27th St from US 101 to proposed SE Lee Ave Extension (See Project D44).	New Solution (Planned Low-Use)
P73	SE 28th St sidewalk Addition	North and south of SE 28th St from US 101 to the proposed SE Lee Ave extension via proposed SE 28th St realignment	Add sidewalks on north and south side to existing SE 28th St, and continue on proposed SE 28th St realignment, creating a pedestrian connection from US 101 to the proposed SE Lee Ave extension (See Project D45).	New Solution (Planned Medium-Use)
P74	SW 30th St Extension Sidewalk	North and south of proposed SW 30th sty extension from SW Coast Ave to US 101 at SE 31st St	Add sidewalks to north and south side of road at time of construction for proposed SW 30th St from SW Coast Ave to US 101 at SE 31st St (See Project D46).	New Solution (Planned Low-Use)
P75	32 St Sidewalk Gaps-Phase 1	North and south side of SW 32nd St from SW Anchor Ave to US 101	Fill gaps in sidewalk network on north and south side of SW 32nd St from SW Anchor Ave to US 101.	Medium-Use (Walking & Biking Plan)
P76	32 St Sidewalk Gaps-Phase 2	North and south side of SE 32nd St from US 101 to SE Fleet Ave	Fill gaps in sidewalk network on north and south side of SE 32nd St from US 101 to SE Fleet Ave.	Medium-Use (Walking & Biking Plan)
P77	SE Fleet Ave Sidewalk Gap	West side of SE Fleet Ave near SE Harbor Ave spur	Fill gap in sidewalk network on west side of SE Fleet Ave near SE Harbor Ave intersection.	Medium-Use (Walking & Biking Plan)
P78	SE Dune Ave Extension Sidewalk	East and west side of proposed SE Dune Ave Extension.	Add sidewalks to both sides of proposed SE Dune Ave Extension, from SE 35th St to SE 32nd St (See Project D47).	New Solution (Planned Low-Use)
P79	SW 35th St Sidewalk Addition	North side of SW 35th St from US 101 to NW Anchor Ave	Add sidewalk to north side of SW 35th St from US 101 to NW Anchor Ave.	Medium-Use (Walking & Biking Plan)

P80	SE High School Drive Sidewalk Network Completion	North and south side of SE High School Dr between US 101 and SE Spy Glass Ridge Drive; south side of High School Drive between SE Spy Glass Ridge Drive and SE 48th Pl.	Sidewalks exist for much of the north side of High School Drive, but on almost none of the south side. This project fills small sidewalk gaps on the north side between US 101 and SE Spy Glass Ridge Drive, and adds a sidewalk where it is missing on much of the south side of High School Drive from US 101 to SE 48th Pl.	High-Use (Walking & Biking Plan)
P81	SE Spyglass Ridge Sidewalk Addition	West side of SE Spyglass Ridge from SE High School Dr to SW Fleet Ave	Add sidewalk to west side of SE Spyglass Ridge from SE High School Dr to existing sidewalk near SW Fleet Ave.	Medium-Use (Walking & Biking Plan)
P82	SE 48th Place Sidewalk Segment	NW side of SE 48th Pl between SE High School Dr and SE Inlet Ave	Add one block sidewalk segment along NW side of SE 48th Pl between SE High School Dr and SE Inlet Ave.	High-Use (Walking & Biking Plan)
P83	SE Inlet Ave Pedestrian Network Gap	East and west side of SE Inlet Ave from SE 48th Pl to SE Heron Loop	Add missing sidewalks complete network on SE Inlet Ave between SE 48th Pl to SE Heron Loop.	Low-Use (Walking & Biking Plan)
P84	SE Jetty Ave Neighborhood Pedestrian Network	North/South and East/West sides of SW Jetty Ave and adjoining streets in subdivision	Add sidewalks to all new subdivision streets in development off of SW Jetty Ave.	Medium-Use (Walking & Biking Plan)
P85	SW Coast Ave Sidewalk Addition	East side of SW Coast Ave from US 101 to SW Dune Ave	Add sidewalk to east side of SW Coast Ave from US 101 to SW Dune Ave. Near US 101, the sidewalk is supplanted with a shared use path.	Medium-Use (Walking & Biking Plan)
P86	SW Dune Ave Sidewalk Segment	East side of SW Dune Ave from SW Coast Ave to SW 50th St	Provide continuous sidewalk connection by adding link on east side of SW Dune Ave from SW Coast Ave to SW 50th St.	Medium-Use (Walking & Biking Plan)
P87	SW 50th St Sidewalk Network Gaps	North and south sides of SW 50th St between SW Dune Ave and US 101	Fill in sidewalk network gaps by adding side on north portion of SW 50th St between SW Dune and proposed Taft Beach Parking Connection. For the remainder of SW 50th St, fill in sidewalk gaps on north and south sides of street to US 101.	Medium-Use (Walking & Biking Plan)
P88	Taft Beach Parking Access Pedestrian Path	East side of proposed Taft Beach Access road	Add sidewalk on east side of proposed Taft Beach Access road (see Project D48) from SW 51st St to SW 50th St.	Planned Medium-Use
P89	SW Fleet Ave Extension Sidewalk	East and west side of proposed SW Fleet Ave extension	Add sidewalks to both side of proposed SW Fleet Ave extension, spanning from SW 50th St to SW 51st St (see Project D49).	Planned Medium-Use
P90	SE 51st Sidewalk Additions	East and west side of SE 51st St from SE 48th Pl to US 101	Add new sidewalks and connect to existing infrastructure on east and west side of SE 51st St between SE 48th Pl and US 101.	Medium-Use (Walking & Biking Plan)
P91	South US 101 Sidewalk Extension- Phase 4	East and west side of US 101 from north of SW 62nd St to south SW 63rd St	Add sidewalks and connect to existing infrastructure on east and west side US 101 from north of SW 62nd St to south SW 63rd St.	US 101 (Walking & Biking Plan)

P92	SW Keel Connection Sidewalk	NE side of proposed SW Keel Connection	Add sidewalk on NE side of proposed SW Keel Connection, a new road extending SW Keel Ave from SW 63rd St to SW Jetty Ave (see Project D50).	Planned Medium-Use
P93	SW Jetty Realignment Sidewalk	East side of proposed SW Jetty Realignment	Add sidewalk on east side of proposed realignment of SW Jetty Ave between US 101 and SW 62nd St (see Project D25).	Medium-Use (Walking & Biking Plan)
P94	SW 62nd St Sidewalk Addition	North and south side of SW 62nd St between US 101 and SW Jetty Ave	Add sidewalk to both sides of street between US 101 and SW Jetty Ave.	Medium-Use (Walking & Biking Plan)
P95	SW 63rd St Sidewalk Addition	North and south portions of SW 63rd St between US 101 and SW Inlet Ave	Add sidewalks to both north and south side of SW 63rd Ave between US 101 and SW Keel Ave. Add sidewalk to north side of road between SW Keel Ave and SW Inlet Ave.	Medium-Use (Walking & Biking Plan)
P96	SW Inlet Ave Sidewalk Addition	West side of SW Inlet Ave between SW 63rd St and SW 6th St	Add sidewalk to west side of SW Inlet Ave between SW 63rd St and SW 6th St.	Medium-Use (Walking & Biking Plan)
P97	SW Fleet Ave Sidewalk Addition	North side of SW 62nd, from SW Galley Ave via the west side of SW Fleet Ave to SW 69th St.	Add sidewalk to north side of SW 62nd from SW Galley until it becomes SW Fleet Ave. Continue sidewalk on west side of SW Fleet Ave to SW 69th St.	Medium-Use (Walking & Biking Plan)
P98	SW 69th St Sidewalk Addition	South side of SW 69th St between SW Fleet Ave and SW Harbor Ave	Add sidewalk segment on SW South side of SW 69th St between SW Fleet Ave and SW Harbor Ave.	Medium-Use (Walking & Biking Plan)
P99	NW Jetty Extension Sidewalks	West side of the proposed SW Jetty Ave extension from NW 14th St to NW 15th St	Add sidewalk to the west side of the proposed SW Jetty Ave extension from NW 14th St to NW 15th St (See Project D51).	New Solution (Planned High-Use)
P100	US 101 at NW 6th St Sidewalk Gap	West side of US 101 south of NW 6th St	Add sidewalk to east side of US 101 along the Seven Gables Shopping Strip. Connect to existing sidewalks at NW 6th St intersection, and south of the shopping strip.	US 101 (Walking & Biking Plan)
P101	Schooner Creek Sidewalks	South side of SE Schooner Creek Road from SE 51st St to end of Urban Growth Boundary	Add sidewalk along the south side of SE Schooner Creek Road from SE 51st St to the end of the Urban Growth Boundary (approximately 1,800 feet in length)	Low-Use (Walking & Biking Plan)



3 Proposed Sidewalk Improvements

Lincoln City
Transportation System Plan

Proposed Pedestrian Improvements

- Proposed Shared-Use Path
- Proposed Sidewalk
- Proposed Shared Street
- Existing Sidewalks
- Existing Shared-Use Path
- Existing Trail
- X# Transportation System Plan Project #
- Park
- City Limit
- Parcel
- Urban Growth Boundary

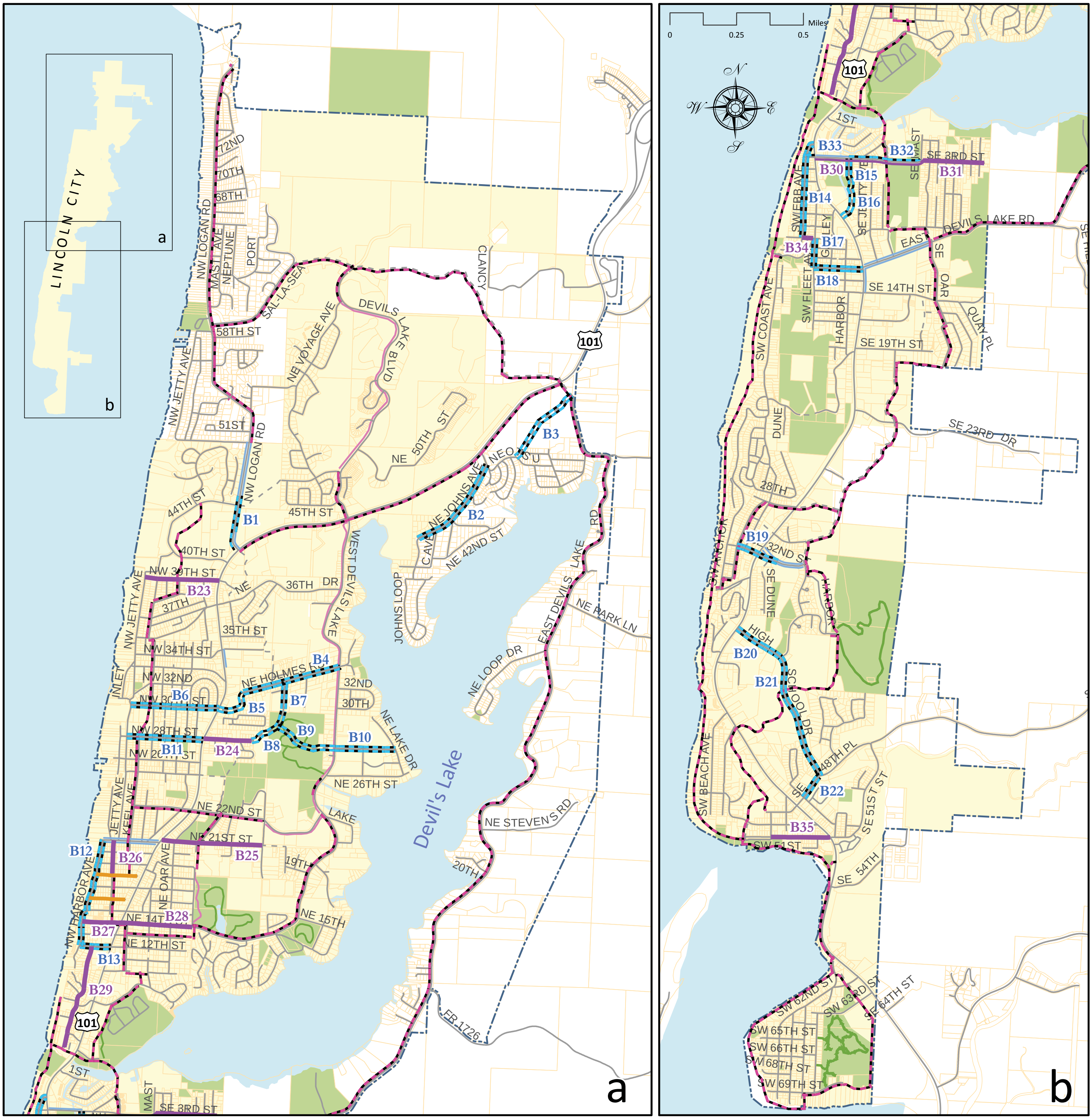
DKS

Proposed Biking Projects - See Figure 4

Project #	Project Name	Project Location	Project Description	Source
B1	NW Logan Bike Lane Gaps	Both sides of NW Logan Rd from US 101 to north of NW 44th St	Fill bike lane gaps on both side of NW Logan Rd from US 101 to north of NW 44th St	High-Use (Walking & Biking Plan)
B2	NE Johns Bike Lanes	Both sides of NE Johns Ave from NE Neotsu Dr to approximately 400 feet west of NE C Ave	Add bike lanes to both sides of NE Johns Ave from NE Neotsu Dr to approximately 400 feet west of NE C Ave	Medium-Use (Walking & Biking Plan)
B3	Neotsu Minor Collector Bike Lanes	Along proposed Neotsu minor collector	Add bike lanes to both sides of the proposed Neotsu minor collector (see project D10)	New Solution (Planned Medium-Use)
B4	Holmes Bike Lanes	Both sides of NE Holmes Rd from NE West Devils Lake Rd to proposed NE Holmes Rd realignment	Add bike lanes to both sides of NE Holmes Rd from NE West Devils Lake Rd to the proposed NE Holmes Rd realignment	High-Use (Walking & Biking Plan)
B5	Holmes Road Realignment Bike Lanes	Along proposed NE Holmes Rd realignment	Add bike lanes to both sides of the proposed NE Holmes Rd realignment (see project D16)	High-Use (Walking & Biking Plan)
B6	NW 30th Bike Lanes	Both sides of NW 30th St from US 101 to NW Jetty Ave	Add bikes lanes to both sides of NW 30th St from US 101 to NW Jetty Ave	High-Use (Walking & Biking Plan)
B7	NE Tide Bike Lanes	Both sides of NE Tide Ave from NE Holmes Rd to dead-end	Add bikes lanes to both sides NE Tide Ave from NE Holmes Ave to the dead-end	Medium-Use (Walking & Biking Plan)
B8	NE Tide Extension Bike Lanes	Along proposed NE Tide Ave extension	Add bike lanes to both sides of the proposed NE Tide Ave extension (see project D17)	New Solution (Planned Medium-Use)
B9	NE 28th Extension Bike Lanes	Along proposed NE 27th St extension	Add bike lanes to both sides of the proposed NE 28th St extension (see project D34)	New Solution (Planned Medium-Use)
B10	NE 28th Bike Lanes	Both sides of NE 28th St from NE West Devils Lake to NE Lake Dr	Add bike lanes to both sides of NE 28th St from NE West Devils Lake to NE Lake Dr	High-Use (Walking & Biking Plan)
B11	NW 28th Bike Lanes	Both sides of NW 28th St from US 101 to NW Jetty Ave	Add bike lanes to both sides of NW 28th St from US 101 to NW Jetty Ave	High-Use (Walking & Biking Plan)
B12	NW Habor Bike Lanes	Both sides of NW Harbor Ave from NW 21st St to NW 12th St	Add bike lanes to both sides of NW Harbor Ave from NW 21st St to NW 12th St	High-Use (Walking & Biking Plan)
B13	NW 12th St Bike Lanes	Both sides of NW 12th St from NW Harbor Ave to US 101	Add bike lanes to both sides of NW 12th St from NW Harbor Ave to US 101	High-Use (Walking & Biking Plan)
B14	SW Ebb Bike Lanes	Both sides of NW Ebb St from US 101 to SW 9th St	Add bike lanes to both sides of NW Ebb St from US 101 to SW 9th St	Medium-Use (Walking & Biking Plan)
B15	SE Habor Bike Lanes	Both sides of SE Harbor Ave from SE 3rd St to dead-end	Add bike lanes to both sides of SE Harbor Ave from SE 3rd St to the dead-end	Low-Use (Walking & Biking Plan)

B16	SE Harbor Extension Bike Lanes	Along proposed SE Harbor Ave extension	Add bike lanes to both sides of the proposed SE Harbor Ave extension (see project D20)	Lincoln City Transportation Master Plan (Planned Medium-Use)
B17	SW Fleet Bike Lanes	Both sides of SW Fleet Ave from SW 9th St to SW 12th St	Add bike lanes to both sides of SW Fleet Ave from SW 9th St to SW 12th St	Low-Use (Walking & Biking Plan)
B18	SW 12th St Bike Lanes	Both sides of SW 12th St from SW Fleet Ave to US 101	Add bike lanes to both sides of SW 12th St from SW 12th St from SW Fleet Ave to US 101	Medium-Use (Walking & Biking Plan)
B19	SW 32nd Bike Lanes	Both sides of SW 32nd St from US 101 to SW Beach Ave	Add bike lanes to both sides of SW 32nd St from US 101 to SW Beach Ave	Medium-Use (Walking & Biking Plan)
B20	SE High School Bike Lanes - Phase 1	Both sides of SE High School Dr from US 101 to SE Spy Glass Ridge Dr	Add bike lanes to both sides of SE High School Dr from US 101 to SE Spy Glass Ridge Dr	High-Use (Walking & Biking Plan)
B21	SE High School Bike Lanes - Phase 2	Both sides of SE High School Dr from SE Spy Glass Ridge Dr to SE 48th Pl	Add bike lanes to both sides of SE High School Dr from SE Spy Glass Ridge Dr to SE 48th Pl	High-Use (Walking & Biking Plan)
B22	SE High School Bike Lanes - Phase 3	Both sides of SE High School Dr from SE 48th Pl to US 101	Add bike lanes to both sides of SE High School Dr from SE 48th Pl to US 101	High-Use (Walking & Biking Plan)
B23	NW 39th Bicycle Boulevard	NW 39th St from US 101 to NW Jetty Ave	Add pavement markings/signage (e.g., sharrows), designating NW 39th St from US 101 to NW Jetty Ave as a shared roadway for bikes	High-Use (Walking & Biking Plan)
B24	NE 28th Bicycle Boulevard	NE 28th St from US 101 to dead-end	Add pavement markings/signage (e.g., sharrows), designating NE 28th St from US 101 to the dead-end as a shared roadway for bikes	Medium-Use (Walking & Biking Plan)
B25	NE 21st Bicycle Boulevard	NE 21st St from US 101 to dead-end	Add pavement markings/signage (e.g., sharrows), designating NE 21st St from US 101 to the dead-end as a shared roadway for bikes	High-Use (Walking & Biking Plan)
B26	NW Jetty Bicycle Boulevard	NW Jetty Ave from NW 21st St to NW 18th St	Add pavement markings/signage (e.g., sharrows), designating NW Jetty Ave from NW 21st St to NW 18th St as a shared roadway for bikes	High-Use (Walking & Biking Plan)
B27	NW 14th Bicycle Boulevard	NW 14th St from US 101 to NW Harbor Ave	Add pavement markings/signage (e.g., sharrows), designating NW 14th St from US 101 to NW Harbor Ave as a shared roadway for bikes	High-Use (Walking & Biking Plan)
B28	NE 14th Bicycle Boulevard	NE 14th St from US 101 to NE Port Ave	Add pavement markings/signage (e.g., sharrows), designating NE 14th St from US 101 to NE Port Ave as a shared roadway for bikes	High-Use (Walking & Biking Plan)
B29	NW Inlet Bicycle Boulevard	NW Inlet Ave from NW 12th St to dead end	Add pavement markings/signage (e.g., sharrows), designating NW Inlet Ave from NW 12th St to the dead end as a shared roadway for bikes	High-Use (Walking & Biking Plan)

B30	Eastbound SE 3rd Shared Lane	Eastbound SE 3rd St from US 101 to SE Mast Ave	Add pavement markings/signage (e.g., sharrows), designating eastbound SE 3rd St from US 101 to SE Mast Ave as a shared lane for bikes; improvement may be paried with project B32	Medium-Use (Walking & Biking Plan)
B31	SE 3rd Bicycle Boulevard	SE 3rd St from SE Mast Ave to SE Tide Ave	Add pavement markings/signage (e.g., sharrows), designating SE 3rd St from SE Mast Ave to SE Tide Ave as a shared roadway for bikes	Medium-Use (Walking & Biking Plan)
B32	Westbound SE 3rd Bike Lane	Westbound SE 3rd St from SE Harbor Ave to SE Mast Ave	Add a westbound bike lane along SW 3rd St from SE Harbor Ave to SE Mast Ave; improvement may be paired with project B30	Medium-Use (Walking & Biking Plan)
B33	Westbound SW 3rd Bike Lane	Westbound SW 3rd St from US 101 to SW Ebb Ave	Convert a motor vehicle lane to a westbound bike lane (see project D2)	Medium-Use (Walking & Biking Plan)
B34	SW 9th Bicycle Boulevard	SW 9th St from SW Ebb St to SW Fleet Ave	Add pavement markings/signage (e.g., sharrows), designating SW 9th St from SW Ebb St to SW Fleet Ave as a shared roadway for bikes	Medium-Use (Walking & Biking Plan)
B35	SW 51st Bicycle Boulevard	SW 51st St from US 101 to SW Ebb Ave	Add pavement markings/signage (e.g., sharrows), designating SW 51st St from US 101 to SW Ebb Ave as a shared roadway for bikes	High-Use (Walking & Biking Plan)



4 Proposed Bike Improvements

Lincoln City
Transportation System Plan

Proposed Bike Improvements

Proposed Shared-Use Path	Existing Bicycle Lane	Park
Proposed Bicycle Lane	Existing Shared-Use Path	City Limit
Proposed Bicycle Boulevard	Existing Trail	Parcel
Proposed Shared Street	X# Transportation System Plan Project #	Urban Growth Boundary

DKS

US 101 HIGHWAY CROSSING IMPROVEMENT PROJECTS (SEE FIGURE 5)

Project C1. New Crossing between NW 39th Street and NW 36th Street

Closest alternative crossings:

- NW Logan Road – signalized, 650 feet to the north
- Mid-block crossing between NW 34th Street and NW 33rd Street – flashing yellow beacon and median refuge island, 1,125 feet to the south

Recommendations:

Locating a crossing at NW 39th Street may align better with most pedestrian activity. Improvements recommended include:

- Median refuge island on the north approach to the intersection (this would no longer allow southbound vehicles to use the center turn lane to turn left into the Pig & Pancake Restaurant)
- Continental crosswalk markings
- Pedestrian-activated flashing yellow beacons
- Crossing warning signs
- Advanced stop bars
- Advanced flashing yellow beacons and warning signs may be needed due to the curvature of the highway

A mid-block crossing south of NW 39th Street could be considered as an alternative location to avoid conflicts with driveways. Recommended improvements would be the same as described above.

Project C2. Enhance Existing Mid-block crossings at NW 18th Street and NW 16th Street

NW 18th Street (NW 16th Street not shown)

Closest alternative crossings:

- NW 21st Street – unsignalized with median refuge island, 825 feet to the north of NW 18th Street
- NW 17th Street – signalized, 175 feet to the south of NW 18th Street and 200 feet to the north of NW 16th Street
- NW 15th Street – unsignalized, 225 feet to the south of NW 16th Street

Recommendations:

- Expand no-parking zones to extend from the crosswalk to the advanced stop bars (this would extend the no-parking zones from 20 feet to 30 feet)

Project C3. Enhance Existing Marked Crossings from NW 15th Street through NE 11th Street

NW 15th Street

NE 11th Street

There are currently marked unsignalized crosswalks at NW 15th Street, NW 13th Street, NW 12th Street, and NE 11th Street. Signalized crosswalks are provided at NW 14th Street.

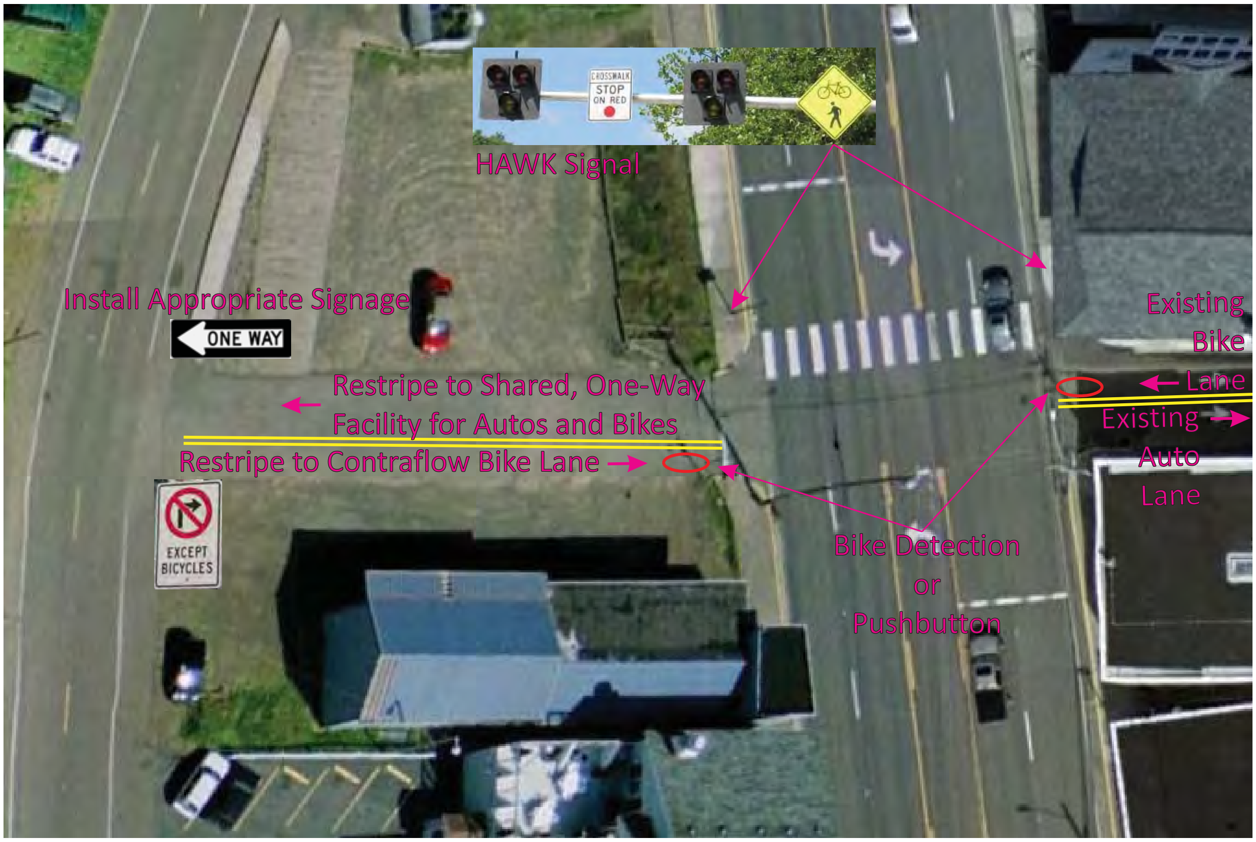
Closest alternative crossings to this segment of highway:

- NW 16th Street – unsignalized, 225 feet to the north
- NW 6th Drive – signalized, 850 feet to the south

Recommendations:

- Expand no-parking zones around NW 15th Street and NW 13th Street to extend from the crosswalk to the advanced stop bars (this would extend the no-parking zones from 20 feet to 30 feet)
- Median refuge island on north approach of the intersection with NE 11th Street, aligning with existing crosswalk (southbound left turn traffic could no longer use the center left turn lane and would need to use the turn lane at NE 12th Street or NE 10th Street)

Project C4. Enhance Existing Marked Crossing at SE 3rd Street



Closest alternative crossings:

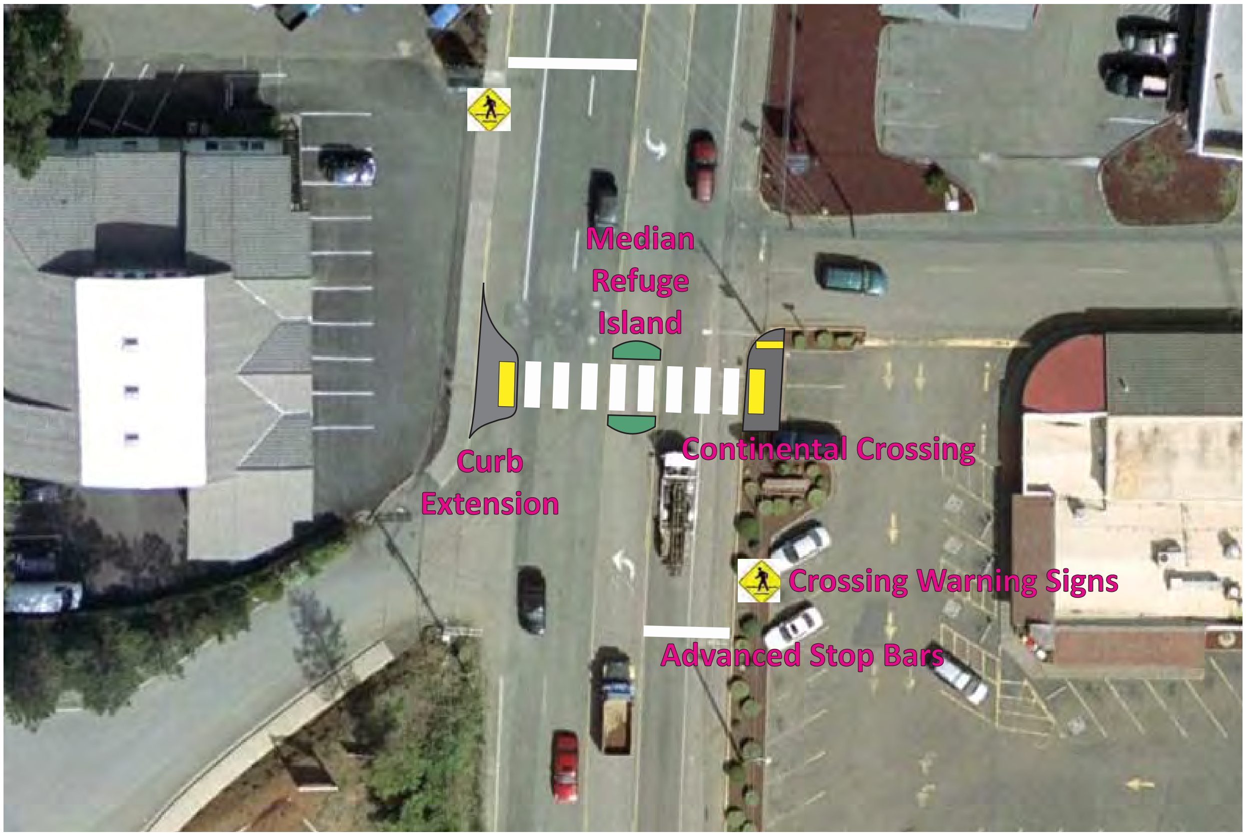
- SE 1st Street – signalized, 825 feet to the north
- City Hall/Library – signalized, 1,400 feet to the south

Recommendations:

The existing marked crosswalk is located at the end of a new contraflow bike lane on SE 3rd Street. Currently, this bike lane ends at US 101 with no where to go. There is also a public parking lot 300 feet to the east, that makes this crossing important for both pedestrians and cyclists. Improvements recommended include:

- HAWK signal providing a red light to stop traffic when activated by pedestrians and cyclists – consider using a bicycle signal in combination with the HAWK signal to serve the contraflow bike lane
- Bicycle detection loops in SE 3rd Street and SW 3rd Street or a pushbutton mounted close to the curb for cyclist use
- Reconfigure SW 3rd Street to one of the two following options:
  - Restripe SW 3rd Street as a one-way, westbound roadway with sharrows, and with a contraflow eastbound bike lane (shown in the figure above). Appropriate signage prohibiting eastbound auto traffic would be required.
  - Close the SW 3rd Street access at US 101 for auto traffic, but allow bicycle access (not shown). Appropriate signage (e.g., no right turns) warning drivers of the closed access would be recommended.

Project C5. New Crossing at SW Bard Road/ SE 19th Street



Closest alternative crossings:

- SE East Devils Lake Road – signalized, 1,625 feet to the north
- Planned crossing at SW 29th Street - unsignalized with median refuge island, 3,400 feet to the south (part of upcoming ODOT project currently under design)

Recommendations:

- Median refuge island between SW Bard Road and SE 19th Street (this may require restricting the left turn movement out of SW Bard Road, with vehicles required to detour north up SW Harbor Avenue)
- Construct curb extension on west side of US 101 at north corner of SW Bard Street (uses space currently striped as shoulder and likely used as de facto right turn lane)
- Continental crosswalk markings
- Crossing warning signs
- Advanced stop bars

Project C6. New Crossing at SE High School Drive

Closest alternative crossings:

- Planned crossing at SW 32nd Street – new traffic signal, 1,575 feet to the north (part of upcoming ODOT project currently under design)
- SE 48th Street – signalized, 4,100 feet to the south

Recommendations:

- Median refuge island, mid-block south of SE High School Drive and north of the next driveways
- Continental crosswalk markings
- Crossing warning signs
- Advanced stop bars

Project C7. New Crossing at SW Coast Avenue

Closest alternative crossings:

- Planned crossing at SW 32nd Street – new traffic signal, 3,750 feet to the north (part of upcoming ODOT project currently under design)
- SE 48th Street – signalized, 1,950 feet to the south

Recommendations:

- Median refuge island on north approach, aligning with existing bus stop on east side of US 101
- Narrow the crossing distance by pushing the added southbound travel lane further south and constructing a curb extension on the northwest corner (this will require modification or closure of the existing driveway near the northwest corner of the intersection)
- Continental crosswalk markings
- Crossing warning signs
- Advanced stop bars

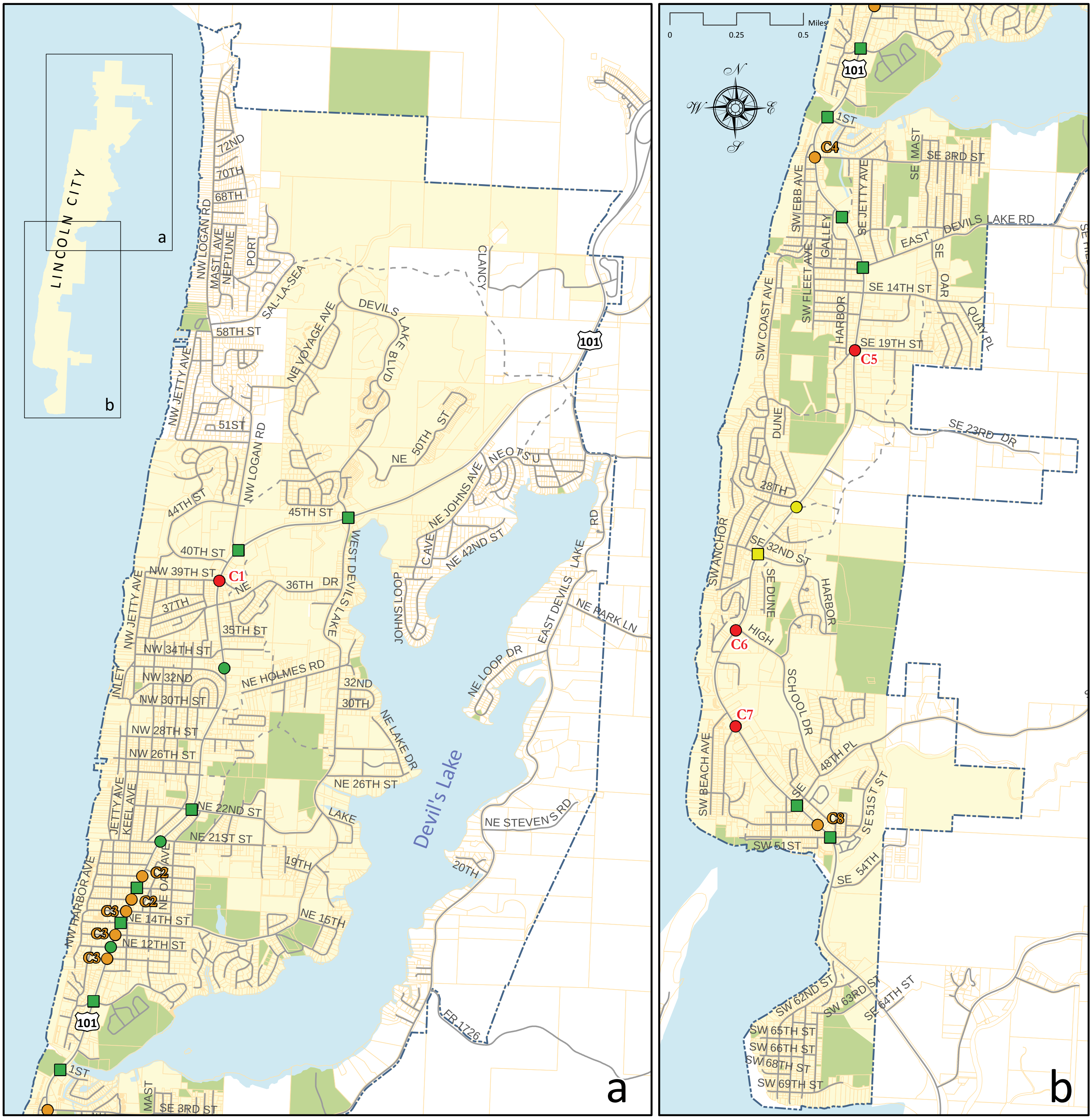
Project C8. Enhance Existing Marked Crossing at SW 50th Street

Closest alternative crossings:

- SW 48th Street – signalized, 500 feet to the north
- SW 51st Street – signalized, 300 feet to the south

Recommendations:

- Change crosswalk striping to continental markings
- Advanced stop bar in northbound direction (explore options to include advanced stop bar in southbound direction without conflicting with SW 51st Street intersection approach)
- Install downward arrow rider signs under existing pedestrian crossing warning signs
- Consider straightening the crossing to avoid confusion for the vision impaired (will require minor shortening of bus pullout on east side)



5 Proposed US 101 Crossing Improvements

Lincoln City

Transportation System Plan

Proposed Crossing Improvements

Signalized Crossing	*Unsignalized Crossing*	
■ (green)	● (green)	Existing Crossing (Unimproved)
■ (yellow)	● (yellow)	Planned New Crossing
	● (orange)	Proposed Crossing Improvement for Existing Crossing
	● (red)	Proposed New Crossing

X# Transportation System Plan Project #

Park

City Limit

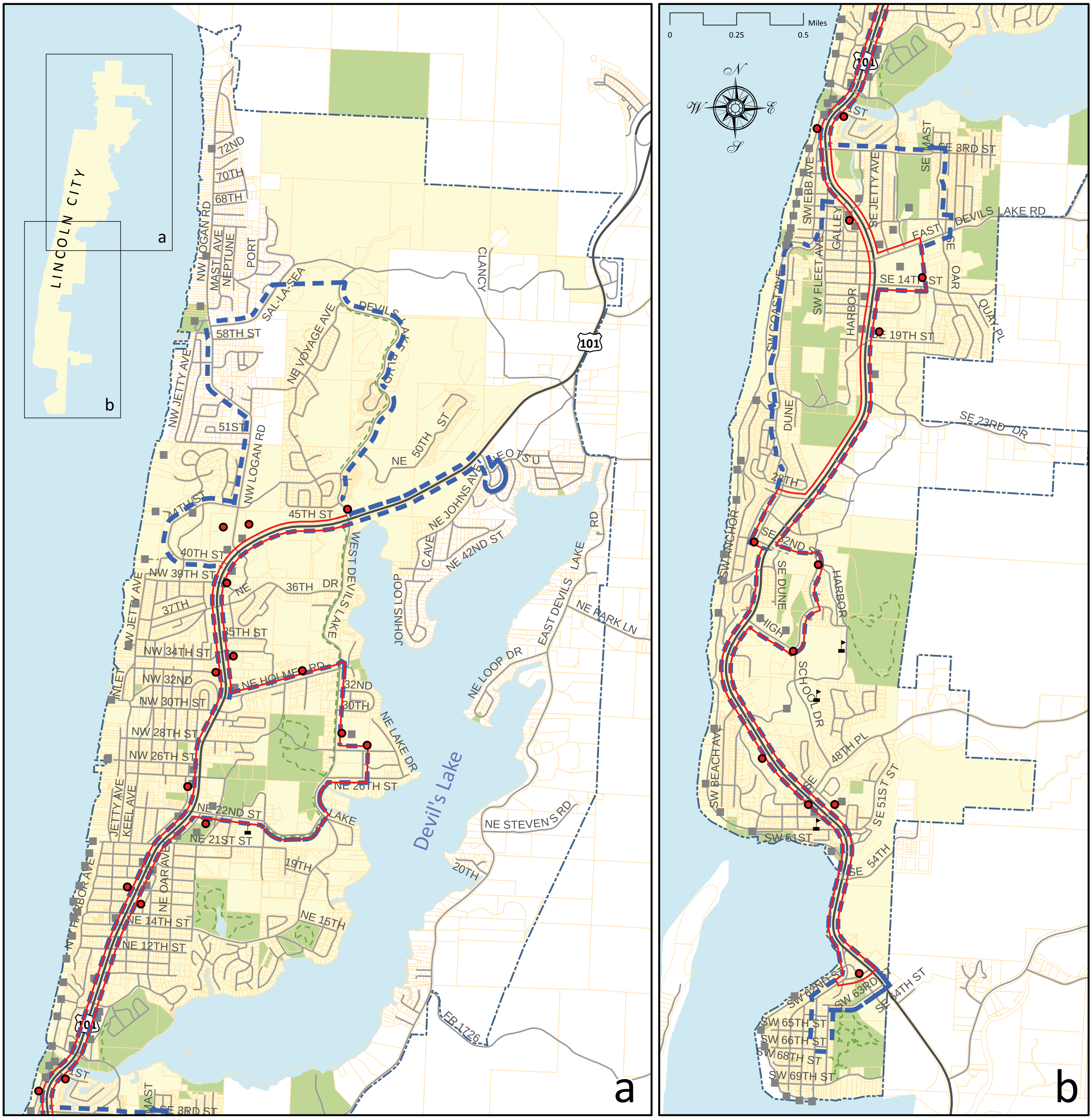
Parcel

Urban Growth Boundary

DKS

Proposed Transit Projects

Project #	Project Name	Project Location	Project Description	Source
T1	Ammenty Improvements	Citywide	Upgrade amenities to include sheltered stops with seating, route information, and bicycle parking	New Solution
T2	Expanded LINC Transit Coverage	Citywide	Add LINC transit stops to unserved areas	New Solution
T3	Improved LINC Transit Access	Citywide	Relocate existing LINC stops to more visible locations and add bus pullouts where necessary	New Solution
T4	Improved LINC Transit Service	-	Expand LINC hours of service, increase frequency by adding more buses to the system, and modify routes (see Figures 6, 7, and 8)	New Solution
T5	Transit Application	-	Develop phone application for users	New Solution
T6	Transit GPS	-	Add GPS to LINC buses and publish live information	New Solution
T7	Transit Signal Priority	Citywide	Install transit signal priority system for the signalized US 101 corridor	New Solution
T8	Seasonal Trolley	Citywide	Implement seasonal trolley service (see Figure 9)	New Solution
T9	New Bus Fleet	-	Upgrade existing LINC bus fleet to provide more attractive system	New Solution
T10	Casino Park & Ride	South Casino parking lot	Develop Park & Ride at Casino and incorporate North by Northwest Connector amenities	North by Northwest Connector
T11	Improved County Transit	-	Work with Lincoln County Transit to improve operating hours and bus frequency	New Solution



6 Expanded Transit Route

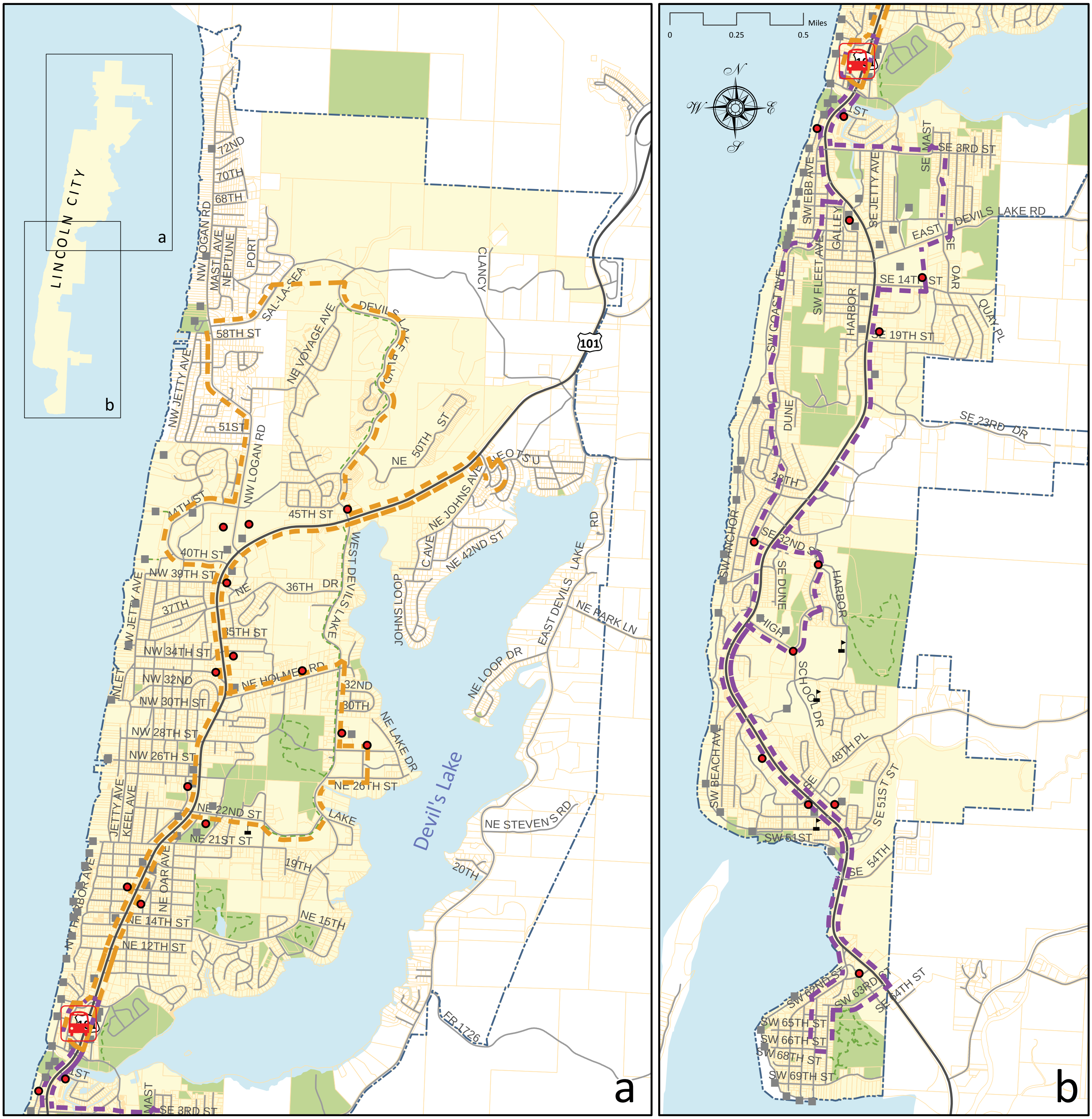
Lincoln City

Transportation System Plan

Transit Facilities

- Existing LINC Route
- Expanded LINC Route
- Existing LINC Stop
- School
- Activity Generator
- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary
- Proposed Alignment

DKS



7 Separate North and South Transit Routes

Lincoln City
Transportation System Plan

Transit Facilities

- North Transit Route
- South Transit Route
- North-South Route Transfer
- Existing LINC Stop
- School
- Activity Generator
- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary
- Proposed Alignment

DKS

8 Express and Local Transit Routes

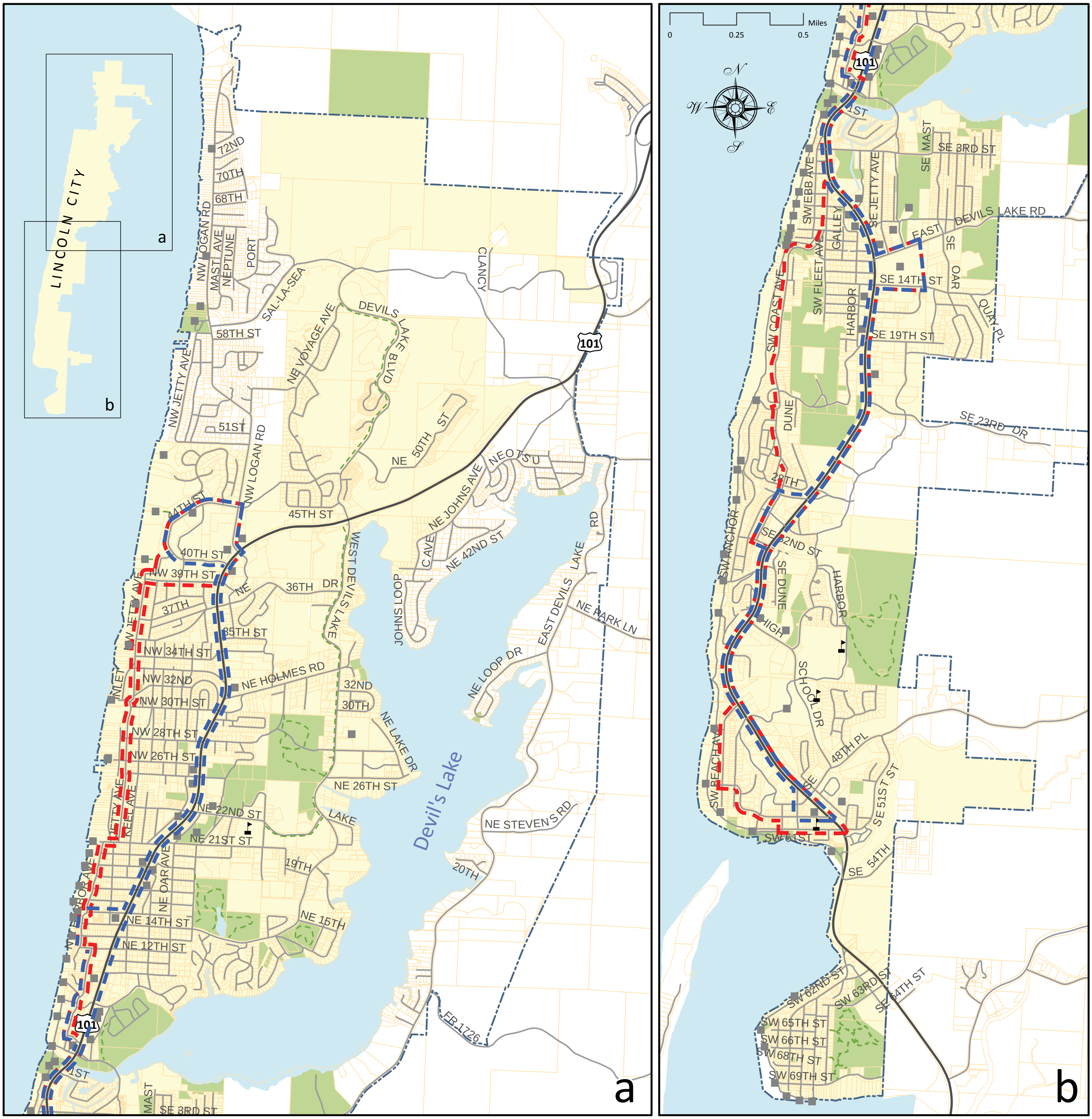
Lincoln City

Transportation System Plan

Transit Facilities

- Express Transit Route
- Local Transit Route
- Existing LINC Stop
- School
- Activity Generator
- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary
- Proposed Alignment

DKS



9 Trolley Route Options

Lincoln City
Transportation System Plan

Transit Facilities

- Hotel and Beach Focus Trolley
- Retail and Highway Focus Trolley
- School
- Activity Generator
- Shared-Use Path
- Park
- City Limit
- Parcel
- Urban Growth Boundary
- Proposed Alignment

DKS

(This page intentionally left blank)

Section L

Memo: Finance Program

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

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

MEMORANDUM

DATE: June 26, 2014

TO: Lincoln City TSP Project Management Team

FROM: John Bosket, P.E.
Kevin Chewuk, P.T.P

SUBJECT: **Lincoln City Transportation System Plan Finance Program**

P11086-010

This document details the transportation funding that is expected to be available through 2035. The funding assumptions will help prioritize the investments the City can make in the transportation system, and will be utilized to develop reasonable budgeting assumptions when selecting a set of transportation improvements to meet identified needs through the next 20 years.

Current Funding Sources

The city uses four general funding sources for transportation, including funds from the Surface Transportation Program (STP), State Highway Trust Fund, a transient room tax, and a System Development Charge (SDC). Federal Highway Trust Funds are received from federal motor vehicle fuel tax and truck-related weight mile charges. The six-year Federal Transportation Authorization Act allocates funds through various programs. Federal Highway Trust Funds from the Surface Transportation Program (STP) flow to the states that use them primarily for safety, highway, and bridge projects. Lincoln City receives a portion of these funds based upon actual population.

The State Highway Trust Fund makes distributions from the state motor vehicle fuel tax, vehicle registration fees, and truck weight-mile fees on a per capita basis. Cities and counties receive a share of State Highway Trust Fund monies, and by statute may use the money for any road-related purpose, including walking, biking, bridge, street, signal, and safety improvements.

The state gas tax funds previously have failed to keep up with cost increases and inflation. With increased fuel efficiency of vehicles and the State's emphasis on reducing vehicle miles traveled, the real revenue collected gradually has eroded over time. In an effort to offset the relative decline in contribution of state funds, the 2009 legislature recently passed the Oregon Jobs and Transportation Act (Oregon House Bill 2001). It increases transportation-related fees including the state gas tax and vehicle registration fees as a fixed amount at the time a vehicle is registered with the Department of Motor Vehicles. Vehicle registration fees in Oregon increased from $27 to $43 per vehicle per year for passenger cars, with similar increases for other vehicle types. The gas tax in Oregon increased on January 1, 2011 by six cents, to 30 cents per gallon, the first increase in the state gas tax since 1993.

Lincoln City collects system development charges (SDC) from new development, which are a funding source for all capacity adding projects for the transportation system. The funds collected can pay for constructing or improving portions of roadways impacted by applicable development. The SDC is a one-time fee. The vehicle SDC rate is currently $660 per unit.

Revenues: The TSP projects current revenue sources to provide over $30 million through 2035 (see Table 1). Over the past five years, Lincoln City averaged annually $80,000 in Surface Transportation Program revenue, $375,000 in State gas tax and vehicle registration fee revenue, and $895,000 in transient room tax revenue. Assuming, as a conservative estimate,[1] the same levels in the future, Lincoln City can expect to receive through 2035, over $29.6 million in Surface Transportation Program, State gas tax and license fee and transient room tax revenue.

Table 1: Lincoln City Transportation Funding (2014 Dollars)

Revenue Source	Average Annual Amount	Estimated Amount Through 2035
Surface Transportation Program (STP)	$80,000	$1,760,000
State Gas Tax and License Fees	$371,000	$8,162,000
Bikeway/Walkway (1% of State Gas Tax and License Fees)	$4,000	$88,000
Transient Room Tax	$895,000	$19,690,000
System Development Charge	$40,000	$880,000
Traffic Impact Fees	$5,000	$110,000
Total Revenues (5-year Average)	***$1,395,000***	***$30,690,000***
Expenditures	**Average Annual Amount**	**Estimated Amount Through 2035**
Personnel Services	$530,000	$11,660,000
Materials and Services	$700,000	$15,400,000
Capital Outlay (i.e., maintenance)	$50,000	$1,100,000
Total Expenditures (5-year Average)	***$1,280,000***	***$28,160,000***
Expected Funds for City Capital Improvements	**Average Annual Amount**	**Estimated Amount Through 2035**
Revenues - Expenditures	**$115,000**	**$2,530,000**

State law requires that the city must set aside a minimum of one percent of the State gas tax and vehicle registration funds received for construction and maintenance of walking and bicycling facilities. In Lincoln City, this represents approximately $4,000 per year and over $88,000 through 2035.

System development charges likely will provide $880,000 for transportation improvements through 2035 (based on forecasted yearly population and employment growth through 2035). The Oregon Revised Statutes sections 223.205 through 223.295 (Bancroft Bonding Act) provide property owners with a deferred financing option for SDC's. Since residents can defer SDC payments up to a period of 10 years in accordance with the state law, the City may not realize the full SDC revenue until several years beyond 2035. The City will continue to receive

[1] This assumes the population growth rate in Lincoln City will be roughly the same as the cost inflation rate, therefore, maintaining existing revenues through 2035.

deferred payments from residents who chose this payment method from previous years, however, so estimates of the SDC revenue estimate are the same through 2035.

On average, the City received approximately $5,000 in traffic impact fees over the past five years. Keeping this revenue level consistent, this represents about $110,000 through 2035.

Expenditures: Expenditures will top $28 million through 2035, assuming the same rate of expenditures over the past five years. The city will spend the majority of the funds (over $15 million through 2035) on materials and services. In addition, the city will spend over $12 million on personnel services and capital outlay combined.

Funding Summary

Overall, Lincoln City officials, citizens and staff have identified nearly 300 transportation solutions, totaling over $200 million worth of investments. Based on current funding levels, the City expects to have $2.5 million to fund the projects included in the aspirational plan of the TSP. The City may wish to consider expanding its funding options in order to fund more of the desired improvements in a timely manner.

Potential Additional Funding Sources

New transportation funding options include local taxes, assessments and charges, and state and federal appropriations, grants, and loans. Factors that constrain these resources, include the willingness of local leadership and the electorate to burden citizens and businesses with taxes and fees; the portion of available local funds dedicated or diverted to transportation issues from other competing City programs; and the availability of state and federal funds. The City must consider all opportunities for providing or enhancing funding for the transportation improvements included in the TSP.

Cities have used the following sources to fund the capital and maintenance aspects of their transportation programs. As described below, they may help to address existing or new needs identified in Lincoln City's TSP.

Transportation Utility Fee

A transportation utility fee is a recurring monthly charge that is paid by all residences and businesses within the City. The city can base the fee on the estimated number of trips a particular land use generates or as a flat fee per residence or business. The city can collect the fee through its regular utility billing. Existing law places no express restrictions on the use of transportation utility fee funds, other than the restrictions that normally apply to the use of government funds.[2] Some cities utilize the revenue for any transportation related project, including construction, improvements and repairs; however, many cities choose self-imposed restrictions or parameters on the use of the funds. For every $1.00 per month in charged rates per water meter for residential and commercial uses, the City could expect to collect nearly $100,000 annually. Bay City, for example, charges a flat fee of $5 per month per water meter.

---

[2] Implementing Transportation Utility Fees, League of Oregon Cities

Local Fuel Tax

Fourteen cities (including Newport and Astoria) and two counties in Oregon have adopted local gas taxes ranging from one to five cents per gallon. The fuel distributers pay collected taxes to the jurisdictions monthly. Newport increases its local gas tax during the summer months to place more of a burden on visitors than on year-round residents. Lincoln City also may want to implement a local gas tax.

Since Lincoln City and Newport have similar populations and are both along US 101, Lincoln City can expect similar revenue if it adopts a three cents per gallon local gas tax during the winter months (November through May) and five cents per gallon local gas tax during the summer months (June through October). A local gas tax of that amount could bring an additional $117 thousand annually or $2.6 million through 2035. The process for presenting such a tax to voters would need to be consistent with Oregon State law as well as the laws of the City.

ODOT Statewide Transportation Improvement Program (STIP) Enhance Funding

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

ODOT Highway Safety Improvement Program (HSIP) Funding

With significantly more funding under the HSIP and direction from the Federal Highway Administration to address safety challenges on all public roads, ODOT will increase the amount of funding available for safety projects on local roads. ODOT will distribute safety funding to each ODOT region, which will collaborate with local governments to select projects that can reduce fatalities and serious injuries, regardless of whether they lie on a local road or a state highway.

ODOT expects to start its jurisdictionally blind safety approach in 2017 for the 2019-2021 STIP. Meanwhile, ODOT intends to implement a transition plan for 2013-2016 to bridge the gap by allocating funding for local roads primarily focused on a few systemic low cost fixes implemented in the shorter timeframe[3].

General Fund Revenues

At the discretion of the City Council, the City can allocate General Fund revenues to pay for its Transportation program. General Fund revenues primarily include property taxes, use taxes, and any other miscellaneous taxes and fees imposed by the City. As a part of the City's annual budget process, competing community priorities set by the City Council constrain the funding potential for transportation projects. General Fund resources can fund any aspect of the program, from capital improvements to operations, maintenance, and administration.

---

[3] ODOT Jurisdictionally Blind Safety Program

Additional revenues available from this source are only available to the extent that the city council either increases general fund revenues or directs and diverts funding from other City programs to transportation.

Local Improvement Districts

Local Improvement Districts (LIDs) can fund capital transportation projects that benefit a specific group of property owners. LIDs require owner/voter approval and a specific project definition. Assessments against benefiting properties pay for improvements. LIDs can supply match for other funds where a project has system wide benefit beyond benefiting the adjacent properties. LIDs are often used for sidewalks and pedestrian amenities that provide local benefit to residents along the subject street. Property owners pay fees through property tax bills over a specified number of years.

Fee in Lieu of Improvements

As infill development occurs along existing streets, the city often defers improvements, such as sidewalks, curbs, gutters, stormwater conveyance, and in cases where the existing street is gravel, paving. The city chooses to defer improvements for many reasons. For example, deferrals avoid sidewalk installation where unnecessary, avoids isolated sections of sidewalk “ to nowhere”, and avoids sidewalk sections that do not match adjoining sections in alignment and slope. When applying for a building permit, the property owner signs a “Deferred Improvement Agreement” (DIA) that allows the development to occur without construction of the public improvements. For many residential properties developed after 1990, deeds include a DIA in which the property owner agrees to construct frontage improvements or participate in a local improvement district to enact the DIAs whenever the city determines improvements are needed. As an alternative to collecting DIAs, the city could at the time of construction collect a fee that would go into a fund designated for improvements in the neighborhood of the property, as identified in the TSP. A fee would be easier to administer and more quickly put to use.

Debt Financing

Although a city can use debt financing to pay for significant capital improvement projects and spread costs over the useful life of a project. This equitable funding strategy spreads the burden of repayment over existing and future customers who will benefit from the projects. Debt service must have a funding source to fulfill annual interest and repayment obligations.

(This page intentionally left blank)

Section M

Memo 10: Transportation System Solutions

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

DKS

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

TECHNICAL MEMORANDUM #10

DATE: June 24, 2014

TO: Lincoln City TSP Project Management Team

FROM: John Bosket, PE
Kevin Chewuk, PTP
Ben Fuller, EIT

SUBJECT: **Lincoln City Transportation System Plan**
Transportation System Solutions P11086-010

This document details the transportation system investments needed to accommodate future travel in Lincoln City. Included is a summary of the process utilized to develop and analyze the solutions for the transportation system and a description of the projects identified to improve the transportation system in the city.

The Solutions Identification Process

The City of Lincoln City understands that transportation funding is limited and recognizes the importance in being fiscally responsible in its approach to enhancing the transportation system. The recommended approach for the TSP update places more value on investments in smaller cost-effective solutions for the transportation system, where practical, rather than larger, more costly ones. The multi-modal network wide approach identifies solutions to accommodate future travel demand by following a four-step process (as shown in Figure 1), considering solutions from top to bottom until finding a viable solution is identified.

1. **Manage** the performance of congested or unsafe locations with strategies that reduce traffic conflicts, increase safety, and encourage more efficient usage of the transportation system.
2. **Reduce** the driving demand at congested locations by improving walking, biking and transit options.
3. **Extend** streets to create parallel routes that will reduce the driving demand on congested facilities.
4. **Expand** existing streets or intersections to increase the driving capacity of the facility. This category also includes new streets in developing areas.

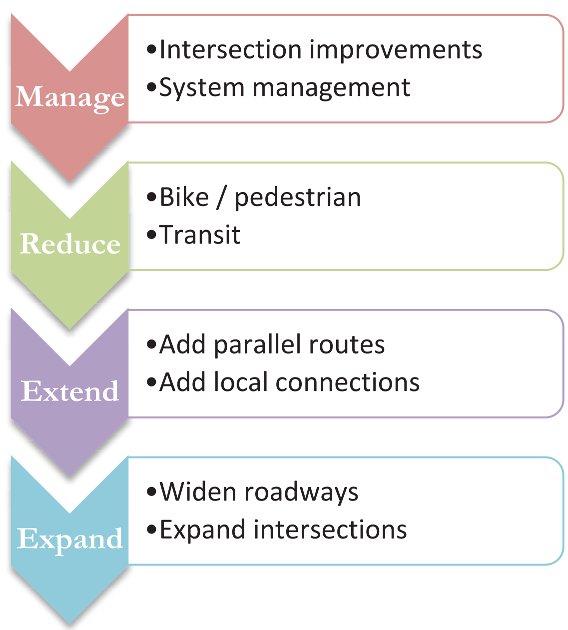


Figure 1: Solutions Identification Process

The approach favors more cost-effective solutions to improve transportation system operations and helps to encourage multiple travel options, increase street connectivity, and promote a more sustainable transportation system.

Community Priorities

The TSP update evaluated each proposed transportation solution (whether included in a previous plan or new) to see how it matched the community priorities (based on the project goals and objectives in Technical Memorandum #5) and the evaluation criteria established for Lincoln City in Technical Memorandum #9. Table 1 illustrates the relative benefit of each transportation solution category in relation to the Lincoln City TSP goals.

Overall, as shown in Table 1, solution categories that “Manage” and “Reduce” are most important to emphasizing a livable, sustainable, and fiscally responsible transportation system. The “Extend” and “Expand” categories are most important to supporting travel choices and ensuring economic vitality.

Table 1: Relationship between TSP Goals and Solution Categories

TSP Goals	Transportation Solution Category			
	Manage	Reduce	Extend	Expand
Goal 1: Provide for efficient motor vehicle travel to and through the city.	✓✓	✓	✓✓	✓✓
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.	✓	✓✓	✓✓	
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.	✓	✓✓	✓	
Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.	✓✓	✓✓	✓✓	✓
Goal 5: Enhance the health and safety of residents.	✓	✓✓	✓	✓
Goal 6: Foster a sustainable transportation system.	✓✓	✓✓		
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.	✓	✓	✓✓	✓✓
Goal 8: Coordinate with local and state agencies and transportation plans.	✓	✓	✓	✓

✓ Beneficial ✓✓ Most Beneficial

Previous Ideas for Transportation Solutions

Consultants and staff compared all transportation projects previously envisioned, but not necessarily adopted, with the known gaps and deficiencies of the transportation system. The previous ideas that complement the goals and policies of the Lincoln City TSP Update appear in the following sections, along with other previous projects modified to provide a better fit, and new ideas.

Aspirational Projects

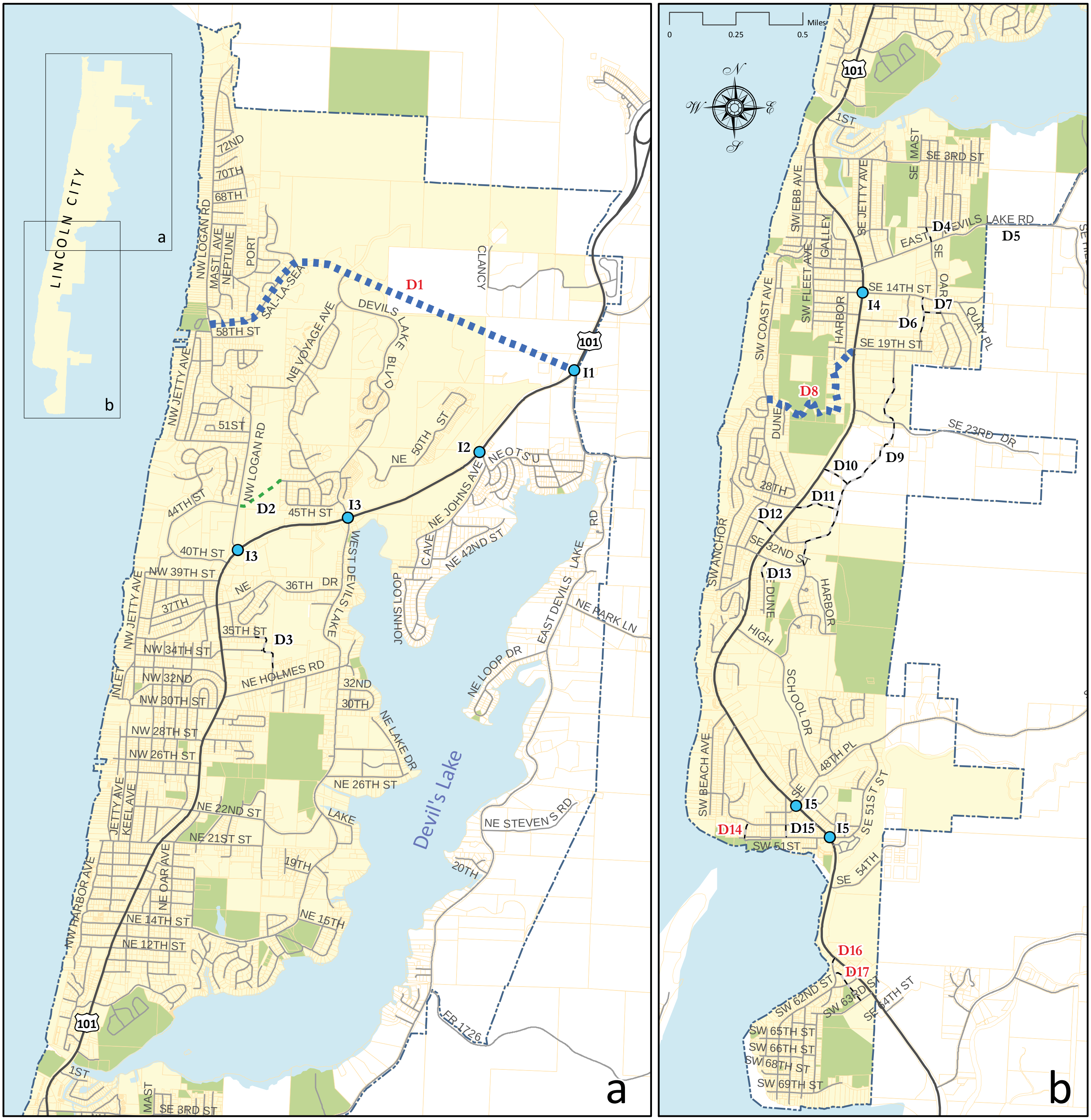
Aspirational projects (projects to which the city aspires) include all identified projects for improving Lincoln City's transportation system, regardless of their priority or their likelihood to be funded. The TSP planning process eliminates any project that may not be feasible for reasons other than financial (such as environmental or existing development limitations). Consultants selected the preliminary set of aspirational transportation projects following the four-step solution identification process detailed earlier in this document. The set includes projects for all of the major modes of travel in the city (motor vehicle, pedestrian, bicycle, and transit).

Transit and demand management projects are in Table 2; walking, biking, and driving projects appear in Figures 2 through 5, with more detail in Attachment 1. The projects are a combination of new and previous ideas (identified in Attachment 1) for the transportation system that attempt to address the gaps and deficiencies identified in Technical Memorandum #6 (Existing Transportation Conditions) and in Technical Memorandum #8 (Future Transportation Conditions).

Each project was assigned a primary source of funding for planning purposes (City, County, State, or developer), although such designations do not create any obligation for funding. The TSP will provide a prioritized list of "City" projects (where the City is assumed to be the primary contributor of funding) that is constrained to a 20 year funding estimate. The TSP will also provide a prioritized list of "State" projects that the City could use to make decisions for applying for grants or other funding mechanisms. While there may be "County" projects that the City would like to be prioritized in the next 20 years, these decisions are ultimately up to the County. The City can, however, choose to provide funds to help support State or County projects—thus, expediting the timeline on those projects the City would like prioritized. "Developer" projects will likely be built in coordination with land use actions and future development. Only projects associated with new development on vacant parcels were assumed to occur within the planning horizon of the TSP. While projects related to property re-development may occur within the TSP planning horizon, no funding was assumed.

Table 2: Transit and System Management Aspirational Projects

Project #	Project Description	Project Extent	Project Elements	Primary Funding Source
Transit Project List				
T1	Amenity Improvements	Citywide	Upgrade amenities to include sheltered stops with seating, route information, and bicycle parking.	City
T2	Improved LINC Transit Service Hours	Citywide	Expand LINC hours of service.	City
T3	Seasonal Trolley	Citywide	Implement seasonal trolley service.	City
T4	Casino Park & Ride	South Casino parking lot	Develop Park & Ride at Casino and incorporate North by Northwest Connector amenities.	City
T5	Improved County Transit	Citywide	Work with Lincoln County Transit to improve operating hours and bus frequency.	County
Transportation System Management and Operations (TSMO) Project List				
M1	Neighborhood Traffic Calming Program	Citywide	Implement program to process community requests for neighborhood traffic calming, investigate options, and implement improvements. Key areas for traffic calming investigations include: Roads End, NE Holmes Road, and Cutler.	City
M2	VMS System	North end of city and south end of city	Display traveler information at gateways to city on Variable Message Signs (VMS).	ODOT
M3	Tourism Management Policy	Citywide	Develop a fee system that charges tourists for having multiple vehicles at vacation rentals/hotels.	City
M4	Business Incentives Program	Citywide	Develop an incentives program for Lincoln City businesses to promote visitors to come earlier and/or stay later, thus reducing peak traffic demands.	City
M5	Oceanlake Parking Management	Oceanlake	Enhance parking wayfinding in Oceanlake to direct visitors to public parking lots off US 101.	City
M6	Safe Routes to School Program	Citywide	Continue support of the Safe Routes to School Program.	City
M7	Tsunami Evacuation Route Identification	Citywide	Enhance tsunami evacuation route wayfinding throughout the city.	City
M8	Bike Parking Program	Citywide	Install new bike parking throughout the city.	City



2 Proposed Driving Improvements

Lincoln City
Transportation System Plan

Proposed Driving Improvements

- Future Study
- Proposed Collector
- Proposed Local
- Intersection Improvement

\# Transportation System Plan Project - City Primary Funding Source

\# Transportation System Plan Project - ODOT, County, or Private Development Primary Funding Source

- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

3 Proposed Shared-Use Path Improvements

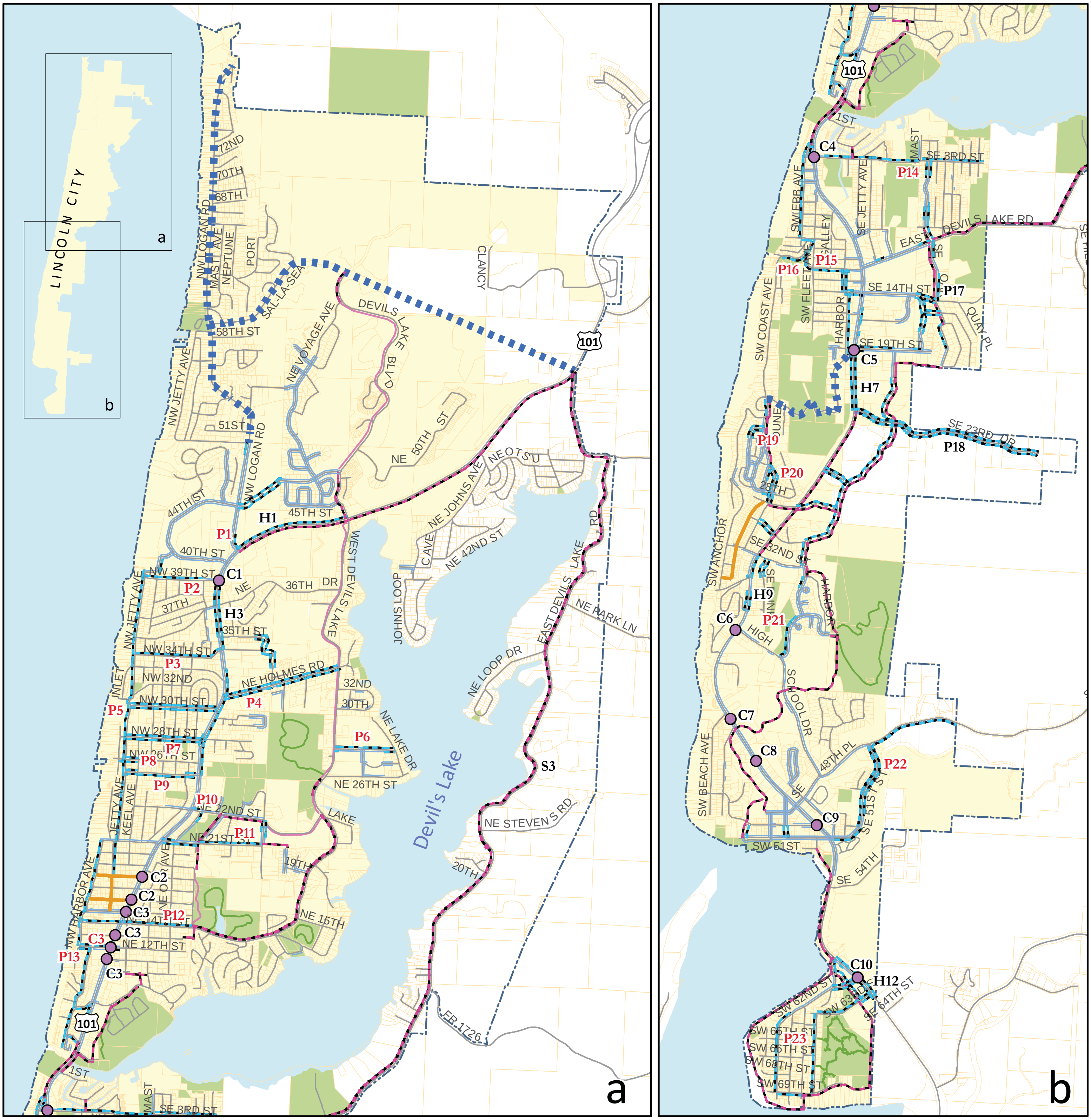
Lincoln City

Transportation System Plan

Proposed Pedestrian Improvements

- Proposed Shared-Use Path
- Proposed Sidewalk
- Proposed Shared Street
- Future Study
- Existing Sidewalks
- Existing Shared-Use Path
- Existing Trail
- \# Transportation System Plan Project - City Primary Funding Source
- \# Transportation System Plan Project - ODOT, County, or Private Development Primary Funding Source
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS



4 Proposed Pedestrian Improvements

Lincoln City
Transportation System Plan

Proposed Pedestrian Improvements

- Proposed Shared-Use Path
- Proposed Sidewalk
- Proposed Shared Street
- Proposed Crossing Improvement
- Future Study
- Existing Sidewalks
- Existing Shared-Use Path
- Existing Trail
- # Transportation System Plan Project - City Primary Funding Source
- # Transportation System Plan Project - ODOT, County, or Private Development Primary Funding Source
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

5 Proposed Bike Improvements

Lincoln City
Transportation System Plan

Proposed Bike Improvements

- Proposed Shared-Use Path
- Proposed Bicycle Lane
- Proposed Bicycle Boulevard (Along Existing Street)
- Proposed Shared Street
- Bikes-in-Roadway Warning System
- Future Study
- Existing Bicycle Lane
- Existing Shared-Use Path
- Existing Trail
- # Transportation System Plan Project - City Primary Funding Source
- # Transportation System Plan Project - ODOT, County, or Private Development Primary Funding Source
- Park
- City Limit
- Parcel
- Urban Growth Boundary

DKS

Developing the Financially Constrained Plan

With an estimated $224.5 million worth of aspirational transportation system projects identified, the City must make reasonable investment decisions to develop a set of transportation improvements that will likely be funded to meet identified needs through 2035. As detailed in the previous memorandum, “Finance Program,” the City expects to have approximately $2.5 million to spend on the 60 transportation improvements for which they will be the primary source of funding over the next 20 years. It would take over $57.0 million to construct all 60 projects, meaning nearly $54.5 million in investments will not be funded.

The City has also identified over $85.0 million worth of investments (spread out over 30 projects) along US 101. ODOT has indicated that it would be reasonable to assume that up to $5 million would be available to fund new projects in Lincoln City over the next 20 years. Again, over $80.0 million worth projects on the state system are not expected to be funded within the TSP planning horizon.

Unless the City expands its funding options, most of the aspirational transportation system projects identified are not reasonably likely to be funded by 2035. For this reason, the transportation system projects were split into two categories. Those reasonably expected to be funded by 2035 become part of the “Financially Constrained Transportation System,” while the projects that are not expected to be funded by 2035 were included in the “Aspirational Transportation System.” Many of the Aspirational Transportation System projects are critically important to the transportation system, and may become priorities over time should additional funding arise.

Setting Priorities to the Investments

Each project from the Aspirational project list was scored based on the evaluation criteria that were developed in Technical Memorandum #9 (Alternatives Evaluation Criteria). Projects were initially grouped into packages of solutions that could reasonably be expected to be funded and implemented over the next 20 years. These packages varied based on allocation of funding to different modes and the desired objectives to be achieved, and included an Auto Mobility, Balanced Modes, Active Community, Safety, and Community Goal focus. The scores were totaled for each package, and used to solicit feedback from the Project Management Team, Project Advisory Committee and the community. The input eventually led to the emergence of a hybrid package of transportation investments to be included as the recommended “Financially Constrained Transportation System.”

The hybrid package of transportation solutions was developed primarily considering the evaluation criteria and funding constraints, but also considered the following items:

- Did the project receive support from the community?
- Does the project provide an alternative bicycle route to US 101 in areas that will likely not have bike lanes within the next 20 years?
- Will the project implement a policy that requires minimal investment from the City?

- Will the project complete a study that provides further insight for improvement needs and funding opportunities?
- Does the project fill a walking or biking gap along the Head to Bay Trail?
- Does the project provide walking or biking improvements along other critical routes?
- Will the project improve mobility along US 101 at an affordable cost?
- Does the project provide a critical safety improvement?
- Is the project necessary to complete before other critical projects can be constructed?

Using these considerations, approximately $2.5 million worth of City projects, and $5.0 million worth of ODOT projects were selected for the "Financially Constrained Transportation System." The projects included in the Financially Constrained Transportation System (shown in Table 3) were recommended within several different priority horizons, based on the project evaluation score:

- Tier 1: Projects recommended for implementation within 1 to 5 years.
- Tier 2: Projects recommended for implementation within 5 to 10 years.
- Tier 3: Projects likely to be implemented beyond 10 years from the adoption of this Plan.

Projects within the Aspirational Transportation System (shown in Attachment 1) were recommended within the following priority horizons, based on the project evaluation score:

- Long-term Tier 1: Projects with the highest priority for implementation beyond the projects included in the Financially Constrained Transportation System, should additional funding become available.
- Long-term Tier 2: Projects with the next highest priority for implementation beyond the projects included in the Financially Constrained Transportation System, should additional funding become available.
- Long-term Tier 3: The last phase of projects to be implemented, should additional funding become available.

DKS

Table 3: Financially Constrained Project List

Project No.	Project Name	Project Elements	Estimated Cost	Priority
Primary Funding Source: City of Lincoln City				
D1	North Lincoln City Circulation Study	Determine roadway connectivity for north Lincoln City, including need for improved east-west connectivity.	$50,000	Tier 1
P12	N 14th St Sidewalk Addition	Add sidewalks to the north side of N 14th Street from NW Harbor Ave to NE Port Ave.	$1,130,000	Tier 3
B7	NE 12th/NE 13th/NW Keel Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating NE 13th St from NE Keel Ave to its east terminus, NE Keel Ave from NE 14th St to NE 10th St, and NE 12th St from US 101 to NE Keel as a shared roadway for bikes.	$25,000	Tier 1
B8	Southeast Delake Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating the route as a shared roadway for bikes. The route includes: SE 1st St from US 101 down to SE 2nd Ct, across the channel via a pedestrian/bicycle bridge to SE 3rd St, along SE 3rd St from the bridge to SE Jetty Ave, along Jetty Ave to SE East Devils Lake Rd, and along SE 9th St from SE Jetty Ave to Police Department.	$700,000	Tier 2
T1	Amenity Improvements	Upgrade amenities to include sheltered stops with seating, route information, and bicycle parking.	$255,000	Tier 1
T4	Casino Park & Ride	Develop Park & Ride at Casino and incorporate North by Northwest Connector amenities.	$45,000	Tier 1
M1	Neighborhood Traffic Calming Program	Implement program to process community requests for neighborhood traffic calming, investigate options, and implement improvements. Key areas for traffic calming investigations include: Roads End, NE Holmes Road, and Cutler.	-	Tier 1
M3	Tourism Management Policy	Develop a fee system that charges tourists for having multiple vehicles at vacation rentals/hotels.	-	Tier 1
M4	Business Incentives Program	Develop an incentives program for Lincoln City businesses to promote visitors to come earlier and/or stay later, thus reducing peak traffic demands.	-	Tier 1
M5	Oceanlake Parking Management	Enhance parking wayfinding in Oceanlake to direct visitors to public parking lots off US 101.	-	Tier 1
M6	Safe Routes to School Program	Continue support of the Safe Routes to School Program.	-	Tier 1
M7	Tsunami Evacuation Route Identification	Enhance tsunami evacuation route wayfinding throughout the city.	-	Tier 1
M8	Bike Parking Program	Install new bike parking throughout the city.	$20,000	Tier 1
Primary Funding Source: ODOT				
B12	Bike warning flashers on US 101/Schooner Creek Bridge	Install "Bikes on Bridge" warning signs and actuated flashing beacons at each end of the Schooner Creek Bridge on US 101. Improvement includes bicycle detection.	$50,000	Tier 1

Project No.	Project Name	Project Elements	Estimated Cost	Priority
S9	D River Hanging Bridge	Create a shared-use path along the east side of US 101 from NE 1st Street to SE 1st Street, which includes a hanging pedestrian/bicycle bridge on the D River Bridge.	$510,000	Tier 1
C1	NE 39th St Crossing	Stipe a continental crossing across US 101 on the north side of the NW 39th Street intersection. This improvement will restripe the highway so that the northbound lanes are reduced to a single through lane until after the crossing where they become two through lanes again. This improvement includes a median refuge island, RRFB's, advanced stop bars, and pedestrian crosswalk signs.	$60,000	Tier 1
C2	Oceanlake Midblock Crossings	Expand no-parking zones to extend from the crosswalk to the advanced stop bars.	$150	Tier 1
C4	SE 3rd St Crossing	Install RRFB's and pedestrian crosswalk signs at stop bars.	$30,000	Tier 1
C5	SW Bard Rd Crossing	Install a continental crossing across US 101 between the SW Bard Road and SE 19th Street intersections. This improvement includes a median refuge island in the center turn lane, a curb extension on the west side, wheelchair ramps with sidewalk on the east side, advanced stop bars, and pedestrian crosswalk signs at the crossing and at the stop bars.	$45,000	Tier 1
C7	SW Coast/Beach Crossing	Install a midblock continental crossing across US 101 between SW Beach Avenue and SW Coast Avenue. This improvement includes a median refuge island, advanced stop bars, closing the ingress driveway just south of the proposed crossing, relocating the existing transit shelter to the proposed crossing, and pedestrian crosswalk signs at the crossing and at the stop bars.	$70,000	Tier 1
C9	SW 50th St Crossing	Restripe and realign the existing crossing at SW 50th Street as a continental crossing that is perpendicular to the roadway. This improvement includes adding downward arrow rider sign under existing crossing signs, advanced stop bars, and pedestrian crosswalk signs at stop bars.	$20,000	Tier 1
C10	Cutler Crossing	Install a pedestrian crossing at the north leg of SW 62nd Street/US 101. This improvement includes continental crossing, a median refuge island, and pedestrian crosswalk signs.	$45,000	Tier 1
H2	Highway Improvements Segment 2	Restripe US 101 from NW Logan Road to NW 39th Street to include bike lanes. Retains five lanes.	$25,000	Tier 1
H4	Highway Improvements Segment 4	Restripe US 101 from NW 25th Street to NW 21st Street to include bike lanes. Retains parking and five lanes.	$50,000	Tier 1

Project No.	Project Name	Project Elements	Estimated Cost	Priority
H5	Highway Improvements Segment 5	Restripe US 101 from NW 13th Street to City Hall to include a southbound bike lane by reducing existing lane widths. Retains five lanes.	$50,000	Tier 1
H6	Highway Improvements Segment 6	Restripe US 101 from City Hall to SE 14th Street to include bike lanes. Retains five lanes.	$25,000	Tier 1
H8	Highway Improvements Segment 8	Complete the shared-path along the east side US 101 between SE 23rd Drive and SW 32nd Street.	$1,000,000	Tier 2
H11	Highway Improvements Segment 11	Install a shared-use path along the west side of US 101 between Siletz Park and NW Jetty Avenue. This includes a hanging pedestrian/bicycle bridge on the Schooner Creek Bridge.	$3,000,000	Tier 3

The Standards

To maintain the vision and associated investments for the transportation system in Lincoln City, the city must have standards and regulations. They also ensure future actions are consistent.

Multi-Modal Street System

A multi-modal street system a hierarchy of city streets organized by functional classification and area type (representative of their places). These classifications ensure that the streets reflect the neighborhood through which they pass, consisting of a scale and design appropriate to the character of the abutting properties and land uses. The classifications also provide for and balance the needs of all travel modes including pedestrians, bicyclists, transit riders, and motor vehicles. Within these street classifications, context sensitive design may result in alternative cross-sections.

Functional Classification

Traditionally, roadways are classified based on the type of vehicular travel they are intended to serve (local versus through traffic). In Lincoln City, the functional classification of a roadway (shown in Figure 6) determines the level of mobility for all travel modes, defining its level of access and usage within the city. The street functional classification system recognizes that individual streets do not act independently of one another but instead form a network that works together to serve travel needs on a local and regional level. From highest to lowest intended usage, the classifications are: principal arterial, minor arterial, collector, local, and shared streets. Roadways with a higher intended usage generally provide more efficient motor vehicle traffic movement (or mobility) through the city, while roadways with lower intended usage (local streets) provide greater access for shorter trips to local destinations.

- **Functional Classification Changes**: The existing functional classifications of streets in Lincoln City were reviewed to determine consistency with the intended use. To the extent possible, minor arterials were designated at one-mile intervals, with collectors at half-mile intervals. Since state highways serve regional travel through the city, US 101 is a principal arterial street. Streets providing primary access to neighborhoods and activity generators in Lincoln City are collectors. All other streets were classified as locals or shared. The updated functional classifications can be seen in Figure 6, while the classification changes are shown in Table A2 of Attachment 1.

Area Type

Classification of a street depends in part on the neighborhood it serves and the intended function for pedestrians, bicyclists, and transit riders in that specific area. The area type defines the street's walking and biking accommodations and determines how users of a roadway interact with the surrounding land use. The area type strikes a balance between street functional classification, adjacent land use, zoning designation and the competing travel needs by prioritizing various design elements. The three area types and a constrained street option for Lincoln City, as identified in the Lincoln City Walking and Biking Plan, are:

- **High-Use Streets** are streets with higher traffic volumes. They typically have a higher amount of pedestrian activity and are often on a transit route. These streets should emphasize a variety of travel choices such as pedestrian, bicycle and transit use to complement the development along the street. Since High-Use streets typically serve pedestrian oriented land uses, walking should receive the highest priority of all the travel modes. They should be designed with features such as wider sidewalks, pedestrian amenities, transit amenities, attractive landscaping, on-street parking, pedestrian crossing enhancements and buffered bicycle lanes.
- **Medium-Use Streets** are streets that have moderate traffic volumes. They are generally surrounded by mixed land uses, including both residential and commercial. These streets often provide secondary neighborhood connections to local parks, schools and mixed-use areas. They should be designed to emphasize walking, while still accommodating the needs of bicyclists and motor vehicles. A high priority should be given to design elements such as landscaped buffers, walkways/pathways/trails, on-street parking and pedestrian safety enhancements.
- **Low-Use Streets** are streets with low traffic volumes. They are generally surrounded by residential uses. They should be designed to emphasize slower travel speeds, while still accommodating the needs of pedestrians and bicyclists. A high priority should be given to design elements such as traffic calming, and on-street parking.

Any street located in steep, environmentally sensitive, rural, historic, or developed areas of the city may be considered a constrained street. These streets may require different design elements that may not be to scale with the adjacent land use. Constrained elements may include narrower travel lanes and pedestrian and bicycle facilities, or accommodations that generally match those provided by the surrounding developed land uses.

6 Proposed Functional Classification

Lincoln City
Transportation System Plan

Proposed Functional Classification

	High Use	Medium Use	Low Use
Minor Arterial			
Collector			
Local Road			

Principal Arterial

Shared Use Path

Park

City Limit

Parcel

Urban Growth Boundary

Note: Planned roadways are shown as dashed lines

DKS

Design Types of Streets

Design of the streets in Lincoln City requires attention to many elements of the public right-of-way and considers how the street interacts with the adjoining properties. The three zones that comprise the cross-section of streets in Lincoln City, including the walking zone, biking/on-street parking zone and driving zone, are shown in Figure 7. The design of these zones varies based on the functional classification and area type. Overall, the TSP includes nine different design types for streets ranging from high-use minor arterial to low-use local street. Note that the TSP does not include a design type for US 101, since it is a state highways and therefore subject to the design criteria in the state's Highway Design Manual. The following provides design criteria for shared streets (see Walking and Biking Treatment Guidelines section) that does not vary by functional classification. The design criteria for streets are in Figures 9a to 9i and in Tables A2 through A4 of Attachment 1. Also included are guidelines for constrained areas (e.g., steep, environmentally sensitive, rural, historic, or previously developed areas of the city) where the design may need to reduce or eliminate lower priority elements of the street. A constrained design should require a variance to the city's standard design prior to construction approval.

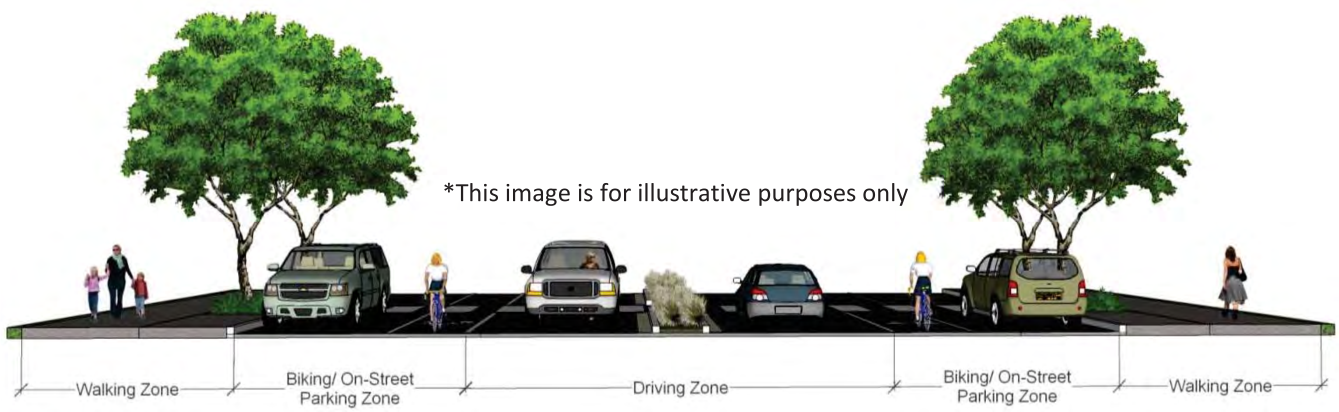


Figure 7: Components of Lincoln City Streets*

Walking Zone: This is the zone in which pedestrians travel (see Figure 8). The walking zone varies by the street type and should be a high priority in high-use and medium-use areas. It should include a minimum five-foot clear throughway for walking, an area for street furnishings, bike racks, or landscaping (e.g. benches, transit stops and/or plantings) and a clearance distance between curbside on-street parking and the street furnishing area or landscape strip, so parking of cars and opening doors of parked vehicles to

Figure 8: Up Close View of the Walking Zone

protect the street furnishings and landscaping. Streets located along a transit route should incorporate furnishings to support transit ridership, such as transit shelters and benches, into the furnishings/landscape strip adjacent to the biking/on-street parking zone.

Biking/On-Street Parking Zone: This is the zone for biking and on-street parking, and is the location where users will access transit. The biking/on-street parking zone is determined by the street type and should be a high priority in high-use and medium-use areas, which should include on-street parking with a minimum six-foot striped bike lane or five-foot bike lane with a three-foot buffer.

Driving Zone: This is the throughway zone for drivers, including cars, buses and trucks and should be a high priority along minor arterial and collector streets. The functional classification of the street generally determines the number of through lanes, lane widths, and median and left-turn lane requirements. However, the route designations (such as transit street or freight route) take precedence when determining the appropriate lane width. Streets need wider lanes (between 13 to 14 feet) for short distances where buses and trucks must negotiate right-turns without encroaching into adjacent or opposing travel lanes. Streets that require a raised median should include landscaping and a minimum six-foot wide pedestrian refuge at marked crossings. The median can be reduced to a minimum of four feet at midblock, widening at intersections for left-turn lanes (where required or needed).

Figure 9a: High-Use Minor Arterial Street

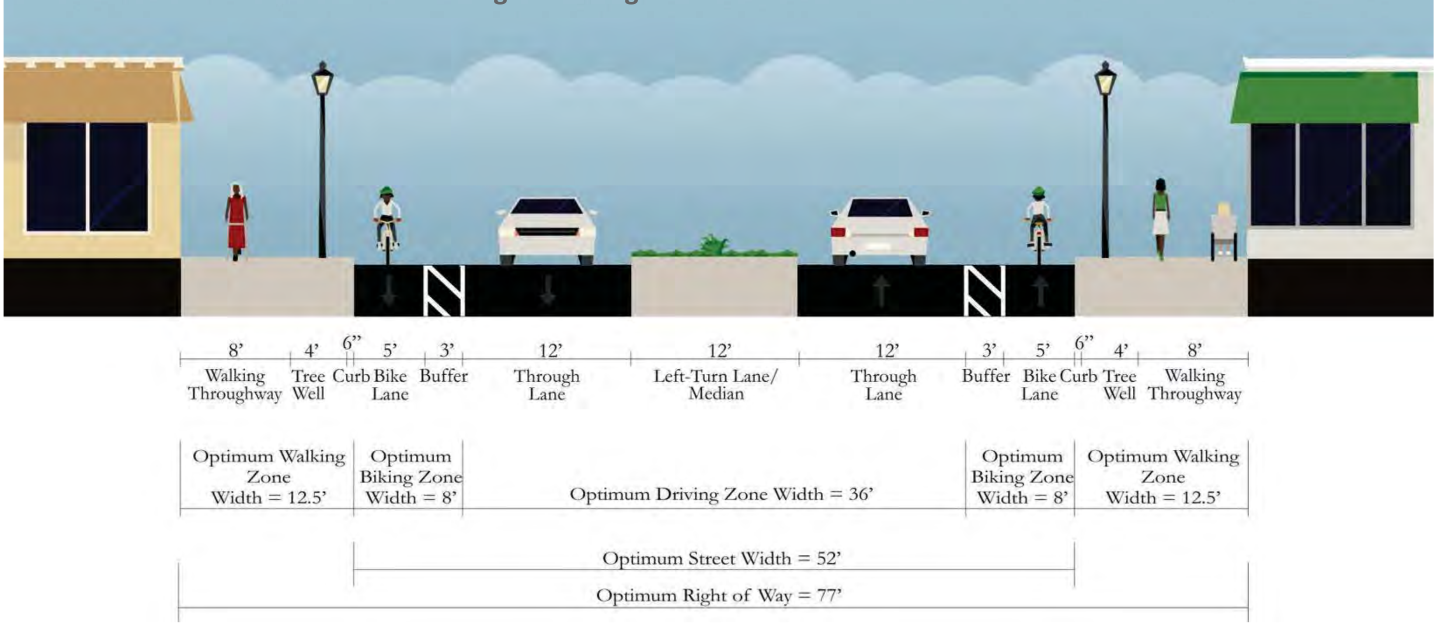


Figure 9b: Medium-Use Minor Arterial Street

Figure 9c: Low-Use Minor Arterial Street

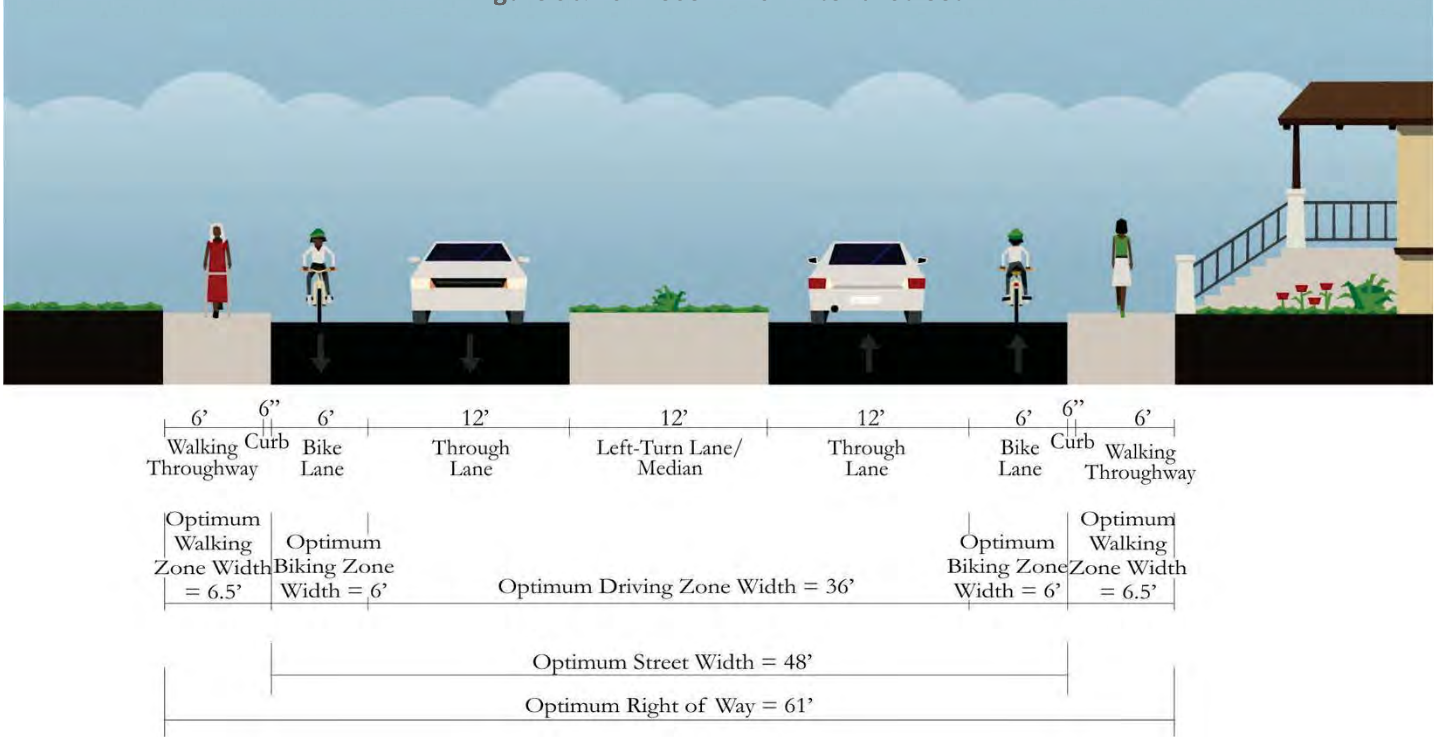


Figure 9d: High-Use Collector Street

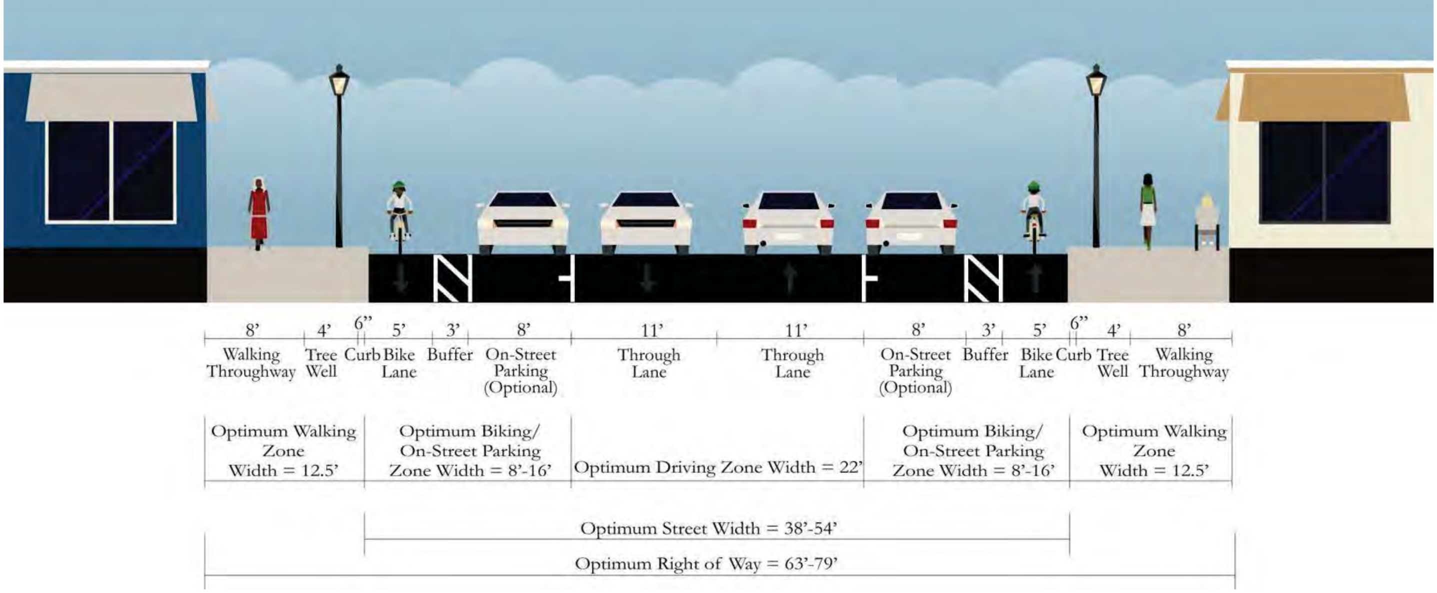


Figure 9e: Medium-Use Collector Street

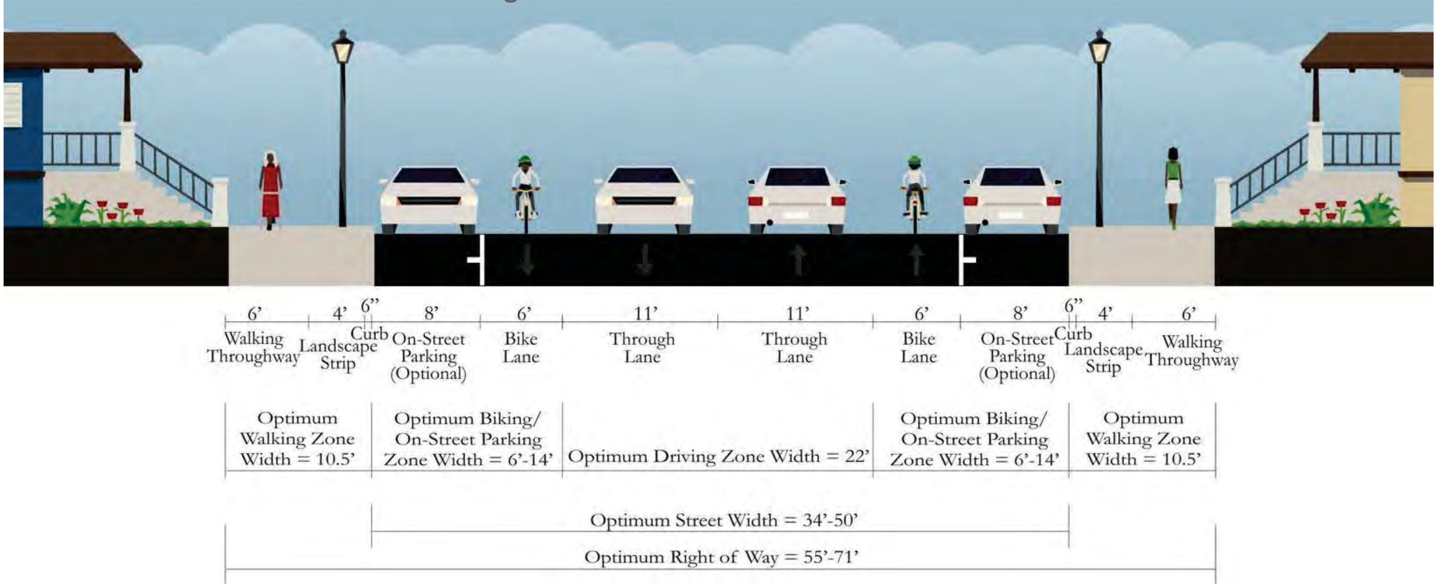


Figure 9f: Low-Use Collector Street

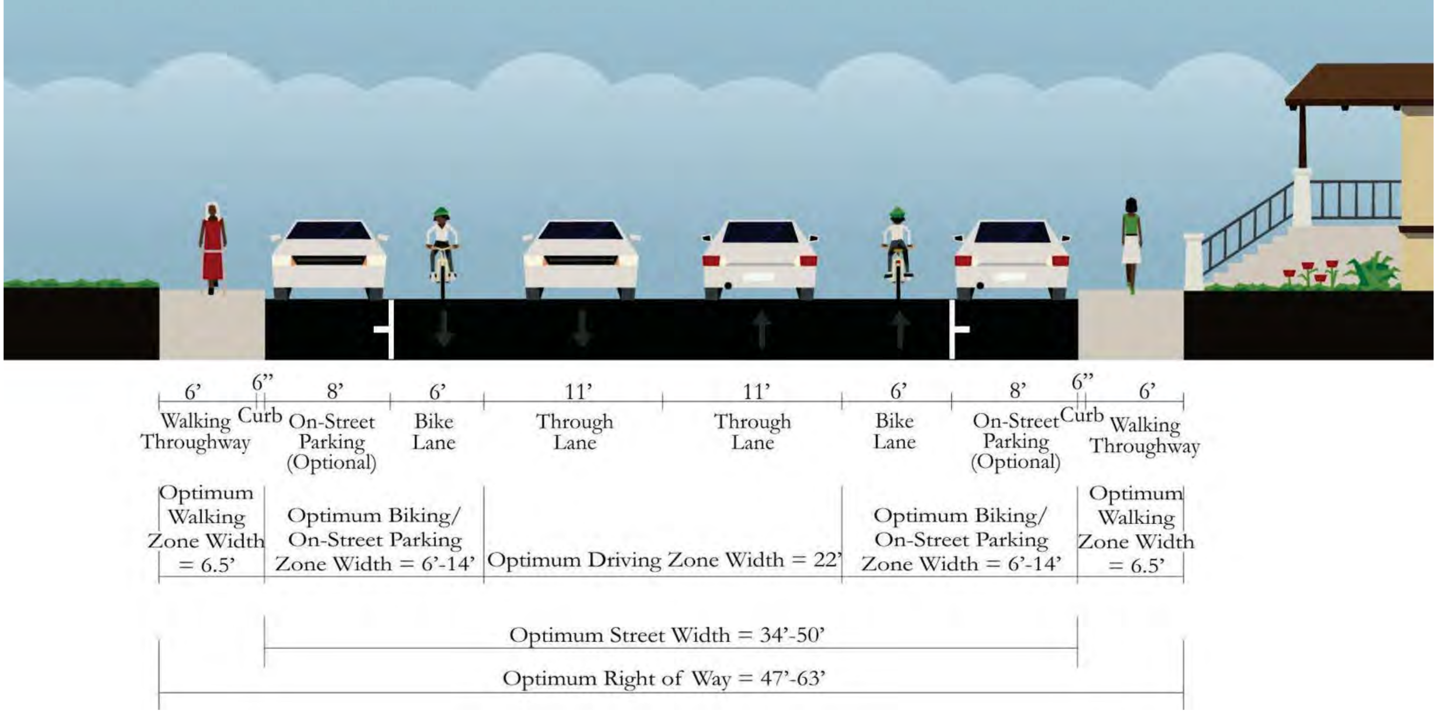


Figure 9g: High-Use Local Street

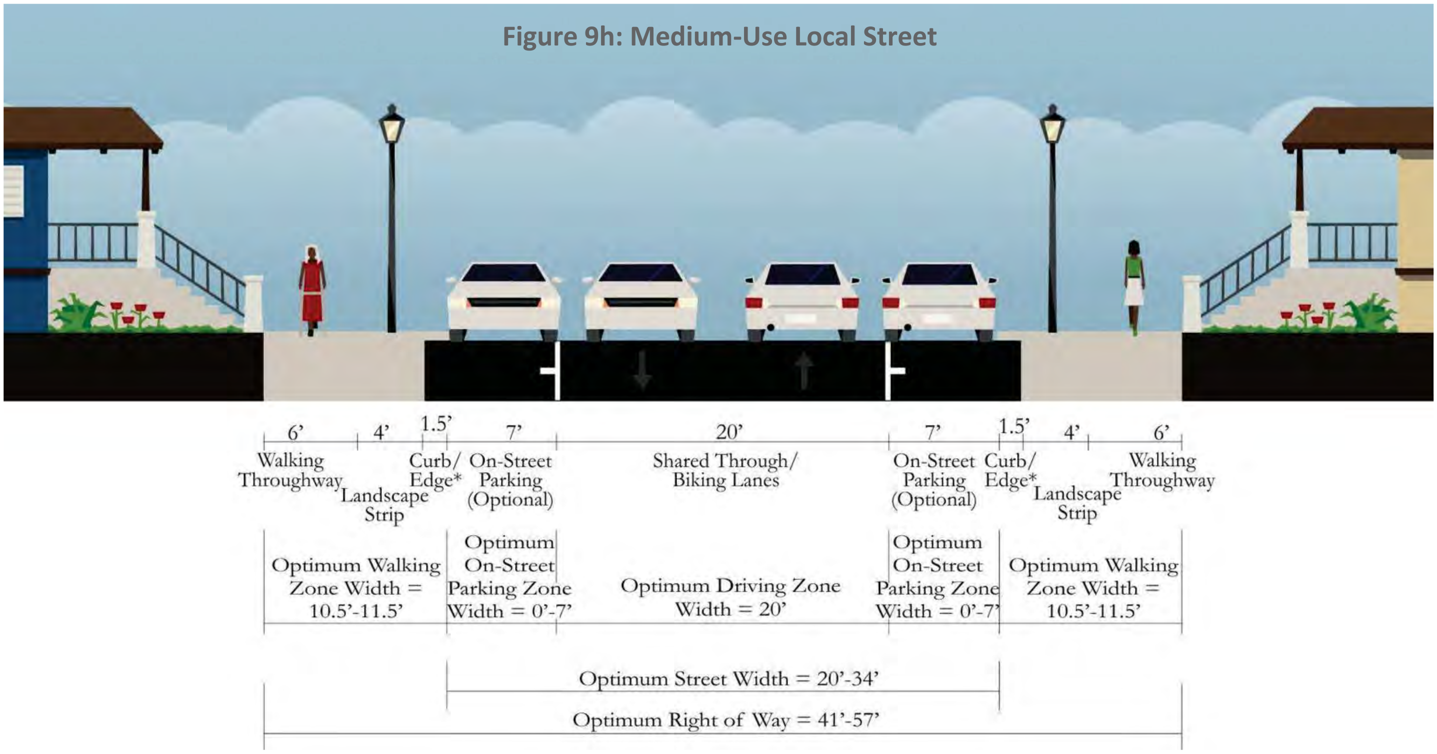


Figure 9h: Medium-Use Local Street

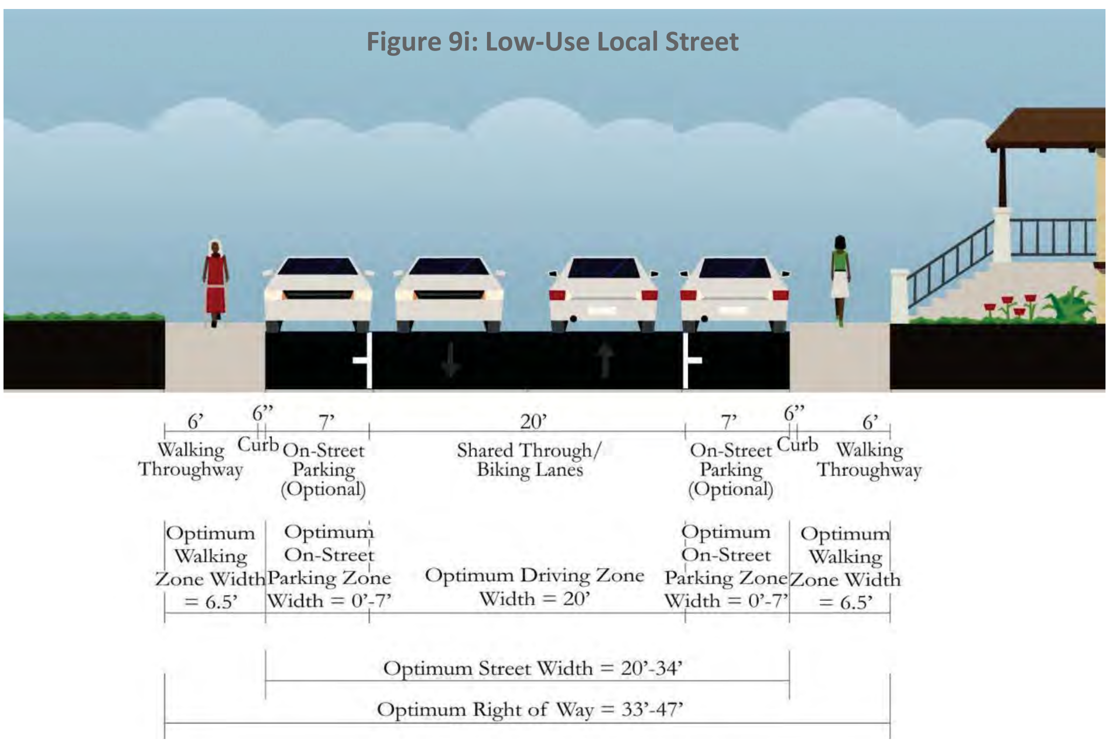


Figure 9i: Low-Use Local Street

Access Spacing Standards

Access management is a broad set of techniques that balance the need to provide efficient, safe, and timely travel with the ability to allow access to individual destinations. Proper access management standards and techniques will promote reduced congestion and accident rates, and may lessen the need for additional roadway capacity.

Table 4 identifies the minimum and maximum public street intersection and minimum private access spacing standards for streets in Lincoln City. New streets or redeveloping properties must comply with these standards to the extent practical (as determined by the city). As the opportunity arises through redevelopment, streets not complying with these standards could improve with strategies such as shared access points, access restrictions (through the use of a median or channelization islands) or closed access points as feasible.

Table 4: Spacing Standards

	Principal Arterial	Minor Arterial	Collector	Local / Shared
Maximum Block Size (Public Street to Public Street)	See Oregon Highway Plan	530 ft.	530 ft.	530 ft.
Minimum Block Size (Public Street to Public Street)		265 ft.	265 ft.	265 ft.
Minimum Driveway Spacing (Public Street to Driveway and Driveway to Driveway)		265 ft.	130 ft.	None

Traffic Calming

Traffic calming refers to street design techniques that slow traffic and make streets safer (primarily in residential and mixed-use areas) without significantly changing vehicle capacity. They mitigate the impacts of traffic on neighborhoods and business districts that need a greater balance between safety and mobility.

Traffic calming measures must balance the need to manage vehicle speeds and volumes with the need to maintain mobility, circulation, and function for service providers (e.g., emergency response). Table 5 lists common traffic calming applications and suggests which devices may be appropriate along various streets in the city. Images of the measures are shown in Attachment 1. Any traffic calming project should include coordination with emergency service providers to ensure the project does not compromise public safety.

Traffic calming seeks to influence driver behavior through physical and psychological means, resulting in lower vehicle speeds or through traffic volumes. Physical traffic calming techniques include:

- Narrowing the street by providing curb extensions or bulbouts, or mid-block pedestrian refuge islands
- Deflecting the vehicle path vertically by installing speed humps, speed tables, or raised intersections
- Deflecting the vehicle path horizontally with chicanes, roundabouts, and mini-roundabouts

Narrowing travel lanes and providing visual cues such as placing buildings, street trees, on-street parking, and landscaping next to the street also creates a sense of enclosure that prompts drivers to reduce vehicle speeds.

Table 5: Traffic Calming Measures by Street Functional Classification

Traffic Calming Measure***	Is Measure Appropriate? (per Roadway Classification)**		
	Minor Arterial*	Collector*	Local or Shared Street*
Narrowing travel lanes	Yes	Yes	Calming measures are generally appropriate on local streets that are infrequent emergency response routes and have more than one way in and out.
Placing buildings, street trees, on-street parking, and landscaping next to the street	Yes	Yes	
Curb Extensions or Bulbouts	Yes	Yes	
Roundabouts	Yes	Yes	
Mini-Roundabouts	No	Yes	
Medians and Pedestrian Islands	Yes	Yes	
Pavement Texture	Yes	Yes	
Speed Hump or Speed Table	No	No	
Raised Intersection or Crosswalk	No	No	
Speed Cushion (provides emergency pass-through with no vertical deflection)	No	Yes	
Choker	No	No	
Traffic Circle	No	No	
Diverter (with emergency vehicle pass through)	No	Yes	
Chicanes	No	No	

* Any traffic calming project should include coordination with emergency service providers to ensure public safety.
** Traffic calming on US 101 would require ODOT approval.
*** See Attachment 1 for images of these measures

Mobility Standards

Establishing mobility standards for streets and intersections in Lincoln City will encourage a sustainable transportation system (consistent with the TSP Goal 6) by providing a metric to assess the impacts of new development on the existing transportation system.

The TSP update recommends the following mobility standards for streets under the city's jurisdiction. State-owned streets must comply with the mobility targets included in the Oregon Highway Plan. Lincoln County does not maintain mobility standards for county roadways.

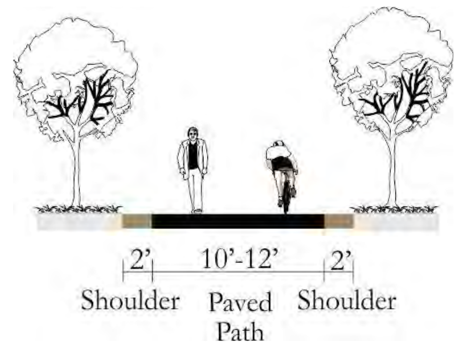
- **Signalized, All-way Stop, or Roundabout Controlled Intersections:** During the highest one-hour period on an average weekday (typically, but not always the evening peak period between 4 p.m. and 6 p.m. during the spring or fall): the intersection as a whole must meet Level of Service (LOS) "E" or better.

- **Two-way Stop and Yield Controlled Intersections:** During the highest one-hour period on an average weekday (typically, but not always the evening peak period between 4 p.m. and 6 p.m. during the spring or fall): All movements serving more than 20 vehicles shall be LOS "E" or better. LOS "F" is acceptable at movements serving no more than 20 vehicles during the peak hour.

Walking and Biking Treatment Guidelines

The following sections detail various walking and biking standards and treatment guidelines. They are consistent with the 2012 Walking and Biking Plan.

Figure 10: Typical Cross-Section for Shared-Use Paths



Shared Use Paths

Shared-use paths provide off-roadway facilities for walking and biking travel. Depending on their location, they can serve both recreational and general travel needs. Shared-use path designs vary in surface types and widths. Harder surfaces are generally better for bicycle travel. Widths should provide ample space for both walking and biking and should also be able to accommodate maintenance vehicles. The typical cross-section for shared-use paths was obtained from the Lincoln City Walking and Biking Plan, and can be seen in Figure 10. The city may reduce the width of the paved shared-use path to a minimum of eight feet in constrained areas located in steep, environmentally sensitive, rural, historic, or developed areas of the city. In areas with significant walking or biking demand, the paved shared-use path should be 12 feet, otherwise it should be 10 feet wide.

In addition, a variety of amenities can make a path inviting to the user. These could include features such as interpretive signs, water fountains, benches, lighting, maps, art, and shelters.

Shared Streets

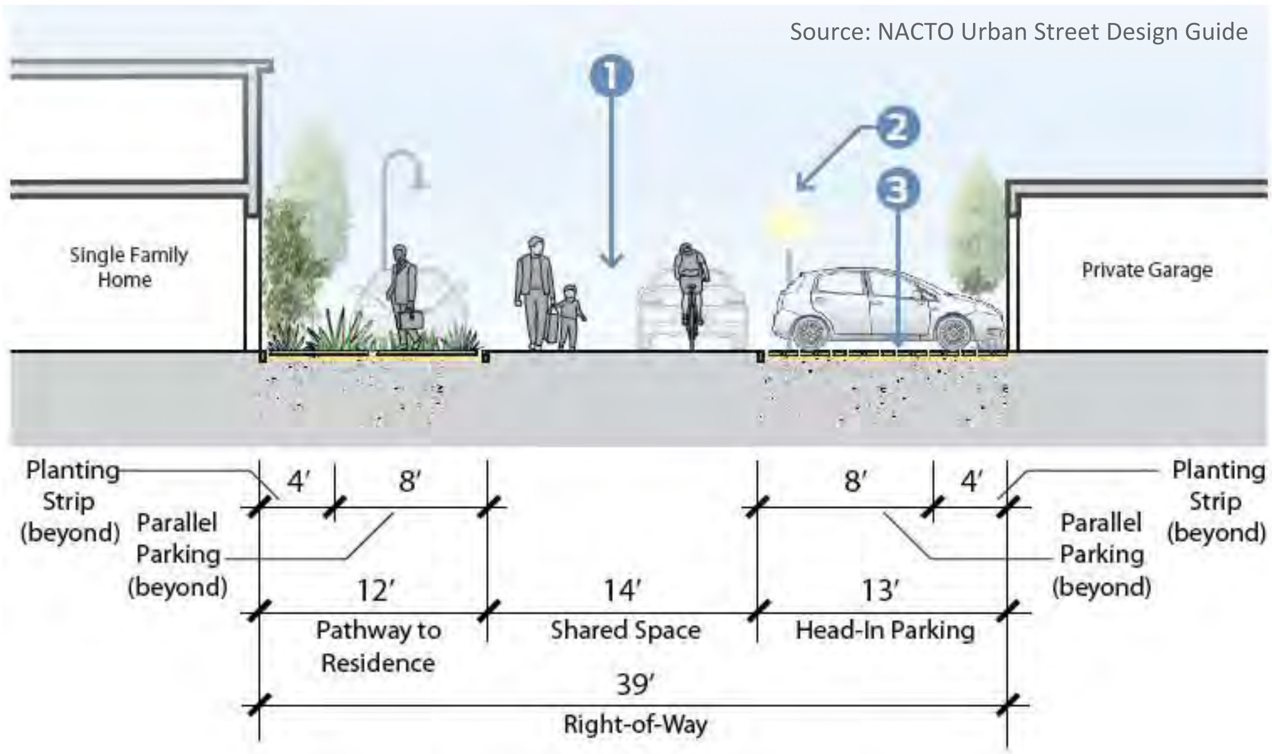
Several streets in Lincoln City have been designated as Shared Streets. Shared streets are shared among pedestrians, bicyclists, and motor vehicles; however, pedestrians have priority over cars and bicyclists. The street is designed without a clear division between pedestrian and auto space (i.e., no continuous curb), so motorists are forced to slow down and travel with caution. Limiting vehicular speed not only improves residents' feelings of safety, but also promotes greater use of the public space. This action allows more room for new features in the street such as street furniture (e.g., planters, street trees, benches) and areas for social interaction, bringing more people out on the streets to walk, bike, play, and interact with each other. The design criteria for Shared streets can be seen in Figure 11.

Source: NACTO Urban Street Design Guide

Example of a Shared Street

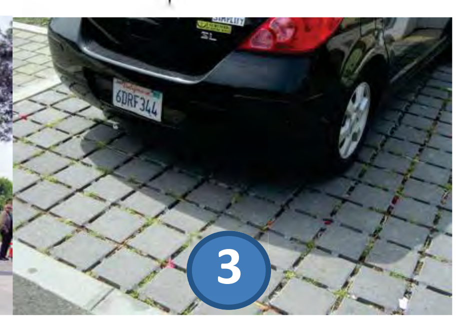
Shared streets should include gateways that announce that one has entered the shared street; curves to slow vehicle traffic; amenities such as trees and play equipment that serve the dual purpose of forcing vehicles to slow down; no curbs; and intermittent parking so that cars do not form a wall of steel between the roadway and houses. The use of curves eliminates lengthy sightlines for drivers. Cars can pass each other along a shared street, but typically only in selected locations. The speed limit is typically about 10 miles per hour.

Figure 11: Design Criteria for Shared Streets



14-foot shared roadway

10 mph advisory speed limit and "shared street" signs



Stormwater is infiltrated through the use of permeable paving systems, landscape planters and other purposely located pervious surfaces

Street Crossings

Roadways with high traffic volumes and/or speeds in areas with nearby transit stops, residential uses, schools, parks, shopping and employment destinations generally require enhanced street crossings. These crossings should include treatments such as marked crosswalks, high visibility crossings, and curb extensions to improve the safety and convenience of street crossings. Several enhanced crossings of US 101 have been included in the Aspirational Plan, with sketches of each shown in Attachment 1.

Crossings should be consistent with the block spacing standards shown in Table 3. Blocks longer than the maximum block size shown in Table 3 should have mid-block pedestrian and bicycle access ways at spacing no more than 330 feet. Exceptions include where the connection is impractical due to inadequate sight distance, high vehicle travel speeds, or other factors that may prevent the crossing (as determined by the city).

Evaluating US 101 Design Options

The Lincoln City TSP update identified the need for circulation, capacity or safety enhancements along several segments of US 101 in areas with constrained right-of-way or other development limitations. The following sections summarize the evaluation of the multiple improvement options that ultimately provided the community direction in developing recommended solutions for these street segments.

Each of the improvement option for segments of the highway was scored according to the evaluation criteria established for this project. Community input and collaboration ultimately led to a recommended solution that was included in the "Aspirational Transportation System" for the TSP.

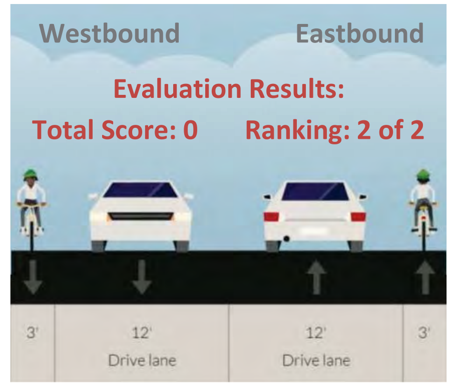
When considering the following options, any design elements proposed for US 101 that do not comply with ODOT's design standards (e.g., auto lanes less than 12 feet wide, center turn lanes less than 14 feet wide, bike lanes less than 6 feet wide, and sidewalk less than 6 feet wide), would require the city to request a design exception. Also note that recent changes in federal regulations pertaining to storm water treatment necessitate the addition of five-foot landscape strips between the highway and sidewalk where improvements are made that significantly increase the amount of impervious surface. This requirement presented an additional challenge for fitting highway improvements within constrained areas.

NE East Devils Lake Road to NE West Devils Lake Road

Two design options were considered along US 101 between NE East Devils Lake Road and NE West Devils Lake Road. The City has a project in the 2016-2018 State Transportation Improvement Plan to address walking and biking facilities along this stretch of the highway and the Neotsu intersection, however, a design for the project has yet to be adopted.

Option 1: Do Nothing

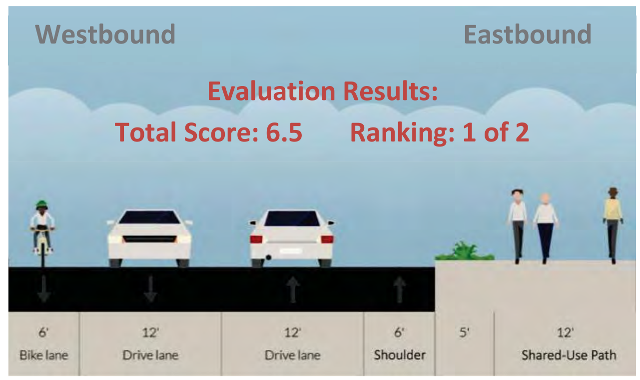
US 101 maintains two travel lanes with only a narrow shoulder to accommodate those walking or bicycling.



Option 1: Do Nothing

Option 2: Widen US 101 to provide bike lanes and a shared-use path

Improvements would widen US 101 to provide bike lanes and a shared-use path along the south side of the highway to accommodate those walking and bicycling. A vegetated buffer would remain between the highway and path to treat storm water.



Option 2: Widen roadway to provide bike lanes and a shared-use path

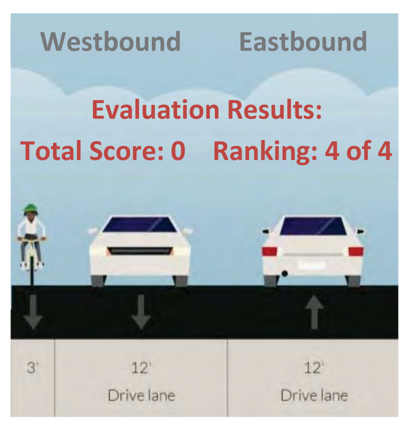
Evaluation of NE East Devils Lake Road to NE West Devils Lake Road Design Options: Option 2 (Widen US 101 to provide bike lanes and a shared-use path) has the greatest likelihood to meet the TSP goals since the Do Nothing option does not provide adequate pedestrian or bicycle facilities. Option 2 has received funding as part of the Statewide Transportation Improvement Program (STIP).

NE West Devils Lake Road to NW Logan Road

Consultants evaluated four design options along US 101 between NE West Devils Lake Road and NW Logan Road. These options are summarized below.

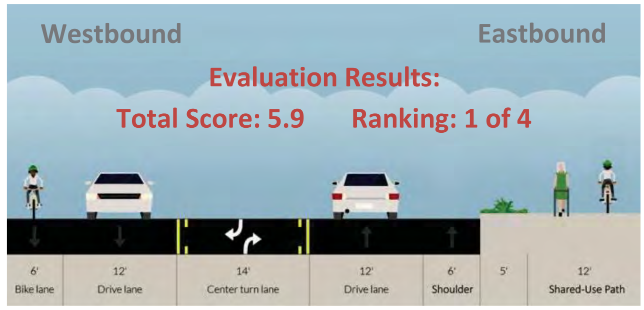
Option 1: Do Nothing

US 101 would maintain two travel lanes with only a narrow shoulder to accommodate those walking or bicycling.



Option 1: Do Nothing

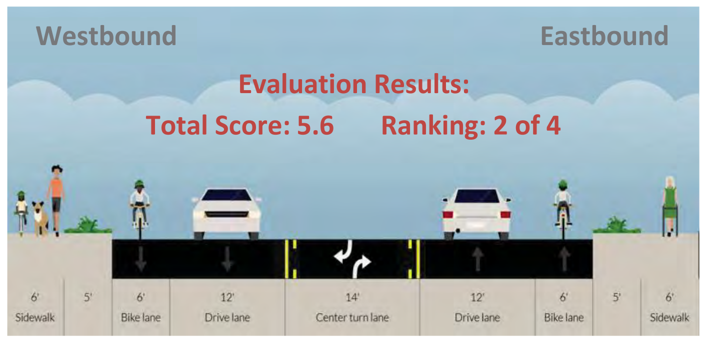
Option 2: Widen US 101 to three lanes, with a shared-use path



Option 2: Widen US 101 to 3 lanes, with a shared-use path

Improvements would widen US 101 to three travel lanes (one lane in each direction with a center turn lane/median). The center turn lane would improve safety for drivers turning left off the highway, but there aren't many driveways in this segment of road to take advantage of this improvement. Bike lanes and a shared-use path along the south side of the road would accommodate those walking and bicycling. A vegetated buffer would remain between the highway and path to treat stormwater.

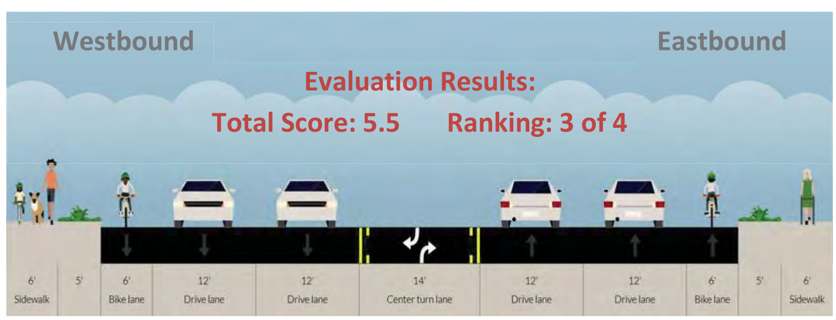
Option 3: Widen US 101 to three lanes, with sidewalks, landscaping, and bike lanes



Option 3: Widen US 101 to 3 lanes, with sidewalks and bike lanes

Improvements would widen US 101 to three travel lanes (one lane in each direction with a center turn lane/median). The center turn lane would improve safety for drivers turning left off the highway, but there aren't many driveways in this segment of road to take advantage of this improvement. Bike lanes and sidewalks would accommodate those walking and bicycling on both sides of the street, as opposed to just having a shared-use path on one side. Landscape strips added between the sidewalk and highway would be required to treat stormwater.

Option 4: Widen US 101 to five lanes, with sidewalks and bike lanes



Option 4: Widen US 101 to 5 lanes, with sidewalks and bike lanes

Improvements would widen US 101 to five travel lanes (two lanes in each direction with a center turn lane/median). The added capacity could reduce some of the congestion in this area leading into town and approaching the casino. Bike lanes and sidewalks would accommodate those walking and bicycling on both sides of the street. Landscape strips added between the sidewalk and highway would treat storm water. Most improvements would fit within available right-of-way, but the project would require about 20 feet of additional right-of-way from a few undeveloped lots (approximately 10 feet from each side). Construction of a highway this wide would require large retaining walls due to surrounding topography, significantly increasing cost.

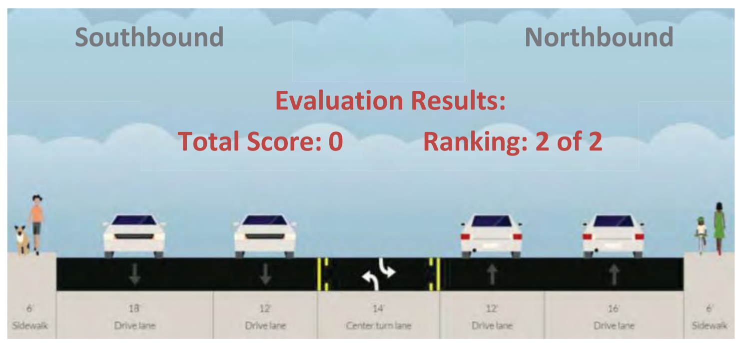
Evaluation of NE West Devils Lake Road to NW Logan Road Design Options: Option 2 scored the highest, because it provides facilities for all modes of travel with the smallest overall footprint. Option 4 provides for all modes of travel and the best motor vehicle operations, but would cost considerably more to construct and scored slightly lower due to the potential property and environmental impacts associated with the wider footprint. Option 2 has received funding as part of the Statewide Transportation Improvement Program (STIP). However, because pedestrian connectivity along the north side of the highway is desired, the "Aspirational Transportation System" includes a project that would construct sidewalk from NE West Devils Lake Road to NW Logan Road.

NW Logan Road to NW 39th Street

Consultants evaluated two design options along US 101 between NW Logan Road and NW 39th Street. These options are:

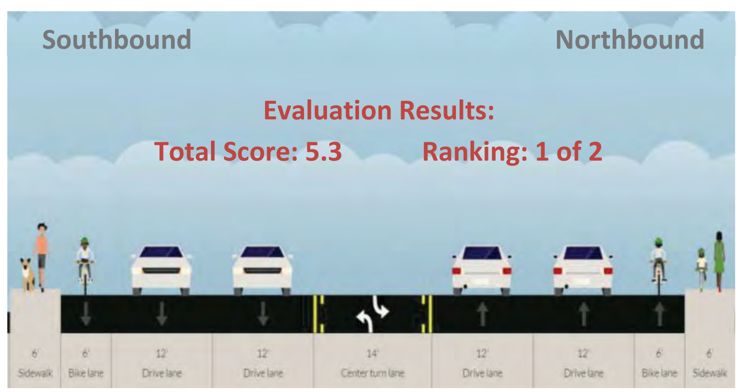
Option 1: Do Nothing

US 101 maintains five travel lanes with sidewalks and a wide curbside travel lane that accommodates cyclists.



Option 1: Do Nothing

Option 2: Restripe US 101 to include bike lanes
US 101 maintains five travel lanes (two lanes in each direction with a center turn lane/median). Improvements restripe the wide curbside travel lanes to include bike lanes in both directions.



Option 2: Restripe US 101 to include bike lanes

Evaluation of NW Logan Road to NW 39th Street Design Options: Overall, Option 2 (Restripe US 101 to include bike lanes) would have the greatest likelihood to meet the TSP goals because it provides better accommodations for cyclists without right-of-way impacts. Therefore, Option 2 was included in the Aspirational project list.

Wecoma (NW 39th Street to NW 25th Street)

Using the TSP goals, consultants evaluated and compared three design options were evaluated along US 101 between NW 39th Street and NW 25th Street (see Table A9 in Attachment 1). Below is a summary of the options and evaluation.

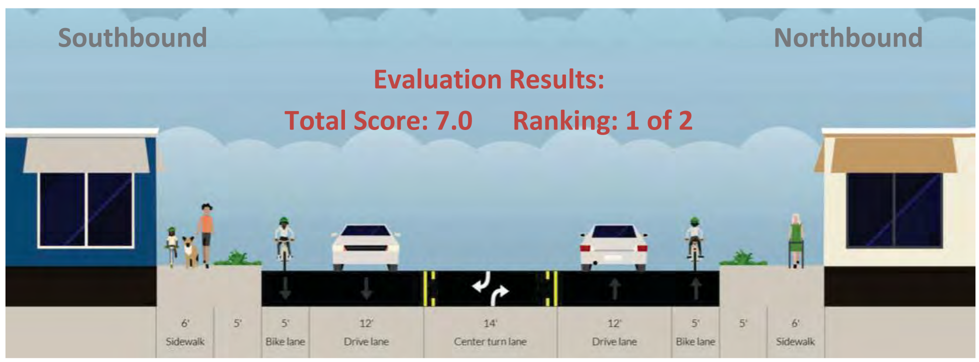
Option 1: Do Nothing

US 101 maintains three travel lanes with only a sidewalk on one side and narrow shoulders to accommodate those walking or bicycling.

Wecoma Option 1: Do Nothing

Option 2: Widen US 101 to add sidewalks with landscaping and bike lanes

US 101 maintains three travel lanes. Improvements add bike lanes and sidewalks to accommodate those walking and bicycling on both sides of the street. Landscape strips added between the sidewalk and highway treat stormwater.



Wecoma Option 2: Widen US 101 to add sidewalks with landscaping and bike lanes

Option 3: Widen US 101 to five lanes, with sidewalks, landscaping, and bike lanes
Consultants considered this option, but are not advancing it for further consideration, because of the significant right-of-way needs and property impacts (approximately 25 feet of right-of-way on average).

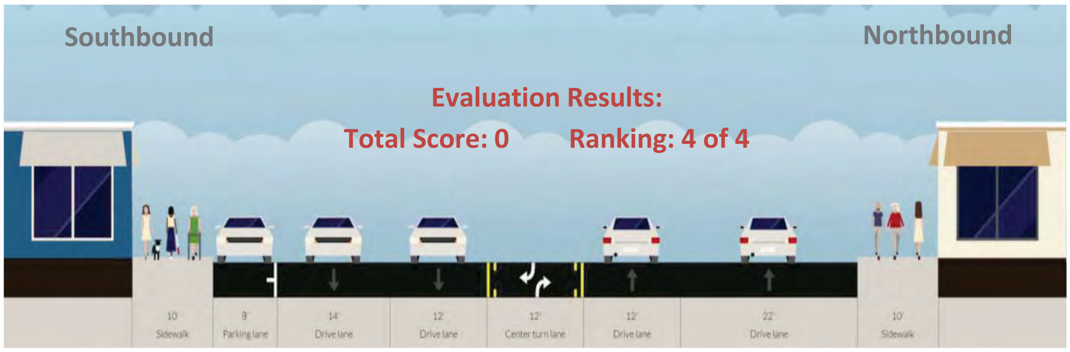
Evaluation of Wecoma (NW 39th Street to NW 25th Street) Design Options: Overall, Option 2 (Widen US 101 to add sidewalks and bike lanes) has the greatest likelihood to meet the TSP goals, because it provides full accommodations for pedestrians and cyclists within minimal right-of-way impacts. Therefore, Option 2 was included in the “Aspirational Transportation System”.

North Oceanlake (NW 25th Street to NW 21st Street)

Using the TSP goals, consultants evaluated and compared four design options (see Table A10 in Attachment 1) along US 101 between NW 25th Street and NW 21st Street, summarized below.

Option 1: Do Nothing

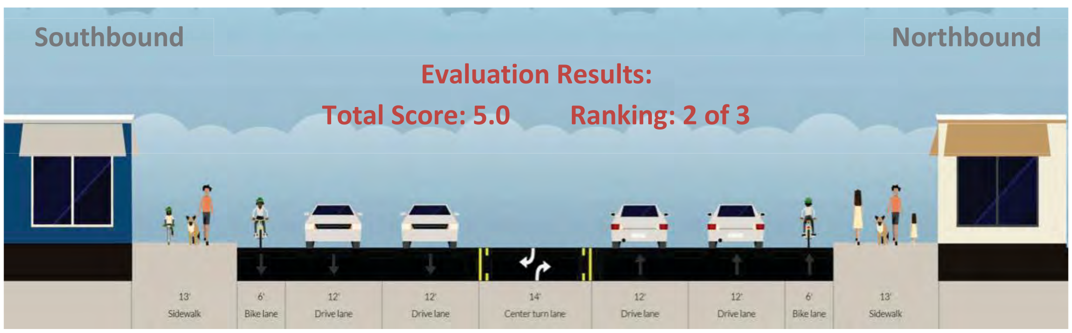
US 101 maintains five travel lanes, with on-street parking on one side. Sidewalks are present and cyclists can use the wide curbside travel lanes.



North Oceanlake Option 1: Do Nothing

Option 2: Remove parking and reconfigure the street width of US 101 to include bike lanes and wider sidewalk

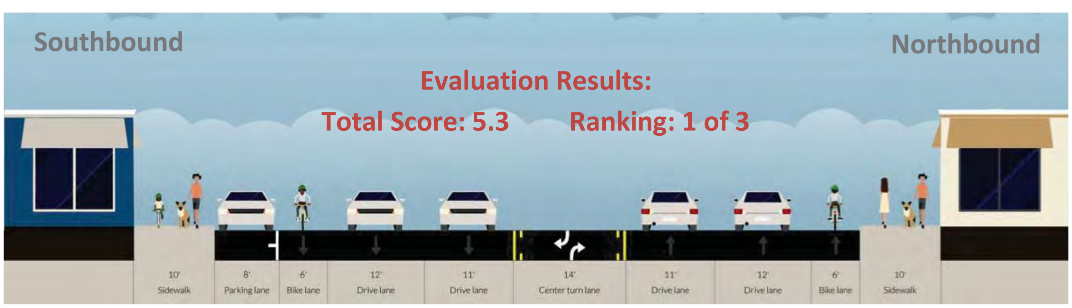
US 101 maintains five travel lanes. However, improvements eliminate the on-street parking. The extra street width is designated for bike lanes and widening of sidewalks by three feet each.



North Oceanlake Option 2: Remove parking and reconfigure the street width of US 101 to include bike lanes and wider sidewalks

Option 3: Reconfigure the street width of US 101 to add bike lanes

US 101 maintains five travel lanes; however, improvements reduce the width of the curbside travel lanes, and reduce the width of the inside travel lanes by one foot to provide a standard width center turn lane (requires approval of design exception from ODOT). The extra street width is designated for bike lanes. Sidewalks continue to accommodate those walking and on-street parking remains. Improvements require only restriping of the highway.



North Oceanlake Option 3: Reconfigure the street width of US 101 to add bike lanes

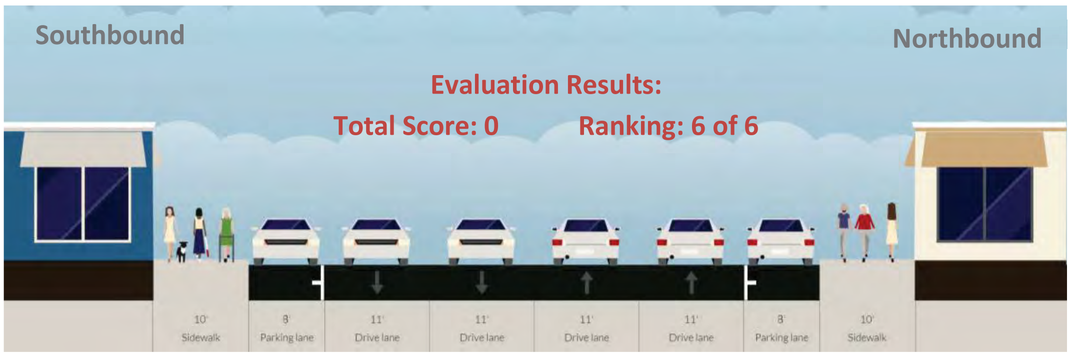
Evaluation of North Oceanlake (NW 25th Street to NW 21st Street) Design Options: Overall, Option 3 scored the highest, because it provides facilities for all travel modes and preserves on-street parking for adjacent businesses. Therefore, Option 3 was included in the "Aspirational Transportation System".

South Oceanlake (NW 21st Street to NW 13th Street)

Consultants evaluated and compared seven design options along US 101 between NW 21st Street and NW 13th Street, summarized below.

Option 1: Do Nothing

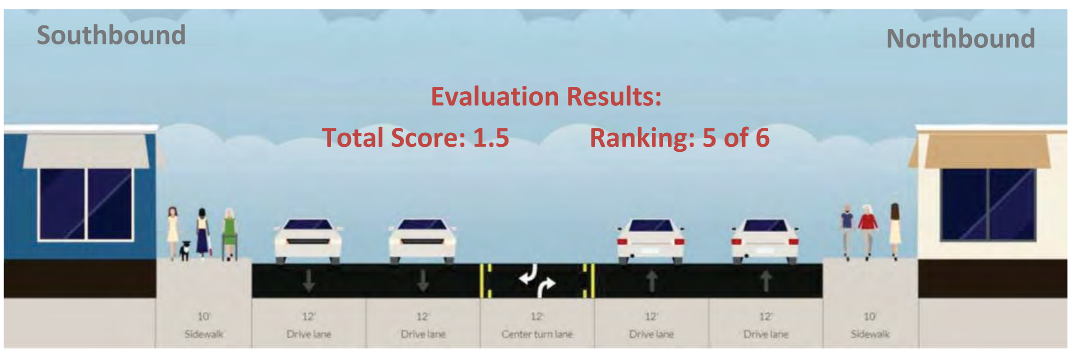
US 101 maintains four narrow travel lanes, with on-street parking on both sides. Sidewalks accommodate those walking. Bicyclists have no accommodations.



South Oceanlake Option 1: Do Nothing

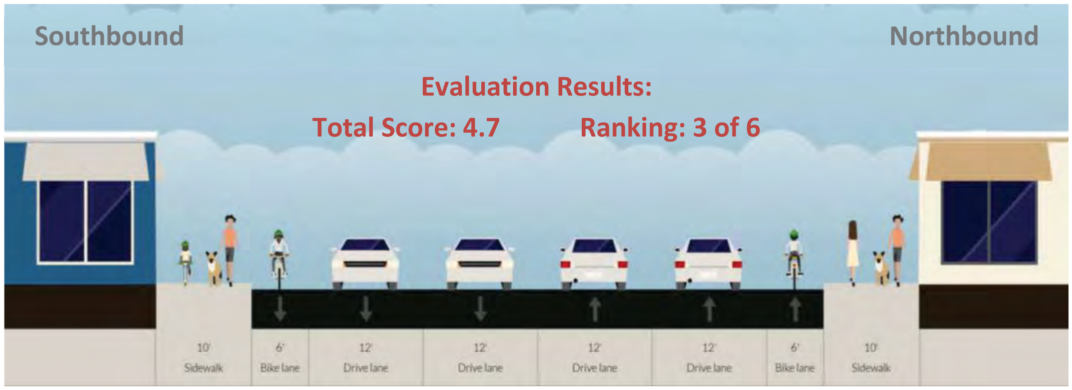
Option 2: Remove parking and reconfigure the street width of US 101 to include a center turn lane/median

Improvements would add a turn lane/median and maintain two travel lanes in each direction, replacing on-street parking. The addition of the turn lane improves safety for drivers turning off of the highway and eliminates the problem of turning vehicles blocking through traffic. Sidewalks remain as they are today and continue to accommodate those walking, but no parked cars act as a buffer between pedestrians and highway traffic. Bicyclists have no accommodations.



South Oceanlake Option 2: Remove parking and reconfigure the street width of US 101 to include a center turn lane/median

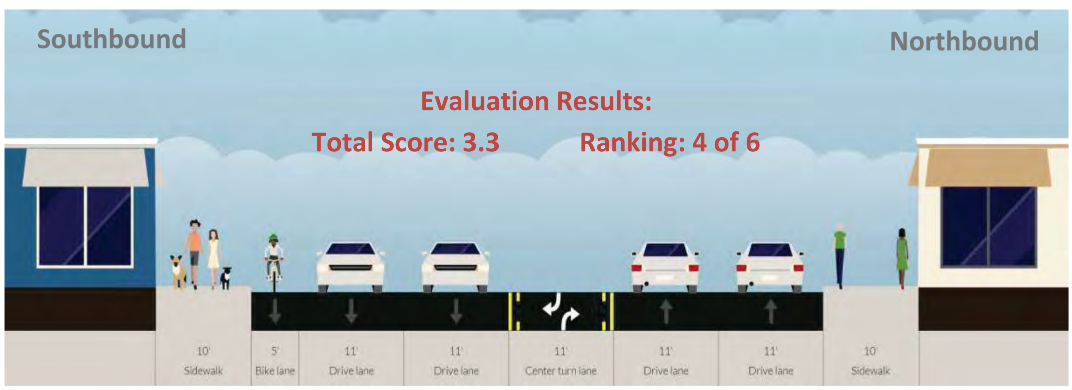
Option 3: Remove parking and reconfigure the street width of US 101 to include bike lanes and wider travel lanes



South Oceanlake Option 3: Remove parking and reconfigure the street width of US 101 to include bike lanes and wider travel lanes

US 101 would maintain four travel lanes; however, on-street parking is removed. The extra street width allows for bike lanes and the addition of one foot to each travel lane on the highway (creating a standard width). Sidewalks remain as they are today and continue to accommodate those walking. The new bike lanes act as a buffer between pedestrians and highway traffic.

Option 4: Remove parking and reconfigure the street width of US 101 to include a southbound bike lane and center turn lane/median



South Oceanlake Option 4: Remove parking and reconfigure the street width of US 101 to include a southbound bike lane center turn lane/median

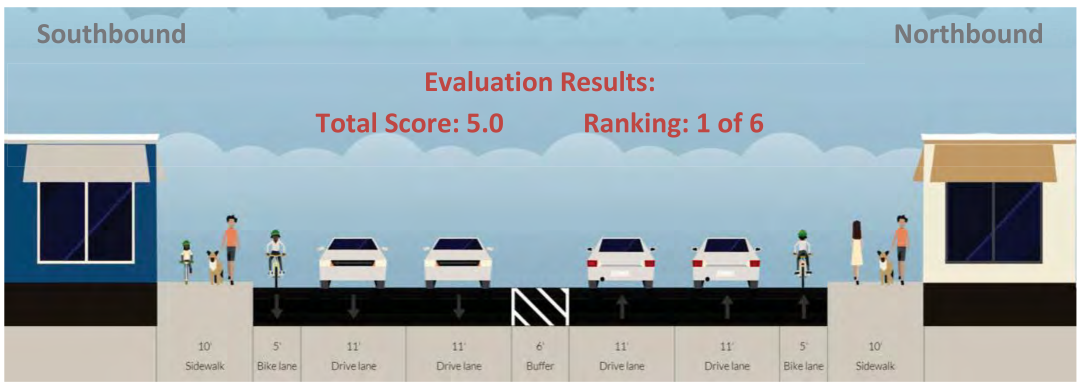
Improvements maintain two lanes in each direction and add a center turn lane/median and southbound bike lanes. The project removes on-street parking. Sidewalks continue to accommodate those walking. Signs direct northbound cyclists to use an alternate route, perhaps along NE 13th Street, NE Mast Avenue, NE Lee Place, and NE 18th Place.

Option 5: Remove parking and reconfigure the street width of US 101 to include bike lanes and wider sidewalks

South Oceanlake Option 5: Remove parking and reconfigure the street width of US 101 to include bike lanes and wider sidewalks

US 101 maintains four travel lanes; however, loses on-street parking in favor of bike lanes and wider sidewalks (by two feet).

Option 6: Remove parking and reconfigure the street width of US 101 to include bike lanes and a small painted median



South Oceanlake Option 6: Remove parking and reconfigure the street width of US 101 to include bike lanes and a small painted median

US 101 would maintain four travel lanes, but loses on-street parking. The extra width provides bike lanes and a six-foot wide painted median in the middle of the road, perhaps including small raised concrete refuges in the painted median at marked pedestrian crossings.

Option 7: Remove two lanes from US 101 and add a center turn lane and bike lanes

US 101 would lose one travel lane in each direction and add a center turn lane and bike lanes. The addition of the turn lane improves safety for drivers turning off of the highway and eliminates the problem of turning vehicles blocking through traffic. The bike lanes provide cycling facilities where none exist today. Evaluation shows that the removal of the through lanes for cars would result in significantly worse congestion on the highway, affecting tourism, freight movement, and local and regional traffic, causing several additional hours of traffic jams in the summertime and far worse congestion during the rest of the year than the summertime congestion experienced today. Therefore, this is no longer an option under consideration.

Evaluation of South Oceanlake (NW 21st Street to NW 13th Street) Design Options: Options that provide more complete facilities for all modes of travel scored highest, with Options 5 and 6 resulting in the highest scores.

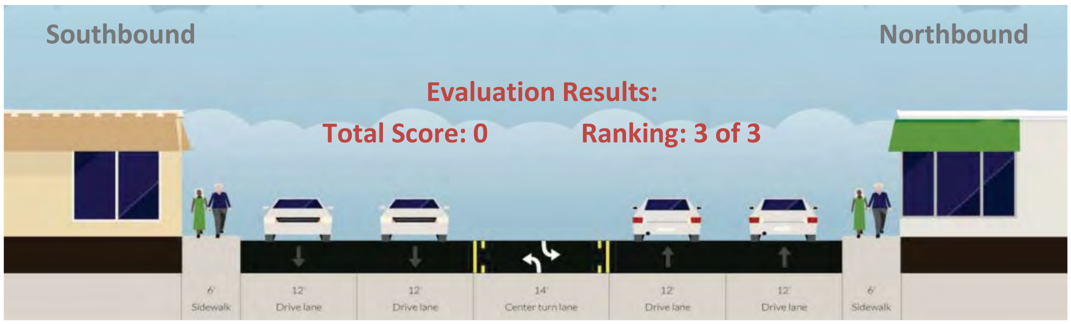
However, since a more focused community outreach effort is necessary for making changes along this segment of Highway, no changes were recommended in "Aspirational Transportation System."

Delake (NW 13th Street to SW 14th Street)

Four design options were evaluated along US 101 between NW 13th Street and SW 14th Street. These options are summarized below.

Option 1: Do Nothing

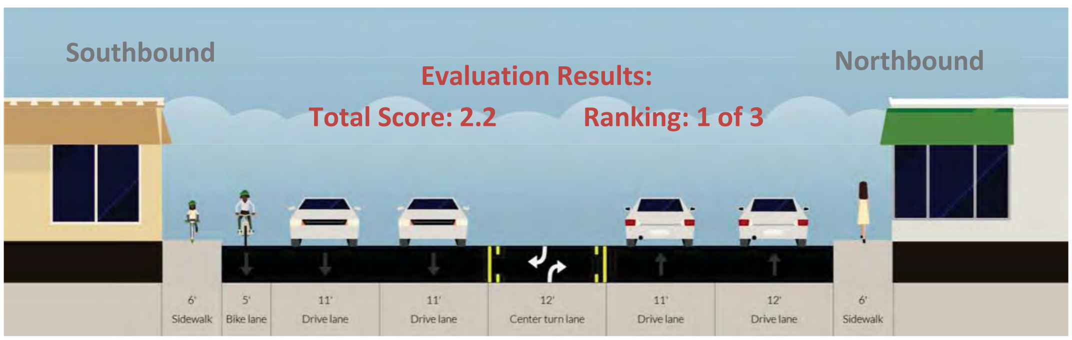
US 101 maintains five travel lanes. Sidewalks accommodate those walking. Cyclists have no accommodations.



Delake Option 1: Do Nothing

Option 2: Reconfigure US 101 to add bike lanes in one direction

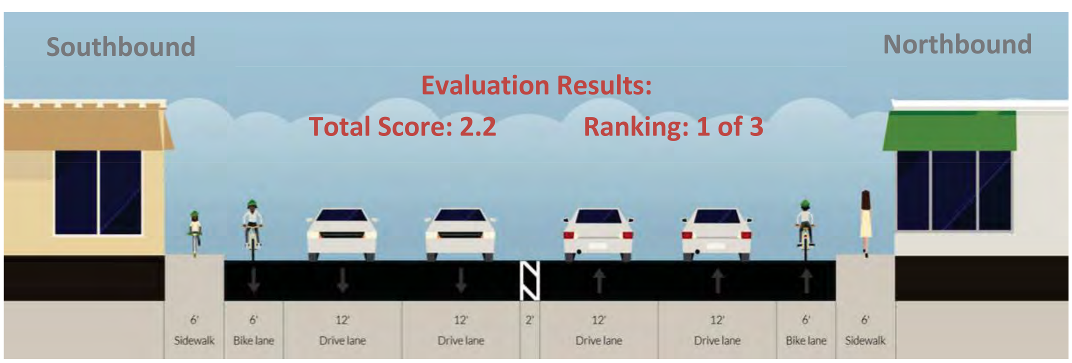
US 101 maintains five travel lanes with slightly reduced widths. The recovered street width would provide a bike lane in the southbound direction. In the direction without a bike lane, signs would direct cyclists to use parallel routes. Sidewalks continue to accommodate those walking.



Delake Option 2: Reconfigure US 101 to add bike lanes in one direction

Option 3: Reconfigure US 101 to a four-lane facility with bike lanes and a striped median

US 101 would lose the existing center turn lane. Recovered extra space would allow for bike lanes



Delake Option 3: Reconfigure US 101 to a four-lane facility with bike lanes and a striped median and a small two-foot painted median. The elimination of the center turn lane would result in increased congestion, especially at signalized intersections. Sidewalks would continue to accommodate those walking.

Option 4: Remove two lanes from US 101 and add bike lanes and wider sidewalks

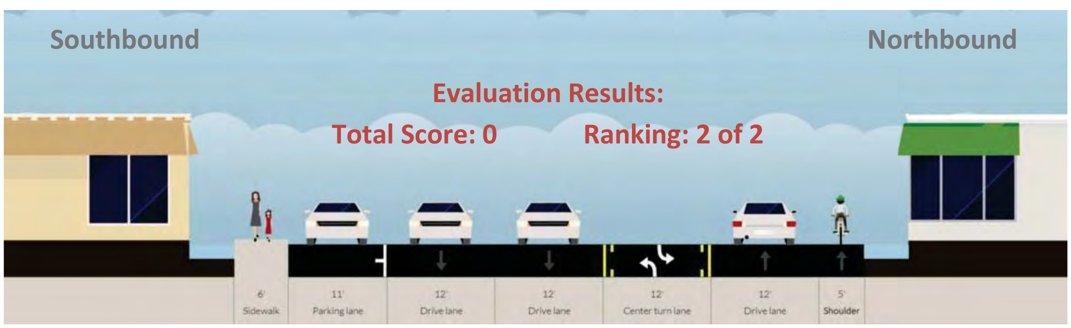
US 101 would lose one travel lane in each direction, with the spaced re-designated for bike lanes and wider sidewalks. The bike lanes would provide cycling facilities where none exist today. Evaluation shows the removal of the through lanes for cars would result in significantly worse congestion on the highway, affecting tourism, freight movement, and local and regional traffic. The resulting congestion would create several additional hours of traffic jams in the summertime and would make congestion during the rest of the year far worse than the summertime congestion experienced today. Therefore, this is no longer an option under consideration.

Evaluation of Delake (NW 13th Street to SW 14th Street) Design Options: Options 2 and 3 achieved the same score, but for different reasons. Option 2 provides only one bike lane, but does so with minimal impact to auto travel (only reduces lane widths). Option 3 provides both bike lanes, but the impact to auto mobility and accessibility renders this option infeasible. Therefore, Option 2 was included in the "Aspirational Transportation System".

SW 14th Street to SE 23rd Drive

Consultants evaluated four design options along US 101 between SW 14th Street and SE 23rd Drive. These options are summarized below.

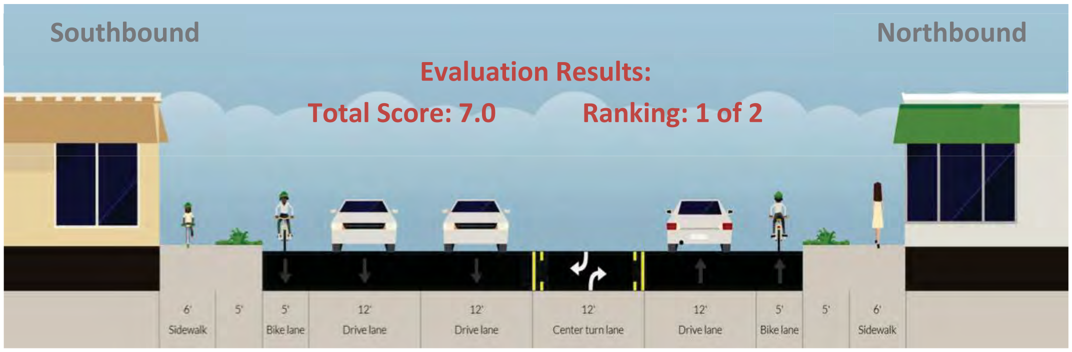
Option 1: Do Nothing



Option 1: Do Nothing

US 101 maintains three travel lanes (two southbound and one northbound), a center turn lane, and on-street parking on one side. A sidewalk accommodates those walking southbound, but not those walking northbound. A shoulder of varying width accommodates northbound cyclists, but southbound cyclists have no facilities.

Option 2: Widen US 101 to add sidewalks with landscaping and bike lanes



Option 2: Widen US 101 to add sidewalks with landscaping and bike lanes

US 101 maintains three travel lanes and a center turn lane, but loses the on-street. The section adds sidewalks with landscaped buffers to treat stormwater and bike lanes on both sides of the highway.

Option 3: Widen US 101 to five lanes, with sidewalks, landscaping, and bike lanes

This option would increase the capacity and reduce congestion of the roadway by adding a second northbound travel lane in addition to the needed bike lanes and sidewalks. Because it would not fit within existing right-of-way and would result in significant impacts to adjacent development, this option is not being advanced for further consideration.

Option 4: Remove a travel lane from US 101 and add bike lanes and sidewalks

One travel lane would be removed from US 101 in the southbound direction, with the space re-designated for bike lanes and sidewalks. Evaluation indicates the removal of the through lane for cars would result in significantly worse congestion on the highway, affecting tourism, freight movement, and local and regional traffic. The resulting congestion would create several additional hours of traffic jams in the summertime and would make congestion during the rest of the year far worse than the summertime congestion experienced today. Therefore, this option is not being advanced for further consideration.

Evaluation of SW 14th Street to SE 23rd Drive Design Options: Option 2 scored very high because it provides complete facilities for all modes of travel without needing additional right-of-way. Therefore, Option 2 was included in the "Aspirational Transportation System".

SE 23rd Drive to SW 32nd Street

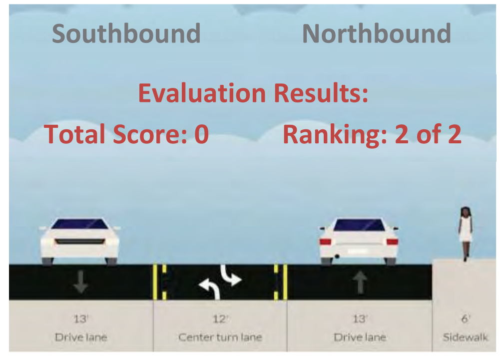
As part of the Statewide Transportation Improvement Program (STIP), ODOT is in the process of improving this two-lane segment to an acceptable three-lane section that will include bicycle and pedestrian facilities.

SW 32nd Street to SW Beach Avenue

Consultants evaluated two design options along US 101 between SW 32nd Street and SW Beach Avenue. This segment of highway is in a very constrained area with steep topography surrounding both sides that limits the ability to widen the corridor. Options considered are summarized below.

Option 1: Do Nothing

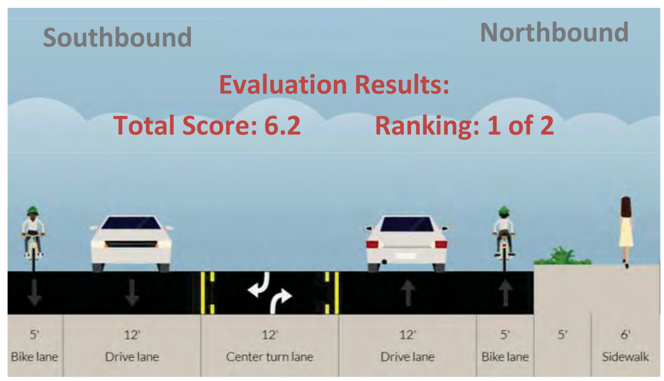
US 101 maintains three travel lanes with a sidewalk only in the northbound direction. Cyclists have no accommodations.



Option 1: Do Nothing

Option 2: Widen US 101 to add bike lanes

US 101 maintain three travel lanes and adds bike lanes in both directions. The project would fill gaps in the northbound sidewalk, but would not provide new sidewalk on the southbound side of the highway. Where new sidewalk is constructed, a landscaped buffer would be necessary to treat storm water.



Option 2: Widen US 101 to add bike lanes

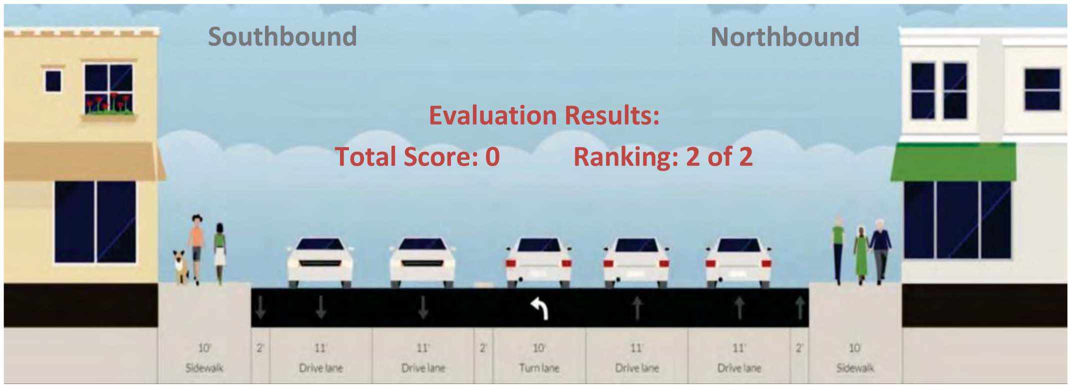
Evaluation of SW 32nd Street to SW Beach Avenue Design Options: Option 2 is clearly better than doing nothing, because it provides bike lanes where none exist today (see Table A14 in Attachment 1). However, even constructing this option, which does not include sidewalk on the southbound side of the highway, would be very difficult in some areas due to the topography. A complete solution for this segment of highway may require further consideration and refinement and may need to include a few different treatments where constraints change. Options to consider could include removal of the center turn lane and having bikes share the travel lane with cars in the downhill direction. Option 2 was included in the “Aspirational Transportation System”.

Taft (SW Beach Avenue to SW 51st Street)

Two design options were evaluated along US 101 between SW Beach Avenue and SW 51st Street. These options are summarized below.

Option 1: Do Nothing

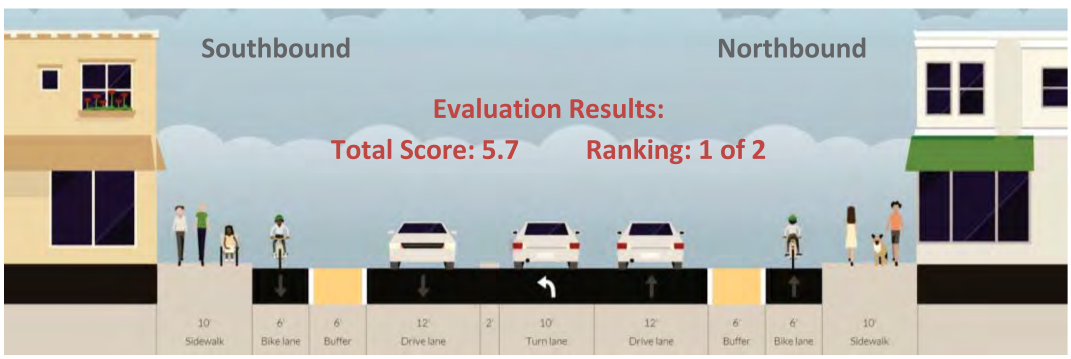
US 101 maintains four travel lanes with a center turn lane and sidewalks in both directions. Because US 101 has no accommodations for cyclists, signs need to point cyclists to alternate routes paralleling the highway.



Taft Option 1: Do Nothing

Option 2: Reconfigure US 101 to three lanes and buffered bike lanes

US 101 would lose one travel lane in each direction and add bike lanes and painted buffers between the bike lane and cars. The elimination of travel lanes for cars would increase congestion somewhat; however, because traffic demand in this area is well below the capacity of the roadway, the resulting congestion in Taft would be less than experienced in other parts of the city.



Taft Option 2: Reconfigure US 101 to three lanes and buffered bike lanes

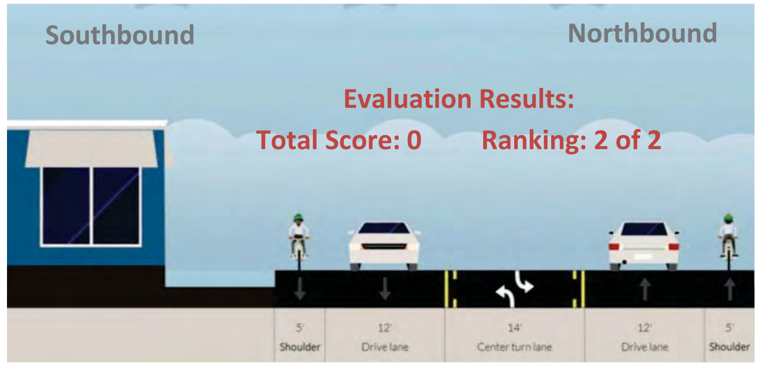
Evaluation of Taft (SW Beach Avenue to SW 51st Street) Design Options: Option 2 scores much higher than doing nothing, because it provides complete facilities for all modes of travel without need for new right-of-way. The increased congestion would be less than experienced in the rest of the city. Option 2 was included in the "Aspirational Transportation System".

Cutler (SW Jetty Avenue to South City Limits)

Consultants evaluated two design options along US 101 between SW Jetty Avenue and the South City Limits. These options are summarized below

Option 1: Do Nothing

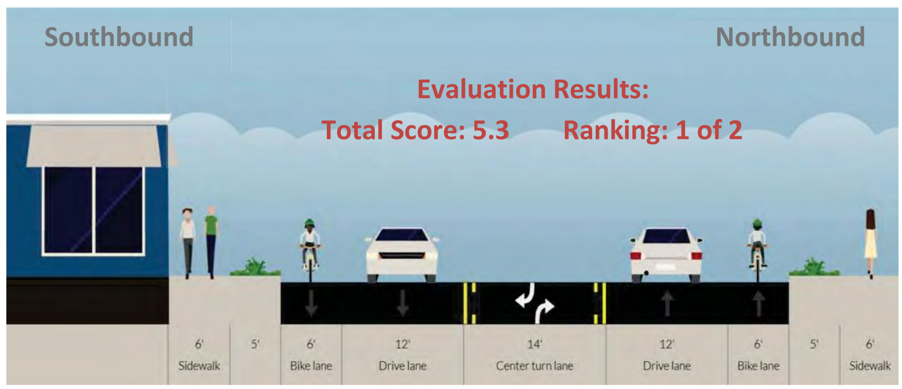
US 101 maintains three lanes, with only a shoulder to accommodate those walking and bicycling.



Cutler Option 1: Do Nothing

Option 2: Widen US 101 to add sidewalks with landscaping and bike lanes

US 101 would continue to maintain three lanes. Sidewalks with landscaping and bike lanes would be added in both directions to accommodate those walking and cycling. On the inside of curves where all storm water flows in one direction, landscaping on only one side of the highway could be adequate for storm water treatment.



Cutler Option 2: Widen US 101 to add sidewalks with landscaping and bike lanes

Evaluation of Cutler (SW Jetty Avenue to South City Limits) Design Options: Option 2 is clearly better than doing nothing, since it provides complete facilities for all travel modes. Therefore, Option 2 was included in the "Aspirational Transportation System".

US 101 Operational Analysis of Design Options

Table 6 and Table 7 document US 101 intersection operations for the baseline (i.e., no build), the five-lane, and the road diet scenarios that correspond with the above US 101 design options. These tables demonstrate the results of doing nothing, adding capacity, and taking away capacity from the highway. The tables show comparison of baseline operations to the Oregon Highway Plan (OHP) mobility targets, and compare five-lane and road diet operations to the Highway Design Manual (HDM) design-mobility standards. Note that currently adopted mobility targets/standards for US 101 are based on accommodating summertime conditions.

Traffic demand in the summer p.m. peak period at most intersections likely will exceed capacity by 2035. To accommodate the growing demand on the highway, US 101 would need to be five lanes. Such widening, however, would be very costly and would significantly impact many adjacent properties and established development. As is, Table 7 shows average weekday peak hours (non-summer, representing about 9 months of the year) will continue to be far less congested. Turning out of many un-signalized side streets will be difficult, but most signalized intersections will operate within adopted mobility targets.

Considering the significant costs and impacts associated with widening US 101, ODOT and Lincoln City could consider adopting alternative mobility targets as part of a long-term strategy for this corridor that would shift the focus to managing congestion so as to maintain efficient operations during the non-summer months. This approach would continue to serve traffic well during the majority of the year, and acknowledge that traffic conditions during the peak two to three summer months will be congested.

Tables 6 and 7 also detail the effects that reducing the number of travel lanes to make space for bike lanes or wider sidewalks (i.e., road diet) would have on congestion. In both the summer and average weekday conditions, reducing the capacity through Oceanlake and Delake would increase congestion severely. Reducing the number of lanes on the highway through Taft would worsen congestion, but it would remain within adopted mobility targets for the highway during both the summer and average weekday peak hours.

DKS

Table 6: 2035 PM Peak Hour, Summer Conditions (V/C Ratios)

Intersection	OHP Mobility Target	Baseline (No Build)	HDM Design-Mobility Standard	Widen to 5 Lanes	Road Diet: Oceanlake	Road Diet: Delake	Road Diet: Taft
Signalized Intersections							
US 101/NE West Devils Lake Rd	0.80	**1.09**	0.70	**0.73**	-	-	-
US 101/NW Logan Rd	0.90	**1.19**	0.75	-	-	-	-
US 101/NE 22nd St	0.90	**1.08**	0.75	-	**1.76**	-	-
US 101/NE 17th St	0.90	0.89	0.75	**0.79**	**1.45**	-	-
US 101/NE 14th St	0.90	**1.11**	0.75	**0.99**	**1.69**	-	-
US 101/NE 6th St	0.90	0.82	0.75	-	-	**1.55**	-
US 101/SE 1st St	0.90	**0.91**	0.75	-	-	**1.67**	-
US 101/Burger King/City Hall	0.90	**0.95**	0.75	-	-	**1.68**	-
US 101/East Devils Lake Rd/SW 12th St	0.90	**0.94**	0.75	-	-	**1.87**	-
US 101/SW 32nd St	0.90	**1.36**	0.75	**0.77**	-	-	-
US 101/SW 48th St	0.95	0.61	0.90	-	-	-	**0.92**
US 101/SW 51st St	0.95	0.55	0.90	-	-	-	0.87
Unsignalized Intersections*							
US 101/East Devils Lake Rd	0.80/0.95	0.75/**>2.0**	0.70/0.80	0.48/0.45	-	-	-
US 101/Neotsu Rd	0.80/0.95	0.79/**>2.0**	0.70/0.80	0.48/0.49	-	-	-
US 101/NE Holmes Rd	0.90/0.95	**1.17/1.43**	0.75/0.80	**0.74**/0.69	-	-	-
US 101/NE 30th St	0.90/0.95	**1.24**/0.66	0.75/0.80	**0.81**/0.33	-	-	-
US 101/NE 21st St	0.90/0.95	0.83/0.26	0.75/0.80	-	**>2.0/>.2.0**	-	-
US 101/SE 14th St	0.90/0.95	**1.14/>2.0**	0.75/0.80	**0.79/>2.0**	-	**1.21/>2.0**	-
US 101/SW Bard Ave/SE 19th St	0.90/0.95	**1.18/1.84**	0.75/0.80	**0.80/0.81**	-	**1.22/1.62**	-
US 101/SE 29th St	0.90/0.95	**1.16/>2.0**	0.75/0.80	**0.76**/0.29	-	-	-
US 101/SE High School Dr	0.90/0.95	**0.93/1.04**	0.75/0.80	0.59/0.44	-	-	-
US 101/SW Jetty Ave	0.90/0.95	0.69/ -	0.75/0.80	0.43/-	-	-	-
US 101/SW 62nd St	0.90/0.95	0.62/0.36	0.75/0.80	0.41/0.32	-	-	-
US 101/SW 63rd St	0.90/0.95	0.62/0.21	0.75/0.80	0.40/0.17	-	-	-

* Worst mainline volume-to-capacity ratio/worst side street volume-to-capacity ratio

Bold, Red and Shaded indicates intersection fails to meet OHP mobility target

Bold and Orange indicates intersection fails to meet HDM design-mobility standard, but meets OHP mobility target

DKS

Table 7: 2035 PM Peak Hour, Average Weekday Conditions (V/C Ratios)

Intersection	OHP Mobility Target	Baseline (No Build)	HDM Design-Mobility Standard	Widen to 5 Lanes	Road Diet: Oceanlake	Road Diet: Delake	Road Diet: Taft
Signalized Intersections							
US 101/NE West Devils Lake Rd	0.80	**0.86**	0.70	0.59	-	-	-
US 101/NW Logan Rd	0.90	0.86	0.75	-	-	-	-
US 101/NE 22nd St	0.90	0.87	0.75	-	**1.41**	-	-
US 101/NE 17th St	0.90	0.69	0.75	0.64	**1.17**	-	-
US 101/NE 14th St	0.90	0.83	0.75	**0.81**	**1.35**	-	-
US 101/NE 6th St	0.90	0.69	0.75	-	-	**1.26**	-
US 101/SE 1st St	0.90	0.75	0.75	-	-	**1.34**	-
US 101/Burger King/City Hall	0.90	0.75	0.75	-	-	**1.32**	-
US 101/East Devils Lake Rd/SW 12th St	0.90	0.76	0.75	-	-	**1.49**	-
US 101/SW 32nd St	0.90	**1.04**	0.75	0.59	-	-	-
US 101/SW 48th St	0.95	0.46	0.90	-	-	-	0.73
US 101/SW 51st St	0.95	0.42	0.90	-	-	-	0.67
Unsignalized Intersections*							
US 101/East Devils Lake Rd	0.80/0.95	0.56/0.73	0.70/0.80	0.36/0.24	-	-	-
US 101/Neotsu Rd	0.80/0.95	0.58/0.90	0.70/0.80	0.36/0.24	-	-	-
US 101/NE Holmes Rd	0.90/0.95	**0.94**/0.57	0.75/0.80	0.59/0.25	-	-	-
US 101/NE 30th St	0.90/0.95	**1.00**/0.24	0.75/0.80	0.66/0.14	-	-	-
US 101/NE 21st St	0.90/0.95	0.68/0.09	0.75/0.80	-	**>2.0**/**>.2.0**	-	-
US 101/SE 14th St	0.90/0.95	**0.92**/**>2.0**	0.75/0.80	0.64/**0.85**	-	**0.98**/**>2.0**	-
US 101/SW Bard Ave/SE 19th St	0.90/0.95	**0.97**/0.82	0.75/0.80	0.65/0.41	-	**0.97**/0.72	-
US 101/SE 29th St	0.90/0.95	**0.94**/0.68	0.75/0.80	0.62/0.10	-	-	-
US 101/SE High School Dr	0.90/0.95	0.75/0.52	0.75/0.80	0.48/0.26	-	-	-
US 101/SW Jetty Ave	0.90/0.95	0.51/-	0.75/0.80	0.32/-	-	-	-
US 101/SW 62nd St	0.90/0.95	0.46/0.19	0.75/0.80	0.30/0.17	-	-	-
US 101/SW 63rd St	0.90/0.95	0.46/0.11	0.75/0.80	0.30/0.09	-	-	-

* Worst mainline volume-to-capacity ratio/worst side street volume-to-capacity ratio

Bold, Red and Shaded indicates intersection fails to meet OHP mobility target

Bold and Orange indicates intersection fails to meet HDM design-mobility standard, but meets OHP mobility target

Table 8 presents the 2035 hours of congestion analysis for signalized intersections along US 101. The values in Table 8 represent how long the mainline approaches of US 101 are congested in a 24-hour period. Congested is defined as a v/c ratio of 0.90 or greater. The hours of congestion methodology can be found in Attachment 1.

As shown in Table 8, it is expected that the highway will be congested for most of the day in the summer. For a typical weekday, however, the highway is expected to be uncongested throughout the day (with the exception of the NE West Devils Lake Road and SW 32nd Street intersections). This analysis confirms that reducing highway capacity through Oceanlake and Delake would have significant impacts to congestion, whereas the highway through Taft would remain uncongested for an average weekday if the number of travel lanes is reduced.

Table 8: 2035 Hours of Congestion Analysis

Intersection	Summer Conditions			Average Weekday Conditions		
	Baseline	Widen to 5 Lanes	Road Diet	Baseline	Widen to 5 Lanes	Road Diet
US 101/NE West Devils Lake Rd	**>8**	0		2	0	
US 101/NW Logan Rd	**>8**			0		
US 101/NE 22nd St	**8**		**>8**	0		**>8**
US 101/NE 17th St	**6**	0	**>8**	0	0	**>8**
US 101/NE 14th St	**>8**	**7**	**>8**	0	0	**>8**
US 101/NE 6th St	2		**>8**	0		**>8**
US 101/SE 1st St	**8**		**>8**	0		**>8**
US 101/Burger King/City Hall	**8**			0		
US 101/East Devils Lake Rd/SW 12th St	**5**			0		
US 101/SW 32nd St	**>8**	0		**8**	0	
US 101/SW 48th St	0		**8**	0		0
US 101/SW 51st St	0	0	3	0	0	0

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

Technical Memorandum #10: Transportation System Solutions

Attachment 1

Aspirational Projects

The following table is a comprehensive list of projects that are recommended for the Lincoln City TSP. Financially constrained projects are highlighted in red.

Table A1: Aspirational Project List

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
D1	North Lincoln City Circulation Study	Determine roadway connectivity for north Lincoln City, including need for improved east-west connectivity.	2.5	$50,000	City	Tier 1	New Solution
D2	NE 47th Extension	Extend NE 47th St to the intersection of NW 44th St and NW Logan Rd; improvement includes sidewalks.	3.8	$3,580,000	Developer	-	Lincoln City Transportation Master Plan
D3	NE Surf Extension	Extend NE Surf Ave to NE 35th St, while also connecting to NE 34th St; improvement includes sidewalks.	3.8	$2,845,000	Developer	-	New Solution
D4	SE Neptune Extension	Extend SE Neptune Ave to SE East Devils Lake Rd at SE Oar Ave; install sidewalks along the east side and a shared-use path along the west side.	3.5	$490,000	Developer	-	New Solution
D5	NE East Devils Lake Flood Prevention	Need to elevate roadway identified in Lincoln County TSP; work with county to develop a long-term solution to avoid flooding; improvements should include a shared-use path on the north side.	4.1	$20,895,000	County	-	Issue noted in Lincoln County TSP
D6	SE Mast Extension	Extend SE Mast Ave to SE 14th St; improvement includes sidewalks.	2.8	$1,505,000	Developer	-	Lincoln City Transportation Master Plan
D7	SE Port Extension	Extend SE Port Ave from SE Oar Ave to the proposed SE Mast Ave extension; improvement includes sidewalks.	1.5	$475,000	Developer	-	New Solution
D8	Bard Rd Improvement Study	Refinement Study to determine needs for bike lanes, sidewalk, and curve smoothing.	2.8	$50,000	City	Long-Term Tier 2	Lincoln City Transportation Master Plan

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
D9	SE Lee Extension	Extend SE Lee Ave to SE 32nd St, while also connecting to stub streets east of US 101; install sidewalks along the west side and a shared use-path along the east side; includes shared-use path connecting the south end of SE Oar Dr to SE Lee Ave just north of the water tank.	4.7	$12,400,000	Developer	-	Lincoln City Transportation Master Plan
D10	SE 27th St Extension	Extend SE 27th St east to the proposed SE Lee Ave extension, and upgrade existing facility; improvement includes sidewalks.	2.9	$1,155,000	Developer	-	New Solution
D11	SE 28th St Realignment	Realign SE 28th St to the intersection of US 101 and SW 29th St, extend SE 28th St east to the proposed SE Lee Ave extension, and upgrade existing facility; install sidewalks along the north side and a shared-use path along the south side.	5.2	$2,435,000	Developer	-	Nelscott Community Vision Plan
D12	SW 30th Extension	Extend SW 30th St from SW Coast Ave to US 101 at SE 31st St; improvement includes sidewalks.	3.3	$1,170,000	Developer	-	Nelscott Community Vision Plan
D13	SE Dune Extension	Extend SE Dune Ave from SE 35th St to SE 32nd St, and close existing US 101 access; improvement includes sidewalks.	5.3	$825,000	Developer	-	Nelscott Community Vision Plan
D14	Taft Beach Parking Local Connection	Create a new local connection from the west end of SW 51st St to SW 50th St; install sidewalks on the east side of the street and a shared-use path on the west side.	5.4	$225,000	City	Long-Term Tier 2	Taft Redevelopment Plan
D15	SW Fleet Extension	Upon redevelopment, extend SW Fleet Ave from SW 50th St to SW 51st St; improvement includes sidewalks.	3.8	$465,000	Developer	-	Taft Redevelopment Plan
D16	SW Jetty Realignment	Realign SW Jetty Ave to perpendicularly connect to US 101, and improve SW Jetty Ave as a two-way minor collector; realignment includes developing a shared-use path along the west side and sidewalks on the east side.	3.1	$545,000	City	Long-Term Tier 2	Cutler District Community Vision & Corridor Plan

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
D17	SW Keel Connection	Create a new local connection from SW 63rd St to SW Jetty Ave; improvements include sidewalks along the east side and a shared-use path along the west side.	4.7	$955,000	City	Long-Term Tier 2	Cutler District Community Vision & Corridor Plan
P1	NW Logan Sidewalk Infill	Fill sidewalk gaps along NW Logan Rd between US 101 and NW 50th St.	3.1	$230,000	City	Long-Term Tier 2	High-Use (Walking & Biking Plan)
P2	NW 39th St Sidewalk Addition	Add sidewalk on north side of NW 39th St from NW Port Ave to NW Jetty Ave.	2.5	$505,000	City	Long-Term Tier 2	High-Use (Walking & Biking Plan)
P3	NW 34th Street Sidewalk Addition	Add sidewalk to north side of NW 34th St from US 101 to NW Jetty Ave.	3.2	$730,000	City	Long-Term Tier 2	Medium-Use (Walking & Biking Plan)
P4	NW 30th/NE Holmes Sidewalk Addition	Add sidewalk on both sides of NW 30th St from US 101 to NW Jetty Avenue, and both sides of NE Holmes from US 101 to NE West Devils Lake Road. Coordinate with project B3.	2.4	$2,060,000	City	Long-Term Tier 2	High-Use (Walking & Biking Plan)
P5	NW Jetty Sidewalk Addition	Add sidewalk on the east side of NW 40th Place from NW 40th St to NW Jetty Ave, and on the west side of NW Jetty Ave from NW 40th Pl to NW 19th St.	2.8	$3,145,000	City	Long-Term Tier 2	High-Use (Walking & Biking Plan)
P6	NE 28th St Sidewalk Infill	Add sidewalk to both sides of NE 28th Street east of NE West Devils Lake Road.	4.8	$530,000	City	Long-Term Tier 2	High-Use (Walking & Biking Plan)
P7	NW 28th St Sidewalk Addition	Add sidewalk on both north and south sides of NW 28th St from US 101 to NW Jetty Ave.	2.1	$1,450,000	City	Long-Term Tier 3	High-Use (Walking & Biking Plan)
P8	NW 26th St Sidewalk Addition	Add sidewalk on north and south side of NW 26th St between NW Keel Ave to NW Jetty Ave.	2.1	$255,000	City	Long-Term Tier 3	Medium-Use (Walking & Biking Plan)
P9	NW 25th St Sidewalk Addition	Add sidewalk on north and south side of NW 25th between NW Inlet Ave to NW Jetty Ave, and NW Oar Ave and US 101. Between NW Oar Ave and NW Keel Ave, add sidewalk to south side of street.	2.1	$805,000	City	Long-Term Tier 3	Medium-Use (Walking & Biking Plan)

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
P10	NE 22nd & Oar Pl Pedestrian Access	Provide pedestrian refuge from frequent turning vehicles by filling sidewalk gaps on north side of NE 22nd St alongside Dairy Queen, and east side sidewalk gap on Oar Place near the Elks Lodge.	2.1	$95,000	City	Long-Term Tier 3	High-Use (Walking & Biking Plan)
P11	NE Surf/NE 21st Sidewalk Network	Complete sidewalk on both sides of NE Surf Avenue between NE 22nd Street and NE 21 Street, add sidewalk to the north side of NE 21st Street between NE Quay Place and NE Surf Avenue, and complete sidewalks on both sides of NE 21st Street between US 101 and NE Quay Place.	2.4	$1,070,000	City	Long-Term Tier 3	Medium-Use (Walking & Biking Plan)
P12	N 14th St Sidewalk Addition	Add sidewalks to the north side of N 14th Street from NW Harbor Ave to NE Port Ave.	2.4	$1,130,000	City	Tier 3	High-Use (Walking & Biking Plan)
P13	North Delake Sidewalk Network	Add sidewalk on the west side of NW Harbor Ave from NE 21st St to NW 12st St, both sides of NW 12th St, west side NW Inlet Ave south of NW 12th St, south side of NW 6th St, both sides of NE 6th St, and the south side of NW 2nd St.	2.4	$3,430,000	City	Long-Term Tier 3	High-Use (Walking & Biking Plan)
P14	Southeast Delake Sidewalk Network	Add sidewalks to the north side of SE 3rd St and both sides of SE Neptune Ave from SE 3rd St to SE 8th St.	2.1	$4,125,000	City	Long-Term Tier 3	Medium-Use (Walking & Biking Plan)
P15	Southwest Delake Sidewalk Network	Add side walk to the west side of SW Ebb Ave from US 101 to SW 9th St, south side of SW 9th St from SW Ebb Ave to SW 11th Dr, both sides of SW 12th St from SW 11th Dr to US 101, both sides of SW Harbor Dr from SW 12th St to SW 14th St, and to the east side of Harbor Drive between SW 14th St and SW Bard Rd.	2.4	$1,260,000	City	Long-Term Tier 3	Medium-Use (Walking & Biking Plan)
P16	SW 11th & Coast Ave Pedestrian Corridor	Add sidewalk on east side of SW 11th Drive at SW 9th St to SW Coast Ave.	2.4	$2,452,243	City	Long-Term Tier 3	Medium-Use (Walking & Biking Plan)

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
P17	Outlet Mall Sidewalk Network	Sidewalk infill on the north side of East Devils Lake Rd from SE Jetty Ave to SE Oar Ave, north side of SE 14th St west of SE Oar Ave, west side of SE Oar Dr, and to both sides of SE 19th St.	2.4	$1,745,000	Developer	-	Medium-Use (Walking & Biking Plan)
P18	SE 23rd Drive Sidewalk Addition	Add sidewalk to north and south sides of SE 23rd Drive from US 101 to terminus of road.	1.8	$4,585,000	Developer	-	Low-Use (Walking & Biking Plan)
P19	SW Anemone Ave Sidewalk Completion	Complete sidewalk network on SW Anemone Ave by adding sidewalks near intersection of SW Coast Ave.	2.1	$210,000	City	Long-Term Tier 3	Low-Use (Walking & Biking Plan)
P20	SW Beach Ave Neighborhood Connection	Complete neighborhood missing sidewalk links by adding sidewalk to east side of SW Beach Ave between SW Coast Ave and SW 28th St. Add additional sidewalk link to south side of SW 28th St between SW Beach Ave and SW Coast Ave. Add sidewalk on both sides of SW Coast Ave from SW Beach Ave to SW 29th St.	2.1	$635,000	City	Long-Term Tier 3	Medium-Use (Walking & Biking Plan)
P21	SE Fleet/SE Spyglass Ridge Sidewalk Gap	Fill gap in sidewalk network along the west sides of SE Fleet Ave and SE Spyglass Ridge Dr.	2.8	$495,000	City	Long-Term Tier 2	Medium-Use (Walking & Biking Plan)
P22	SE 51st/Schooner Creek Sidewalk Addition	Add new sidewalks to both sides of SE 51st St from SE 48th Pl to US 101, and to the south side of SE Schooner Creek Rd from SE 51st St to the urban growth boundary.	2.8	$2,070,000	City	Long-Term Tier 2	Medium-Use (Walking & Biking Plan)
P23	Cutler Sidewalk Network	Add sidewalk to both sides of SW 62nd St between US 101 and SW Jetty Ave, both sides of SW 63rd St east of SW Keel Ave and the north side only west of SW Keel Ave, west side of SW Inlet Ave, west side of SW Fleet Ave, and to the south side of SW 69th St between SW Fleet Ave and SW Harbor Ave.	2.2	$2,380,000	City	Long-Term Tier 3	Medium-Use (Walking & Biking Plan)

DKS

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
B1	NW Logan Bike Lane Gaps	Fill bike lane gaps on both side of NW Logan Rd from US 101 to north of NW 44th St.	5.3	$455,000	City	Long-Term Tier 2	High-Use (Walking & Biking Plan)
B2	NW 39th/Jetty Ave Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating NW 39th St from US 101 to NW Jetty Ave and NW Jetty Ave from NW 39th St to NW 21st St as a shared roadway for bikes.	3.8	$50,000	City	Long-Term Tier 2	High-Use (Walking & Biking Plan)
B3	Holmes/NW 30th Bike Facilities	Add bike lanes to both sides of NE Holmes Rd from NE West Devils Lake Rd to US 101 along the proposed alignment, and add pavement markings/signage (e.g., sharrows), designating NW 30th St from US 101 to NW Jetty Ave as a shared roadway for bikes. Coordinate with project P4.	4.7	$1,225,000	City	Long-Term Tier 2	High-Use (Walking & Biking Plan)
B4	NW Jetty Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating NW Jetty Ave from NW 21st St to NW 18th St as a shared roadway for bikes.	2.8	$5,000	City	Long-Term Tier 2	High-Use (Walking & Biking Plan)
B5	NE 21st Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating NE 21st St from US 101 to the dead-end as a shared roadway for bikes.	3.5	$20,000	City	Long-Term Tier 2	High-Use (Walking & Biking Plan)
B6	North Delake Bike Facilities	Add bike lanes to both sides of NW Harbor Ave from NW 21st St to NW 12th St and on both sides of NW 12th St. Between NW 14th St and NW 15th St, bikes may have to share the road with motorists due to physical constraints. Add pavement markings/signage (e.g., sharrows), designating NW 14th Street (NW Harbor to NE Keel) and NW Inlet Ave (NW 12th to US 101) as a shared roadway for bikes.	4.0	$1,555,000	City	Long-Term Tier 2	High-Use (Walking & Biking Plan)
B7	NE 12th/NE 13th/NW Keel Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating NE 13th St from NE Keel Ave to its east terminus, NE Keel Ave from NE 14th St to NE 10th St, and NE 12th St from US 101 to NE Keel as a shared roadway for bikes.	2.8	$25,000	City	Tier 1	Medium-Use (Walking & Biking Plan)

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
B8	Southeast Delake Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating the route as a shared roadway for bikes. The route includes: SE 1st St from US 101 down to SE 2nd Ct, across the channel via a pedestrian/bicycle bridge to SE 3rd St, along SE 3rd St from the bridge to SE Jetty Ave, along Jetty Ave to SE East Devils Lake Rd, and along SE 9th St from SE Jetty Ave to Police Department.	5.1	$700,000	City	Tier 2	Medium-Use (Walking & Biking Plan)
B9	Southwest Delake Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating SW Ebb St from US 101 to SW 6th St, SW 6th St from SW Ebb St to SW Fleet Ave, SW Fleet Ave from SW 6th St to SW 12th St, and SW 12th St, SW Harbor Ave from SW 12th St to SW Bard Road as a shared roadway for bikes.	5.3	$210,000	City	Long-Term Tier 2	Medium-Use (Walking & Biking Plan)
B10	SE High School Bike Lanes	Add bike lanes to both sides of SE High School Dr from US 101 to SE Spy Glass Ridge Dr and both sides of SE 48th Pl from SE High School Dr to SE Inlet Ave.	6.0	$1,930,000	City	Long-Term Tier 2	High-Use (Walking & Biking Plan)
B11	Taft Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating S 48th (west of SE Inlet Ave, and from High School Dr to SE 51st St), SW Ebb Ave, and SW/SE 51st St (east of SW Ebb Ave) as shared roadways for bikes.	3.5	$50,000	City	Long-Term Tier 2	Medium-Use (Walking & Biking Plan)
B12	Bike warning flashers on US 101/Schooner Creek Bridge	Install "Bikes on Bridge" warning signs and actuated flashing beacons at each end of the Schooner Creek Bridge on US 101. Improvement includes bicycle detection.	2.5	$50,000	ODOT	Tier 1	New Solution
S1	Head to Bay Trail Expansion - Phase 2	Continue the shared-use path along the west side of West Devils Lake Blvd.	7.2	$295,000	City	Long-Term Tier 1	New Solution (Planned Medium-Use)

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
S2	Head to Bay Trail Expansion - Phase 1	Replace existing sidewalk on the west side of NE West Devils Lake Blvd from US 101 to NE 47th St with a shared-use path.	8.2	$500,000	City	Long-Term Tier 1	Medium-Use (Walking & Biking Plan)
S3	East Devils Lake Path	Create a shared-use path along the west side of NE East Devils Lake Rd from US 101 to SE Oar Ave.	8.5	$18,850,000	County	-	High-Use (Walking & Biking Plan)
S4	Head to Bay Trail Expansion - NE 22nd St	Replace existing sidewalk with shared-use path along the south side of N 22nd St from NE Quay Pl to NE Surf Ave and along the west side of NE Quay Pl from NE 22nd St to NE 21st St.	9.2	$890,000	City	Long-Term Tier 1	High-Use (Walking & Biking Plan)
S5	NE 21st Path	Create a shared-use path from NE 21st Street/NE Surf Avenue to the NE Tide Avenue terminus.	6.3	$620,000	City	Long-Term Tier 2	New Solution
S6	Oceanlake Shared Facilities	Develop a network of shared-use paths and shared streets along NW 18th St, NW 16th St, and NW Jetty Ave from NW 18th St to NW 15th St.	8.2	$350,000	City	Long-Term Tier 1	Oceanlake Redevelopment Plan (Planned High-Use)
S7	Head to Bay Trail Expansion - West Devils Lake Road	Fill gaps in Head to Bay path along the west side of NE West Devils Lake Rd between NE 26th St and NE Port Ave (includes boardwalk over creek), and connect to NE 13th Street along the NE Port Ave alignment.	8.2	$2,995,000	City	Long-Term Tier 1	High-Use (Walking & Biking Plan)
S8	East Delake Path - North	Create a shared-use path connecting NE Keel Ave/NE 10th St, US 101/NE 1st St, and US 101/SE 1st St. Includes a hanging pedestrian/bicycle bridge on the east side of the highway.	8.2	$2,485,000	City	Long-Term Tier 1	New Solution (Planned Medium-Use)
S9	D River Hanging Bridge	Create a shared-use path along the east side of US 101 from NE 1st Street to SE 1st Street, which includes a hanging pedestrian/bicycle bridge on the D River Bridge.	8.2	$510,000	ODOT	Tier 1	New Solution (Highway)
S10	East Delake Path - South	Create a shard-use path from the SE 9th St/Police Department intersection to the end of SE Oar Dr.	6.8	$700,000	City	Long-Term Tier 1	New Solution (Planned Low-Use)

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
S11	SW Coast Path	Create a shared-use path along the east side of SW Coast Ave from SW Bard Rd to SW Beach Ave.	6.9	$60,000	City	Long-Term Tier 1	High-Use (Walking & Biking Plan)
S12	SW Beach Ave Shared Street	Convert SW Beach Ave from SW 29th St to SW 34th St, and SW 34th St to shared roadways for pedestrians and bicyclists; improvements may include raised intersections, signage, pavers, lighting, landscaping, and traffic calming (vehicles should be slowed to 10 mph).	4.0	$135,000	City	Long-Term Tier 2	New Solution
S13	Nelscott to Taft Path	Create a shared-use path connecting Nelscott to Taft from SE Fleet Ave/SE 32nd St to US 101 behind the high school, north of the elementary school, and south of the baseball field; then from US 101 to the SW 48th St terminus and to SW 50th St.	8.6	$8,815,000	Developer	-	New Solution (Alternative US 101 Path)
S14	Siletz Park Path	Create a shared-use path connecting SW 52nd Court to the proposed Schooner Creek Hanging Bridge.	5.5	$300,000	City	Long-Term Tier 2	New Solution
S15	Cutler Loop Path	Create a shared-use path loop along the beachfront, behind the wetland park, and along the proposed SW Keel Ave alignment.	7.9	$6,215,000	City	Long-Term Tier 1	Cutler Community Vision & Corridor Plan - Improved
C1	NE 39th St Crossing	Stipe a continental crossing across US 101 on the north side of the NW 39th Street intersection. This improvement will restripe the highway so that the northbound lanes are reduced to a single through lane until after the crossing where they become two through lanes again. This improvement includes a median refuge island, RRFB's, advanced stop bars, and pedestrian crosswalk signs.	6.9	$60,000	ODOT	Tier 1	New Solution
C2	Oceanlake Midblock Crossings	Expand no-parking zones to extend from the crosswalk to the advanced stop bars.	6.9	$150	ODOT	Tier 1	New Solution

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
C3	South Oceanlake Unsignalized Crossings	Expand no-parking zones around NW 15th Street and NW 13th Street to extend from the crosswalk to the advanced stop bars; install a median refuge island on the north approach of the NE 11th Street intersection; install pedestrian crosswalk signs at stop bars.	6.3	$20,000	ODOT	Long-Term Tier 1	New Solution
C4	SE 3rd St Crossing	Install RRFB's and pedestrian crosswalk signs at stop bars.	6.6	$30,000	ODOT	Tier 1	New Solution
C5	SW Bard Rd Crossing	Install a continental crossing across US 101 between the SW Bard Road and SE 19th Street intersections. This improvement includes a median refuge island in the center turn lane, a curb extension on the west side, wheelchair ramps with sidewalk on the east side, advanced stop bars, and pedestrian crosswalk signs at the crossing and at the stop bars.	6.6	$45,000	ODOT	Tier 1	New Solution
C6	SE High School Dr Crossing	Install a continental crossing across US 101 between SE High School Drive and the motel driveway. This improvement includes a median refuge island in the center turn lane, advanced stop bars, and pedestrian crosswalk signs at the crossing and at the stop bars.	6.3	$25,000	ODOT	Long-Term Tier 1	New Solution
C7	SW Coast/Beach Crossing	Install a midblock continental crossing across US 101 between SW Beach Avenue and SW Coast Avenue. This improvement includes a median refuge island, advanced stop bars, closing the ingress driveway just south of the proposed crossing, relocating the existing transit shelter to the proposed crossing, and pedestrian crosswalk signs at the crossing and at the stop bars.	6.6	$70,000	ODOT	Tier 1	New Solution

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
C8	Fire Signal Crossing	Install a pedestrian crossing at the fire signal, incorporating pedestrian push buttons to activate a pedestrian phase with the current fire signal. This improvement includes continental crossing, relocated stop bars, and pedestrian crosswalk signs at the stop bars.	5.9	$75,000	ODOT	Long-Term Tier 1	New Solution
C9	SW 50th St Crossing	Restripe and realign the existing crossing at SW 50th Street as a continental crossing that is perpendicular to the roadway. This improvement includes adding downward arrow rider sign under existing crossing signs, advanced stop bars, and pedestrian crosswalk signs at stop bars.	6.9	$20,000	ODOT	Tier 1	New Solution
C10	Cutler Crossing	Install a pedestrian crossing at the north leg of SW 62nd Street/US 101. This improvement includes continental crossing, a median refuge island, and pedestrian crosswalk signs.	6.2	$45,000	ODOT	Tier 1	Cutler District Community Vision & Corridor Plan
T1	Amenity Improvements	Upgrade amenities to include sheltered stops with seating, route information, and bicycle parking.	7.3	$255,000	City	Tier 1	New Solution
T2	Improved LINC Transit Service Hours	Expand LINC hours of service.	7.7	$2,800,000	City	Long-Term Tier 1	New Solution
T3	Seasonal Trolley	Implement seasonal trolley service.	7.6	$1,275,000	City	Long-Term Tier 1	New Solution
T4	Casino Park & Ride	Develop Park & Ride at Casino and incorporate North by Northwest Connector amenities.	6.8	$45,000	City	Tier 1	North by Northwest Connector
T5	Improved County Transit	Work with Lincoln County Transit to improve operating hours and bus frequency.	7.4	-	County	-	New Solution

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
M1	Neighborhood Traffic Calming Program	Implement program to process community requests for neighborhood traffic calming, investigate options, and implement improvements. Key areas for traffic calming investigations include: Roads End, NE Holmes Road, and Cutler.	2.8	-	City	Tier 1	New Solution
M2	VMS System	Display traveler information at gateways to city on Variable Message Signs (VMS).	3.0	$750,000	ODOT	Long-Term Tier 2	New Solution
M3	Tourism Management Policy	Develop a fee system that charges tourists for having multiple vehicles at vacation rentals/hotels.	1.6	-	City	Tier 1	New Solution
M4	Business Incentives Program	Develop an incentives program for Lincoln City businesses to promote visitors to come earlier and/or stay later, thus reducing peak traffic demands.	2.0	-	City	Tier 1	New Solution
M5	Oceanlake Parking Management	Enhance parking wayfinding in Oceanlake to direct visitors to public parking lots off US 101.	3.0	-	City	Tier 1	New Solution
M6	Safe Routes to School Program	Continue support of the Safe Routes to School Program.	2.5	-	City	Tier 1	New Solution
M7	Tsunami Evacuation Route Identification	Enhance tsunami evacuation route wayfinding throughout the city.	0.5	-	City	Tier 1	New Solution
M8	Bike Parking Program	Install new bike parking throughout the city.	2.8	$20,000	City	Tier 1	New Solution
I1	US 101/NE East Devils Lake Road Intersection Improvements	Widen the south leg of the US 101/NE East Devils Lake Road intersection for a center turn lane to allow for two-stage left turns.	2.3	Coordinate with funded STIP project	ODOT	Long-Term Tier 1	New Solution
I2	US 101/NE Neotsu Drive Intersection Improvements	Widen the south leg of the US 101/NE Neotsu Drive intersection for a center turn lane to allow for two-stage left turns.	2.3	$140,000	ODOT	Long-Term Tier 2	New Solution

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
I3	West Devils Lake/Logan Coordinated Signal Timing	Optimize the existing traffic signals at US 101/NE West Devils Lake Road and US 101/NW Logan Road by implementing coordinated signal timing plans, upgrading traffic signal controllers, and installing communication.	3.1	$105,000	ODOT	Long-Term Tier 3	New Solution
I4	US 101/SE 14th Street Intersection Improvements	Restripe the east leg of the US 101/SE 14th Street intersection to provide a shared left/through lane and a separate right turn lane, and install channelization at the west leg to only allow right turns out onto US 101.	1.6	$30,000	ODOT	Long-Term Tier 1	New Solution
I5	Taft Coordinated Signal Timing	Optimize the existing traffic signals at US 101/SW 48th Street and US 101/SW 51st Street by implementing coordinated signal timing plans, upgrading traffic signal controllers, and installing communication.	3.1	$65,000	ODOT	Long-Term Tier 1	New Solution
H1	Highway Improvements Segment 1	Install sidewalk along the north side of US 101 from NE West Devils Lake Road to NW Logan Road.	5.6	$3,000,000	ODOT	Long-Term Tier 1	New Solution
H2	Highway Improvements Segment 2	Restripe US 101 from NW Logan Road to NW 39th Street to include bike lanes. Retains five lanes.	5.3	$25,000	ODOT	Tier 1	New Solution
H3	Highway Improvements Segment 3	Widen US 101 from NW 39th Street to NW 25th Street to include bike lanes and landscaped sidewalks (stays three lanes).	7.0	$24,000,000	ODOT	Long-Term Tier 1	New Solution
H4	Highway Improvements Segment 4	Restripe US 101 from NW 25th Street to NW 21st Street to include bike lanes. Retains parking and five lanes.	5.3	$50,000	ODOT	Tier 1	New Solution
H5	Highway Improvements Segment 5	Restripe US 101 from NW 13th Street to City Hall to include a southbound bike lane by reducing existing lane widths. Retains five lanes.	2.2	$50,000	ODOT	Tier 1	New Solution

Project #	Project Description	Project Elements	Evaluation Score	Estimated Cost	Primary Funding Responsibility	Priority	Source
H6	Highway Improvements Segment 6	Restripe US 101 from City Hall to SE 14th Street to include bike lanes. Retains five lanes.	5.3	$25,000	ODOT	Tier 1	New Solution
H7	Highway Improvements Segment 7	Widen US 101 from SE 14th Street to SE 23rd Drive to include bike lanes and landscaped sidewalks (stays four lanes).	7.0	$14,000,000	ODOT	Long-Term Tier 2	New Solution
H8	Highway Improvements Segment 8	Complete the shared-path along the east side US 101 between SE 23rd Drive and SW 32nd Street.	4.3	$1,000,000	ODOT	Tier 2	New Solution
H9	Highway Improvements Segment 9	Widen US 101 from SW 32nd Street to SW Beach Avenue to include shoulders on both sides and a landscaped sidewalk on the east side. Retains three lanes, and narrows to two lanes in constrained areas.	3.8	$26,000,000	ODOT	Long-Term Tier 3	New Solution
H10	Highway Improvements Segment 10	Replace the outside travel lanes along US 101 between SW Beach Avenue and Siletz Park with buffered bike lanes.	5.7	$50,000	ODOT	Tier 1	New Solution
H11	Highway Improvements Segment 11	Install a shared-use path along the west side of US 101 between Siletz Park and NW Jetty Avenue. This includes a hanging pedestrian/bicycle bridge on the Schooner Creek Bridge.	5.7	$3,000,000	ODOT	Tier 3	New Solution
H12	Highway Improvements Segment 12	Widen US 101 from SW Jetty Avenue to City Limits to include bike lanes and landscaped sidewalks (stays three lanes).	5.3	$12,000,000	ODOT	Long-Term Tier 2	New Solution

Functional Classification Changes

Table A2: Functional Classification Changes

Roadway	From	To
NE 11th St	Minor Collector	Local
NE 22nd St	Major Collector	Collector
NE 28th St	Local	Collector
NE 47th St	Local	Collector
NE 6th Dr	Minor Collector	Local
NE Devils Lake Blvd	Minor Collector	Collector
NE East Devils Lake Blvd	Major Collector	Collector
NE Holmes Rd	Major Collector	Collector
NE Mast Ave	Minor Collector	Local
NE Oar Ave	Minor Collector	Local
NE Oar Pl	Minor Collector	Local
NW 12th St	Major Collector	Local
NW 14th St	Local	Collector
NW 21st St	Major Collector	Collector
NW 2nd Dr	Major Collector	Local
NW 30th St	Local	Collector
NW 39th St	Minor Collector	Collector
NW 40th St	Local	Collector
NW 44th St	Local	Collector
NW 6th Dr	Major Collector	Local
NW Harbor Ave	Major Collector	Collector
NW Inlet Ave	Major Collector	Local
NW Jetty Ave	Major Collector	Collector
NW Logan Rd	Major Collector	Minor Arterial
S Drift Creek Rd	Major Collector	Collector
SE 23rd Dr	Major Collector	Collector
SE 48th Pl	Major Collector	Collector
SE East Devils Lake Rd	Major Collector	Collector
SE High School Dr	Major Collector	Collector
SE Spyglass Ridge Dr	Major Collector	Local
SW 11th Dr	Minor Collector	Local
SW 12th ST	Minor Collector	Local
SW 24th Dr	Minor Collector	Local
SW 32nd St	Minor Collector	Local
SW 63rd St	Minor Collector	Local
SW 9th St	Minor Collector	Local
SW Anchor Ave	Minor Collector	Local
SW Bard Rd	Local	Collector
SW Coast Ave	Minor Collector	Local
SW Ebb Ave	Minor Collector	Local
SW Fleet Ave	Minor Collector	Local

DKS

Design Criteria for Minor Arterial Streets

Table A3: Design Criteria for Minor Arterial Streets

	Area Type			
	High Use	Medium Use	Low Use	Constrained Guidelines*
Recommended Right-of-way	77 ft.	69 ft.	61 ft.	47 ft.
Walking Zone				
Total Walking Zone Width	12.5 ft.	10.5 ft.	6.5 ft.	6.5 ft.
Walking Facility (throughway)	8 ft. sidewalk	6 ft. sidewalk	6 ft. sidewalk	6 ft. sidewalk
Minimum Furnishings/Landscape Strip Width	4 ft. tree well	4 ft. landscape strip	None	None
Edge (Clearance between Curb and Furnishings/Landscape Strip)	0.5 ft. curb			0.5 ft. curb
Biking/On-Street Parking Zone				
Total Biking/ On-Street Parking Zone Width	8 ft.	6 ft.	6 ft.	0 ft.
Biking Facility	8 ft. bike lanes (includes 3 ft. buffer)	6 ft. bike lanes	6 ft. bike lanes	Via Adjacent Parallel Street within 330 ft.
On-Street Parking Width	None			None
Driving Zone				
Through Lanes	2			2
Lane Width	12 ft.			11 ft.
Left-Turn Lanes/ Median (To be used for landscaping or pedestrian crossing refuge at midblock locations)	Required 12 ft.			Required 12 ft.

*Guideline for constrained areas only and would require approval through a variance procedure before street elements could be modified.

Design Criteria for Collector Streets

Table A4: Design Criteria for Collector Streets

	Area Type			
	High Use	Medium Use	Low Use	Constrained Guidelines*
Recommended Right-of-way	63 – 79 ft.	55 – 71 ft.	47 – 63 ft.	33 ft.
Walking Zone				
Total Walking Zone Width	12.5 ft.	10.5 ft.	6.5 ft.	6.5 ft.
Walking Facility (throughway)	8 ft. sidewalk	6 ft. sidewalk	6 ft. sidewalk	6 ft. sidewalk
Minimum Furnishings/Landscape Strip Width	4 ft. tree well	4 ft. landscape strip	None	None
Edge (Clearance between Curb and Furnishings/Landscape Strip)	0.5 ft. curb (1.5 ft. with curbside on-street parking and landscaping)		0.5 ft. curb	0.5 ft. curb
Biking/On-Street Parking Zone				
Total Biking/ On-Street Parking Zone Width	8 - 16 ft.	6 - 14 ft.	6 - 14 ft.	0 ft.
Biking Facility	8 ft. bike lanes (includes 3 ft. buffer)	6 ft. bike lanes	6 ft. bike lanes	Via Adjacent Parallel Street within 330 ft.
On-Street Parking Width	Optional 8 ft.			None
Driving Zone				
Through Lanes	2			2
Lane Width	11 ft.			10 ft.
Left-Turn Lanes/ Median (To be used for two-way left-turn lanes, landscaping, or pedestrian crossing refuge at midblock locations)	Optional 11 ft.			None

*Guideline for constrained areas only and would require approval through a variance procedure before street elements could be modified.

Design Criteria for Local Streets

Table A5: Design Criteria for Local Streets

	Area Type			
	High Use	Medium Use	Low Use	Constrained Guidelines*
Recommended Right-of-way	45 – 61 ft.	41 – 57 ft.	33 – 47 ft.	33 ft.
Walking Zone				
Total Walking Zone Width	12.5 – 13.5 ft.	10.5 – 11.5 ft.	6.5 ft.	6.5 ft.
Walking Facility (throughway)	8 ft. sidewalk	6 ft. sidewalk	6 ft. sidewalk	6 ft. sidewalk
Minimum Furnishings/Landscape Strip Width	4 ft. tree well	4 ft. landscape strip	None	None
Edge (Clearance between Curb and Furnishings/Landscape Strip)	0.5 ft. curb (1.5 ft. with curbside on-street parking and landscaping)		0.5 ft. curb	0.5 ft. curb
Biking/On-Street Parking Zone				
Total Biking/ On-Street Parking Zone Width	0 - 7 ft.	0 - 7 ft.	0 - 7 ft.	0 ft.
Biking Facility	Bike Boulevard	Optional Bike Boulevard	None	None
On-Street Parking Width	Optional 7 ft.			None
Driving Zone				
Through Lanes	2			2
Lane Width	10 ft.			10 ft.
Left-Turn Lanes/ Median (To be used for landscaping or pedestrian crossing refuge at midblock locations)	None			None

*Guideline for constrained areas only and would require approval through a variance procedure before street elements could be modified.

Traffic Calming

Chicanes reduce vehicle speeds by creating a winding street pattern. These are typically appropriate on low volume streets.


Source: upload.wikimedia.org


Source: alexandriava.gov

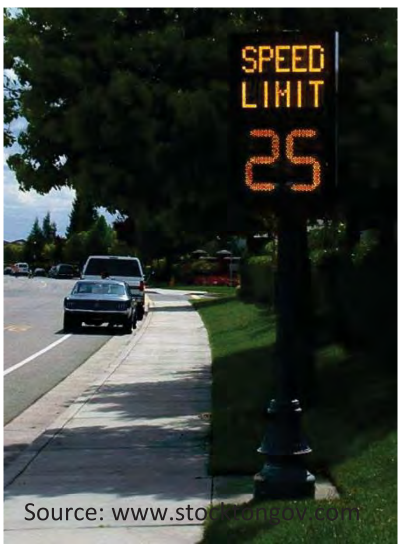
Chokers reduce the roadway width through curb extensions. These are typically appropriate on low volume streets with on-street parking.

Raised Crosswalks act as speed humps by vertically deflecting vehicles. These are typically appropriate at midblock pedestrian crossings. This treatment can be found on SW Jetty Avenue in Cutler.


Source: google.com

Raised Intersections are intersections elevated to the curb height, thus vertically deflecting vehicles as they approach intersection crosswalks.

Source: www.paolionthemove.org



Source: www.stocktongov.com

Speed Feedback Signs are roadside signs that read vehicle speeds and present the approaching motorist with a message. Messages can tell a motorist how fast he/she is driving, the speed limit, to slow down, or other programmable messages. These signs can be effective on higher speed roadways where horizontal and vertical deflection is not an appropriate measure.

Speed Humps are highly effective at slowing motorists. However, consideration should be given to driver discomfort. Speed humps are not appropriate along common routes for emergency vehicles.

Speed Tables are flat and longer than speed humps. While they are not as effective at slowing motorists, they are more comfortable to drive over.


Source: www.enterpriseflasher.com

Stop Signs can be used at intersections to break up long stretches of unimpedied roadway, effectively slowing motorists and discouraging through-traffic on local roadways.

Street Closures reduce traffic volumes on local roadways by placing a physical barrier across the roadway, effectively preveneting through-travel . Barriers should be designed to allow for pedestrian and bicycle travel. Street closures can be designed to allow for emergency through-travel.

Source: google.com

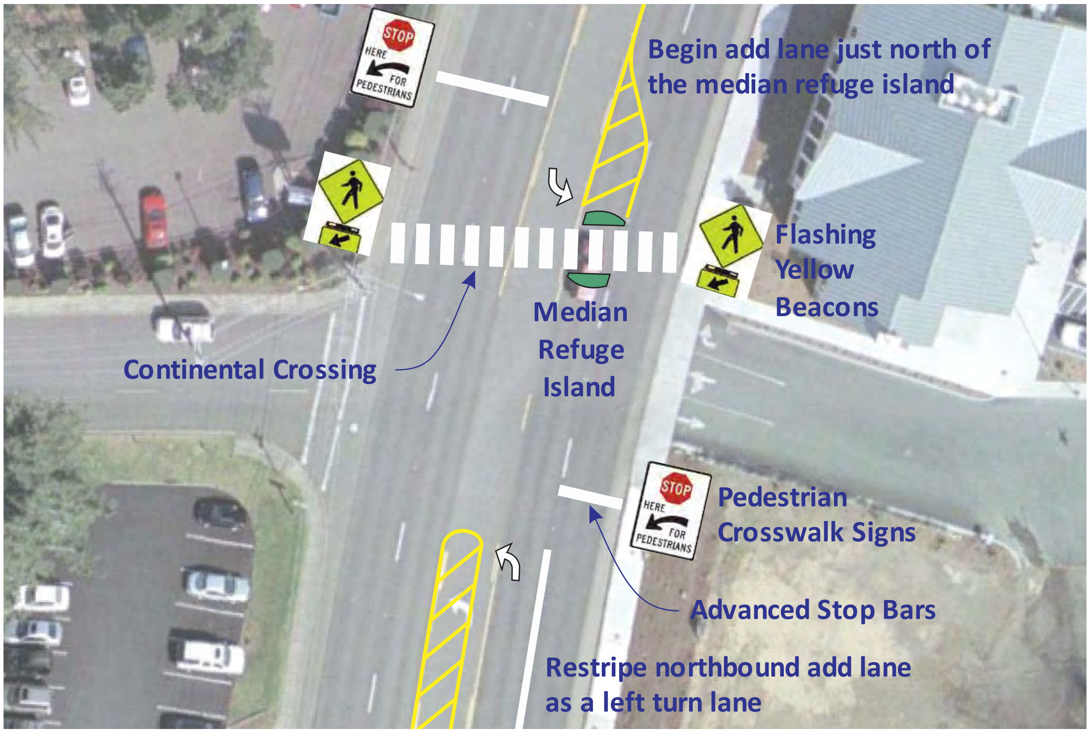
Source: austin.metblogs.com

Traffic Circles are raised, circular islands placed in the center of an intersection. Careful consideration must be given when choosing this device as this it may require more space than is available at the existing intersection, and it can be difficult for larger vehicles to maneuver around it.

DKS

Street Crossings

Project C1. New Crossing Between NW 39th Street and NW 36th Street



Closest alternative crossings:

- NW Logan Road – signalized, 650 feet to the north.
- Mid-block crossing between NW 34th Street and NW 33rd Street – flashing yellow beacon and median refuge island, 1,125 feet to the south.

Recommendations:

- Begin the 2nd northbound travel lane just north of NW 39th Street. Absorb the 2nd northbound lane south of NW 39th Street into the two-way left-turn lane. Just would allow for both pedestrian and southbound left turning refuge. This could impact northbound queuing at the NW Logan Road intersection.
- Continental crosswalk markings.
- Pedestrian-activated flashing yellow beacons.
- Pedestrian crosswalk signs.
- Advanced stop bars.
- Advanced flashing yellow beacons and warning signs may be needed due to the curvature of the highway.

Project C2. Enhance Existing Mid-Block Crossings at NW 18th Street and NW 16th Street

NW 18th Street (NW 16th Street not shown)

Closest alternative crossings:

- NW 21st Street – unsignalized with median refuge island, 825 feet to the north of NW 18th Street.
- NW 17th Street – signalized, 175 feet to the south of NW 18th Street and 200 feet to the north of NW 16th Street.
- NW 15th Street – unsignalized, 225 feet to the south of NW 16th Street.

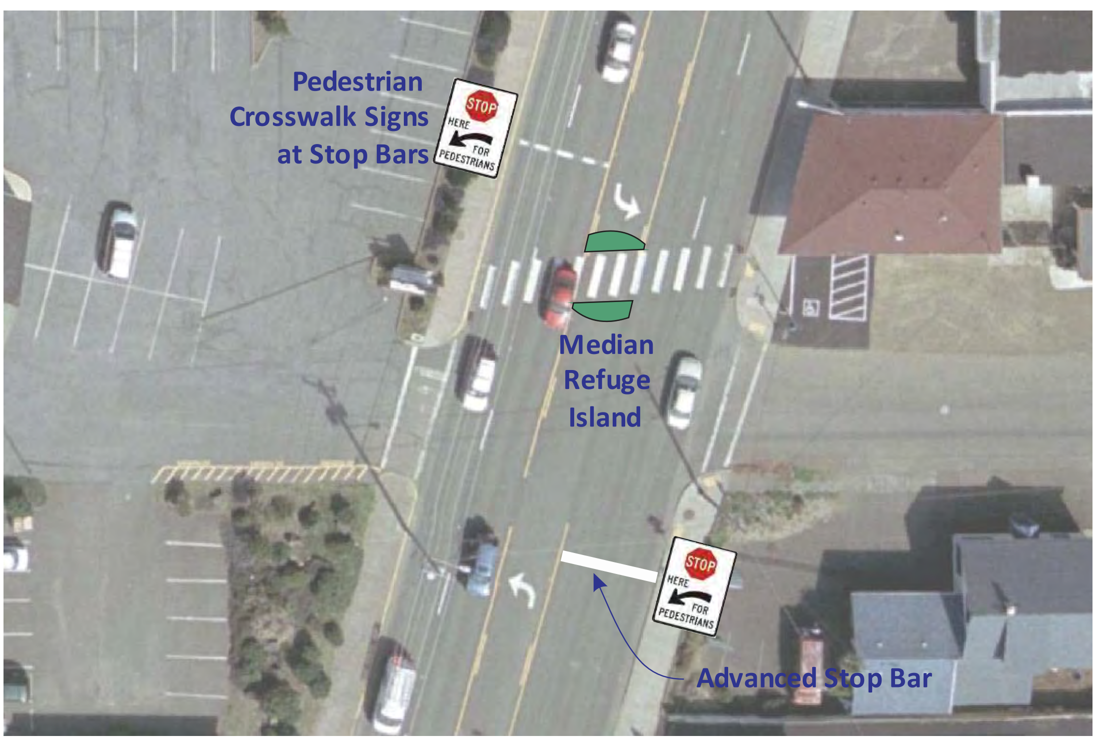
Recommendations:

- Expand no-parking zones to extend from the crosswalk to the advanced stop bars (this would extend the no-parking zones from 20 feet to 30 feet).
- Consider pedestrian crossing signs at stop bars if they can be clearly seen by motorists, and would not block the existing crossing signs at the crossing.

Project C3. Enhance Existing Marked Crossings from NW 15th Street Through NE 11th Street

NW 15th Street

NE 11th Street



There are currently marked unsignalized crosswalks at NW 15th Street, NW 13th Street, NW 12th Street, and NE 11th Street. Signalized crosswalks are provided at NW 14th Street.

Closest alternative crossings to this segment of highway:

- NW 16th Street – unsignalized, 225 feet to the north.
- NW 6th Drive – signalized, 850 feet to the south.

Recommendations:

- Expand no-parking zones around NW 15th Street and NW 13th Street to extend from the crosswalk to the advanced stop bars (this would extend the no-parking zones from 20 feet to 30 feet).
- Median refuge island on north approach of the intersection with NE 11th Street, aligning with existing crosswalk (southbound left turn traffic could no longer use the center left turn lane and would need to use the turn lane at NE 12th Street or NE 10th Street).
- Pedestrian crosswalk signs at stop bars.
- A PAC member expressed concern regarding the angled crossing. The east wheelchair ramp is slightly north of the intersection, likely due to the location of the storm drain. The west wheelchair ramp is at the intersection, as preferred. Overall, straightening the crossing would not provide a clear safety benefit due to driver expectancy of pedestrian crossings.

Project C4. Enhance Existing Marked Crossing at SE 3rd Street

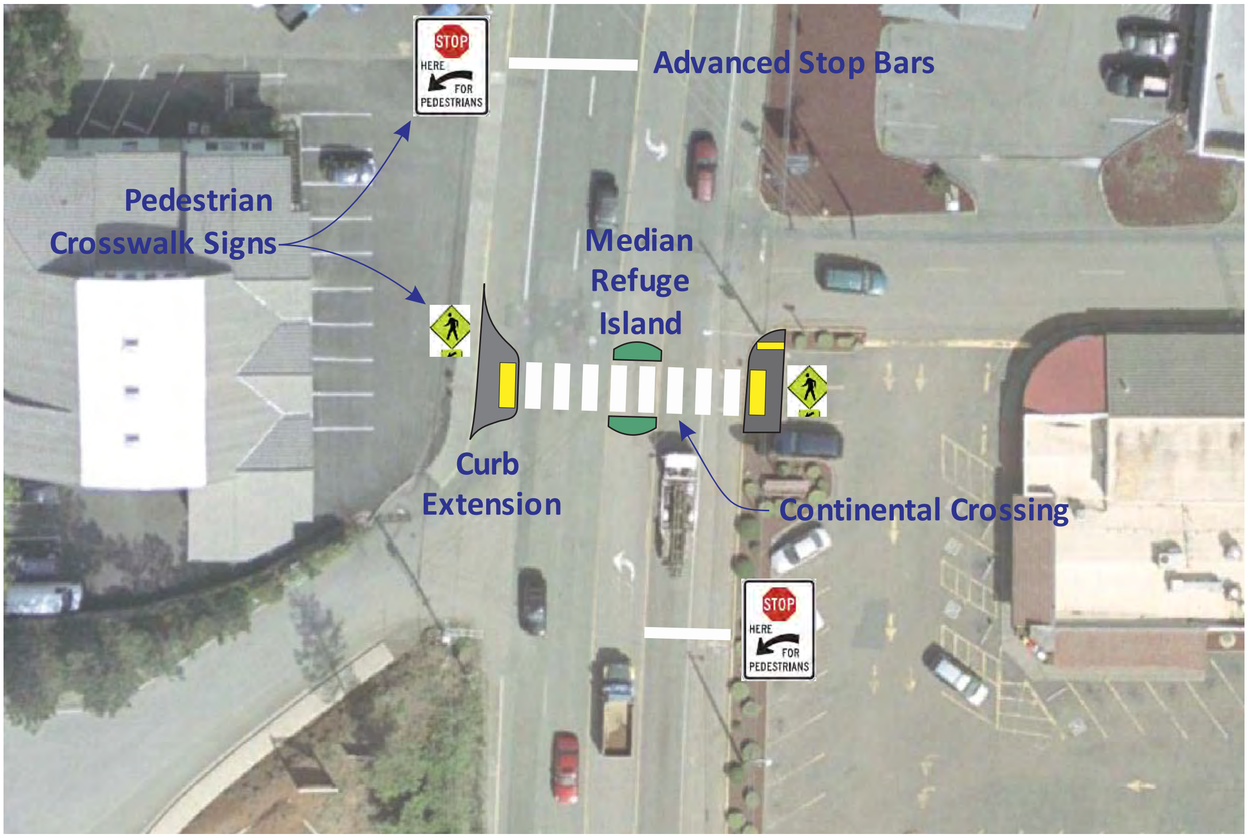
Closest alternative crossings:

- SE 1st Street – signalized, 825 feet to the north.
- City Hall/Library – signalized, 1,400 feet to the south.

Recommendations:

- Rectangular Rapid Flashing Beacons at the existing SE 3rd Street crossing.
- Pedestrian crosswalk signs at stop bars.

Project C5. New Crossing at SW Bard Road/SE 19th Street



Closest alternative crossings:

- SE East Devils Lake Road – signalized, 1,625 feet to the north.
- Planned crossing at SW 29th Street - unsignalized with median refuge island, 3,400 feet to the south (part of upcoming ODOT project currently under design).

Recommendations:

- Median refuge island between SW Bard Road and SE 19th Street (this may require restricting the left turn movement out of SW Bard Road, with vehicles required to detour north up SW Harbor Avenue).
- Construct curb extension on west side of US 101 at north corner of SW Bard Street (uses space currently striped as shoulder and likely used as de facto right turn lane).
- Continental crosswalk markings.
- Pedestrian crosswalk signs.
- Advanced stop bars.
- A PAC member expressed concern regarding motorists speeding for position for the southbound lane drop, and suggested moving the crossing north. However, moving the crossing north would impact the southbound left movement, which is a high demand movement, and it would locate the crossing far from SW Bard Road. If this conflict is an issue, the lane drop could be move north of the crossing.

Project C6. New Crossing at SE High School Drive

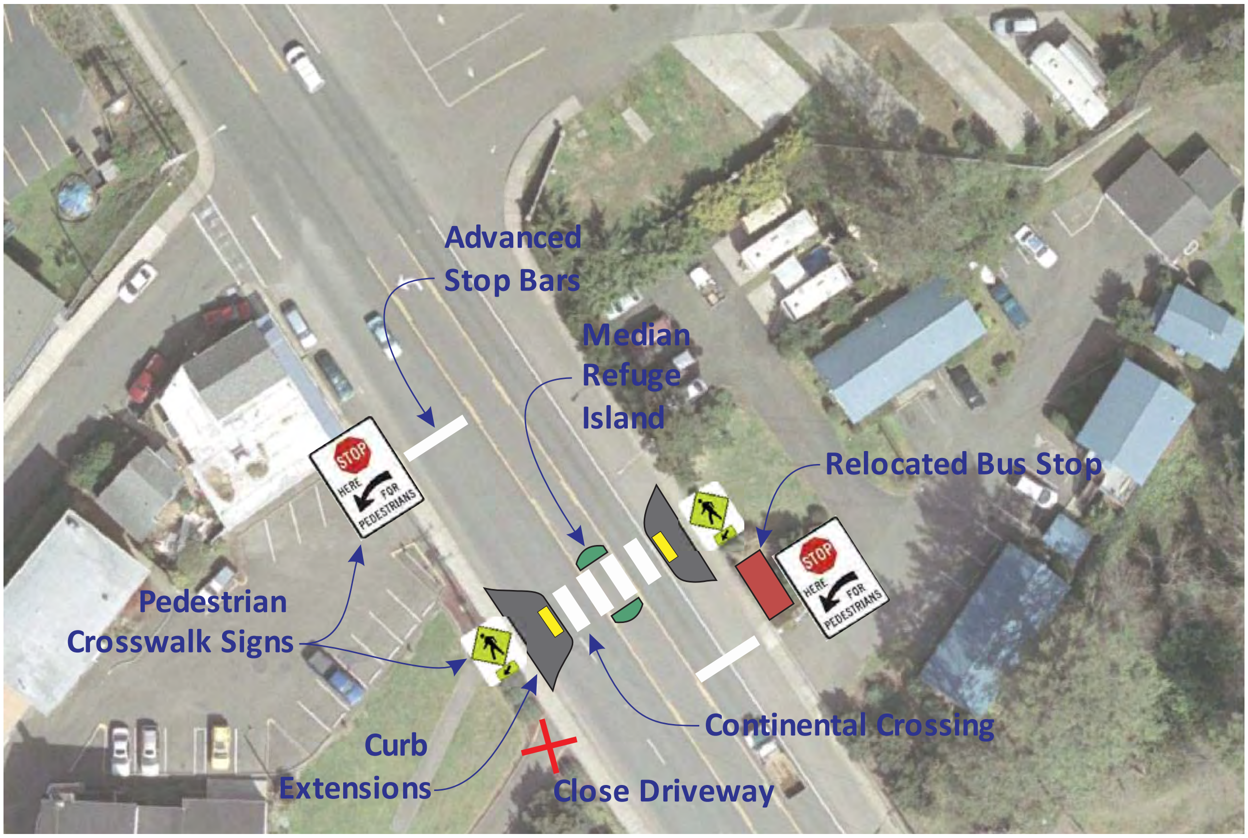
Closest alternative crossings:

- Planned crossing at SW 32nd Street – new traffic signal, 1,575 feet to the north (part of upcoming ODOT project currently under design)
- SE 48th Street – signalized, 4,100 feet to the south

Recommendations:

- Median refuge island, mid-block south of SE High School Drive and north of the next driveways.
- Continental crosswalk markings.
- Pedestrian crosswalk signs.
- Advanced stop bars.
- The PAC agreed that a crossing improvement is not needed at this location.

Project C7. New Crossing at between SW Beach Avenue and SW Coast Avenue



Closest alternative crossings:

- Planned crossing at SW 32nd Street – new traffic signal, 3,650 feet to the north (part of upcoming ODOT project currently under design)
- SE 48th Street – signalized, 2,050 feet to the south

Recommendations:

- Median refuge island, mid-block south of SW Beach Avenue and north of SW Coast Avenue.
- Narrow the crossing distance by pushing the added southbound travel lane further south and constructing curb extensions.
- Continental crosswalk markings.
- Pedestrian crosswalk signs.
- An advanced stop bar for the northbound approach.
- Relocate the existing bus stop approximately 100 feet north to align with the proposed crossing.

Project C8. New Crossing at the Fire Signal

Closest alternative crossings:

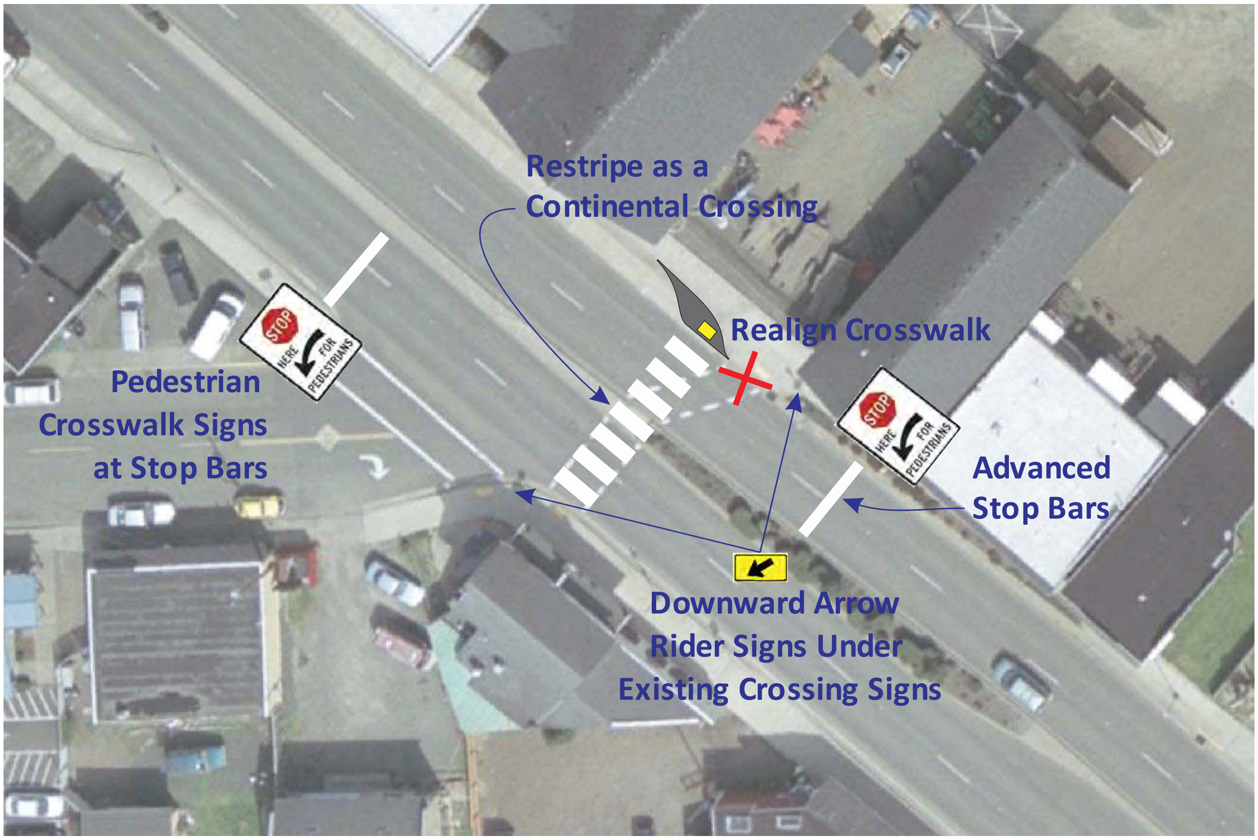
- SW Coast Avenue – proposed crossing, 930 feet to the north
- SE 48th Street – signalized, 1,140 feet to the south

Recommendations:

- Install pedestrian push buttons to activate the fire signal. This would include installation of pedestrian signal heads.
- Wheelchair ramps.
- Continental crosswalk markings.
- Pedestrian crosswalk signs.
- Relocation of the stop bar nearest to the crossing.
- Pedestrian crosswalk signs.

DKS

Project C9. Enhance Existing Marked Crossing at SW 50th Street



Closest alternative crossings:

- SW 48th Street – signalized, 500 feet to the north
- SW 51st Street – signalized, 300 feet to the south

Recommendations:

- Change crosswalk striping to continental markings.
- Consider straightening the crossing to avoid confusion for the vision impaired (will require minor shortening of bus pullout on east side).
- Advanced stop bar in northbound direction (explore options to include advanced stop bar in southbound direction without conflicting with SW 51st Street intersection approach).
- Pedestrian crosswalk signs at stop bars.
- Install downward arrow rider signs under existing pedestrian crossing warning signs. Relocate the existing northbound crossing sign near the relocated wheelchair ramp if the crossing is straightened.

Evaluating Alternatives

Table A6: Evaluation of NE East Devils Lake Road to NE West Devils Lake Road Design Options

TSP Goals	Option 1: Do Nothing	Option 2: Widen US 101 to provide bike lanes and a shared-use path
Goal 1: Provide for efficient motor vehicle travel to and through the city.	0	0.67
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.	0	1
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.	0	0.33
Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.	0	1.67
Goal 5: Enhance the health and safety of residents.	0	1.5
Goal 6: Foster a sustainable transportation system.	0	0.67
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.	0	0.67
Total Score	0	6.5
Ranking of Design Option	**2**	**1**

Table A7: Evaluation of NE West Devils Lake Road to NW Logan Road Design Options

TSP Goals	Option 1: Do Nothing	Option 2: Widen US 101 to three lanes, with a shared-use path	Option 3: Widen US 101 to three lanes, with sidewalks, landscaping, and bike lanes	Option 4: Widen US 101 to five lanes, with sidewalks, landscaping, and bike lanes
Goal 1: Provide for efficient motor vehicle travel to and through the city.	0	0.33	0.33	0.67
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.	0	1	1	1
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.	0	0.67	0.67	0.67
Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.	0	1.67	1.67	1.33
Goal 5: Enhance the health and safety of residents.	0	1.25	1.25	1.5
Goal 6: Foster a sustainable transportation system.	0	0.67	0.33	-0.33
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.	0	0.33	0.33	0.67
Total Score	0	5.92	5.58	5.5
Ranking of Design Option	**4**	**1**	**2**	**3**

Table A8: Evaluation of NW Logan Road to NW 39th Street Design Options

TSP Goals	Option 1: Do Nothing	Option 2: Restripe US 101 to include bike lanes
Goal 1: Provide for efficient motor vehicle travel to and through the city.	0	0
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.	0	0.67
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.	0	0.67
Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.	0	1.67
Goal 5: Enhance the health and safety of residents.	0	1
Goal 6: Foster a sustainable transportation system.	0	1
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.	0	0.33
Total Score	0	5.33
Ranking of Design Option	**2**	**1**

Table A9: Evaluation of Wecoma (NW 39th Street to NW 25th Street) Design Options

TSP Goals	Option 1: Do Nothing	Option 2: Widen US 101 to add sidewalks with landscaping and bike lanes
Goal 1: Provide for efficient motor vehicle travel to and through the city.	0	0
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.	0	2
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.	0	0.67
Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.	0	2
Goal 5: Enhance the health and safety of residents.	0	1
Goal 6: Foster a sustainable transportation system.	0	0.67
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.	0	0.67
Total Score	0	7
Ranking of Design Option	**2**	**1**

Table A10: Evaluation of North Oceanlake (NW 25th Street to NW 21st Street) Design Options

TSP Goals	Option 1: Do Nothing	Option 2: Remove parking and reconfigure the street width of US 101 to include bike lanes and wider sidewalk	Option 3: Reconfigure the street width of US 101 to add bike lanes
Goal 1: Provide for efficient motor vehicle travel to and through the city.	0	0	0
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.	0	1.33	1.33
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.	0	0.67	0.67
Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.	0	2	1.67
Goal 5: Enhance the health and safety of residents.	0	1	1
Goal 6: Foster a sustainable transportation system.	0	0.33	0.33
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.	0	0	0.33
Total Score	0	5.0	5.33
Ranking of Design Option	**3**	**2**	**1**

Table A11: Evaluation of South Oceanlake (NW 21st Street to NW 13th Street) Design Options

TSP Goals	Option 1: Do Nothing	Option 2: Remove parking and reconfigure the street width of US 101 to include a center turn lane/median	Option 3: Remove parking and reconfigure the street width of US 101 to include bike lanes and wider travel lanes	Option 4: Remove parking and reconfigure the street width of US 101 to include a southbound bike lane center turn lane/median	Option 5: Remove parking and reconfigure the street width of US 101 to include bike lanes and wider sidewalks	Option 6: Remove parking and reconfigure the street width of US 101 to include bike lanes and a small painted median
Goal 1: Provide for efficient motor vehicle travel to and through the city.	0	0.33	0	0.33	0	0
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.	0	-0.33	1.33	0.33	1.5	1.5
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.	0	0	0.67	0.33	0.67	0.67
Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.	0	0.67	2	1.17	2	2
Goal 5: Enhance the health and safety of residents.	0	0.88	0.75	1	0.88	1.25
Goal 6: Foster a sustainable transportation system.	0	0	0	0	0	0
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.	0	0	0	0.17	0	-0.33
Total Score	0	1.54	4.75	3.33	5.04	5.08
Ranking of Design Option	**6**	**5**	**3**	**4**	**2**	**1**

DKS

Table A12: Evaluation of Delake (NW 13th Street to SW 14th Street) Design Options

TSP Goals	Option 1: Do Nothing	Option 2: Reconfigure US 101 to add bike lanes in one direction	Option 3: Reconfigure US 101 to a four lane facility with bike lanes and a striped median
Goal 1: Provide for efficient motor vehicle travel to and through the city.	0	0	-0.67
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.	0	0.67	1.33
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.	0	0.33	0.67
Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.	0	0.33	0.5
Goal 5: Enhance the health and safety of residents.	0	0.5	1
Goal 6: Foster a sustainable transportation system.	0	0	0
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.	0	0.33	-0.67
Total Score	0	2.17	2.17
Ranking of Design Option	**3**	**1 (Tie)**	**1 (Tie)**

Table A13: Evaluation of SW 14th Street to SE 23rd Road Design Options

TSP Goals	Option 1: Do Nothing	Option 2: Widen US 101 to add sidewalks with landscaping and bike lanes
Goal 1: Provide for efficient motor vehicle travel to and through the city.	0	0
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.	0	2
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.	0	0.67
Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.	0	2
Goal 5: Enhance the health and safety of residents.	0	1
Goal 6: Foster a sustainable transportation system.	0	0.67
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.	0	0.67
Total Score	0	7
Ranking of Design Option	**2**	**1**

Table A14: Evaluation of SW 32nd Street to SW Beach Avenue Design Options

TSP Goals	Option 1: Do Nothing	Option 2: Widen US 101 to add bike lanes
Goal 1: Provide for efficient motor vehicle travel to and through the city.	0	0
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.	0	1.83
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.	0	2
Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.	0	1
Goal 5: Enhance the health and safety of residents.	0	1
Goal 6: Foster a sustainable transportation system.	0	0
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.	0	0.67
Total Score	0	6.17
Ranking of Design Option	**2**	**1**

Table A15: Evaluation of Taft (SW Beach Avenue to SW 51st Street) Design Options

TSP Goals	Option 1: Do Nothing	Option 2: Reconfigure US 101 to three lanes and bike lanes
Goal 1: Provide for efficient motor vehicle travel to and through the city.	0	-0.33
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.	0	1.67
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.	0	1
Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.	0	1.33
Goal 5: Enhance the health and safety of residents.	0	1
Goal 6: Foster a sustainable transportation system.	0	0.67
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.	0	0.33
Total Score	0	5.67
Ranking of Design Option	**2**	**1**

Table A16: Evaluation of Cutler (SW Jetty Avenue to South City Limits) Design Options

TSP Goals	Option 1: Do Nothing	Option 2: Widen US 101 to add sidewalks with landscaping and bike lanes
Goal 1: Provide for efficient motor vehicle travel to and through the city.	0	0
Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.	0	1.33
Goal 3: Provide transit service and amenities that encourage a higher level of ridership.	0	0.33
Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.	0	1.67
Goal 5: Enhance the health and safety of residents.	0	1
Goal 6: Foster a sustainable transportation system.	0	0.67
Goal 7: Ensure the transportation system supports a prosperous and competitive economy.	0	0.33
Total Score	0	5.33
Ranking of Design Option	**2**	**1**

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

MEMORANDUM

DATE: April 18, 2014

TO: Christina McDaniel-Wilson

FROM: John Bosket, P.E.
Benjamin Fuller, E.I.T.

SUBJECT: **Lincoln City Transportation System Plan**
Hours of Congestion Methodology P11086-010

This memorandum documents the proposed methodology to determine the hours of congestion for signalized intersections in Lincoln City, discusses the limitations of the methodology, and presents the resulting hours of congestion for alternative US 101 configurations.

METHODOLOGY

1. Determine the Existing Volume Profile

To determine existing volume profiles, it is best to use 16-hour counts. If 16-hour count data is not available, automatic traffic recorder (ATR) data should be used. When ATR data is used, the method for determining the appropriate ATR should match the seasonal factoring methodology.

For the Lincoln City TSP, 16-hour count data is not available. Therefore, to determine existing year volume profiles, on-site ATR's will be used. The ATR data can provide base year volume profiles for both directions along the corridor, and it can be used to determine traffic profiles for both the summer (30HV) and average weekday (AWD) conditions.

Two ATR's exist in Lincoln City: West Devils Lake ATR (#21-007) and D River Wayside ATR (#21-008). Both of these ATR's were used to seasonally factor intersection counts in the city. Therefore, the ATR volume profiles will be applied to intersections in the same manner that was done for seasonal factoring: the West Devils Lake ATR will be used to build the volume profiles for US 101/West Devils Lake Road and US 101/NW Logan Road, and the D River Wayside ATR will be used for all other signalized intersections along US 101.

Summer Traffic Profile:

Determine the peak volume month for the corridor. The peak month in Lincoln City is August. Average the hourly volumes for the entire month—including all days of the week—per direction.

Average Weekday Traffic Profile:

Average the hourly volumes across all Mondays, Tuesdays, Wednesday, and Thursdays for the whole year—this is done for both directions.

2. Factor the Volume Profiles to the 2035 P.M. Peak Hour Volumes

Develop a factor between the 2035 p.m. peak hour mainline volume and the existing volume profile for the summer and average weekday conditions. Multiply this factor against the existing volume profiles to determine the 2035 volume profile. This is done separately for each direction. Note that if the through lane shares a turn movement, the 2035 p.m. peak hour mainline volume is the sum of the through and turn volumes.

3. Determine Capacity

Capacity of the mainline approach is the lane group capacity, which can be determined through HCM analysis (e.g., Synchro HCM report). Assume the same value of capacity for the 24-hour profile. Capacity will likely vary by direction. Capacity is based on a volume-to-capacity (v/c) ratio of 1.0.

4. Shift Demand to Determine Volume Served

If the hourly demand is greater than capacity, cap demand at capacity, and carry the remainder to the following hour. This will become the volume served in a given hour.

5. Determine "Congestion"

Set a v/c ratio value for congestion (in this case, 0.90 was assumed). Congestion is the average driver's perception of congestion, and is not to be confused with capacity—the value of congestion will likely be less than capacity. The value of congestion should consider that the perceived value of congestion is likely to vary by region (e.g., commuters in the Portland Metro region are likely to perceive congestion at a higher v/c ratio than those in rural communities). Multiply the congestion v/c ratio to lane group capacity. This is the volume at which the facility becomes "congested."

6. Determine Hours of Congestion

Count the number of hours in the day that the volume served is greater than the level of congestion for either direction.

LIMITATIONS OF THE METHODOLOGY

The following is a list of limitations of the methodology. As shown, there are several factors that are not reflected in calculating hours of congestion. Therefore, the values reported should be evaluated as approximated figures. While there are several limitations to this methodology, the methodology is still adequate for the purpose of estimating the duration of congestion for signalized intersections in Lincoln City for the future analysis year of 2035.

- If left turn volumes are not adequately served, left turn queues may block the mainline through approach, thus degrading the mainline through movement capacity.

- This methodology evaluates locations independently and does not consider the potential for queue spillback from adjacent intersections.
- Capacity of an approach for an actuated signal is not constant, as it varies with changes in entering volume. Capacity of the mainline approach is typically lowest during the p.m. peak hour. Therefore, it is conservative to assume the p.m. peak hour capacity for the entire day.
- Defining “congestion” is subjective and significantly impacts the hours of congestion calculation.
- In cases where demand significantly exceeds capacity, this methodology becomes less precise. In reality, demand is likely to change during periods of high, recurring congestion. The following is a list of items that would likely affect demand, and are not reflected in this methodology:
    - During recurring congestion, motorists may shift their departure time to a less congested hour.
    - Motorists may choose alternative routes when the more direct route becomes more congested.
    - Trip generation may be less during congested periods as potential motorists are less inclined to make trips during cases of significant congestion.
    - As congestion increases, travelers are more likely to use alternative modes of transportation.

RESULTS

Table 1 presents the hours of congestion for the US 101 alternatives considered in the Lincoln City TSP. The Baseline alternative considers only improvements that currently have committed funding. The five lane scenario assumes that US 101 will be expanded to five lanes throughout Lincoln City. The road diet scenario considers reducing US 101 to three lanes in Oceanlake, Delake, and Taft. For each alternative, the hours of congestion are reported for both the summer (30HV) and the average weekday (AWD) conditions.

Table 1: Hours of Congestion along US 101

Location	Baseline		5 Lanes		Road Diet	
	30HV	AWD	30HV	AWD	30HV	AWD
NE West Devils Lake Road	>8	2	0	0		
NW Logan Road	>8	0				
NE 22nd Street	8	0			>8	>8
NE 17th Street	6	0	0	0	>8	>8
NW 14th Street	>8	0	7	0	>8	>8
NE 6th Street	2	0			>8	>8
SE 1st Street	8	0			>8	>8
City Hall	8	0				
SW 12th Street	5	0				
SE 32nd Street	>8	8	0	0		
SW 48th Street	0	0			8	0
SW 51st Street	0	0			3	0

(This page intentionally left blank)

Section N

Memo: Alternate Mobility Targets

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

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

TECHNICAL MEMORANDUM

DATE: August 22, 2014

TO: Lincoln City TSP Project Management Team

FROM: John Bosket, PE
Kevin Chewuk, PTP
Ben Fuller, EIT

SUBJECT: **Lincoln City Transportation System Plan**
Alternative Mobility Targets P11086-010

It is important for a Transportation System Plan (TSP) to identify a full range of transportation system projects and services that would address the deficiencies that would exist at the end of a 20-year planning horizon if the community grows in accordance with its existing adopted land use plan and no additional improvements are made during that period of time.

However, it is also important for a TSP to realistically identify which transportation projects and services are reasonably likely to be implemented over the 20-year planning horizon, based on financial or other constraints. This exercise enables the community and, as appropriate, the state to establish realistic expectations for how that transportation system will likely operate at the end of the 20-year planning horizon.

Because of the financial and other constraints that have been faced by state and local governments over the last 20 years and which are expected to continue into the foreseeable future, it is often the case that the local and/or state roadways will not be improved to the extent that they will be able meet local level-of-service (LOS) standards or, in the case of ODOT, roadway volume-to-capacity (v/c) ratio based mobility targets, at the end of the 20-year planning horizon if the community grows in accordance with its existing, adopted land use plan. This is particularly common in larger communities or in those with roadways that experience higher travel demands. In these cases, it is appropriate to adjust roadway performance expectations, as expressed through local LOS standards or state mobility targets, to match the performance that is actually forecasted to exist at the end of the 20-year planning horizon, through the adoption of alternative standards or mobility targets.

In other words, in these situations, adopting alternative standards or mobility targets is simply an exercise in adjusting roadway performance expectations to match realistic expectations for how the roadways are actually forecasted to operate, taking into account financial and other constraints and assuming implementation of the existing, adopted local land use plan. In addition to establishing realistic expectations for future system performance, this process will help reduce the potential for state and local investment needs by not continuing to require compliance with standards or targets that both parties acknowledge cannot likely be achieved, assuming that the community continues to grow in accordance with its existing, adopted land use plan.

In Lincoln City, the transportation system analysis has revealed that portions of US 101 are not expected to be able to meet ODOT's existing adopted mobility targets at the end of the 20-year planning horizon, based on the transportation impact associated with the population and employment growth expected through implementation of the City's existing, adopted land use plan and the transportation system performance that would result, assuming implementation of only those projects and services that have been identified as reasonably likely to be funded during the 20-year planning horizon. This memorandum documents the need for developing alternative mobility targets for US 101 through Lincoln City and describes the proposed new targets. Included is a summary of the methodology and results, and the recommended alternative mobility targets for the highway.

Background

The segment of US 101 under consideration, shown in Figure 1, is bounded by the urban growth boundary (near Clancy Road to the north and near SW 63rd Street to the south). US 101 is the major transportation route through Lincoln City, running north to south bisecting the city. The Pacific Ocean, Siletz Bay, Devils Lake, D River, and hilly topography- limit continuous north to south routes parallel to US 101. At several locations, US 101 is the only north-south street, forcing most drivers to use it for trips within the city.

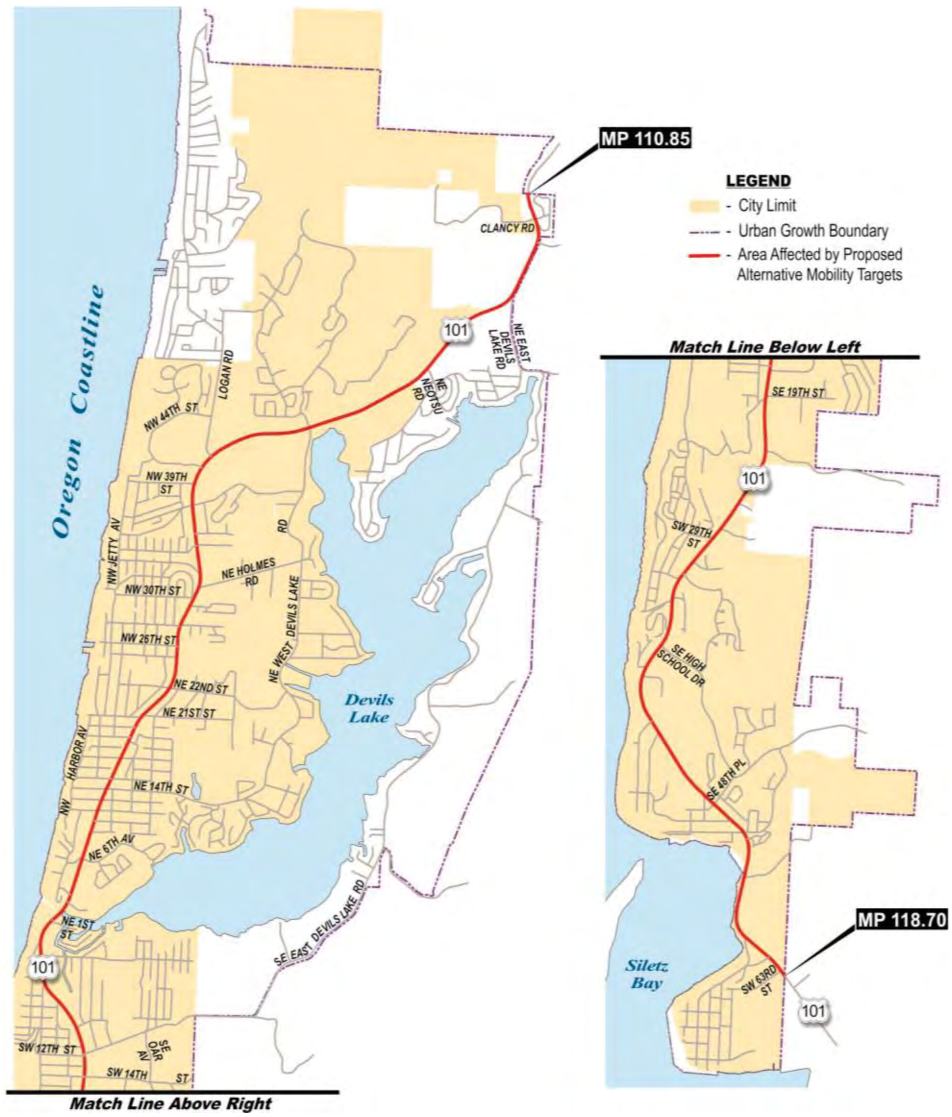


Figure 1: US 101 Segment Under Consideration for Alternative Mobility Targets

Within Lincoln City, US 101 is classified as a Statewide Highway. Statewide Highways typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation. In addition, US 101 through Lincoln City is part of the National Highway System and Strategic

National Defense Highway Network (STRAHNET), and is a designated Federal truck route, Scenic Byway, and a Tier 1 Lifeline Route.

A portion of US 101 within the Taft district (475 feet north of SW Fleet Avenue to 250 feet south of SW/SE 51st Street) also has a Special Transportation Area (STA) designation. The primary objective of a STA is to provide access to and circulation amongst community activities, businesses, and residences and to accommodate pedestrian, bicycle, and transit movement along and across the highway. Although motor vehicle traffic moves through an STA and automobiles may play an important role in accessing an STA, convenience of movement within an STA focuses upon pedestrian, bicycle, and transit modes. It encourages direct street connections and shared on-street parking. Local auto, pedestrian, bicycle, and transit movements to the area are generally as important as the through movement of traffic. Because of this, ODOT's mobility targets and design standards in STA's are intended to allow for lower speed operations.

The Need for Alternative Mobility Targets

Prior to exploring alternatives to the current mobility targets, evaluation of the disparity between the current targets and forecasted traffic operations confirmed the need for assessing the potential to mitigate conditions through other means. The findings of that evaluation are described below.

Current Mobility Targets

All intersections along US 101 in Lincoln City must comply with the volume to capacity (v/c) ratio targets in the Oregon Highway Plan (OHP). ODOT v/c ratio targets are based on highway classification, area type, and posted speeds. Table 2 lists the existing OHP Mobility Targets for US 101.

ODOT standard analysis procedure also requires intersection operating conditions to be compared to existing OHP Mobility Targets during the 30th highest annual hour of traffic (30 HV). In Lincoln City, the 30th highest annual hour occurs during the summer months, when traffic volumes increase due to an influx of vacationers and visitors. During an average weekday (typically during late May and early September), volumes are generally 20 percent lower than those along the highway during the summer.

Table 1: Current Mobility Targets for US 101 Intersections*

Segment of US 101	Signalized Intersections	Unsignalized Intersections: US 101 Approaches	Unsignalized Intersections: Side Street Approaches to US 101
From the North UGB (near Clancy Road) to just northeast of Logan Road	0.80 v/c	0.80 v/c	0.90 v/c
From just northeast of Logan Road to just north of SW Fleet Avenue	0.90 v/c	0.90 v/c	0.95 v/c
From just north of SW Fleet Avenue to just south of SE 51st Street	0.95 v/c	0.95 v/c	1.00 v/c
From just south of SE 51st Street to just south of SW 63rd Street	0.90 v/c	0.90 v/c	0.95 v/c
From just south of SW 63rd Street to the south UGB (just south of SE 63rd Street)	0.80 v/c	0.80 v/c	0.90 v/c

* v/c ratios shown are maximum allowed
Source: Oregon Highway Plan (OHP), Policy 1F, Table 6, as amended August 2005.

Existing and Future Highway Operations

A comparison of existing (year 2012) and future (year 2035) traffic operations along US 101 to adopted mobility targets during summer traffic conditions (30 HV) shows that most intersections operate well today, but traffic demand in the summer p.m. peak period at many intersections will exceed capacity by 2035. Table 2 summarizes the results of this analysis, along with both the Highway Design Manual (HDM) and existing OHP Mobility Targets. Typically, the Highway Design Manual mobility standard is applied to the evaluation of highway construction improvements and the existing OHP Mobility Targets are used in the assessment of development proposals and planning projects. As shown, most of the intersections would fail to comply with both standards by 2035.

The Transportation System Plan (TSP) development process considered a range of improvement options for US 101. This included widening the highway corridor to add capacity, making spot improvements at intersections, enhancing the transit system, expanding the cycling and walking networks, strategies to help manage peak travel demands, and improvements to maximize the efficiency of the existing street network. Widening the highway to five lanes through the city would add a significant amount of capacity and would allow nearly all intersections to comply with current mobility targets. However, the impact to existing development would be significant considering the surrounding environment and constrained right-of-way (both built environment and physical constraints). Additionally, the cost of such widening (in total or for any segment that currently does not have five lanes) is well beyond any reasonably likely expectation for funding during the 20-year based on current ODOT funding capabilities. Therefore, the highway-widening improvements were not recommended for implementation within the 20-year planning horizon.

Widening US 101 to a uniform five-lane cross-section will be identified as a possibility for the timeframe beyond the 20-year planning horizon, with the benefits, costs, and constraints duly noted. If strong a community interest in pursuing highway widening develops and significant (currently unanticipated) funding to implement widening of one or more highway segments during the current 20-year planning horizon is secured, ODOT will work with the City to amend the TSP and highway performance expectations accordingly. Absent that development, ODOT and the City will manage US 101 with the expectation that no highway widening projects will be developed during the 20-year planning horizon. Without highway widening, the management approach for US 101 is to maximize the safety and efficiency of the overall transportation system and increase accessibility and availability of transit, walking and biking facilities, recognizing that it is not currently financially feasible or practical from either a community impact or physical constraint perspective (or both) to construct additional highway capacity on US 101 to reduce congestion.

Table 2 shows how US 101 intersections are expected to operate in 2035 during the summer peak with the recommended improvements from the Lincoln City TSP in place. Congestion on the highway is not expected to significantly improve over the “No Build” condition, with peak hour demand near or exceeding capacity at most signalized intersections. Given that highway widening would be required to meet existing OHP Mobility Targets, it is clear that it will not be possible to meet them along US 101 in Lincoln City by the end of the 20-year planning horizon.

Table 2: Intersection Operations along US 101 within Lincoln City, Summer Conditions (v/c Ratios)

Intersection	HDM Design-Mobility Standard	Existing OHP Mobility Target	2012 Existing Conditions	2035 Baseline Conditions (No Build)	2035 with Recommended System Improvements
Signalized Intersections					
US 101/NE West Devils Lake Rd	0.70	0.80	**0.81**	**1.07**	**1.07**
US 101/NW Logan Rd	0.75	0.90	0.88	**1.20**	**1.20**
US 101/NE 22nd St	0.75	0.90	0.70	**1.16**	**1.16**
US 101/NE 17th St	0.75	0.90	0.58	**0.91**	**0.91**
US 101/NE 14th St	0.75	0.90	0.67	**1.24**	**1.24**
US 101/NE 6th St	0.75	0.90	0.59	**0.92**	**0.92**
US 101/SE 1st St	0.75	0.90	0.61	**1.00**	**1.00**
US 101/Burger King/City Hall	0.75	0.90	0.70	**0.99**	**0.99**
US 101/East Devils Lake Rd/SW 12th St	0.75	0.90	0.62	**0.93**	**0.93**
US 101/SW 32nd St	0.75	0.90	-	**1.36**	**1.36**
US 101/SW 48th St	0.90	0.95	0.47	0.57	0.93
US 101/SW 51st St	0.90	0.95	0.43	0.55	0.91
Unsignalized Intersections*					
US 101/NE East Devils Lake Rd	0.70/0.80	0.80/0.95	0.60/0.49	**0.75/>2.0**	0.75/0.72
US 101/Neotsu Rd	0.70/0.80	0.80/0.95	0.63/0.41	**0.79/>2.0**	0.79/0.65
US 101/NE Holmes Rd	0.75/0.80	0.90/0.95	0.74/0.50	**1.17/1.72**	**1.17/1.72**
US 101/NE 30th St	0.75/0.80	0.90/0.95	0.76/0.22	**1.20/0.58**	**1.20/0.58**
US 101/NE 21st St	0.75/0.80	0.90/0.95	0.54/0.10	0.83/0.13	0.83/0.13
US 101/SE 14th St	0.75/0.80	0.90/0.95	0.72/0.67	**1.14/>2.0**	**1.14/>2.0**
US 101/SW Bard Ave/SE 19th St	0.75/0.80	0.90/0.95	0.71/0.65	**1.17/0.41**	**1.17/0.41**
US 101/SE 29th St	0.75/0.80	0.90/0.95	0.74/0.11	**1.16/>2.0**	**1.16/>2.0**
US 101/SE High School Dr	0.75/0.80	0.90/0.95	0.59/0.43	**0.93/1.04**	**0.93/1.04**
US 101/SW Jetty Ave	0.75/0.80	0.90/0.95	0.53/-	0.69/ -	0.69/ -
US 101/SW 62nd St	0.75/0.80	0.90/0.95	0.49/0.19	0.62/0.36	0.62/0.36
US 101/SW 63rd St	0.75/0.80	0.90/0.95	0.52/0.19	0.62/0.21	0.62/0.21

* Worst mainline volume-to-capacity ratio/worst side street volume-to-capacity ratio

Bold, Red and Shaded indicates intersection fails to meet existing OHP mobility target

Factors Limiting the Ability to Meet Existing Mobility Targets

Several factors combine to make compliance with the current mobility targets along US 101 difficult. They include:

- **Competition from Multiple Users**
  The importance of US 101 to statewide, regional, and local traffic creates significant demands for both short and long trips along the corridor. These competing users include:
  - Motorists making local trips to homes, work, and shopping
  - Motorists making regional trips through Lincoln City between other cities along the coast
  - Freight traveling to and through Lincoln City (US 101 is a Federal Truck Route)
  - Tourists driving along the coast, many with large recreational vehicles, and stopping in Lincoln City to shop, dine, and enjoy the attractions
  - Transit, including movement and access – most of the local transit routes are along US 101
  - Bicyclists- US 101 is a major touring bike route as well as a means of transportation for locals
  - Pedestrians using the most direct route, in some places the only route, connecting their residences with community facilities, employment, and shopping
- **Financial Factors**
  As is true for most agencies, funding for City and ODOT transportation improvements is limited. Even if all forecasted state and local transportation revenue for projects in Lincoln City over the next 20 years were spent on highway capacity improvements, it would still fall well short of enabling current mobility targets to be met (and would likely be insufficient to widen even one of the existing non-five lane segments).
- **Existing Development Patterns**
  In many areas along US 101, adjacent development constrains the ability to widen the highway right-of-way. Obtaining needed right-of-way for highway widening would require acquisition and removal of such development, which would be very expensive and undesirable to the community.
- **Environmental Factors**
  The Pacific Ocean, Siletz Bay, Devils Lake, D River, and hilly topography (particularly at Spanish Head) limits options to provide an effective, connected transportation system, especially along US 101, which is the primary transportation corridor through the city. These factors provide a challenging environment for transportation and make the construction or expansion of transportation facilities potentially cost prohibitive.

Other Strategies Being Applied to Enhance Mobility

Recognizing that mobility along US 101 will be constrained, the City's Transportation System Plan includes several actions to help relieve congestion:

- Improvements to local streets to allow the city street network to operate at a Level of Service "E" or better through the year 2035. Maintaining good performance of the local streets will help to provide attractive travel alternatives to US 101 for local trips, where practical.

- Expand the city's local street network, especially in the north and southeast parts of the city, to improve connectivity and create alternate routes to US 101 for local trips, removing them from the highway.
- Use an array of Transportation System Management (TSM) strategies, including adaptive signal timing on US 101 (currently being implemented), displaying traveler information at city gateways, improved connectivity of local streets, and improved parking management for visitors (in addition to access management regulations already in place).
- Enhance the transit system to improve services and provide attractive travel options as funding allows. This includes upgrading transit stop accessibility and amenities, working to secure funding to implement a seasonal trolley service, expanding LINC service hours, implementing park and ride facilities, and coordinating with Lincoln County to improve county-funded transit service.
- Fill facility gaps in the pedestrian and bicycle network and improve crossing opportunities along US 101, improving safety and providing access to major activity generators.

However, even with these actions in place, traffic operations along US 101 will not meet existing OHP Mobility Targets at the end of the 20-year planning horizon. The implementation of these actions, along with the OTC adoption of alternative mobility targets for US 101 into the OHP that reflect ODOT and the City's mutual, realistic highway performance expectations, constitutes ODOT's US 101 management strategy in Lincoln City through the 20-year planning horizon.

Proposed Alternative Mobility Targets

The approach to developing alternative mobility targets for US 101 through Lincoln City included the following:

- The replacement of the 30th highest annual hour of traffic analysis time period with the average annual weekday peak hour.
- New maximum v/c ratio thresholds that reflect ODOT and City US 101 highway performance expectations based on the expected growth associated with implementation of the City's existing adopted land use plan, regional US 101 traffic growth, and state and local transportation facility and service improvements that have been identified and reasonably likely to be implemented during the 20-year planning horizon with identified funding constraints.

This section describes the proposed alternative mobility targets in detail, including the process used to develop them and the associated analysis methodology.

Applying the Average Annual Weekday Peak Hour

One characteristic of the current mobility target that makes it difficult to comply with through Lincoln City is the requirement to use the 30th highest annual hour of traffic as the design period. In many larger urbanized areas, this time period is roughly equivalent to the average weekday p.m. peak hour at virtually any time during the year. However, along the Oregon Coast, and in this area in particular, US 101 also serves significant seasonal demand from recreational trips. Therefore, the 30th highest annual hour of traffic occurs on a summer Friday evening, when local commuting traffic peaks coincide with recreational traffic peaks. Because it will not be possible to meet, or even stay below actual facility one-hour capacity using ODOT's standard analysis methodology during the 30th highest hour, the approach to establish a new mobility target for US 101 through Lincoln City begins with using a design period that is more representative of travel that does not take place during the peak summer tourist season.

Figure 2 illustrates the difference in traffic volumes on US 101 during an average weekday compared to the summer peak (30 HV). During an average weekday (typically during late May and early September), volumes are generally 20 percent lower than those along the highway during the summer. In fact, for at least eight months out of the year, traffic volumes are often well below the annual average.

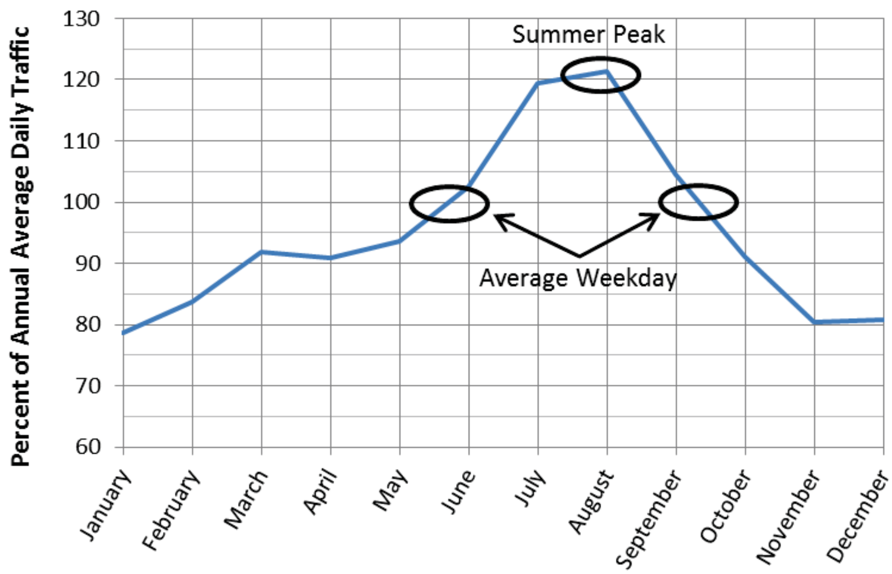


Figure 2: Summer volumes on US 101 in Lincoln City are generally 20 percent higher than those along the highway during an average weekday

Since the average annual weekday p.m. peak hour is more representative of travel on US 101 through Lincoln City for the majority of any given year than the 30th highest annual hour, this time period is recommended for the analysis methodology used to develop the US 101 alternative mobility target(s). This would shift the corridor management emphasis away from accommodating summer recreational trips through the city and refocus it on conditions that are more representative of every day travel. Furthermore, the 20 percent allowance for additional traffic that could result from using that time period negates the roughly 30 percent disparity between the current targets and projected operations in the future.

Assigning New Maximum v/c Ratio Thresholds

As noted above, using the average annual weekday p.m. peak hour as the basis for defining facility performance instead of the 30th highest annual hour is more consistent with the conditions that exist on US 101 throughout the majority of any given year. However, even with this methodology adjustment, several intersections still exceed the OHP v/c ratio values that apply to US 101.

The OHP v/c ratio thresholds for US 101 in Lincoln City range from 0.80 to 0.95. Raising the v/c ratio threshold in order to match the forecasted roadway performance based on the implementation of the City's existing, adopted land use plan and implementation of the identified financially constrained projects along the corridor is also needed in several areas, in addition to changing the analysis time period as described above.

Alternative Mobility Target Process

Figure 3 shows the ODOT Region 2 methodology for determining alternative mobility targets. Table 3 summaries the assessment of each study intersection along US 101 using the methodology. Refer to Technical Memorandum #8 (Future Transportation Conditions) for summer and average weekday 2035 p.m. peak hour motor vehicle volumes used for this methodology.

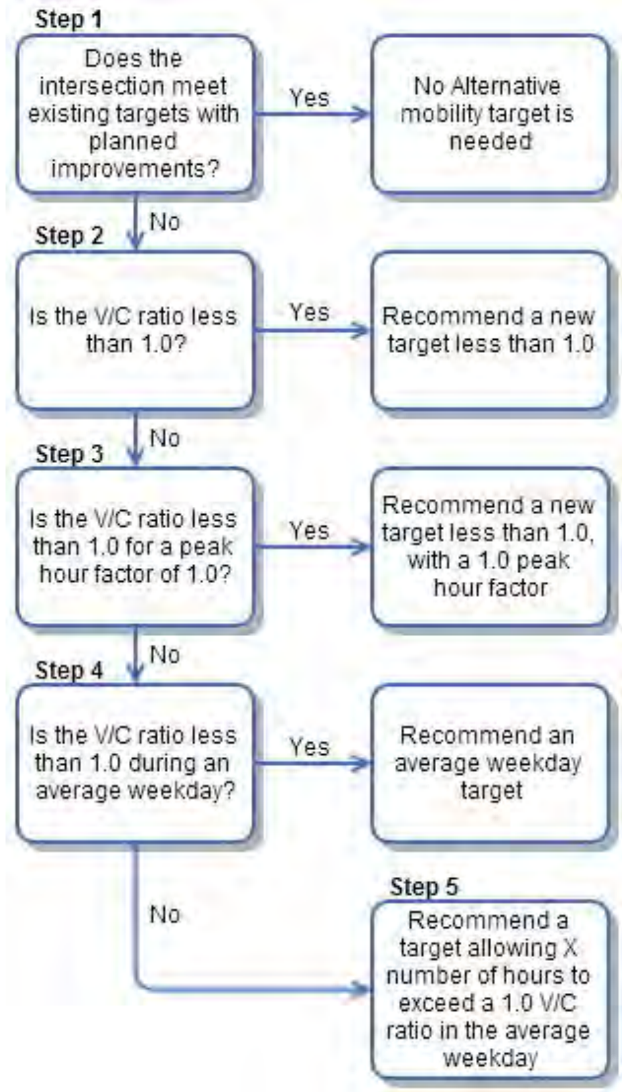


Figure 3: Alternative Mobility Target Methodology

Step 1: Eight of the twenty-four study intersections (but only two of the twelve signalized intersections) would be expected to meet existing OHP mobility targets during the summer of 2035, after recommended improvements described earlier. To be compliant, Lincoln City would need alternative mobility targets for 16 of the twenty-four study intersections.

Step 2: Of the 16 study intersections that would not meet current mobility targets during the summer of 2035, four (all signalized) would be expected to operate with v/c ratios less than 1.0.

Step 3: Of the 12 study intersections expected to operate with a v/c ratio over 1.0 during the summer of 2035, two would be expected to operate with v/c ratios less than 1.0 after assuming a peak hour factor of 1.0.[1]

Step 4: Of the 10 study intersections expected to operate with a v/c ratio over 1.0 during the summer of 2035 after assuming a 1.0 peak hour factor, only two (signalized intersection of US 101/SW 32nd Street and unsignalized intersection of US 101/SE 14th Street) would be expected to also operate with a v/c ratio over 1.0 during an average weekday in 2035.

Step 5: Technical Memorandum #10 (Transportation System Solutions) documents the analysis referred to as "hours of congestion." The analysis applied to the soon to be signalized SW 32nd Street intersection, shows the intersection will exceed capacity for approximately eight consecutive hours during an average weekday in 2035. The hours of congestion analysis was not reviewed for the unsignalized US 101/SE 14th Street intersection because the over-capacity condition was related to high delays experienced by a small number of projected vehicles attempting to turn out of the side street onto US 101. It is likely that under such conditions, these drivers will avoid the area and reroute to the nearest signalized intersection.

---

[1] Peak hour factors (PHF) are used to account for the non-uniformity of traffic flow within the peak hour by converting hourly volumes to peak flow rates associated with a selected interval of time within the peak hour. The most common interval of time selected for traffic analysis is the peak 15 minutes. A PHF of 1.0 assumes uniform traffic flow within the four 15-minutes periods of the peak hour.

Table 3: Alternative Mobility Target Results (v/c Ratio)

Intersection	Existing OHP Mobility Target	2035 Summer (30 HV) Intersection Operations	Assuming 0.99 v/c Mobility Target	2035 Summer (30 HV) Intersection Operations		2035 Average Weekday Intersection Operations	
		Step 1: With Recommended Improvements		Step 2: With Recommended Improvements	Step 3: 1.0 Peak Hour Factor	Step 4: With Recommended Improvements	Step 5: Total Hours v/c > 1.0
Signalized Intersections							
US 101/NE West Devils Lake Rd	0.80	**1.07**	0.99	**1.07**	**1.01**	0.85	-
US 101/NW Logan Rd	0.90	**1.20**	0.99	**1.20**	**1.12**	0.86	-
US 101/NE 22nd St	0.90	**1.16**	0.99	**1.16**	**1.12**	0.91	-
US 101/NE 17th St	0.90	**0.91**	0.99	0.91	0.86	0.71	-
US 101/NE 14th St	0.90	**1.24**	0.99	**1.24**	**1.18**	0.84	-
US 101/NE 6th St	0.90	**0.92**	0.99	0.92	0.87	0.71	-
US 101/SE 1st St	0.90	**1.00**	0.99	**1.00**	0.94	0.73	-
US 101/Burger King/City Hall	0.90	**0.99**	0.99	0.99	0.94	0.80	-
US 101/East Devils Lake Rd/SW 12th St	0.90	**0.93**	0.99	0.93	0.90	0.71	-
US 101/SW 32nd St	0.90	**1.36**	0.99	**1.36**	**1.30**	**1.08**	8 hours
US 101/SW 48th St*	0.95	0.93	0.99	0.93	0.91	0.73	-
US 101/SW 51st St*	0.95	0.91	0.99	0.91	0.86	0.71	-
Unsignalized Intersections**							
US 101/NE East Devils Lake Rd	0.80/0.95	0.75/0.72	0.99	0.75/0.72	0.71/0.63	0.56/0.34	-
US 101/Neotsu Dr	0.80/0.95	0.79/0.65	0.99	0.79/0.65	0.75/0.57	0.58/0.31	-
US 101/NE Holmes Rd	0.90/0.95	**1.17/1.72**	0.99	**1.17/1.72**	**1.15/1.60**	0.94/0.77	-
US 101/NE 30th St	0.90/0.95	**1.20/0.58**	0.99	**1.20/0.58**	**1.18/0.54**	0.97/0.21	-
US 101/NE 21st St	0.90/0.95	0.83/0.13	0.99	0.83/0.13	0.79/0.13	0.68/0.06	-
US 101/SE 14th St	0.90/0.95	**1.14/>2.0**	0.99	**1.14/>2.0**	**1.08/>2.0**	**0.92/>2.0**	-
US 101/SW Bard Ave/SE 19th St	0.90/0.95	**1.17/0.41**	0.99	**1.17/0.41**	**1.12/1.52**	0.95/0.18	-
US 101/SE 29th St	0.90/0.95	**1.16/>2.0**	0.99	**1.16/>2.0**	**1.10/1.52**	0.94/0.34	-
US 101/SE High School Dr	0.90/0.95	**0.93/1.04**	0.99	**0.93/1.04**	0.89/0.89	0.75/0.52	-
US 101/SW Jetty Ave	0.90/0.95	0.69/ -	0.99	0.69/ -	0.65/ -	0.51/ -	-
US 101/SW 62nd St	0.90/0.95	0.62/0.36	0.99	0.62/0.36	0.59/0.32	0.46/0.19	-
US 101/SW 63rd St	0.90/0.95	0.62/0.21	0.99	0.62/0.21	0.59/0.19	0.46/0.11	-

* Planned Improvement includes reconfiguring the highway from two travel lanes to one in each direction.
** Worst mainline volume-to-capacity ratio/worst side street volume-to-capacity ratio
Bold, Red and Shaded indicates intersection fails to meet target

Recommended Alternative Mobility Targets

Because the newly signalized intersection at US 101 and 32nd is the only signalized intersection that is forecasted to exceed the existing OHP Mobility Target values once the analysis methodology is adjusted to assess the average annual condition, it is the only existing adopted OHP target value that requires an alternative mobility standard (the intersection at US 101 and NE 22nd also exceeds the adopted target value, but only by 0.01, so it does not merit any adjustment). In this location, an alternative OHP Mobility Target v/c ratio of 1.0 (an "at full capacity" condition) for 8 hours per average weekday is recommended for adoption by the Oregon Transportation Commission (OTC). OTC adoption of the alternative analysis methodology that assesses the average annual weekday traffic conditions is also recommended for all of US 101 in Lincoln City.

A number of unsignalized intersections on US 101 are also expected to operate above the existing OHP Mobility Target values at the end of the 20-year planning horizon. The segment where these conditions are expected runs from the intersection of US 101 and NE Holmes Rd to the intersection of US 101 and SE 29th Street. In this segment, an alternative OHP Mobility Target v/c ratio of 0.95 for the major street approaches at these intersections is recommended for adoption by the Oregon Transportation Commission (OTC).

As previously noted, the minor approach at US 101 and SE 14th Street was also forecasted to have demands that would exceed capacity for multiple hours per average weekday. However, because this forecasted over-capacity condition is related to high delays experienced by a very small number of vehicles attempting to turn out of the side street, an alternative OHP Mobility Target for these minor street movements (turns from the local street onto US 101) is not recommended. It is likely that under such conditions, the few drivers that were theoretically assigned to use this intersection through the analysis process will, in reality, avoid this intersection during peak travel periods and reroute to the nearby signalized intersection at US 101 and 12th Street (meaning that the forecasted operating condition is likely overstated).

US 101 Operations under the Recommended Alternative Mobility Targets

Table 4 compares US 101 traffic operations under the average weekday peak hour to the previously reported 30th highest annual hour. It shows that most intersections would be able to comply with either the existing, adopted OHP Mobility Targets or the alternative OHP Mobility Targets that are recommended for OTC adoption through 2035 with implementation of transportation projects identified in the Lincoln City TSP.

DKS

Table 4: Intersection Operations along US 101, Comparison of Mobility Targets

Intersection	HDM Design-Mobility Standard (v/c ratio-30 HV)	Existing OHP Mobility Target (v/c ratio-30HV)	Recommended Mobility Target (v/c ratio-Average Weekday)	2035 with Recommended Improvements	
				Summer (30 HV)	Average Weekday
Signalized Intersections					
US 101/NE West Devils Lake Rd	0.70	0.80		**1.07**	0.85
US 101/NW Logan Rd	0.75	0.90	-	**1.20**	0.86
US 101/NE 22nd St	0.75	0.90	-	**1.16**	**0.91**
US 101/NE 17th St	0.75	0.90	-	**0.91**	0.71
US 101/NE 14th St	0.75	0.90	-	**1.24**	0.84
US 101/NE 6th St	0.75	0.90	-	**0.92**	0.71
US 101/SE 1st St	0.75	0.90	-	**1.00**	0.73
US 101/Burger King/City Hall	0.75	0.90	-	**0.99**	0.80
US 101/East Devils Lake Rd/SW 12th St	0.75	0.90	-	**0.93**	0.71
US 101/SW 32nd St	0.75	0.90	1.0 for 8 hours/avg. weekday	**1.36**	**1.08**
US 101/SW 48th St	0.90	0.95	-	0.93	0.73
US 101/SW 51st St	0.90	0.95	-	0.91	0.71
Unsignalized Intersections*					
US 101/NE East Devils Lake Rd	0.70/0.80	0.80/0.95	-	0.75/0.72	0.56/0.34
US 101/Neotsu Rd	0.70/0.80	0.80/0.95	-	0.79/0.65	0.58/0.31
US 101/NE Holmes Rd	0.75/0.80	0.90/0.95	0.95/0.95	**1.17/1.72**	0.94/0.77
US 101/NE 30th St	0.75/0.80	0.90/0.95	0.95/0.95	**1.20/0.58**	**0.97**/0.21
US 101/NE 21st St	0.75/0.80	0.90/0.95	0.95/0.95	0.83/0.13	0.68/0.06
US 101/SE 14th St	0.75/0.80	0.90/0.95	0.95/0.95	**1.14/>2.0**	0.92/**>2.0**
US 101/SW Bard Ave/SE 19th St	0.75/0.80	0.90/0.95	0.95/0.95	**1.17/0.41**	0.95/0.18
US 101/SE 29th St	0.75/0.80	0.90/0.95	0.95/0.95	**1.16/>2.0**	0.94/0.34
US 101/SE High School Dr	0.75/0.80	0.90/0.95	-	**0.93/1.04**	0.75/0.52
US 101/SW Jetty Ave	0.75/0.80	0.90/0.95	-	0.69/ -	0.51/ -
US 101/SW 62nd St	0.75/0.80	0.90/0.95	-	0.62/0.36	0.46/0.19
US 101/SW 63rd St	0.75/0.80	0.90/0.95	-	0.62/0.21	0.46/0.11

* Worst mainline volume-to-capacity ratio/worst side street volume-to-capacity ratio

Bold, Red and Shaded indicates intersection fails to meet existing OHP mobility target

(This page intentionally left blank)

Section O

Memo 11: Implementing Ordinance and Policy Amendments

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

DRAFT TECHNICAL MEMORANDUM #11

DATE: August 4, 2015

TO: **Lincoln City Planning Commission and City Council**

FROM: Darci Rudzinski and Shayna Rehberg, Angelo Planning Group

SUBJECT: **Lincoln City Transportation System Plan (TSP) Update**
Revised Proposed Policy and Code Amendments (Task 6.2)

This memorandum presents draft policy and code amendments for implementing the updated City of Lincoln City Transportation System Plan (TSP). The proposed amendments in subsequent sections of this memorandum are based primarily on the following sources:

- Draft 2015 Lincoln City Transportation System Plan, TSP Goals;
- Recommendations from the 2012 Lincoln City Walking and Biking Plan;
- Discussion at Project Management Team (PMT) Meeting #5 (June 25, 2014);
- Transportation Planning Rule (TPR) requirements; and
- The code and other City documents, particularly the City's draft update of its Transportation System Plan (TSP).

City Planning Commission and City Council will review the draft amendments;. a revised set of proposed amendments will be considered during the public adoption hearings for the updated TSP.

Transportation Goals and Policies

The TSP update proposes a new set of transportation policies to include in Lincoln City's Comprehensive Plan. The new policies are based on the goals and objectives in the draft TSP. The Project Management Team (PMT) and the Project Advisory Committee (PAC) have vetted the policies, which reflect recommendations in the 2012 Lincoln City Walking and Biking Plan, as well as issues raised at PMT Meeting #5 (June 25, 2014).

Table 1 presents draft policy language. The right-hand column provides the source of the draft policy language and other information that helps explain the proposed language. This commentary column indicates the numbered objective from the draft TSP as well as any changes made since June 25, 2014.[1] Note that many policies expand and implement the corresponding TSP objective and do not mirror TSP language exactly; proposed language is intended to provide policy guidance for land use and transportation decision making after the TSP is adopted.

The formatting of Table 1 numbers each goal; policy numbering reflects the associated goal for easy reference.

Table 1: Draft Lincoln City Transportation Goals and Policies

Proposed Policy		Commentary
Goal 1: An equitable, balanced and connected multi-modal transportation system.		
Policy 1.1:	Ensure that the transportation system provides equitable access to all modes and to underserved and vulnerable populations.	Objective 1a
Policy 1.2:	Ensure that the transportation system is age-friendly.	Objective 1a
Policy 1.3:	Enhance system efficiency with new or improved transportation connections that give travelers more options to reach their destinations safely and directly.	Objective 4c
Policy 1.4:	Ensure that pedestrian and bicycle throughways are clear of obstacles and obstructions (e.g., utility poles, grates).	Objective 1b

[1] The ordinance to adopt changes to the comprehensive plan and zoning ordinance will signify new goals and policies through the use of underlined text; goals and policies to be replaced will be shown struck out.

Proposed Policy		Commentary
Policy 1.5:	Implement the city's ADA transition plan to ensure the transportation network meets City standards for accessibility and Americans with Disabilities Act (ADA) standards. Identify and improve existing ADA-related deficiencies, such as providing needed ADA-compliant ramps and pedestrian push buttons at intersections, to ensure that new facilities account for the needs of all users.	PMT recommendation. Objective 1c
Goal 2: Convenience and availability of pedestrian and bicycle modes.		
Policy 2.1:	Provide, and require as part of new development, walking and biking improvements (e.g., street lighting, bike parking) that encourage higher levels of walking and biking.	Objective 2b
Policy 2.2:	Improve walking and biking connections to community amenities.	Objective 2c
Policy 2.3:	Enhance way finding signage for those walking and biking, directing travelers to bus stops, beaches, and key routes and destinations.	Objective 2d
Policy 2.4:	Promote walking, bicycling, and sharing the road through public information.	Objective 2e
Policy 2.5:	Ensure that the land development code supports appropriate connectivity between land uses to facilitate pedestrian and bicycle trips.	Objective 2f Identifying changes to development code related to connectivity is part of this TSP update project (see the next section regarding development code amendments). The proposed policy provides ongoing support for connectivity

Proposed Policy		Commentary
		in the development code.
Policy 2.6:	Implement pedestrian and bicycle facility improvements identified in the *Lincoln City Walking and Biking Plan* along local roadways. Give highest priority to improvements on high-use roadways, followed by improvements to medium-use and low-use roadways, as defined in the TSP.	Objective 2a 2012 Walking and Biking Plan policy recommendation High-, medium-, and low-use roadways are classifications, in addition to traditional street classification (see Figure 12 and Figures 15a-15i in the Draft TSP).
Policy 2.7:	Coordinate with ODOT and developers to improve bicycling conditions on US 101, including but not limited to providing bike lanes as part of resurfacing, utility, and development projects on the highway. Where bike lanes or similar bicycle facilities cannot be provided on US 101, provide these types of bicycle facilities on alternate and parallel routes, as identified in the City Transportation System Plan, through means including grants and development requirements.	Goal 8: Coordinate with local and state agencies and transportation plans. 2012 Walking and Biking Plan recommendation and PMT recommendation Proposed language in the second half of the policy reflects the City's role in providing or requiring bicycle facilities on City streets that may serve as alternate routes to US 101. Alternative routes to US 101 are identified in the Draft TSP and Technical Memorandum #10 (Draft TSP Volume 2, Section M).
Policy 2.8:	Provide and support trail extensions and connections in the city, such as the Head to Bay Trail.	PMT recommendation The proposed language reflects the City's role in providing or requiring trail extensions and connections.
Policy 2.9:	Track bicycle activity regularly, such as	2012 Walking and Biking Plan

Proposed Policy		Commentary
	through a volunteer-based annual counting program, at key locations in Lincoln City in order to identify needs for bicycle facilities and amenities on an ongoing basis.	policy recommendation
Policy 2.10:	Require all new development, except single-family residential development, to provide bicycle parking facilities.	This policy is based on a policy recommendation from the 2012 Walking and Biking Plan and reinforces TPR requirements related to bicycle parking. (See code amendments related to bicycle parking in the next section.)
Policy 2.11:	Support local organizations in providing events and activities promoting walking and bicycling.	2012 Walking and Biking Plan policy recommendation and modified from TM #5, Objective 5g
Goal 3: Transit service and amenities that encourage a higher level of ridership.		
Policy 3.1:	Establish and maintain a system of Park-and-Ride lots in the city.	Objective 3e Proposed language refers to potential park-and-ride locations that have been identified as part of the TSP update process, and asserts that the overarching vision is to create a comprehensive system in the city. The Draft TSP identifies the North End as a recommended park-and-ride location.
Policy 3.2:	Locate transit stops in locations that are safe and convenient for users.	Objective 3a
Policy 3.3:	Evaluate the feasibility of tourist-based transit	Objective 3b and PMT

Proposed Policy		Commentary
	options (e.g., trolley).	recommendation The Draft TSP includes a project to study the feasibility of seasonal trolley service.
Policy 3.4:	Coordinate with transit providers to optimize the coverage, quality, and frequency of bus services.	Objective 3c and PMT recommendation Proposed language provides general support for coordination between the City and transit providers. The Draft TSP includes a project to coordinate with Lincoln County regarding transit service, including expanding hours of operation (Table 1, Project T5).
Policy 3.5:	Provide and support improvements for non-motorized transportation (e.g., sidewalk and bicycle connections, shelters, benches) to complement transit service and encourage higher levels of transit use.	Objective 3d This policy reflects the City's role in providing these improvements and in requiring these improvements from development as appropriate. (See the next section of the memorandum for proposed development code amendments related to providing transit amenities.)
Goal 4: Efficient travel to and through the city.		
Policy 4.1:	Develop and preserve north-south arterial corridors in the city to provide alternative routes to US 101 for local trips.	Objective 4a
Policy 4.2:	Develop and preserve east-west collector corridors through the city to improve	Objective 4b

Proposed Policy		Commentary
	connectivity across US 101.	
Policy 4.3:	Develop a program to implement improvements that enhance mobility at designated high-priority locations.	Goal 4: Efficient travel to and through the city.
Policy 4.4:	Design and manage the road system consistent with adopted mobility standards or targets. State and County mobility standards apply to facilities under their respective jurisdictions. Work with ODOT to develop alternative mobility targets on US 101 as needed.	Objectives 4e and 6i Mobility standards express levels of use acceptable to the community. Development review and traffic study requirements in the city code will implement the mobility standards (see the next section of the memorandum). The Draft TSP recommends that alternative mobility targets be adopted by the Oregon Transportation Commission for segments of US 101. Detail regarding the recommended alternative mobility targets is provided in a technical memorandum in Volume 2, Section N of the Draft TSP.
Policy 4.5:	Improve wayfinding through the city.	Recommendation from City staff
Policy 4.6:	Designate off-highway loading zones to remove stopped delivery trucks on US 101.	
Goal 5: Safe and active residents.		
Policy 5.1:	Improve safety for walking, biking, and driving trips in the city by prioritizing improvements to high collision and high risk locations.	Objective 5a Identifying improvements is part of the TSP update process. The proposed language is more generalized supportive policy

Proposed Policy	Commentary
	language.
Policy 5.2: Provide and maintain enhanced street and highway crossings for pedestrians and bicyclists, as needed.	, Objective 5c Identifying and recommending improvements for pedestrian and bicycle crossings is part of the TSP update process.
Policy 5.3: Provide and support needed improvements along tsunami evacuation and Seismic Lifeline Routes for general public awareness and for way finding in emergencies.	PMT recommendation and Objective 5d Investments have been identified as part of the TSP update process. The proposed language reflects the City's role in providing and requiring these improvements as appropriate.
Policy 5.4: Improve the visibility of transportation users in constrained areas, such as on hills and blind curves.	Objective 5e
Policy 5.5: Provide and require provision of improvements at signalized pedestrian crossings (e.g., chirpers) for the safety of underserved and vulnerable populations.	Objective 5b The proposed language reflects the City's role in providing and requiring these improvements as appropriate.
Policy 5.6: Develop, implement, and support programs that educate community members and visitors regarding good traffic behavior and consideration for all users.	Objective 5f Identifying programs was part of the TSP update process. Further work will be needed to develop and implement – or to partner with other organizations that develop and implement – these programs. Language about encouragement

Proposed Policy		Commentary
		programs is addressed by proposed Policy 2.11.
Goal 6: A sustainable transportation system.		
Policy 6.1:	Develop, implement, and support strategies to reduce the use of US 101 for local trips.	Objective 6a Opportunities to reduce US 101 trips were explored as part of the TSP update process. Additional work will be needed to develop and implement – or to support the work of other organizations to develop and implement – strategies to reduce local trips on US 101.
Policy 6.2:	Minimize impacts of the transportation network on the scenic, natural and cultural resources in the city.	Objective 6b New infrastructure should be low impact, where practical.
Policy 6.3:	Support alternative vehicle types (e.g., provide electric vehicle plug-in stations).	Objective 6c
Policy 6.4:	In evaluating comprehensive plan map and text amendments and zoning map and text amendments, consider how changes in land use designations may shorten trip lengths or reduce the need for motor vehicle travel within the city.	Objective 6d This is a combination of land use and transportation policy directs the City to consider the effects of land use changes on trip length and mode.
Policy 6.5:	Maintain transportation system assets to preserve their intended function and extend their useful life.	Objective 6e
Policy 6.6:	Improve the capacity of the transportation system, travel reliability, and safety with	Objective 6f Opportunities and specific

Proposed Policy		Commentary
	system management solutions.	improvements have been identified as part of the TSP update process (e.g., adaptive signal timing, traveler information displays, parking management). The proposed language provides a more generalized supportive policy statement.
Policy 6.7:	Establish stable and diverse revenue sources for transportation improvements. Leverage new and creative funding sources to fund high-priority transportation projects.	Objective 6g It is recommended to modify this language for policy purposes to more strongly direct the City to actively pursue and establish these funding sources. Former Objective 6i is combined with this policy because they address very similar issues.
Policy 6.8:	Consider costs and benefits when identifying new project solutions and prioritizing public investments.	
Policy 6.9:	Ensure transparency in making transportation system investments, such as by relying on the recommendations of the adopted City Transportation System Plan.	Objective 6h Technical memoranda in Draft TSP Volume 2 contain the information and methodology for selecting projects in the TSP.

Proposed Policy		Commentary
Goal 7: A transportation system that supports a prosperous and competitive economy.		
Policy 7.1:	Design and maintain the transportation system to complement the community character, to be attractive to tourists, and to showcase the natural environment and views.	Recommendation from City staff
Policy 7.2:	Continue to identify and, when appropriate, require transportation improvements that will enhance access to employment.	Objective 7b Improvements are identified as part of the draft TSP update process and will be an identified as part of future update processes. The proposed language reflects the City's role in providing these improvements and in requiring these improvements of development as appropriate.
Policy 7.3:	Increase the distribution of travel information (e.g., online, radio, variable message signs) to maximize the reliability and effectiveness of US 101.	Objective 4d
Policy 7.4:	Work with ODOT in its efforts to improve the efficiency, access, capacity, and reliability of the freight system on US 101.	Objective 7d The TSP includes improvements to US 101 that will provide benefits to freight vehicles.
Policy 7.5:	Develop and implement a variety of parking management strategies in support of economic activity in targeted commercial areas along US 101 (e.g., Oceanlake).	PMT recommendation The Draft TSP includes a parking management project in Oceanlake to improve wayfinding to public parking lots (Table 1, Project M5).

Proposed Policy		Commentary
Goal 8: Coordination with local and state agencies and transportation plans.		
Policy 8.1:	Work with the Cascades West Area Commission on Transportation and the Valley/North Coast Regional Solutions Center to promote projects that improve regional linkages and to secure funding for local projects.	Objective 8a
Policy 8.2:	Ensure that land use decisions that impact the transportation system are consistent with state and local policies, such as policies in neighborhood plans that provide background for the Lincoln City Comprehensive Plan, and requirements, such as the Oregon Transportation Planning Rule.	Goal 8: Coordinate with local and state agencies and transportation plans. The proposed language combines and converts language to support transportation-related decision making going forward.

Development Code

The following section presents draft proposed amendments to Lincoln City Municipal Code (LCMC) Title 12 (Streets, Sidewalks and Public Places), Title 16 (Subdivisions), and Title 17 (Zoning). These amendments have been developed in response to the following:

- Transportation Planning Rule (TPR) requirements;
- Recommendations from the 2012 Lincoln City Walking and Biking Plan;
- Discussion at Project Management Team (PMT) Meeting #5 (June 25, 2014); and
- Consistency between the code and other City documents, particularly the City's Transportation System Plan (TSP).

The draft amendments are presented in adoption-ready format, although the amendments will undergo one final round of revisions before an adoption draft is prepared for the first evidentiary hearing before the Planning Commission. Adoption-ready format means that proposed additions are underlined and proposed deletions are ~~struck-through~~. The proposed amendments are organized sequentially by code section.

Commentary precedes each section of the code that briefly explains the proposed amendment and includes references to the recommendations from the Code Amendments Recommendations memorandum (July 7, 2014). The summary recommendation table from that memorandum is included in this memorandum as Attachment A. In some cases, multiples sets of proposed amendments apply to a single code section, accompanied by sequential commentary.

Commentary #1:

Consistent with a City request and proposed Policy 4.4, proposed requirements address minimum clear dimensions for sidewalks.

Title 12
STREETS, SIDEWALKS AND PUBLIC PLACES

Chapter 12.04
SIDEWALKS

12.04.010 Purpose.

[…]

12.04.060 Repair by city – Assessment of costs…

<u>12.04.070 Unobstructed sidewalks.</u>

<u>Property owners and utility providers shall keep a minimum of five feet of the sidewalk width clear of both permanent and temporary obstructions (e.g., utility poles, sandwich signs).</u>

Commentary #2:

The provisions in LCMC Chapter 12.28 (Vehicle Access and Circulation) currently apply to a segment of US 101 and its approach roads. However, the provisions in this chapter are consistent with Model Development Code for Small Cities ("model code"), require coordination with ODOT as needed, and grant discretion to the City for implementing the stricter of the provisions (e.g., joint or cross access, turn restrictions) when appropriate. Due to the flexibility of the existing provisions, they can readily be expanded to apply citywide. It is recommended that minor changes be made to these provisions to enable them to apply citywide, as there are not such regulations for vehicle access and circulation in the city currently. In applying citywide, it is recommended that the chapter be struck and added as a new section in LCMC Chapter 17.52 (Supplemental Regulations), shown later in this memorandum (after Commentary #7).

~~Chapter 12.28~~
~~VEHICULAR ACCESS AND CIRCULATION~~

~~12.28.200 Vehicular access and circulation.~~

~~A. Intent and Purpose. The intent of this section is to manage access to land uses and on-site circulation, and to preserve the transportation system in terms of safety, capacity, and function while providing reasonable access for residents and businesses.~~

~~B. Applicability. This chapter applies to Highway 101 between SE/SW 12th Street and SE/SW 37th Street, to all properties that abut the Highway, and to all properties within 200 feet of the Highway that abut streets intersecting with the Highway. The standards apply when lots are created, consolidated, or modified through a land division, partition, lot line adjustment, lot consolidation, or street vacation; and when properties are subject to land use approval or site plan review. The requirements in this chapter are in addition to requirements relating to properties abutting Highway 101 that are imposed by the Oregon Department of Transportation (ODOT) through the provisions of Oregon Administrative Rule 734-051. Where ODOT requires more restrictive provisions than city requirements, ODOT standards shall prevail.~~

~~C. Access Permit Required. Access to Highway 101 (e.g., a new curb cut or driveway approach) requires an access permit from Lincoln City and a valid approach road permit from the Oregon Department of Transportation. Access to the intersecting streets identified in subsection (B) of this section also requires an access permit from the city. An access permit may be in the form of a letter to the applicant, or it may be attached to a land use decision notice as a condition of approval.~~

~~D. Notice to ODOT. Written notice of the following actions shall be provided to ODOT by Lincoln City. Said notice shall be provided when Lincoln City provides notice to other public agencies and city departments. When notice to other public agencies and city departments is not provided, Lincoln City shall provide written notice to ODOT at the same time and manner as public notice is provided to the general public.~~

~~1. Land use applications that require public hearings;~~

~~2. Subdivision and partition applications;~~

~~3. Other applications that affect private access to Highway 101 or the intersecting streets identified in subsection (B) of this section.~~

~~E. Traffic Study Requirements. The city may require a traffic impact study prepared by a qualified professional. ODOT may require such a study for properties abutting Highway 101. The city and ODOT will use the traffic impact study to make decisions about access, circulation, and other transportation requirements. It is the intent of the city to coordinate its traffic impact study requirements with ODOT~~

~~so that an applicant need complete only one such study to comply with the requirements of both agencies.~~

~~F. Conditions of Approval. The city may require the closing or consolidation of existing curb cuts or other vehicle access points, recording of reciprocal access easements (e.g., for shared driveways), turn restrictions, development of a frontage street, installation of traffic control devices, and/or other mitigation as a condition of granting an access permit, to ensure the safe and efficient operation of the street and highway system. Installation of traffic control devices on Highway 101 must be approved by ODOT.~~

~~G. Corner and Intersection Separation – Backing onto Public Streets. New and modified accesses shall conform to the following standards:~~

~~1. Property access to Highway 101 is under the concurrent jurisdiction of the Oregon Department of Transportation (ODOT). Access to streets intersecting with the highway shall not be permitted within 100 feet of the intersection unless no other reasonable access to the property is available. Where no other alternatives exist, the city may allow construction of an access connection at a point less than 100 feet from such an intersection, provided the access is as far away from the intersection as possible. In such cases, the city may impose turning restrictions (i.e., right in/out, right in only, or right out only). Access to properties with frontage on Highway 101 and other public roads shall be provided only from the roads other than the highway whenever reasonable access can be provided.~~

~~2. Access to and from off-street parking areas shall not permit backing onto a public street, except for single-family dwellings.~~

~~3. The city may reduce required separation distance of access points to city streets where they prove impractical due to lot dimensions, existing development, other physical features, or conflicting code requirements, provided all of the following requirements are met. Where the statewide highway access point spacing requirements in OAR 734-051 cannot be met, all the following requirements must be met before the city can complete the "Land Use Compatibility Statement for a State Highway Approach" required for a highway approach road application.~~

~~a. Joint-use driveways and cross-access easements are provided in accordance with subsection (I) of this section;~~

~~b. The site plan incorporates a unified access and circulation system in accordance with this section; and~~

~~c. The property owner(s) enter in a written agreement with the city, recorded with the deed, that pre-existing connections on the site will be closed and eliminated after construction of each side of the joint-use driveway.~~

~~H. Site Circulation. New developments shall be required to provide a circulation system that accommodates expected traffic on the site. Pedestrian connections on the site, including connections through large sites, and connections between sites (as applicable) and adjacent sidewalks, must be sufficient to safely accommodate expected pedestrian traffic to, from, within, and across the site.~~

~~I. Joint- and Cross-Access – Requirement. The number of driveway and private street intersections with public streets should be minimized by the use of shared driveways for adjoining lots where feasible. When necessary for traffic safety and access management purposes, or to access flag lots, the city and/or ODOT (for access to Highway 101) may require joint access and/or shared driveways in the following situations:~~

~~1. For shared parking areas;~~

~~2. For adjacent developments, where access onto an arterial or collector is proposed;~~

~~3. For multitenant developments, and developments on multiple lots or parcels. For such joint accesses and shared driveways the city may require the applicant to incorporate any of the following, among other requirements:~~

~~a. A continuous service drive or cross-access corridor that provides for driveway separation consistent with the applicable transportation authority's access management classification system and standards;~~

~~b. A design speed of 10 miles per hour and a maximum width of 24 feet, in addition to any parking alongside the driveway; additional driveway width or fire lanes may be approved when necessary to accommodate specific types of service vehicles, loading vehicles, or emergency service provider vehicles;~~

~~c. Driveway stubs to property lines (for future extension) and other design features to make it easy to see that the abutting properties may be required with future development to connect to the cross-access driveway;~~

~~J. Joint- and Cross-Access – Reduction in Required Parking Allowed. When a shared driveway is provided or required as a condition of approval, the land uses adjacent to the shared driveway may have their minimum parking standards reduced in accordance with the shared parking provisions of LCMC 17.56.060.~~

~~K. Joint- and Cross-Access – Easement and Use and Maintenance Agreement. Pursuant to this section, property owners shall:~~

~~1. Record an easement with the deed allowing cross-access to and from other properties served by the joint-use driveways and cross-access or service drive;~~

~~2. Record an agreement with the deed that remaining access rights along the roadway for the subject property shall be dedicated to the city and pre-existing driveways will be closed and eliminated after construction of the joint-use driveway;~~

~~3. Record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners.~~

~~L. Access Connections and Driveway Design. All driveway connections to a public right-of-way (access) and driveways shall conform to all of the following design standards:~~

~~1. Driveways to city streets shall meet the following standards:~~

~~a. One-way driveways (one-way in or out) shall have a minimum driveway width of 10 feet, and a maximum width of 12 feet, and shall have appropriate signage designating the driveway as a one-way connection.~~

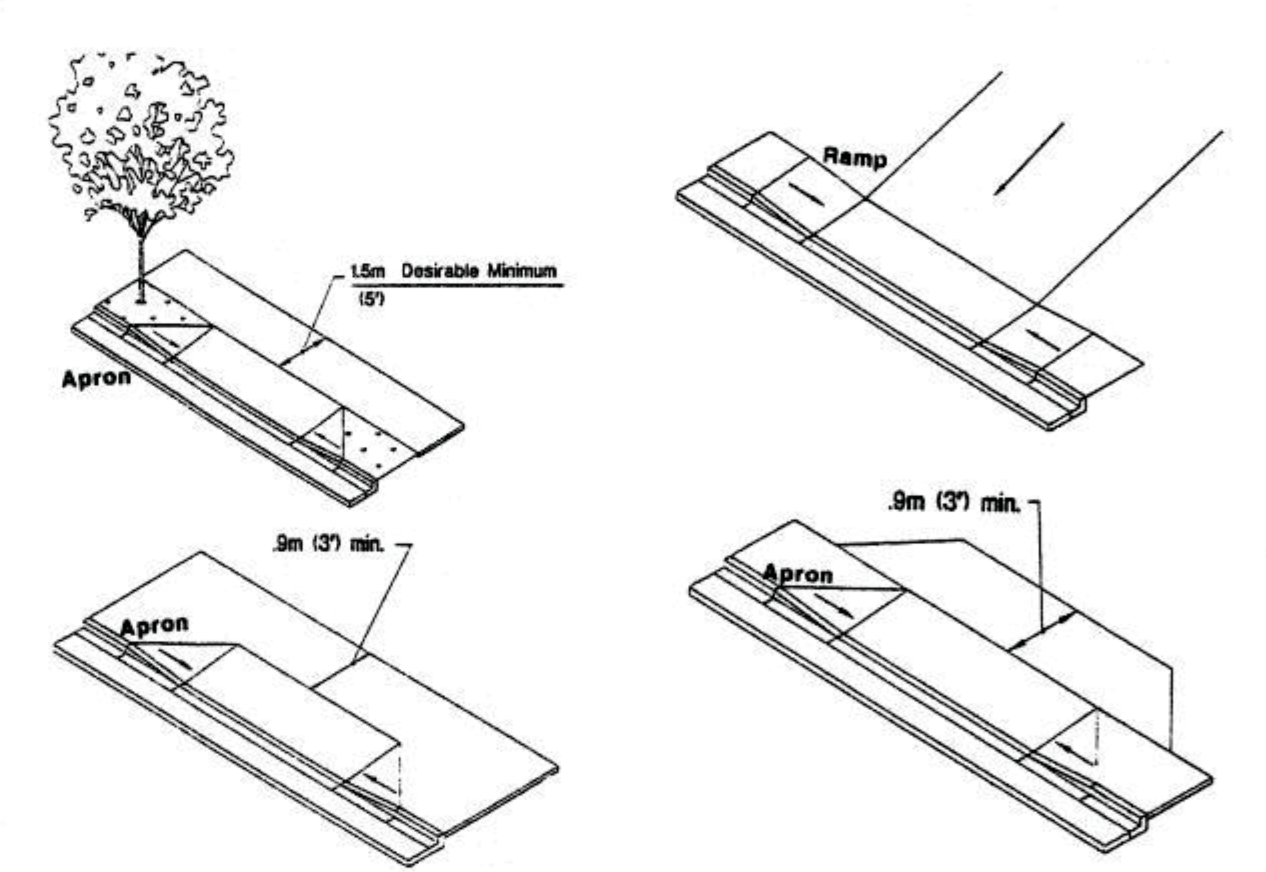
~~b. For two-way access, each lane shall have a minimum width of 10 feet and a maximum width of 12 feet.~~

~~Driveways to Highway 101 shall meet ODOT requirements for design and construction.~~

~~2. Driveways shall be designed and located to provide exiting vehicles with an unobstructed view of other vehicles and pedestrians, and to prevent vehicles from backing into the flow of traffic on the public street or causing conflicts with on-site circulation. Construction of driveway accesses along acceleration or deceleration lanes or tapers should be avoided due to the potential for vehicular conflicts. Driveways should be located to allow for safe maneuvering in and around loading areas.~~

~~3. Driveway aprons (when required) shall be constructed of concrete and shall be installed between the street right-of-way and the private drive, as shown in Figure 12.28.200A. Driveway aprons shall conform to ADA requirements for sidewalks and walkways, which generally require a continuous unobstructed route of travel that is not less than three feet in width, with a cross slope not exceeding two percent, and providing for landing areas and ramps at intersections.~~

~~**Figure 12.28.200A Examples of Acceptable Driveway Openings Next to Sidewalks/Walkways**~~



~~M. Fire Access and Turnarounds. When required under the Uniform Fire Code, fire access lanes with turnarounds shall be provided. Except as waived in writing by the fire marshal, a fire equipment access drive shall be provided for any portion of an exterior wall of the first story of a building that is located more than 150 feet from an existing public street or approved fire equipment access drive. The drive shall contain unobstructed adequate aisle width (14 to 20 feet) and turn-around area for emergency vehicles. The fire marshal may require that fire lanes be marked as "No Stopping/No Parking."~~

~~N. Vertical Clearances. Driveways, private streets, aisles, turn-around areas and ramps shall have a minimum vertical clearance of 13 feet and six inches for their entire length and width.~~

~~O. Clear Vision Areas. No visual obstruction (e.g., sign, structure, solid fence, or shrub vegetation) may be placed in a clear vision area except in accordance with LCMC 17.52.060. The minimum clear vision area may be modified by the city engineer with the concurrence of the planning director upon finding that more or less sight distance is required (i.e., due to traffic speeds, roadway alignment, etc.). ODOT shall establish clear vision requirements for Highway 101, but if the city's clear vision requirements are more restrictive, the city's requirements shall prevail.~~

~~P. Construction. The following development and maintenance standards shall apply to all driveways and private streets, except that the standards do not apply to driveways serving one single-family detached dwelling. For properties abutting Highway 101, development and maintenance requirements established as a part of an ODOT approach road permit also shall apply.~~

~~1. Surface Options. Driveways, parking areas, aisles, and turnarounds may be paved with asphalt, concrete, or comparable surfacing, or a durable nonpaving or porous paving material may be used to reduce surface water runoff and protect water quality. Driveway and street materials shall be subject to review and approval by the city engineer.~~

~~2. Surface Water Management. When nonporous paving is used, all driveways, parking areas, aisles, and turnarounds shall have on-site collection of surface waters to eliminate sheet flow of such waters onto public rights-of-way and abutting property. Surface water facilities shall be constructed in conformance with applicable engineering standards.~~

~~3. Driveway Aprons. When driveway approaches or "aprons" are required to connect driveways to the public right-of-way, they shall be paved with concrete surfacing and conform to the city's engineering design criteria and standard specifications. (See general illustrations in Figure 12.28.200A.)~~

Commentary #3:

Proposed amendments update existing subdivision block size requirements to make them consistent with access spacing standards established in the TSP.

Proposed modifications amend existing subdivision provisions to make pedestrian/bicycle access ways a requirement instead of a discretionary decision by the Planning Commission. The following proposed language provides exceptions and design specifications.

Per Recommendation 10, a reference to local street design standards in the TSP has been added in subdivision street standards, and the minimum right-of-way and roadway table has been replaced with this reference. A reference to the public works/engineering standards should be added if the street design standards will be incorporated into that document.

The amendments propose deletion of language pertaining to "other sidewalks" not being required of the subdivider or partitioner. Off-site transportation improvements, including sidewalks, may be a condition of approval, based on the findings of the transportation impact analysis. (See recommendation 6c in Attachment A.)

Title 16
SUBDIVISIONS

Chapter 16.12
DESIGN STANDARDS

16.12.170 Block sizes.

~~Blocks shall not exceed 1,200 feet in length, except blocks adjacent to arterial streets or~~ Block sizes shall conform to the access spacing standards in the city Transportation System Plan unless the previous adjacent layout or topographical conditions justify a variation. ~~The recommended minimum distance between intersections on major streets is 1,800 feet.~~

16.12.200 Easements – Pedestrian and bicycle access ways.

~~When the planning commission determines pedestrian ways to be essential for public convenience, such ways may be required to connect two culs-de-sac between streets in long blocks between streets and other public or semipublic lands or through major or minor greenway systems. In any block over 750 feet in length, a pedestrian way with a minimum width of eight feet or combination pedestrian way and utility easement may be required through the middle of the block. If unusual conditions require blocks longer than 1,200 feet, two pedestrian ways may be required. Long blocks parallel to arterial streets may be approved without pedestrian ways if desirable in the interests of traffic safety.~~

A. Where applicable, pedestrian and bicycle access ways shall be provided to achieve the following connections, as generally illustrated in the Figure 16.12.200A:

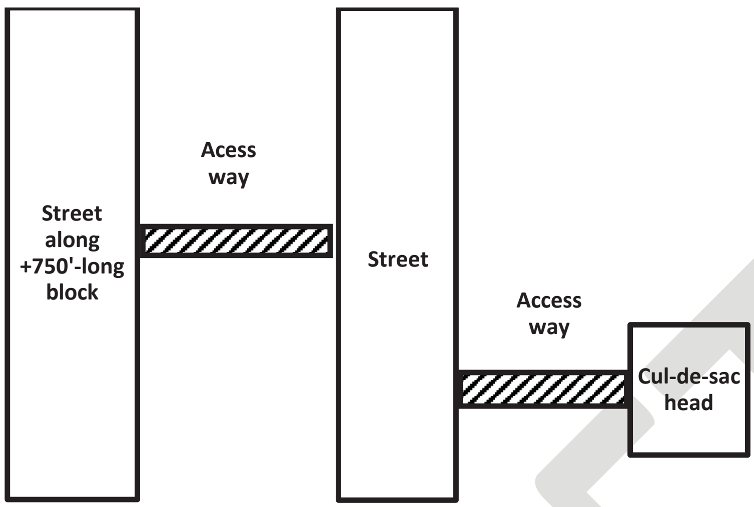
1. from the head of a cul-de-sac to the nearest street, including cases where the nearest street is a segment of the same street leading to the head of the cul-de-sac where the street consists of tight curves;

2. between streets on either side of a long block (more than 750 feet in length), with at least one access way for every 750 feet in block length;

3. from or between other existing or approved pedestrian and bicycle access ways; and

4. other connections as determined necessary by the planning commission.

Figure 16.12.200A



B. The access way shall be located in a public right-of-way or a public access easement on private property. The access way may be provided within a utility easement with the written permission of the utility provider.

C. A pedestrian and bicycle access way shall be a minimum of eight feet in width. The access way shall be constructed of concrete, asphalt, brick/masonry pavers, or other city-approved durable surfaces meeting ADA requirements.

D. Where constrained by steep slopes, environmentally sensitive areas, historic or culturally significant areas, or existing development, the planning commission may waive the requirement for an access way.

[…]

Chapter 16.16
IMPROVEMENTS

16.16.020 Streets.

A. The developer shall improve a~~A~~ll streets, including alleys, within the subdivision or partition and streets adjacent, but only partially within the subdivision or partition~~, shall be improved. S~~ and streets adjacent to a subdivision or partition~~ shall be improved~~, whether included or excluded from the subdivision or partition.

B. Construction of a~~A~~ll streets and alleys shall be constructed to city standards for permanent street and alley construction, pursuant to requirements set forth in the city Transportation System Plan and Public Works/Engineering Standards.

[…]

16.12.030 Streets – Minimum right-of-way and roadway widths.

Unless otherwise approved by the planning commission ~~or indicated on a development plan~~, the width of streets and roadways in feet shall ~~not~~ be not less than the minimum shown in the ~~following table~~ cross sections in the city Transportation System Plan and Public Works/Engineering Standards.

~~Type of Street~~	~~Minimum Right-of-Way (in feet)~~	~~Minimum Roadway (in feet)~~
~~Major streets~~	~~80 to 100~~	~~varies~~
~~Collector streets~~	~~60~~	~~40~~
~~Other lesser streets~~	~~50~~	~~36~~
~~Streets ending in a permanent cul-de-sac of length of 250' or less (center to intersection center)~~	~~50~~	~~32~~
~~Radius for turnaround at end of cul-de-sac~~	~~50~~	~~43~~
~~Radius for turnaround at end of cul-de-sac street of 250' length or less~~	~~50~~	~~41~~
~~Alley~~	~~20~~	~~20~~

[…]

16.16.060 Sidewalks.

A. The developer shall install s~~S~~idewalks ~~are required~~ on both sides of all streets ~~and in any pedestrian ways~~ within the subdivision or partition~~.~~, ~~Other sidewalks are not required of the subdivider or partitioner.~~ and pedestrian access ways in accordance with LCMC 16.12.200.

B. All sidewalks constructed within the subdivision or partition shall be to city standards, as set forth in the city Transportation System Plan and Public Works/Engineering Standards, and at grades established or approved by the city engineer. The property owner shall keep a minimum of five feet of the sidewalk width clear of both permanent and temporary obstructions (e.g., utility poles, sandwich signs).

Commentary #4:

Proposed amendments require pedestrian/bicycle access ways in subdivisions and define access way in LCMC Chapter 17.08. (See Recommendation 6c in Attachment A.)

Proposed language also adds on-site and site-to-site pedestrian/bicycle circulation and access requirements for uses other than commercial uses; and includes a definition for these pedestrian and bicycle circulation and access facilities (pathways) in LCMC Chapter 17.08. (See Recommendations 6a and 6b in Attachment A.)

New definitions in 17.08 define shared streets and shared-use paths. (See Recommendation 13b in Attachment A.)

The amendments permit transportation uses addressed in the TPR outright in the base zones in LCMC 17.16-17.45 and add a definition for "transportation uses" is in LCMC Chapter 17.08. (See Recommendation 1 in Attachment A.)

Title 17
ZONING

Chapter 17.08
DEFINITIONS

"Access" means the way or means by which pedestrians and vehicles enter and leave property.

"Access way" means a pedestrian and/or bicycle connection between two rights-of-way, or to achieve other connectivity needs as determined by the planning commission. An access way conforms to city standards and is in either an off-street public right-of-way or a public access easement on private property.

"Accessory structure" or "accessory use" means a structure or use incidental and subordinate to the main use of property and located on the same lot as the main use, including any required off-street parking within 200 feet (measured in a straight line) of the building or use it is intended to serve.

[…]

"Owner" means the person in whom is vested the ownership, dominion or title of property; proprietor; including an authorized agent of the owner.

"Pathway" means a pedestrian and/or bicycle way on private property that provides pedestrian and/or bicycle circulation within a site and to adjacent sites and facilities.

"Perennial" means a landscape plant that persists for several years with new herbaceous growth from a part that lives over from one growing season to another.

[…]

“Screening” means the visual shielding of one structure or use from another structure or use by fences, walls, berms, or densely planted vegetation so as, on installation, to substantially, but not necessarily totally, eliminate visual impacts of the shielded structure or use on the other structure or use.

<u>“Shared street” means a low-volume and low-speed street, as designated in the city Transportation System Plan, used by pedestrians, bicyclists, and motor vehicles, and where pedestrians have priority over motor vehicles and bicyclists. Shared streets do not have clear division between pedestrian and motor vehicle space (e.g., no continuous curb) and typically include such features as street furniture (e.g., planters, street trees, benches) and areas for social interaction. Design criteria for shared streets are included in the Transportation System Plan.</u>

<u>”Shared-use path” means a facility for non-motorized travel outside of the roadway, intended for transportation and recreation or both. Typical design standards for shared-use paths are in the city Transportation System Plan.</u>

“Shoreline” means the boundary line between a body of water and land, measured on tidal waters at mean high water, and on non-tidal waterways at the ordinary high water mark.

[...]

“Transitional area” means an area consisting of a lot, lots or parts of lots, within any residential district, having side lot lines abutting a boundary of a commercial or industrial zone, and extending not more than 100 feet from such boundary into the residential zone.

<u>“Transportation uses” means transportation facilities, services, and improvements as identified in the Transportation Planning Rule, OAR 660-012-0045(1), including:</u>

- <u>Operation, maintenance, and repair of existing transportation facilities identified in the city Transportation System Plan;</u>
- <u>Dedication of right-of-way, authorization of construction, and the construction of facilities and improvements, where the improvements are consistent with clear and objective dimensional standards; and</u>
- <u>Changes in the frequency of transit, rail, and airport services.</u>

“Underlying zone” means the existing zone on the property at the time of application.

Chapter 17.16
SINGLE-FAMILY RESIDENTIAL (R-1) ZONE

17.16.020 Permitted uses.

The following uses are permitted:

A. Single-family dwellings;

B. Attached single-family dwelling, if attached to no more than one other single-family dwelling;

C. Two-family and duplex dwellings when developed on a minimum 8,000-square-foot lot;

D. Community gardens and market gardens not larger than 12,500 square feet, in accordance with the standards of LCMC17.80.080;

E. Public parks, playgrounds and other similar publicly owned recreation areas;

F. Bed and breakfast accommodations, subject to the standards set forth in LCMC 17.80.060;

G. Manufactured homes when developed in accordance with the standards set forth in LCMC 17.52.250;

H. A mobile home used during construction of a permitted use for which a building permit has been issued, but not exceeding six months;

I. Residential homes;

J. Essential emergency communications and warning facilities~~.~~;

K. Transportation uses, defined in LCMC 17.08.

Chapter 17.20
MULTIPLE-FAMILY RESIDENTIAL (R-M) ZONE

17.20.020 Permitted uses.

The following uses are permitted:

A. Single-family dwellings, if developed under the standards set forth for single-family dwellings within the R-1 zone (except for the building coverage standards, which shall be as set out in LCMC 17.20.060(D)), and two-family dwellings or duplexes;

B. Multiple-family dwellings and apartment houses;

C. Rooming and boarding houses;

D. Community gardens and market gardens not larger than 12,500 square feet, in accordance with the standards of LCMC17.80.080;

E. A mobile home used during construction of a permitted use for which a building permit has been issued, but not exceeding six months;

F. Bed and breakfast accommodations, subject to the standards set forth in LCMC 17.80.060;

G. Manufactured homes when developed in accordance with the standards specified in LCMC 17.52.250;

H. Attached single-family dwellings, when developed in accordance with the standards specified in LCMC 17.52.260~~.~~;

I. Transportation uses, defined in LCMC 17.08.

Chapter 17.24
PROFESSIONAL CAMPUS (PC) ZONE

17.24.020 Uses permitted.

In a PC zone, the following are given as examples of those uses which meet the intent of this zone:

A. Offices, studios or clinics of accountants, architects, artists, attorneys, authors, writers, dentists, designers, engineers, investment counselors, landscape architects, management consultants, physicians, surgeons and psychologists;

B. Offices of administrative, editorial, educational, utility, executive, financial, government, philanthropic, insurance, real estate, religious, research, scientific or statistical organizations whose activities are such that few visitors, other than employees, have reason to come to the premises;

C. Hospitals and accessory uses such as pharmacies, and related health facilities, sanitariums, nursing homes, residential homes and assisted living facilities;

D. Public parks and recreation facilities;

E. Government buildings;

F. Elderly housing units developed under the standards and provisions of the low density section of the R-M zone;

G. Mixed use development;

H. Essential emergency communications and warning facilities~~.~~;

I. Transportation uses, defined in LCMC 17.08.

Chapter 17.28
RECREATION-COMMERCIAL (RC) ZONE

17.28.020 Uses permitted.

In an RC zone, the following are given as examples of those uses which meet the intent of this zone:

A. Motels and resorts;

B. Eating or drinking establishments;

C. Gift shops;

D. Convention centers;

E. Single-family dwellings and duplexes, if developed under the standards set forth for single-family dwellings within the R-1 zone;

F. Time-share units, when developed under the standards of LCMC 17.28.050;

G. Bed and breakfast accommodations;

H. Attached single-family dwellings, when developed in accordance with the standards specified in LCMC 17.52.260;

I. Manufactured homes when developed in accordance with the standards specified in LCMC 17.52.250;

J. Essential emergency communications and warning facilities;

K. Community gardens and market gardens not larger than 12,500 square feet, in accordance with the standards of LCMC17.80.080;

L. Mixed-use development~~.~~;

M. Transportation uses, defined in LCMC 17.08.

Chapter 17.32
GENERAL COMMERCIAL (GC) ZONE

17.32.020 Uses permitted.

In a GC zone, the following are given as examples of those uses that meet the intent of this zone:

A. Convenience service/retail use;

B. Eating and drinking establishments, excluding drive-in restaurants;

C. Carpet, rug, fabric and interior decorating shops including reupholstering, making of draperies and other similar articles which are conducted as part of, and secondary to, a retail sales operation;

D. Sporting goods stores;

E. Motels and resorts;

F. Building supply stores;

G. Public facilities;

H. Garden supplies and nursery;

I. Community meeting buildings, fraternal or social organizations;

J. Automotive parts and accessories;

K. Printing;

L. Carpenter, plumbing, cabinet, upholstering and sheet metal shops, if conducted wholly within an enclosed building;

M. Appliance sales and service;

N. Single-family dwellings and duplexes, if developed under the standards in the R-1 zone;

O. Mini-warehouses, if existing on or if site plan approval was applied for before June 9, 2008. Mini-warehouses in existence on or applied for before June 9, 2008, may be expanded within the boundaries of the lot or lots they occupied as of that date, subject to the standards applicable as of the date of application for expansion;

P. Time-share units, when developed under the standards of LCMC 17.28.050;

Q. Bed and breakfast accommodations;

R. Professional and business offices;

S. Art gallery and studio;

T. Physical therapy;

U. Equipment rental establishments;

V. Physical fitness center;

W. Manufactured homes when developed in accordance with the standards specified in LCMC 17.28.100(C) and 17.52.250;

X. Veterinary clinics;

Y. Community gardens and market gardens not larger than 12,500 square feet, in accordance with the standards of LCMC17.80.080;

Z. Mixed-use development;

AA. Essential emergency communications and warning facilities~~.~~;

BB. Transportation uses, defined in LCMC 17.08.

Chapter 17.36
PLANNED INDUSTRIAL (PI) ZONE

17.36.020 Uses permitted.

In a PI zone, the following are given as examples of those uses which meet the intent of this zone:

A. Any production, processing, cleaning, servicing, testing, repair or storage of materials, goods or products, and business offices accessory thereto, similar in character and nature to the following activities with the standards provided for this zone:

1. Dry cleaning and laundry plants;

2. Electrical and household equipment repair shops;

3. Printing, lithography and publishing plants;

4. Sign fabrication and painting;

5. Automobile, truck or trailer sales and repairs;

6. Building material sales and storage;

7. Heating, plumbing and air conditioning supplies and equipment fabrication;

8. Carpenter, cabinet or upholstery shops;

9. General contractor;

10. Machine parts and tool manufacture, including warehouse and other storage establishments and facilities;

B. Any business or commercial establishments including warehouse and other storage establishments and facilities which provide supplies and/or services to industrial or manufacturing customers, or which provide sales and services primarily at wholesale, so long as such establishments are maintained with the standards listed below;

C. Frozen food locker;

D. Garden supplies and equipment, and greenhouses and nurseries;

E. Automobile, truck, trailer or motorcycle repair;

F. Kennels;

G. Mini-warehouses;

H. Manufactured dwelling sales and service;

I. Essential emergency communications and warning facilities~~.~~;

J. Transportation uses, defined in LCMC 17.08.

Chapter 17.40
RECREATION-RESIDENTIAL (R-R) ZONE

17.40.020 Permitted uses.

In an R-R zone, the following uses are permitted:

A. Single-family dwelling;

B. Manufactured home;

C. Recreational vehicle;

D. Essential emergency communications and warning facilities;

E. Community gardens and market gardens not larger than 12,500 square feet, in accordance with the standards of LCMC17.80.080~~.~~;

F. Transportation uses, defined in LCMC 17.08.

Chapter 17.42
PARK (P) ZONE

17.42.020 Permitted uses.

The following uses are permitted in the park (P) zone:

A. Public parks, playgrounds, recreational buildings and facilities;

B. Public athletic fields and facilities including but not limited to baseball/softball/soccer fields, basketball courts, volleyball courts, swimming pools, and gymnasiums;

C. Public community centers and auditoriums;

D. Concession stands with approval of the parks director in conjunction with recreational activities sponsored by the city;

E. Special events as approved by the city manager;

F. Vendors holding permits as approved by the planning and community development director in accordance with the standards set forth in Chapter 5.28 LCMC;

G. Uses permitted in the open space zone;

H. Public parking for park use;

I. Such other uses as the planning and community development director determines to be in accordance with the primary purpose of the park zone;

J. Essential emergency communications and warning facilities;

K. Community gardens~~.~~;

L. Transportation uses, defined in LCMC 17.08.

Chapter 17.44
MARINE WATERWAY (M-W) ZONE

17.44.020 Uses permitted outright.

In an M-W zone the following are given as examples of those uses which meet the intent of this zone:

A. Wildlife or marine life sanctuary or preserve;

B. Marine life raising or production area;

C. Marine recreation activities such as fishing and boating;

D. Navigation activities;

E. Essential emergency communications and warning facilities~~.~~;

F. Transportation uses, defined in LCMC 17.08.

Chapter 17.45
TAFT VILLAGE CORE (TVC) ZONE

17.45.040 Land use activities.

This section contains a matrix that establishes which land uses are permitted (P), conditionally permitted (C), or expressly prohibited (–) within the TVC zone. A conditionally permitted use requires approval of a use permit by the planning commission in compliance with applicable provisions of Chapter 17.60 LCMC. If a particular use is not listed, the planning director shall be responsible to make a use determination to decide if the proposed use is similar to a listed use. Unless a proposed use is determined to be similar to a listed permitted or conditionally permitted use, it is a prohibited use. A permitted or conditionally permitted use may be subject to site plan review in accordance with LCMC 17.52.240.

L. Other Uses	
1. Ambulance service	C

2. Art gallery and studio	P
3. Places of worship	C
4. Clubs, lodges, meeting halls	C
5. Home occupations	P
6. Handicraft-type industries with on-site sales (i.e., crafts, saddles)	P
7. Parks/playgrounds/community gardens	C
8. Police/fire facilities	C
9. Public facilities/public parking lots	P
10. Public/private schools, business/trade schools, in accordance with LCMC 17.80.010	C
11. Public utility or utility substation	C
12. Essential emergency communications and warning facilities	P
13. Community gardens and market gardens not larger than 12,500 square feet, in accordance with the standards of LCMC 17.80.080	P
14. Gardens and animals, accessory to a permitted use and subject to the provisions of LCMC 17.80.080	P
15. Transportation uses, defined in LCMC 17.08.	P

Commentary #5:

Additions to public infrastructure improvement standards under Supplementary Regulations (LCMC 17.52.230) refer to local street design standards in the TSP and to the public works/engineering standards (if the street design standards are incorporated into that document). (See Recommendation 10 in Attachment A.) Proposed provisions require transit amenities (or easements/dedications for amenities) in coordination with Lincoln County Transit or other applicable transit agencies. The proposed provisions are based on TPR language and language used in several communities. (See Recommendation 7 in Attachment A.) Reflecting City direction, new language addresses property owner responsibility for the maintenance of sidewalks, landscape strips, and curbs. Fee in lieu provisions replace deferred improvement agreements (See Recommendation 12 in Attachment A.)

Chapter 17.52
SUPPLEMENTARY REGULATIONS AND EXCEPTIONS

17.52.230 Public infrastructure improvement requirements.

A. Infrastructure Easement and Improvement Requirements. The following requirements apply to: any project requiring ~~issuance of~~ a building permit ~~shall be~~ for ~~the~~ additions, alterations, or repairs of an existing building within any 12-month period, for which the total construction cost exceeds ~~exceeding~~ 50 percent of the assessed value or market value~~, whichever is greater, of an existing building or structure, or for~~; any new building or structure in connection with any permitted or conditional use within any zone as described in this title~~, or of a~~; and a project requiring site plan approval for development ~~for which site plan review is required~~ under LCMC 17.52.240~~, shall be subject to the following requirements:~~.

[…]

2. The applicant shall agree, except as otherwise provided in subsections (B) and (C) of this section:

a. To install curbs and gutters along adjacent streets not having curbs and gutters, and also to pave the roadways from the curbs to 12 feet beyond centerline of unpaved or partially unpaved streets contiguous to the property to be developed, in accordance with the standards of this title, street design standards in the city Transportation System Plan and Public Works/Engineering Standards, and LCMC Title 16 (Subdivisions) applicable to the type of development planned on the subject property; and, if existing rights-of-way for streets contiguous to the property are not adequate in width, under the standards of this title and LCMC Title 16 (Subdivisions), to dedicate right-of-way to the city sufficient to allow streets that are adequate in width,

b. To dedicate to the city utility easements five feet in width along rear lot lines, or along front lot lines as required by the city,

c. To dedicate easements for drainage purposes, and provide stormwater detention, treatment, and drainage features and facilities, as approved by the city engineer…

d. To install sidewalks ~~five feet in width~~ in accordance with street design standards in the city Transportation System Plan and Public Works/Engineering Standards along boundaries contiguous with streets, within existing right-of-way if adequate in width; and, if existing easements are not adequate in width, to deed easements to the city sufficient to allow sidewalks five feet in width,

e. To install and connect to the city systems water and sewer lines […];

f. To place underground all existing electrical, telephone, and cable television utility service installations or connections […]

g. To develop the site and construct all buildings and improvements in strict conformity to the tendered site plan.

h. To provide any of the following transit-related improvements, if development includes or is adjacent to existing or planned transit stops shown in the city Transportation System Plan or an adopted plan prepared by a transit provider, as determined by the city engineer or community development director:

(1) Reasonably direct pedestrian connections between the transit stop and building entrances of the site. For the purpose of this section "reasonably direct" means a route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for users.

(2) A transit passenger landing pad that is ADA accessible.

(3) An easement or dedication for a passenger shelter or bench, if such an improvement is in an adopted plan.

(4) Lighting at the transit stop.

(i) That the property owner shall maintain the sidewalk, landscape strip, and curb adjacent to the property.

(j)The city manager or a designated representative may accept a ~~deferred improvement agreement~~ fee in lieu of the required improvement, in a form approved by the city manager or designate, for installation of curbs, gutters, sidewalks, street paving, water and sewer lines and appurtenances, and stormwater detention, treatment, and drainage features and facilities, when the city manager or designate determines that a delay is appropriate prior to the commencement of construction of these improvements. The fee shall not be less than 125 percent of the cost to perform the work, as determined by the city engineer, based on the applicable city standards in effect at the time of application. The applicant shall pay the fee prior to plat recording or issuance of a building or development permit. The city shall use all such fees for construction, repair, or maintenance of the public infrastructure improvements named above within the city of Lincoln City; and […]

Commentary #6:

Recommended modifications to site plan review criteria include applying pedestrian/bicycle circulation and access requirements to other uses in addition to commercial. The new section on pedestrian and bicycle circulation and access addresses not only connections within and between sites, but access to transit stops, pathway/driveway separation, pathway surface and width specifications, and ADA compliance. (See Recommendations 6a and 6b in Attachment A.)

17.52.240 Site plan review.

A. Purpose […]

B. Site Plan Review Criteria. A site plan review application shall demonstrate that:

1. The proposed development will comply with all of the applicable requirements of this title; and

2. The arrangement of all buildings and structures, access points, parking and loading facilities, landscaping, lighting, walls and fences, and stormwater detention, treatment, and drainage features and facilities will avoid traffic congestion and will provide for pedestrian and vehicular safety and welfare. See LCMC 12.28.200 for detailed requirements regarding vehicle access and circulation and LCMC 17.52.290 for detailed requirements regarding pedestrian/bicycle access and circulation.

[…]

17.52.280 Vehicle access and circulation. [This is a proposed new section presented next in this memorandum, following Commentary #7.]

17.52.290 Pedestrian and bicycle access and circulation.

A. Purpose. This section implements city pedestrian and bicycle access and connectivity policies to provide for safe, reasonably direct, and convenient pedestrian and bicycle access and circulation within a site and between a site and adjacent sites and facilities.

B. Applicability and standards. Developments subject to site plan review, pursuant to LCMC 17.52.240, shall conform to all of the following standards for pedestrian and bicycle access and circulation:

1. Continuous pathway system. A pathway system shall extend throughout the development site and connect to adjacent sidewalks, adjacent existing and planned transit stops, and adjacent sites as applicable and feasible.

2. Safe, direct, and convenient. Pathways within a development site shall provide connections between primary building entrances and all adjacent parking areas, recreational areas, and public rights-of-way that meet all of the following criteria:

   a. The pathway is reasonably direct, following a route that does not deviate unnecessarily from a straight line or at minimum, does not involve a significant amount of out-of-direction travel;

   b. The pathway is designed primarily for pedestrian and bicyclist safety and convenience, meaning it is free from hazards, provides a reasonably smooth and consistent surface, and the route of travel between destinations minimizes vehicular-pedestrian conflict points. It has a three-foot landscape buffer separating pathways and adjacent parking lots or driveways to mitigate safety concerns.

   c. The pathway network connects to all primary building entrances, in conformance with applicable Americans with Disabilities Act (ADA) requirements.

3. Pathway/parking area drive aisle separation. Where a pathway abuts a parking area drive aisle, the drive aisle shall have a curb along the abutting edge and the sidewalk shall be six inches higher than the edge of the drive aisle. Alternatively, the city engineer may approve a pathway at the same grade as the drive aisle, if the pathway is physically separated from all vehicle maneuvering areas by, for example, a row of bollards (designed for use in parking areas) spaced to prevent vehicles from entering the pathway.

4. Crossing parking areas and driveways. Where a pathway crosses a parking area or driveway, it shall be marked clearly with contrasting paving materials (e.g., pavers, light-color concrete inlay between asphalt, or similar contrast). The crossing may be part of a speed table to improve driver-visibility of pedestrians. If crossings involve grade changes, the crossing shall include ADA accessible ramps. Painted striping, thermo-plastic striping, and similar types of non-permanent applications are not as desirable, but may be approved for lower-volume crossings of 24 feet or less.

5. Pathway surface and width. Pathways shall be concrete, asphalt, brick/masonry pavers, or another city-approved durable surface meeting ADA requirements. Pathways shall be at least four feet in width, except in commercial developments, where they must be at least six feet in width. The community development director may require wider pathways in developments likely to have high volumes of pedestrian and bicycle traffic that warrant wider width.

Commentary #7:

As was addressed earlier in this memorandum (Commentary #2), it is recommended that the existing chapter regarding vehicle access and circulation be amended to apply the provisions citywide and that the chapter be made into a new section in LCMC Chapter 17.52 (Supplemental Regulations). While shown in underlined text to signify the addition of a new chapter, much of this text is original (existing adopted language), with the exception of the following:

1. The subsection on traffic study requirements is proposed to be replaced with a reference to an expanded set of requirements in LCMC 17.52.300 [new TIS section].

2. Corner and intersection separation (spacing) standards in Subsection G have been updated to include the standards table from the Draft TSP.

3. A reference to the new section regarding pedestrian and bicycle access and circulation (LCMC 17.52.290) has been added to the site circulation subsection (Subsection H).

17.52.280 Vehicle access and circulation

A. Intent and Purpose. The intent of this section is to manage access to land uses and on-site circulation, and to preserve the transportation system in terms of safety, capacity, and function while providing reasonable access for residents and businesses.

B. Applicability. The standards of this section apply to lots created, consolidated, or modified through a land division, partition, lot line adjustment, lot consolidation, or street vacation; and to properties subject to land use approval or site plan review. The requirements in this chapter are in addition to requirements relating to properties abutting Highway 101 that are imposed by the Oregon Department of Transportation (ODOT) through the provisions of Oregon Administrative Rule 734-051. Where ODOT requires more restrictive provisions than city requirements, ODOT standards shall prevail.

C. Access Permit Required. Access (e.g., a new curb cut or driveway approach) to Highway 101 requires an access permit from Lincoln City and a valid approach road permit from the Oregon Department of Transportation. Access to other streets in the city requires an access permit from the city or Lincoln County as appropriate. An access permit may be in the form of a letter to the applicant, or it may be attached to a land use decision notice as a condition of approval.

D. Notice to ODOT. Written notice of the following actions shall be provided to ODOT by Lincoln City. Said notice shall be provided when Lincoln City provides notice to other public agencies and city departments. When notice to other public agencies and city departments is not provided, Lincoln City shall provide written notice to ODOT at the same time and manner as public notice is provided to the general public.

1. Land use applications that require public hearings;

2. Subdivision and partition applications;

3. Other applications that affect private access to Highway 101 or the intersecting streets identified in subsection (B) of this section.

E. Traffic Impact Study (TIS) Requirements. The city may require a traffic impact study prepared by a qualified professional, pursuant to requirements in LCMC 17.52.300. ODOT may require such a study for properties abutting Highway 101 or relying on this facility for access. The city and ODOT will use the TIS to make decisions about access, circulation, and other transportation requirements. The city will coordinate its traffic impact study requirements with ODOT, so that an applicant need complete only one such study to comply with the requirements of both agencies.

F. Conditions of Approval. The city may require the closing or consolidation of existing curb cuts or other vehicle access points, recording of reciprocal access easements (e.g., for shared driveways), turn restrictions, development of a frontage street, installation of traffic control devices, and/or other mitigation as a condition of granting an access permit, to ensure the safe and efficient operation of the street and highway system. Installation of traffic control devices on Highway 101 must be approved by ODOT.

G. Corner and Intersection Separation – Backing onto Public Streets. New and modified accesses shall conform to the following standards:

1. Property access to Highway 101 shall comply with ODOT standards. New access to local streets intersecting with the highway shall be-consistent with access spacing standards in Table 17.52.280A below. Where no other alternative exists for property access, the city may allow construction of an access connection at a point less than-the distance required below, provided the access is as far away from the intersection as possible. In such cases, the city may impose turning restrictions (i.e., right in/out, right in only, or right out only). For properties with frontage both on Highway 101 and another public street, access shall be from the local street wherever reasonable.

Table 17.52.280A

	Principal Arterial	Minor Arterial	Collector	Local / Shared
Maximum Block Size (Public Street to Public Street)	See Oregon Highway Plan	530 ft.	530 ft.	530 ft.
Minimum Block Size (Public Street to Public Street)		265 ft.	265 ft.	265 ft.
Minimum Driveway Spacing (Public Street to Driveway and Driveway to Driveway)		265 ft.	130 ft.	None

2. Access to and from off-street parking areas, except those for single-family dwellings, shall not permit backing onto a public street.

3. The city may reduce required separation distance of access points to city streets where they prove impractical due to lot dimensions, existing development, other physical features, or conflicting code requirements, provided all of the following requirements are met.

3. The city may reduce required separation distance of access points to city streets where they prove impractical due to lot dimensions, existing development, other physical features, or conflicting code requirements, provided all of the following requirements are met. Where the statewide highway access point spacing requirements in OAR 734-051 cannot be met, all the following requirements must be met before the city can complete the “Land Use Compatibility Statement for a State Highway Approach” required for a highway approach road application.

a. Joint-use driveways and cross-access easements are provided in accordance with subsection (I) of this section;

b. The site plan incorporates a unified access and circulation system in accordance with this section; and

c. The property owner(s) enter in a written agreement with the city, recorded with the deed, that pre-existing connections on the site will be closed and eliminated after construction of each side of the joint-use driveway.

H. Site Circulation. New developments shall provide a circulation system that accommodates expected traffic on the site. Pedestrian connections on the site, including connections through large sites, and connections between sites (as applicable) and adjacent sidewalks must be sufficient to accommodate expected pedestrian traffic safely to, from, within, and across the site. See LCMC 17.52.290 for more detailed requirements regarding pedestrian and bicycle access and circulation.

I. Joint- and Cross-Access – Requirement. The number of driveway and private street intersections with public streets should be minimized by the use of shared driveways for adjoining lots where feasible. When necessary for traffic safety and access management purposes, or to access flag lots, the city and/or ODOT (for access to Highway 101) may require joint access and/or shared driveways in the following situations:

1. For shared parking areas;

2. For adjacent developments, where access onto an arterial or collector is proposed;

3. For multitenant developments, and developments on multiple lots or parcels. For such joint accesses and shared driveways the city may require the applicant to incorporate any of the following, among other requirements:

a. A continuous service drive or cross-access corridor that provides for driveway separation consistent with the applicable transportation authority's access management classification system and standards;

b. A design speed of 10 miles per hour and a maximum width of 24 feet, in addition to any parking alongside the driveway; additional driveway width or fire lanes may be approved when necessary to accommodate specific types of service vehicles, loading vehicles, or emergency service provider vehicles;

c. Driveway stubs to property lines (for future extension) and other design features to make it easy to see that the abutting properties may be required with future development to connect to the cross-access driveway;

J. Joint- and Cross-Access – Reduction in Required Parking Allowed. When a shared driveway is provided or required as a condition of approval, the land uses adjacent to the shared driveway may have their minimum parking standards reduced in accordance with the shared parking provisions of LCMC 17.56.060.

K. Joint- and Cross-Access – Easement and Use and Maintenance Agreement. Pursuant to this section, property owners shall:

1. Record an easement with the deed allowing cross-access to and from other properties served by the joint-use driveways and cross-access or service drive;

2. Record an agreement with the deed that remaining access rights along the roadway for the subject property shall be dedicated to the city and pre-existing driveways will be closed and eliminated after construction of the joint-use driveway;

3. Record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners.

L. Access Connections and Driveway Design. All driveway connections to a public right-of-way (access) and driveways shall conform to all of the following design standards:

1. Driveways to city streets shall meet the following standards:

a. One-way driveways (one-way in or out) shall have a minimum driveway width of 10 feet, and a maximum width of 12 feet, and shall have appropriate signage designating the driveway as a one-way connection.

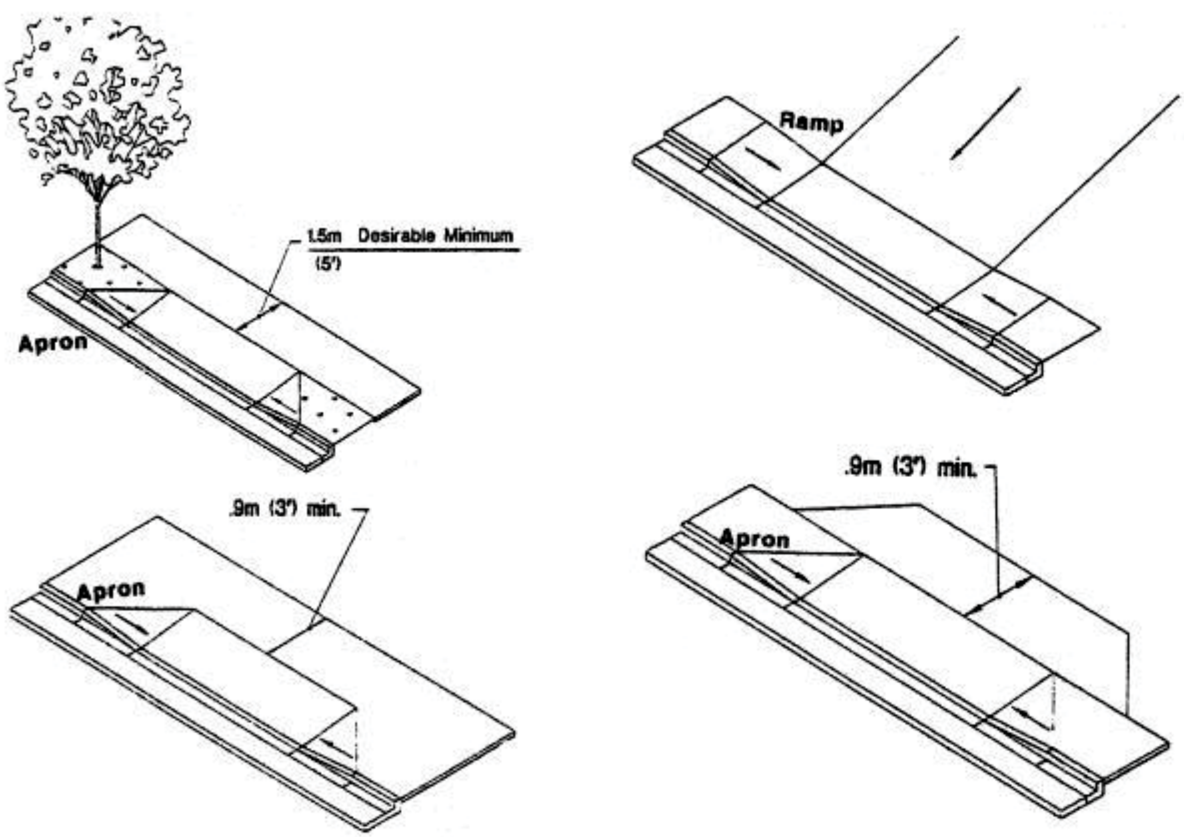
b. For two-way access, each lane shall have a minimum width of 10 feet and a maximum width of 12 feet.

Driveways to Highway 101 shall meet ODOT requirements for design and construction.

2. Driveways shall be designed and located to provide exiting vehicles with an unobstructed view of other vehicles and pedestrians, and to prevent vehicles from backing into the flow of traffic on the public street or causing conflicts with on-site circulation. Construction of driveway accesses along acceleration or deceleration lanes or tapers should be avoided due to the potential for vehicular conflicts. Driveways should be located to allow for safe maneuvering in and around loading areas.

3. Driveway aprons (when required) shall be constructed of concrete and shall be installed between the street right-of-way and the private drive, as shown in Figure 17.52.280A. Driveway aprons shall conform to ADA requirements for sidewalks and walkways, which generally require a continuous unobstructed route of travel that is not less than three feet in width, with a cross slope not exceeding two percent, and providing for landing areas and ramps at intersections.

Figure 17.52.280A Examples of Acceptable Driveway Openings Next to Sidewalks/Walkways



M. Fire Access and Turnarounds. When required under the Uniform Fire Code, fire access lanes with turnarounds shall be provided. Except as waived in writing by the fire marshal, a fire equipment access drive shall be provided for any portion of an exterior wall of the first story of a building that is located more than 150 feet from an existing public street or approved fire equipment access drive. The drive shall contain unobstructed adequate aisle width (14 to 20 feet) and turn-around area for emergency vehicles. The fire marshal may require that fire lanes be marked as "No Stopping/No Parking."

N. Vertical Clearances. Driveways, private streets, aisles, turn-around areas and ramps shall have a minimum vertical clearance of 13 feet and six inches for their entire length and width.

O. Clear Vision Areas. No visual obstruction (e.g., sign, structure, solid fence, or shrub vegetation) may be placed in a clear vision area except in accordance with LCMC 17.52.060. The minimum clear vision area may be modified by the city engineer with the concurrence of the planning director upon finding that more or less sight distance is required (i.e., due to traffic speeds, roadway alignment, etc.). ODOT shall establish clear vision requirements for Highway 101, but if the city's clear vision requirements are more restrictive, the city's requirements shall prevail.

P. Construction. The following development and maintenance standards shall apply to all driveways and private streets, except that the standards do not apply to driveways serving one single-family detached dwelling. For properties abutting Highway 101, development and maintenance requirements established as a part of an ODOT approach road permit also shall apply.

> 1. Surface Options. Driveways, parking areas, aisles, and turnarounds may be paved with asphalt, concrete, or comparable surfacing, or a durable nonpaving or porous paving material may be used to reduce surface water runoff and protect water quality. Driveway and street materials shall be subject to review and approval by the city engineer.
>
> 2. Surface Water Management. When nonporous paving is used, all driveways, parking areas, aisles, and turnarounds shall have on-site collection of surface waters to eliminate sheet flow of such waters onto public rights-of-way and abutting property. Surface water facilities shall be constructed in conformance with applicable engineering standards.

3. Driveway Aprons. When driveway approaches or "aprons" are required to connect driveways to the public right-of-way, they shall be paved with concrete surfacing and conform to the city's engineering design criteria and standard specifications. (See general illustrations in Figure 17.52.280A.)

Commentary #8:

Amendments expand upon existing traffic study requirements in 12.28.200(E.) with provisions regarding applicability, general preparation, and approval criteria. Requirements are based on language from the State model code and from code recently developed for other small- and medium-sized jurisdictions in Oregon. Mobility standards for local streets established in the TSP are in the proposed approval criteria provisions. (See Recommendations 3a and 3b in Attachment A.)

15.52.300 Traffic Impact Study (TIS) Requirements.

1. Purpose. The purpose of traffic impact study (TIS) requirements is to implement Sections 660-012-0045(2)(b) and (e) of the Oregon Transportation Planning Rule that require the city to adopt standards and a process to protect the future operations of roadways and transit corridors. This section establishes when a land use application requires a TIS to determine improvements needed to minimize impacts to transportation facilities and the section establishes approval criteria to ensure adequate facilities for both motorized and non-motorized modes of transportation.

The city and ODOT will use the TIS to make decisions about access, circulation, and other transportation requirements. The city will coordinate its traffic impact study requirements with ODOT, so that an applicant need complete only one such study to comply with the requirements of both agencies.

2. Applicability. A TIS shall accompany a land use application at the request of the city engineer, if the proposal involves one or more of the following:

a. An amendment to the Lincoln City Comprehensive Plan or zoning map.

b. A new direct property approach road to US 101.

c. Likely generation of 50 or more PM peak-hour trips on US 101, or 100 or more PM peak-hour trips on the local transportation system, according to (source).

d. An increase in use of any adjacent street or direct property approach road to US 101 by 10 vehicles or more per day that exceed 20,000 pounds gross vehicle weight.

e. An existing or proposed access driveway that does not meet minimum spacing or sight distance requirements, or a driveway located where vehicles entering or leaving the property are restricted, or such vehicles are likely to queue or hesitate at an approach or access connection, thereby creating a safety hazard.

f. A change in internal traffic patterns that may cause safety problems, such as back-up onto the highway or traffic crashes in the approach area.

3. Preparation. An Oregon registered professional engineer qualified to perform traffic engineering analysis shall prepare the TIS at the applicant's expense. The city engineer and ODOT staff, as appropriate, shall determine whether the contents of the TIS is sufficient.

4. Approval Criteria.

a. The study complies with the content requirements set forth by the city engineer and ODOT staff as appropriate;

b. The study demonstrates that adequate transportation facilities exist to serve the proposed land use action or identifies mitigation measures that resolve identified traffic safety problems in a manner that is satisfactory to the city engineer and, if State facilities are affected, to ODOT;

c. For affected city facilities, the TIS demonstrates the project meets mobility and other applicable performance standards established in the adopted city Transportation System Plan have been met; and

d. Proposed design and construction of transportation improvements are in accordance with the street design standards and the access spacing standards specified in the Transportation System Plan.

Commentary #9:

Proposed requirements allow transit-related uses in off-street parking areas so long as the lots continue to meet minimum parking requirements. (See Recommendation 9 in Attachment A.)

Preferential carpool and vanpool parking provisions, added to parking lot development standards, apply to parking lots over a specified size or number of parking spaces. Proposed language could incentivize the use of van pool/car pools in the future, especially for large employers. (See Recommendation 8 in Attachment A.)

Bicycle parking requirements proposed for addition to LCMC 17.56 apply to all uses, except for housing with fewer than four units. The proposed requirements for the number of bicycle parking spaces are based on those recommended in the State model code; the use categories for these requirements are derived from those used for the city's vehicle parking requirements. The model code provides basic bicycle parking location and design requirements, and these requirements are recommended for Lincoln City. (See Recommendation 5 in Attachment A.) City staff requested that provisions also be proposed for allowing reductions in off-street vehicle parking requirements based on bicycle parking spaces being provided.

Chapter 17.56
OFF-STREET PARKING AND LOADING REGULATIONS

17.56.080 Use of parking facilities.

<u>A. </u>Areas needed to meet the parking requirements of a particular building or use shall not be transformed or changed to another type of use, or transferred to meet the parking requirements of another building or use, until the parking required for the original user of said parking area is provided at another location. Such required parking shall be available for the parking of operable passenger vehicles of residents, customers, patrons and employees only, and shall not be used for the storage of vehicles or materials, or for the parking of trucks used in the conduct of the business or use.

<u>B. Portions of off-street parking areas may be developed or redeveloped for transit-related uses such as transit shelters or park-and-ride lots, subject to meeting all other applicable standards.</u>

[…]

17.56.110 Development and maintenance standards for off-street parking areas.

A. Access.

[…]

L. RV, Motorhome and Bus Parking…

M. Preferential Carpool/Vanpool Parking. Parking lots for uses with designated employee parking and with more than 20 parking spaces shall provide at least 5% of these spaces as preferential long-term carpool and vanpool parking spaces, with a minimum of one space and rounding up fractions of spaces. Preferential carpool and vanpool parking spaces shall be closer to the primary employee entrance of the building than other parking spaces, with the exception of ADA accessible parking spaces, and shall be marked as preferential carpool and vanpool parking.

17.56.120 Reductions in Parking Requirements. Reductions in the minimum required vehicle parking standards in LCMC 17.56.50 may be granted by the community development director as part of the development permit application review and approval process.

A. A reduction of one vehicle parking space per two bicycle parking spaces may be permitted, up to a maximum reduction of 10% of the minimum required vehicle parking spaces.

17.56.130 Bicycle Parking.

At a minimum, required bicycle parking shall be consistent with the following standards:

A. Location. All bicycle parking shall be within 100 feet of the primary building entrance; located within a well-lighted area; and clearly visible from the primary building entrance. Where necessary, a sign shall be used to direct users to the parking facility.

B. Access. Bicycle parking shall be convenient and easy to find; an unobstructed access aisle of at least five feet in width shall connect each bicycle parking facility to the building entrance.

C. Bicycle Parking Spaces. The bicycle parking standards in Table 17.56.130A below shall apply to the listed uses and installation of bicycle parking spaces shall be in conjunction with the installation of required new or additional vehicle parking improvements.

Table 17.56.130A

A. Residential:	
1. Single-, two-, and three-family dwelling	0
Multiple-family dwelling containing four or more dwelling units	2 spaces per 4 dwelling units

B. Commercial-Residential:	
1. Recreational vehicle park	1 space per 5 recreational vehicle spaces
2. Hotel or motel	1 space per 5 guest rooms
C. Institutions:	
1. Welfare or correctional institution, convalescent hospital, nursing home, rest home, sanitarium or similar institution	2 spaces per use or 1 space per 10 vehicle spaces, whichever is greater
2. Hospital	
D. Places of public assembly:	
1. Place of worship, auditorium, gymnasium, community center or other place of public assembly	2 spaces per use or 1 space per 10 vehicle spaces, whichever is greater
2. Library, reading room, museum, art gallery	
3. Preschool nursery, day nursery or kindergarten	2 spaces per use or 1 space per 10 vehicle spaces, whichever is greater
4. Elementary or junior high school and equivalent private or parochial school	4 spaces per classroom
5. High school	4 spaces per classroom
6. College, university, institution of higher learning and equivalent parochial school	2 spaces per use or 1 space per 10 vehicle spaces, whichever is greater

E. Commercial amusement:	
1. Amusement park	2 spaces per primary use or 1 per 5 vehicle spaces, whichever is greater
2. Billiard and pool halls	
3. Bowling alley	
4. Dance hall	
5. Golf course (9- and 18-hole)	
6. Golf driving range	
7. Miniature golf	
8. Indoor arena or theater	
9. Moorage (boat)	
10. Skating rink	
11. Stadium	
12. Swimming pool	
13. Tennis and racquet court	
F. Commercial:	
1. Store, supermarket, and department store	2 spaces per primary use or 1 per 5 vehicle spaces, whichever is greater
2. Retail store handling bulky merchandise such as automobiles, furniture and large appliances	

3. Service or repair shop	
4. Bank or office (except medical and dental)	
5. Medical and dental clinic	
6. Restaurant, tavern or bar	
7. Mortuary	
G. Industrial:	
1. Manufacturing uses	2 spaces per primary use or 1 per 10 vehicle spaces, whichever is greater
2. Storage warehouse, trucking freight terminals	
3. Wholesale establishment	
H. Other uses: Other uses not specifically listed above shall provide parking as required by the community development director. In determining the off-street parking requirements for said uses, the community development director shall use the above requirements as a general guide.	

D. Dimensions. Each bicycle parking space shall be at least two feet by six feet with a vertical clearance of six feet.

E. Security. Bicycle parking facilities shall be either a lockable enclosure for storing bicycles or a stationary object (i.e., a "rack,") to which the bicycle can be locked. Structures that require a user-supplied lock shall accommodate both cables and U-shaped locks and shall permit securing of the frame and both wheels (removing the front wheel may be necessary).

F. Covered Employee Bike Parking. Bicycle parking that is provided for employees shall have shelter (i.e., covered from the weather), or employees shall have access to a secure room within a building for bicycle parking.

Commentary #10: A definition has been added a for access way under the commercial design standards definitions section. (See Recommendation 13a in Attachment A.)

Chapter 17.74
COMMERCIAL DESIGN STANDARDS

17.74.005 Definitions.

"Accessibility" means the locational and design characteristics of a use, structure, or facility that permit it to be reached by one with a disability, as prescribed under the Americans with Disabilities Act and associated building codes and guidelines.

<u>"Access way" means a pedestrian or bicycle connection between two rights-of-way, or to achieve other connectivity needs as determined by the planning commission. An access way conforms to city standards and is in either an off-street public right-of-way or a public access easement on private property.</u>

"Alcove" means a recessed section of a building's exterior wall; may provide weather protection, outdoor seating or other pedestrian amenities.

Commentary #11: Specific language added to public notice requirements ensures that ODOT and other public agencies receive notice. (See Recommendation 4 in Attachment A.)

Chapter 17.76
ADMINISTRATIVE PROVISIONS

17.76.020 Public notice.

A. Content of Mailed and Published Notice…

B. Mailed Notice…

C. Published Notice…

D. Change in Nature of Decision…

E. Notice of Zone Change or Limitation or Prohibition of Use…

F. At least 30 days prior to the amendment of the comprehensive plan or this title pursuant to a requirement of periodic review of the comprehensive plan…

G. Notice to ODOT and other public agencies. The city shall provide written notice to ODOT and other public agencies in accordance with LCMC 12.28.200(D).

Commentary #12: Clarifying language that plan and land use regulation amendments be consistent with TPR Section -0060 has been added to LCMC 17.88. (See Recommendation 11 in Attachment A.)

Chapter 17.88
AMENDMENTS

17.88.050 Action by the city council.

A. Hearing Before City Council.

[…]

D. Findings of Fact. In order for the city council to adopt an ordinance for an amendment to this title, comprehensive plan document and/or map, it must make and adopt findings ~~must be made~~, ~~and adopted~~ as a part of said ordinance, that are adequate to support the amendment proposal. The findings must be factual and must be supported by substantial evidence submitted into the record. It must be found that the amendment complies with and conforms to the comprehensive plan goals, policies and land use map. For plan and land use regulation amendments, proposals must be consistent with provisions in the Oregon Transportation Planning Rule, OAR 660-012-0060. ~~It may be further necessary to provide evidence that the proposed amendment is in conformance with statewide land use planning goals and policies w~~When statewide goals provide a more specific direction than is provided by the goals in the comprehensive plan, the findings must provide evidence that the proposed amendment is in conformance with statewide land use planning goals and policies. Specifically, for plan and land use regulation amendments, the council must find that proposals are consistent with provisions in the Oregon Transportation Planning Rule, OAR 660-012-0060.

Attachment A – Code Amendment Recommendations (From July 7, 2014 Memorandum)

Table A-1: Summary of Recommended Lincoln City Municipal Code Amendments

	Recommendations for Amending the Municipal Code	Commentary
1	Add transportation uses specified in the TPR (e.g., climbing/passing lanes within existing right-of-way, reconstruction or modification of public roads and highways that does not involve removal or displacement of buildings, minor improvement of existing transportation related facilities) as outright permitted uses in the base zones in LCMC 17.16-17.45.	• TPR Section -0045(1)(a) Transportation Facilities, Services, and Improvements Permitted
2	Refer to access management standards for local streets in the TSP in the vehicle access section in the code (LCMC 12.28.200).	• TPR Section -0045(2)(a) Access Control Measures
3a, b	• Expand traffic study requirements in LCMC 12.28.200(E) to include applicability and approval criteria provisions. • Refer to mobility/performance standards for local streets in the TSP in the new approval criteria provisions in traffic study requirements (LCMC 12.28.200(E)).	• TPR Section -0045(2)(b) Standards to Protect Transportation Facilities • Discussion at Project Management Team Meeting #5
4	Add a reference to existing notice requirements in the vehicle access section (LCMC 12.28.200(D)) to public	• TPR Section -0045(2)(f)

	Recommendations for Amending the Municipal Code	Commentary
	notice and administrative provisions in LCMC 17.76.020.	Coordination with Transportation Facility and Service Providers • Consistency within code
5	Add bicycle parking requirements (e.g., number of spaces, parking location and design) to LCMC Chapter 17.56 for all uses except for single-family housing based on model code in the Lincoln City Walking and Biking Plan and Model Development Code for Small Cities, 3rd Edition.	• TPR Section -0045(3)(a) Bicycle Parking • Recommendations from 2012 Lincoln City Walking and Biking Plan
6a, b, c	• Add pedestrian access/circulation requirements for uses other than commercial (e.g., multi-family residential, institutional) in site development requirements (LCMC 17.52.240). • Add requirements for connections generally to adjacent sites, to transit stops, or through parking lots for multi-family residential, commercial, and institutional uses in site development requirements (LCMC 17.52.240). • Make provisions for pedestrian accessways in subdivisions required instead of discretionary (LCMC 16.12.200).	• TPR Section -0045(3)(b) Pedestrian and Bicycle On-Site Circulation and Connections • Recommendations from 2012 Lincoln City Walking and Biking Plan • Discussion at Project Management Team Meeting #5
7	Amend public infrastructure improvement requirements (LCMC 17.52.230) to require transit amenities (or easements/dedications for amenities) in coordination with Lincoln County Transit or other applicable transit agencies.	• TPR Section -0045(4)(b) Transit Connections and Amenities
8	Add preferential carpool and vanpool parking provisions to parking lot development standards in LCMC 17.56.110; they could apply to parking lots over a specified size or number of parking spaces.	• TPR Section -0045(4)(d) Carpool/Vanpool Parking

	Recommendations for Amending the Municipal Code	Commentary
9	Allow transit-related uses in off-street parking areas (LCMC 17.56.080) that can accommodate them and still meet minimum parking requirements.	• TPR Section -0045(4)(e) Transit-Related Uses in Parking Areas
10	Omit the street standards in the subdivision ordinance (LCMC 16.16.020 and LCMC 16.16.030). In their place refer to or substitute local street design standards in the TSP. Refer to the TSP's local street design standards in the public infrastructure improvement standards in zoning code section LCMC 17.52.230(A). Establish private street standards in the subdivision ordinance and	• TPR Section -0045(7) Street Design Standards • Recommendations from 2012 Lincoln City Walking and Biking Plan • Discussion at Project Management Team Meeting #5
11	Add a requirement in the findings section for plan and land use regulation amendments (LCMC 17.88.50(D)) that amendments be consistent with TPR Section -0060.	• TPR Section -0060 Plan and Land Use Regulation Amendments
12	Replace deferred improvement agreements with fee in lieu provisions in public infrastructure improvement requirements in LCMC 17.52.230.	• Discussion at Project Management Team Meeting #5
13 a, b	• Add a definition for access way in the general definitions and commercial design standards definitions sections in Title 17 (LCMC 17.08.010 and LCMC 17.74.005). • Add a definition for shared streets and shared-use paths in the general definitions in Title 17 (LCMC 17.08.010), in coordination with the TSP.	• Consistency within the code and between the code and the TSP • City comments (Basecamp, July 22, 2014)

(This page intentionally left blank)

Section P

Traffic Calming Toolbox

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

Traffic Calming

Chicanes reduce vehicle speeds by creating a winding street pattern. These are typically appropriate on low volume streets.


Source: upload.wikimedia.org


Source: alexandriava.gov

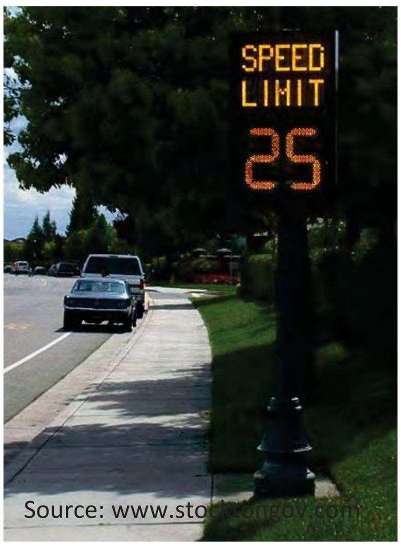
Chokers reduce the roadway width through curb extensions. These are typically appropriate on low volume streets with on-street parking.

Raised Crosswalks act as speed humps by vertically deflecting vehicles. These are typically appropriate at midblock pedestrian crossings. This treatment can be found on SW Jetty Avenue in Cutler.


Source: google.com

Raised Intersections are intersections elevated to the curb height, thus vertically deflecting vehicles as they approach intersection crosswalks.

Source: www.paolionthemove.org



Source: www.stocktongov.com

Speed Feedback Signs are roadside signs that read vehicle speeds and present the approaching motorist with a message. Messages can tell a motorist how fast he/she is driving, the speed limit, to slow down, or other programmable messages. These signs can be effective on higher speed roadways where horizontal and vertical deflection is not an appropriate measure.

Speed Humps are highly effective at slowing motorists. However, consideration should be given to driver discomfort. Speed humps are not appropriate along common routes for emergency vehicles.

Speed Tables are flat and longer than speed humps. While they are not as effective at slowing motorists, they are more comfortable to drive over.


Source: www.enterpriseflasher.com

Stop Signs can be used at intersections to break up long stretches of unimpedied roadway, effectively slowing motorists and discouraging through-traffic on local roadways.

Street Closures reduce traffic volumes on local roadways by placing a physical barrier across the roadway, effectively preveneting through-travel . Barriers should be designed to allow for pedestrian and bicycle travel. Street closures can be designed to allow for emergency through-travel.

Source: google.com

Source: austin.metblogs.com

Traffic Circles are raised, circular islands placed in the center of an intersection. Careful consideration must be given when choosing this device as this it may require more space than is available at the existing intersection, and it can be difficult for larger vehicles to maneuver around it.

(This page intentionally left blank)

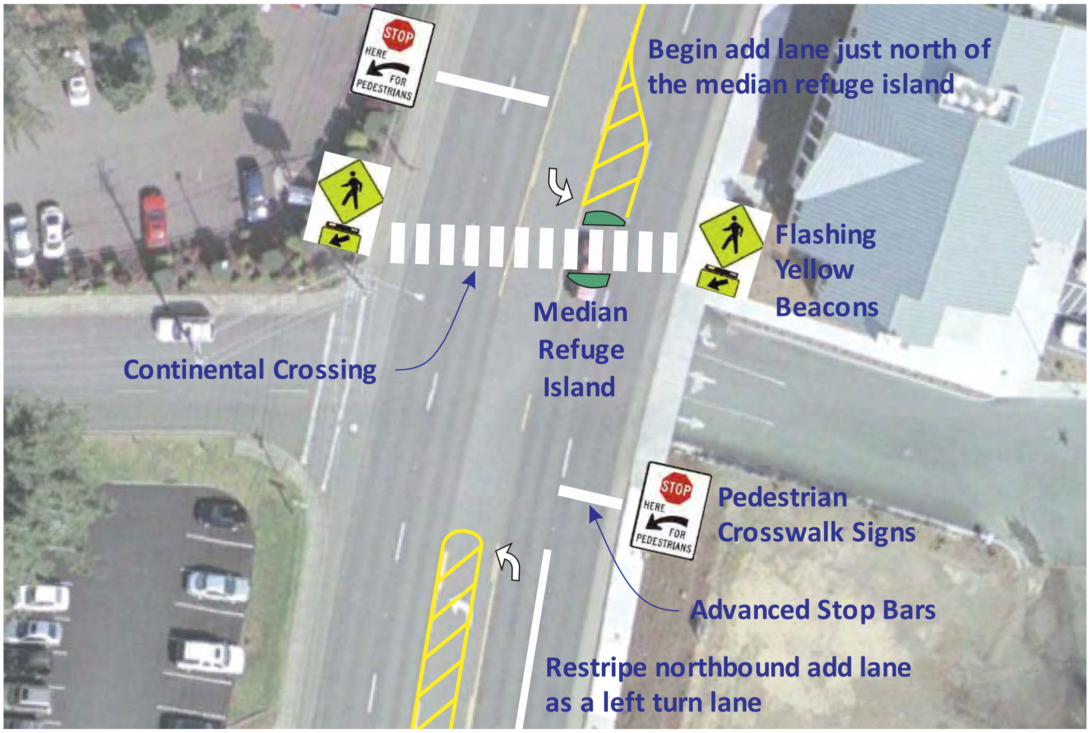
Section Q

US 101 Crossing Project Details

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

Street Crossings

Project C1. New Crossing Between NW 39th Street and NW 36th Street



Closest alternative crossings:

- NW Logan Road – signalized, 650 feet to the north.
- Mid-block crossing between NW 34th Street and NW 33rd Street – flashing yellow beacon and median refuge island, 1,125 feet to the south.

Recommendations:

- Begin the 2nd northbound travel lane just north of NW 39th Street. Absorb the 2nd northbound lane south of NW 39th Street into the two-way left-turn lane. Just would allow for both pedestrian and southbound left turning refuge. This could impact northbound queuing at the NW Logan Road intersection.
- Continental crosswalk markings.
- Pedestrian-activated flashing yellow beacons.
- Pedestrian crosswalk signs.
- Advanced stop bars.
- Advanced flashing yellow beacons and warning signs may be needed due to the curvature of the highway.

Project C2. Enhance Existing Mid-Block Crossings at NW 18th Street and NW 16th Street

NW 18th Street (NW 16th Street not shown)

Closest alternative crossings:

- NW 21st Street – unsignalized with median refuge island, 825 feet to the north of NW 18th Street.
- NW 17th Street – signalized, 175 feet to the south of NW 18th Street and 200 feet to the north of NW 16th Street.
- NW 15th Street – unsignalized, 225 feet to the south of NW 16th Street.

Recommendations:

- Expand no-parking zones to extend from the crosswalk to the advanced stop bars (this would extend the no-parking zones from 20 feet to 30 feet).
- Consider pedestrian crossing signs at stop bars if they can be clearly seen by motorists, and would not block the existing crossing signs at the crossing.

Project C3. Enhance Existing Marked Crossings from NW 15th Street Through NE 11th Street

NW 15th Street

NE 11th Street

There are currently marked unsignalized crosswalks at NW 15th Street, NW 13th Street, NW 12th Street, and NE 11th Street. Signalized crosswalks are provided at NW 14th Street.

Closest alternative crossings to this segment of highway:

- NW 16th Street – unsignalized, 225 feet to the north.
- NW 6th Drive – signalized, 850 feet to the south.

Recommendations:

- Expand no-parking zones around NW 15th Street and NW 13th Street to extend from the crosswalk to the advanced stop bars (this would extend the no-parking zones from 20 feet to 30 feet).
- Median refuge island on north approach of the intersection with NE 11th Street, aligning with existing crosswalk (southbound left turn traffic could no longer use the center left turn lane and would need to use the turn lane at NE 12th Street or NE 10th Street).
- Pedestrian crosswalk signs at stop bars.
- A PAC member expressed concern regarding the angled crossing. The east wheelchair ramp is slightly north of the intersection, likely due to the location of the storm drain. The west wheelchair ramp is at the intersection, as preferred. Overall, straightening the crossing would not provide a clear safety benefit due to driver expectancy of pedestrian crossings.

Project C4. Enhance Existing Marked Crossing at SE 3rd Street

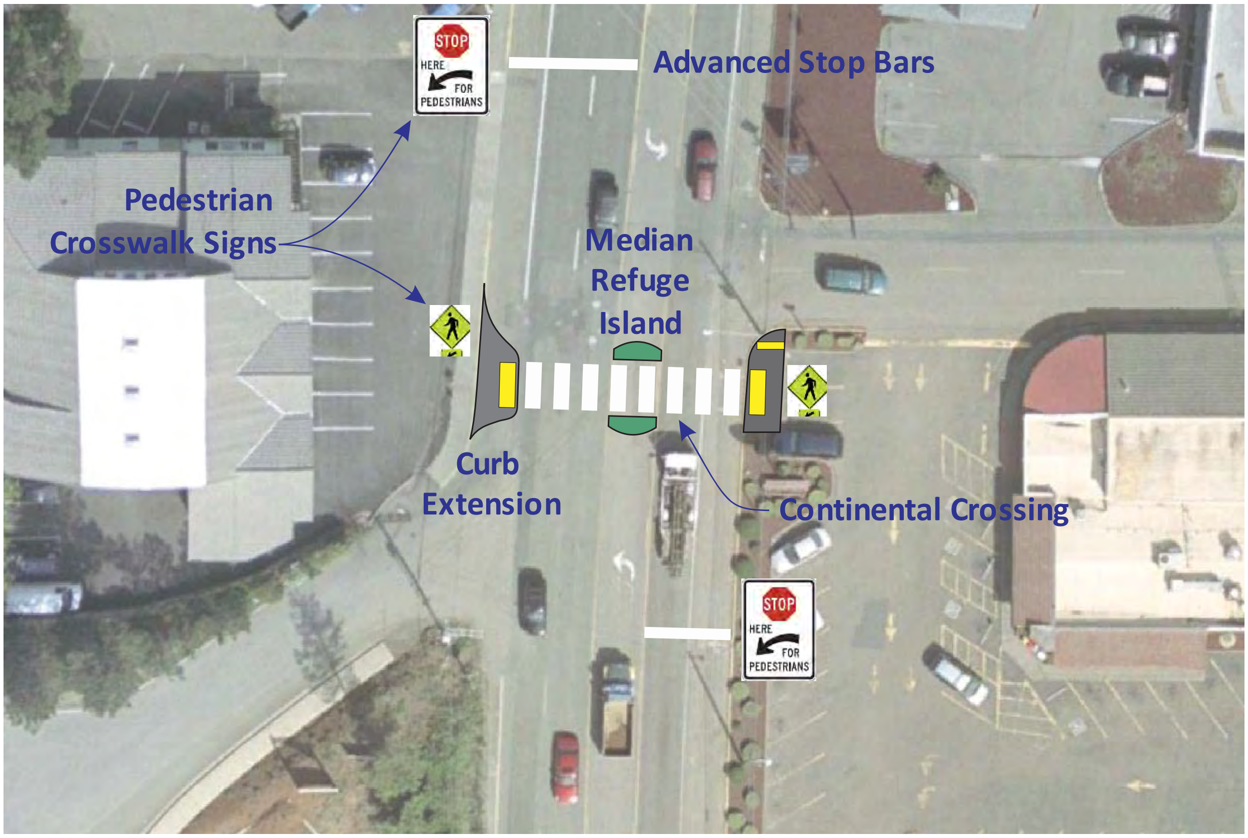
Closest alternative crossings:

- SE 1st Street – signalized, 825 feet to the north.
- City Hall/Library – signalized, 1,400 feet to the south.

Recommendations:

- Rectangular Rapid Flashing Beacons at the existing SE 3rd Street crossing.
- Pedestrian crosswalk signs at stop bars.

Project C5. New Crossing at SW Bard Road/SE 19th Street



Closest alternative crossings:

- SE East Devils Lake Road – signalized, 1,625 feet to the north.
- Planned crossing at SW 29th Street - unsignalized with median refuge island, 3,400 feet to the south (part of upcoming ODOT project currently under design).

Recommendations:

- Median refuge island between SW Bard Road and SE 19th Street (this may require restricting the left turn movement out of SW Bard Road, with vehicles required to detour north up SW Harbor Avenue).
- Construct curb extension on west side of US 101 at north corner of SW Bard Street (uses space currently striped as shoulder and likely used as de facto right turn lane).
- Continental crosswalk markings.
- Pedestrian crosswalk signs.
- Advanced stop bars.
- A PAC member expressed concern regarding motorists speeding for position for the southbound lane drop, and suggested moving the crossing north. However, moving the crossing north would impact the southbound left movement, which is a high demand movement, and it would locate the crossing far from SW Bard Road. If this conflict is an issue, the lane drop could be move north of the crossing.

Project C6. New Crossing at SE High School Drive

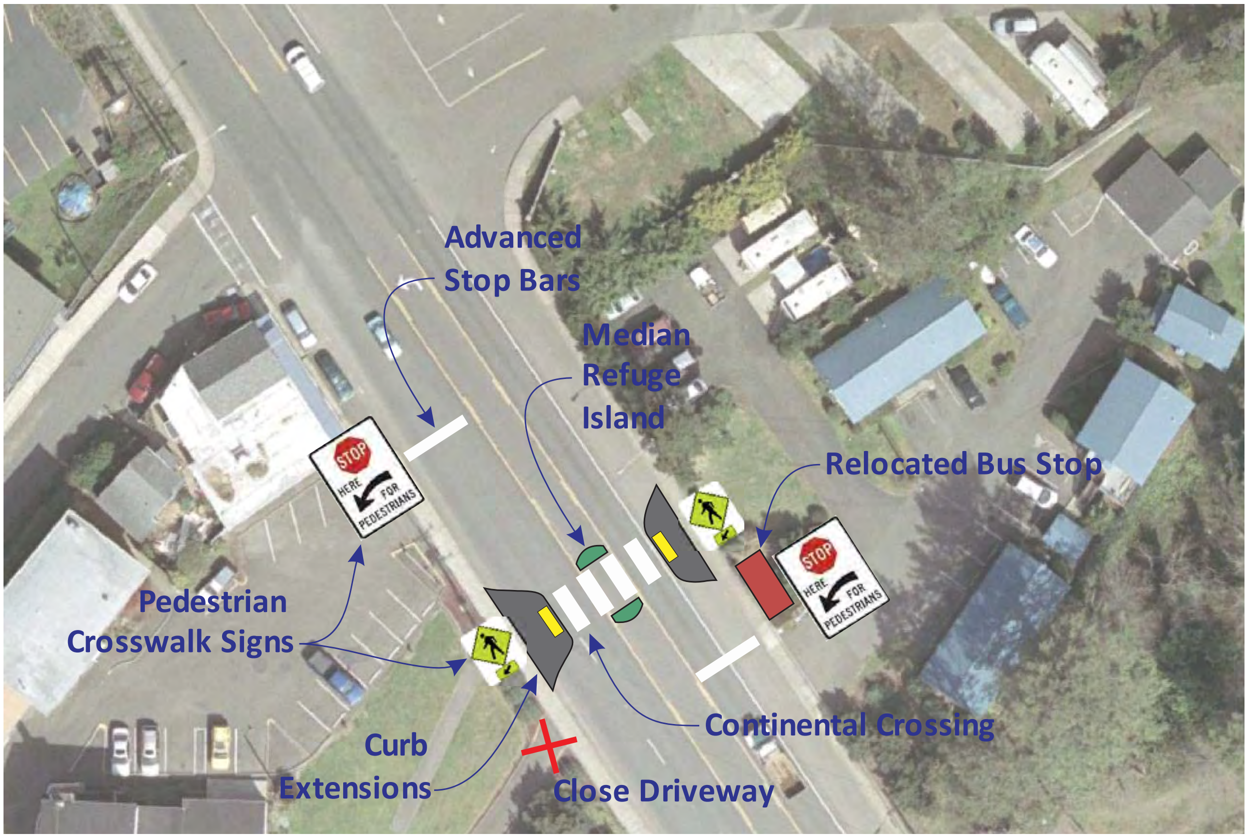
Closest alternative crossings:

- Planned crossing at SW 32nd Street – new traffic signal, 1,575 feet to the north (part of upcoming ODOT project currently under design)
- SE 48th Street – signalized, 4,100 feet to the south

Recommendations:

- Median refuge island, mid-block south of SE High School Drive and north of the next driveways.
- Continental crosswalk markings.
- Pedestrian crosswalk signs.
- Advanced stop bars.
- The PAC agreed that a crossing improvement is not needed at this location.

Project C7. New Crossing at between SW Beach Avenue and SW Coast Avenue



Closest alternative crossings:

- Planned crossing at SW 32nd Street – new traffic signal, 3,650 feet to the north (part of upcoming ODOT project currently under design)
- SE 48th Street – signalized, 2,050 feet to the south

Recommendations:

- Median refuge island, mid-block south of SW Beach Avenue and north of SW Coast Avenue.
- Narrow the crossing distance by pushing the added southbound travel lane further south and constructing curb extensions.
- Continental crosswalk markings.
- Pedestrian crosswalk signs.
- An advanced stop bar for the northbound approach.
- Relocate the existing bus stop approximately 100 feet north to align with the proposed crossing.

Project C8. New Crossing at the Fire Signal

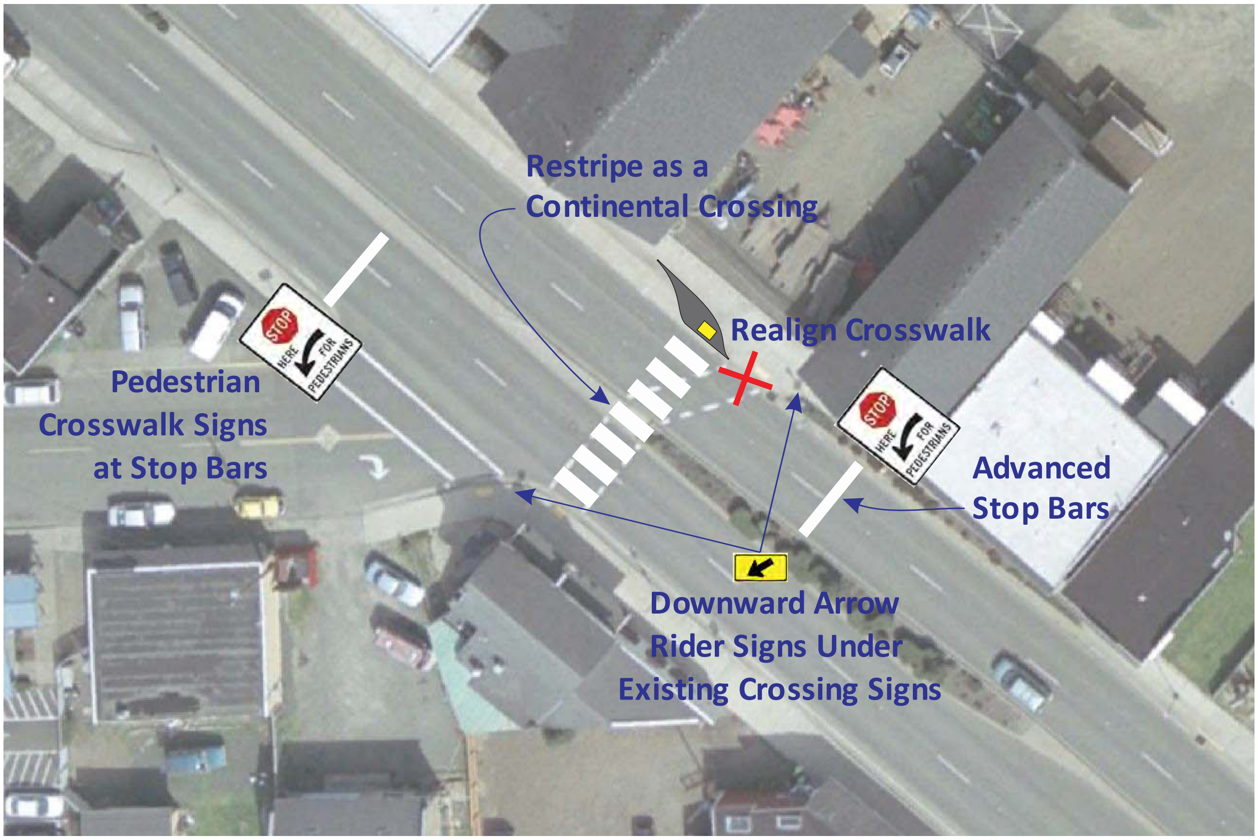
Closest alternative crossings:

- SW Coast Avenue – proposed crossing, 930 feet to the north
- SE 48th Street – signalized, 1,140 feet to the south

Recommendations:

- Install pedestrian push buttons to activate the fire signal. This would include installation of pedestrian signal heads.
- Wheelchair ramps.
- Continental crosswalk markings.
- Pedestrian crosswalk signs.
- Relocation of the stop bar nearest to the crossing.
- Pedestrian crosswalk signs.

Project C9. Enhance Existing Marked Crossing at SW 50th Street



Closest alternative crossings:

- SW 48th Street – signalized, 500 feet to the north
- SW 51st Street – signalized, 300 feet to the south

Recommendations:

- Change crosswalk striping to continental markings.
- Consider straightening the crossing to avoid confusion for the vision impaired (will require minor shortening of bus pullout on east side).
- Advanced stop bar in northbound direction (explore options to include advanced stop bar in southbound direction without conflicting with SW 51st Street intersection approach).
- Pedestrian crosswalk signs at stop bars.
- Install downward arrow rider signs under existing pedestrian crossing warning signs. Relocate the existing northbound crossing sign near the relocated wheelchair ramp if the crossing is straightened.

(This page intentionally left blank)

Section R

Public Involvement Summary

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

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

MEMORANDUM

DATE: November 6, 2012

TO: Lincoln City TSP Project Management Team

FROM: John Bosket, P.E.

SUBJECT: **Lincoln City Transportation System Plan**
Public and Stakeholder Involvement Strategy P11086-010

Lincoln City has recognized that citizen involvement is necessary in making wise and legitimate land use decisions through its Comprehensive Plan. The following strategy reflects the City's Comprehensive Plan policies regarding citizen involvement and provides specific actions for engaging citizens and stakeholders in the Transportation System Plan (TSP) development process.

The city will involve the public and stakeholders primarily through a series of committee meetings, public open houses, and work sessions with elected officials, in addition to the distribution of project information through a variety of media, including a project website. The following describes each of these outreach mechanisms and a milestone schedule showing the public process is attached.

Advisory Committees

A technical advisory committee and a project advisory committee will inform and guide the plan. All committee meetings will be at city hall.

Technical Advisory Committee (TAC) – The primary function of the TAC will be to review drafts and provide comments on technical and regulatory issues. This committee will consist of representatives from affected agencies and service providers, including staff from the Lincoln City planning and public works departments, Lincoln County, Lincoln County Transit, Lincoln City Police Department, Lincoln City Fire and Rescue, the Department of Land Conservation and Development, the Oregon Department of Transportation, and others.

The TAC will meet three times. In the first meeting, the TAC will review and discuss existing and future transportation conditions. In the second meeting, the TAC will review and discuss potential transportation solutions. The TAC in its final meeting will meet with the project advisory committee to review and discuss the draft TSP prior to beginning the public hearings process. The city will not advertise the TAC meetings for public attendance.

Project Advisory Committee (PAC) - The primary function of the PAC is to provide recommendations for the project, acting as community representatives. The city has invited PAC members participating in the Lincoln City Walking and Biking Plan to participate as PAC members for the TSP Project. They represent a wide array of interests, including: County Health and Human Services, Samaritan North Lincoln Hospital, Confederated Tribes of Siletz Indians, neighborhood associations, advocates of pedestrian and bicycle travel, school district representatives, merchants associations, a liaison to the Hispanic community and a representative for persons with disabilities.

The PAC will meet five times. The first meeting will provide a project orientation and begin the discussion of the vision, goals, and policies that best describe how the transportation system should be developed and managed in Lincoln City. The second meeting will be a review and discussion of existing and future transportation conditions. In the third meeting, the PAC will develop evaluation criteria from the vision, goals, and policies. The fourth meeting will be a review and discussion of potential transportation solutions. The final meeting, a joint meeting with the Technical Advisory Committee, will be a review and discussion of the draft TSP prior to beginning the public hearings process.

PAC meetings will welcome public attendance; however, non-PAC members must hold questions and comments until a designated period at the end of the meeting.

Advertisement of meetings will be through the project website, the city's website, and media notices in the local newspaper. The city may supplement advertising through a Facebook site, the local radio station, and posters/flyers displayed in public areas or at other community events (e.g., farmers market).

Public Open Houses

The city will hold three public open houses during the project. The first will introduce the TSP project and obtain input regarding existing and future transportation needs and interests, as well as key areas of interest for inclusion in the vision, goals, and policies. The second open house will obtain input on potential solutions to address transportation needs. The final open house (prior to beginning the public hearings process) will present the draft TSP.

Advertisement of public open houses will be through a project website, the City's website, and media notices in the local newspaper. The city may supplement advertising through its Facebook site, the local radio station, and posters/flyers displayed in public areas or at other community events (e.g., farmers market).

Elected Officials Workshops and Briefings

The city councilors and planning commissioners of Lincoln City will engage in the TSP development process through a series of four joint work sessions and three City Council update briefings. The initial joint work session on October 2, 2012, offered an orientation and opportunity for officials to offer direction. The other joint work sessions, at the same milestones as for the TAC meetings, will gain input on: 1) existing/future conditions and the vision, goals, and policies, 2) potential transportation solutions, and 3) the draft TSP. City council update briefings will follow each of the three public open houses to share public input offered at each project milestone.

Engaging Seniors, Non-English Speakers, and Low Income Populations

As part of the outreach to engage citizens and stakeholders in the TSP project, the city will make special efforts to involve minority and low income groups within the city.

According to the 2010 Census, nearly 84% of the population of Lincoln City is White and more than 13% of the population is of Hispanic or Latino origin. American Indian and Alaskan Native persons comprise 3.5% of the population. Given the considerable size of the Hispanic or Latino community in Lincoln City, written materials and translation service will be made available in Spanish upon request. In addition, the city will post project advertisements in locations where Hispanic or Latino community members are likely to see them.

To assist those that cannot drive, public meetings will be at city hall or at other locations in close proximity to transit. The city will provide downloadable materials on the project website. Hard copies of project documents will be available in the city's Driftwood Public Library for those without internet access.

To help engage senior citizens, the city will post project advertisements in locations where seniors will be likely to see them. Such locations may include drugstores, grocery stores, the Senior Center, and retirement and assisted living communities.

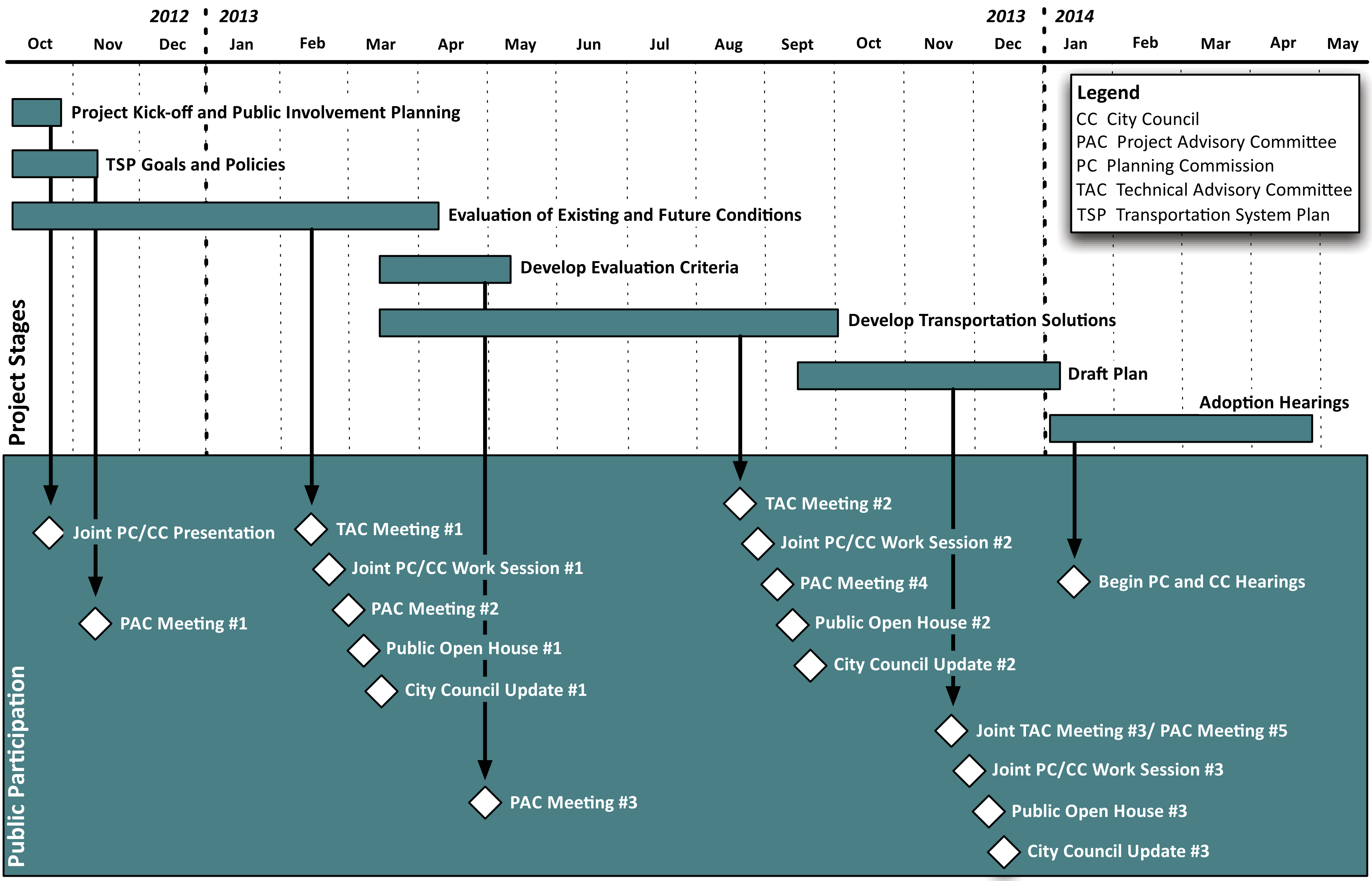
Distribution and Review of Work Products

The city will email project work products directly to TAC and PAC members, and post them to the project website for access by the general public. TAC and PAC members will be able to comment directly through regular committee meetings. The general public will be able to comment during the public comment period at the end of PAC meetings, at public open houses, and through the project website. The project website will facilitate public input by including a comment mapping feature. The project team will review comments input through the website and include them as part of the project record of public comments.

Lincoln City
Transportation System Plan

Project Milestone Schedule

Updated Nov. 5, 2012



LINCOLN CITY TRANSPORTATION SYSTEM PLAN TECHNICAL ADVISORY COMMITTEE (TAC) MEETING #1 SUMMARY

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

Date: Thursday, June 20, 2013

Time: 2:00 PM to 4:00 PM

Location: City Hall 801 SW Highway 101

Purpose: The purpose of this meeting is to provide a brief introduction to the project and review and discuss existing and future baseline transportation conditions in Lincoln City (Technical Memoranda #6, #7, and #8). An overview of key findings will be provided and the consultant will lead a discussion of potential options for addressing transportation needs. A new draft of the TSP vision, goals, and objectives (Technical Memorandum #5) has been developed based on PAC input and will be briefly discussed.

I. Sign-in, Introductions, and Agenda Overview

The project team introduced the project schedule to the Technical Advisory Committee (TAC) and noted that the next TAC meeting would likely be in late August or early September. The TAC was asked if they would prefer doing joint meetings with the Project Advisory Committee (PAC) in the future. Overall, the TAC felt it would help stimulate the conversations and felt it would be a good idea.

II. Project/Process Introduction

The project team gave a brief overview of the project to the TAC. Most TAC members noted they were familiar with the Transportation System Plan update process.

III. Revised Transportation Vision, Goals, and Objectives

The following draft vision statement was presented to the TAC. It was developed from input provided at the first PAC meeting:

> *All transportation modes flow smoothly and safely to and throughout the city, meeting the needs of residents, businesses, visitors, and people of all physical and financial conditions. Connectivity is improved to support travel within and between the pearls, where mixed-use development is complemented by enhanced walking and biking environments. Environmental resources are protected, right of way is used wisely, and healthy lifestyles are promoted.*

The following goals were also developed from input at the November 13th PAC meeting.

- Goal 1: Provide for efficient motor vehicle travel to and through the city.
- Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.
- Goal 3: Provide transit service and amenities that encourage a higher level of ridership.

- Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.
- Goal 5: Enhance the health and safety of residents.
- Goal 6: Foster a sustainable transportation system.
- Goal 7: Ensure the transportation system supports a prosperous and competitive economy.
- Goal 8: Coordinate with local and state agencies and transportation plans.

The project team noted that the goals are not in order of priority and are intended to provide direction for the development of transportation system solutions.

The TAC wanted to ensure tsunami was included as an objective under one of the goals. The project team noted it was an objective under Goal 5. The TAC questioned where a north to south arterial route adjacent to US 101 would be. The project team suggested that it would be disconnected, with the Nelscott area, D River Bridge, and Schooner Creek Bridges as limitations to the connection. The TAC questioned how specific street extensions would get. The project team noted the potential alignment wouldn't be property specific unless the corridor was constrained.

IV. Existing and Future Baseline Transportation Conditions

The project team went over existing and future baseline (2035) transportation conditions. The city's population is currently 8,000, with up to 20,000 additional tourists visiting the city during the summer. Those 65 and older make up more than 20 percent of the population, while most residents (72 percent) commute to work via single occupant vehicles.

Today, the highest walking and biking activity generally occurs near beach access and shopping. Typically more walking activity than biking occurs in the city. Transit service is provided via the OXO Connector accessing NW Oregon, Rose Lodge to Newport, LINC IntraCity Loop and Dial-a-Ride Service. Few north-to-south driving alternatives exist to US 101, which varies from 2 to 5 lanes through the city.

The TAC noted that bike riding seems low compared to similar sized cities in Oregon. They also noted that working hours vary by person, so limited transit frequency makes transit inconvenient. It is not flexible enough for most workers, with driving generally being a shorter trip than transit.

The TAC questioned how flooding on East Devils Lake Road impacts US 101. A TAC member noted that a planned project for the County will raise the street 6 inches, with another long-term (unfunded) solution to raise the street 3 to 4 feet to mitigate some of the flooding impacts. The TAC was concerned about the flooding since this route provides the only northern bypass to US 101, and only additional highway alternative route if the D-River Bridge is lost.

A TAC member noted that the Casino has a bus route that was not identified. They also noted that the North by NW connector was missing from the existing inventory in Technical memorandum #6.

Most pedestrian and bicycle crashes occur along US 101, with 5 pedestrians hit between NW 18th to NW 15th and 3 bicyclists hit between NW 40th and NW 39th. Three pedestrian fatalities and 1 bicycle fatality have occurred since 2007.

The TAC noted that the high collision location near Logan Road has a median opening. The TAC noted that biking is the city is dangerous, and that there are generally no safe biking areas. The terrain is also a challenge.

Household growth through 2035 is expected to be highest at the north end of the city, near Roads End. Employment growth through 2035 is expected to be highest near the Casino and at the south end of the city near Taft. During the summer peaks of 2035, 6 signalized intersections and 7 unsignalized intersections will experience long delays. Peak congestion will spread over multiple hours. On average weekday peaks in 2035, 2 signalized intersections and 3 unsignalized intersections will experience long delays. New growth areas will be underserved by transit in 2035, including the Roads End area. Many sidewalk and bike lane gaps will also exist in 2035.

The TAC noted that transportation solutions should not be limited to areas within the city. System management solutions near Highway 18 could optimize travel to and through Lincoln City.

The TAC noted that visitors in vacation rentals do not know any other route besides US 101.The TAC questioned how the trip patterns were adjusted between these uses and full-time single family homes. The project team noted that local property management firms were contracted to help with the adjustments.

V. Discussion of types of potential solutions

The project team went over a toolbox of potential transportation solutions with TAC members. TAC members noted the following transportation solutions are needed:

- Improved frequency of the Lincoln City Loop
- Improved parking for bikes and vehicles
- Remote parking with a shuttle for special events
- Trolley service for tourists
- Traveler information for parking
- Comprehensive way-finding system
- Transit signal priority
- Shared streets for walking and biking with pavement markings
- Note deficiencies in TSP for critical link bridges

The TAC noted that the city should consider funding a Trolley some other way besides through tax payers. The TAC suggested having it funded by local hotels, motels and businesses. The TAC mentioned the Trolley will note help with transportation system congestion, but will make getting around the city more convenient.

VI. Next Steps/Adjourn

The project team will develop initial evaluation criteria to provide a point-based technical rating method that will be used to evaluate how well proposed design alternatives meet the measure of effectiveness criteria. The project team will also begin the process of identifying transportation solutions to address the identified system gaps and deficiencies. At our next meeting we will discuss the project evaluation criteria and initial transportation solutions. In the meantime, please visit the project website http://www.lincolncitytsp.org and provide comments on the draft project deliverables.

LINCOLN CITY TRANSPORTATION SYSTEM PLAN
TECHNICAL ADVISORY COMMITTEE (TAC) MEETING #2
SUMMARY

Date: Tuesday March 11, 2014

Time: 2:00 PM to 4:00 PM

Location: City Hall 801 SW US 101

Purpose: The purpose of this meeting was to discuss the draft Transportation Solutions Memorandum and the draft Finance Program Memorandum with the Technical Advisory Committee.

Attendees:

TAC Members	
Keith Kilian	Police Chief, Lincoln City Police Department,
Alison Robertson	Lincoln City Urban Renewal
Steve Hodge	Lincoln County
Stephanie Reid	Lincoln City City Engineer
Debra Martzahn	Lincoln City Senior Planner
Richard Townsend	Lincoln City Planning & Community Development Director
Lila Bradley	Lincoln City Public Works Director
Terry Cole	Oregon Department of Transportation
Consultant Team	
John Bosket	DKS Associates
Ben Fuller	DKS Associates
Other Attendees	
Dick Anderson	Mayor

I. Sign-In, Introductions, and Agenda Overview

Those in attendance introduced themselves, and John Bosket presented an overview of the meeting.

II. Project Status Update

John outlined the following project schedule with the TAC:

Draft Transportation Solutions Memorandum/Draft Finance Program Memorandum

- TAC #2 and PAC #4 (Today)
- Joint Planning Commission/City Council Work Session (April 29th)
- Open House #2 (May)
- City Council Update (May)

Draft TSP (May – July)

- TAC #3 and PAC #5 (July – August)
- Joint Planning Commission/City Council Work Session (July – August)
- Open House #3 (July – August)
- City Council Update (August – September)
- Adoption Hearings (September – November)

III. Financially Constrained Project Prioritization

John presented the projected revenues and expenditures over the next 20 years for the city, based on an average of the last five years of funding data. Over the next 20 years, it is expected that the city will have an additional $2.5 million to spend on transportation projects.

Steve Hodge asked, “What would expenditures need to be to keep the roads looking like they do today?” The projected expenditures in the memorandum do not assume that maintenance is such that road conditions stay the same through 20 years, but only that the same level of maintenance that has been applied over the last five years is continued. This discussion highlighted the fact that transportation facility deterioration rates are faster than current maintenance practices can keep up with and that road quality will likely decrease steadily over the next 20 years. Therefore, to maintain the current quality of the roads, it is likely that expenditures will need to increase. So the estimated $2.5 million available to spend on new projects could actually be much less if the city desires to increase maintenance expenditures in the future.

Stephanie Reid noted that the Deferred Improvement Agreements the city has been using for decades aren’t working because the city never collects later. The idea of not requiring frontage improvements right away when they wouldn’t connect to anything is good, but the approach to getting developer improvements later needs to change. A fee in lieu of improvements that is paid at the time of development may be a better way to go. The funds could be saved and applied to improvements within defined districts.

IV. Overview of Draft Transportation Solutions

The **priority projects** were presented and the follow items were discussed:

- Sidewalk is needed on US 101 east of Logan Road. In response to this comment, Terry Cole noted that a funded STIP project will be addressing this in the form of a shared-use path along the south side of the highway between Logan Road and NE East Devils Lake Road.
- The need for a crossing on US 101 at NW 39th Street was brought to question. It was confirmed that pedestrian activity validates this need. The Pig N Pancake and Walgreens to the east of the highway and residential neighborhood to the west generate ample pedestrian demand for the crossing. In addition, a Taco Bell may be built on the southeast corner, which would generate more demand.
- There is a need for improvements in Cutler, specifically bike and pedestrian improvements along US 101. The highway options address the need for these highway improvements.

- The proposed new connection between Logan Road and US 101 along the Sal-La-Sea alignment may generate enough demand to warrant a signal at the US 101/NE East Devils Lake Road intersection. The NE East Devils Lake Road realignment STIP project may purchase the house on the north side of the highway, which would help the new connection tie into the realigned intersection.
- The TGM planning project for the SE 23rd area should plan for the proposed north-south roadway connection paralleling US 101.

The TAC discussed the proposed **US 101 crossing improvements**. The following comments were made:

- Would the NW 39th crossing queue southbound traffic to the Logan intersection, and would it create further problems and driver frustration?
    - Drivers will not be happy having to stop for a Rectangular Rapid Flashing Beacon (RRFB) after getting through the congested Logan intersection.
    - Could the RRFB be interconnected with the Logan intersection? To interconnect the RRFB with the Logan traffic signal, the RRFB would likely need to be a HAWK signal.
    - The PAC has already expressed that they like the RRFB near the Starbucks, and want to keep the type of crossing control consistent throughout the city—they were not in favor of the HAWK idea at SE 3rd Street.
- A member of the TAC asked if an RRFB was considered at the Bard crossing. The project team considered an RRFB at Bard, but thought it was not necessary. ODOT is concerned about installing too many RRFB's as they may become less effective. However, the project description will be updated to consider a RRFB.
    - Could the Bard crossing be moved north? There is a project to build sidewalk and a bus shelter. The shelter will be about 50 – 75 feet north of the current stop location. A median refuge island at that location may block access to adjacent driveways and the left turn lane for SE 19th.
    - Could Bard be realigned to intersect the highway more perpendicularly, creating more separation from SE 19th?
- There was an old discussion about wanting a pedestrian crossing at SW 35th. The High School crossing may make sense as there are some topography issues at 35th.
- Does realigning the Taft crossing really provide a safety benefit to pedestrians? Isn't it better to have pedestrians looking at the oncoming traffic?
    - Pedestrians are currently cutting across anyway.
    - There really isn't data that suggests a benefit to how the crossing is now.
    - Straightening the crossing shortens the crossing distance, which decreases the time pedestrians are exposed to motor vehicles. A straight crossing is also a more predictable direction for pedestrians with vision impairment.

The TAC discussed the proposed **street standards** and had the following comments:

- People from the Sustainability Committee commented that they would prefer just a wide one-foot bike lane stripe versus the three-foot bike buffer.
- The TAC discussed what the minimum width of a local street should be. Local streets in Olivia Beach are very narrow. They can difficult or even impossible for emergency services to navigate. Overall, the local residents in Olivia Beach may like the street system; however, Debra has heard a complaint about the street width. The minimum width of local streets should be addressed by the city's code.

- Stephanie noted that maybe the code should also address half street improvements, as the city doesn't want improvements on just one side of a street. The Deferred Improvement Agreements they have been using don't work because they are never collected on. Should consider a fee in lieu of system instead.
- Stephanie thought that the city should consider a formal process for receiving traffic calming requests, like what was done for the City of Sandy.
- Stephanie also confirmed that the city should have mobility standards to have a way to gauge development impacts on the road network.
- The project team will look at Traffic Impact Analysis requirements in the implementation phase with Angelo Planning Group.

The TAC reviewed the **US 101 highway design options**. The following comments were made:

- If new sidewalk were constructed with pervious concrete, would ODOT still require the landscape strip? Lincoln City has been using pervious concrete recently with good results.
- The section of Logan to East Devils Lake Road may want to consider the STIP project as the "Baseline", rather than an option.
- There are major ADA issues in Delake, with frequent obstructions (like utility poles) in the sidewalk. Maybe the lane widths could be reduced to provide wider sidewalks to address these ADA issues? Other options include relocating existing utility poles, or replacing overhead utility lines with underground lines.
- There could be a third Cutler option where the east side is more of a rural improvement.
- In Cutler's vision plan, there is a recommended pedestrian crossing treatment by the coffee shop.

V. Next Steps/Adjourn

The project team will meet with the PAC this evening to present much of the same material. The project team will be meeting with the Planning Commission and City Council in April, and will host an open house in May as well. DKS will continue to revise the aspirational projects and US 101 highway options with input from the TAC, PAC, Planning Commission, City Council, and the public.

LINCOLN CITY TRANSPORTATION SYSTEM PLAN
PROJECT ADVISORY COMMITTEE (PAC) MEETING #1 SUMMARY

Date: Tuesday, November 13, 2012

Time: 5:30 PM to 7:30 PM

Location: City Hall 801 SW Highway 101

Purpose: The purpose of this meeting was to provide an orientation to the Transportation System Plan (TSP) project and to obtain input on the Vision, Goals, and Objectives for transportation in Lincoln City.

Attendees:

PAC Members	
Jim Taylor	Nelscott Neighborhood Association
Amy Ramsdell	Oregon Department of Transportation Region 2, Area 4 Manager
Wes Ryan	Lodging Industry and Lincoln County Transit
Sandy Pfaff	Lincoln City Visitor and Convention Bureau
Liz Bardon	Samaritan North Lincoln Hospital
Stephen Lewis	Blind Veterans Association
Dennis Gibson	ADA
Paul Robertson	Lincoln City Bicycle Advocacy Group
Carl Mosely	Citizen; Bicycle/Pedestrian Advocate
Robert Hunt	Citizen; Pedestrian Advocate
Ryan Green	Oregon Paralyzed Veterans of America
Pam Barlow Lind	Confederated Tribes of Siletz Indians, Planner
Project Team	
Stephanie Reid	Lincoln City City Engineer
Debra Martzahn	Lincoln City Senior Planner
Richard Townsend	Lincoln City Planning & Community Development Director
Terry Cole	Oregon Department of Transportation
John Bosket	DKS Associates
Ben Fuller	DKS Associates
Other Attendees	
Tarah Campi	Oregon Cascades West Council of Governments
Dick Anderson	Mayor of Lincoln City
Valerie Grigg Devis	Oregon Department of Transportation
Jeremy Ruark	The News Guard
Steven Bechard	Lincoln City Chief of Police

1. Sign-in, Agenda Overview, and Introductions

Stephanie Reid welcomed PAC members and asked attendees to introduce themselves. As part of the introductions, each PAC member was asked to explain who or what they are representing and what they think the ideal transportation system for Lincoln City would look like.

- **Jim Taylor:** All transportation modes would flow smoothly and safely to and through the city, meeting the needs of both visitors and residents (regardless of physical or financial situation); traffic congestion would no longer be an issue; the transportation system facilitates business and nonprofit organizations in the efforts to meet their customer needs and to remain viable; traffic heading to and from Lincoln City moves quickly along an improved Highway 18 even during summer/holiday seasons; US 101 would allow traffic to move freely and safely throughout the City; parking along/adjacent to US 101 would be plentiful and accessible, even for the physically challenged; public transportation would be readily available and affordable to all; separate bike lanes and sidewalks would allow pedestrians and cyclists to travel easily and safely; there would be safe crossing along US 101 throughout the City; improvements affecting bicyclists and pedestrians would have stemmed from the walking and bike plan; alternative routes to US 101 during peak traffic periods would be developed; the Nelscott strip and Anchor Avenue (aka Marview) continue to be the heart and soul of Nelscott and are easily and safely accessible from US 101; traffic calming devices would exist throughout the Nelscott Pearl; Nelscott has parking to meet the needs of residents, business, and visitors; area on east side of US 101 would be commercially viable.
- **Amy Ramsdell:** The Transportation System Plan would recognize today's needs and the future's needs to provide a safe and reliable system for all users off and on US 101; the Transportation System Plan would also be unique to Lincoln City, incorporating the String of Pearls concept.
- **Wes Ryan:** All modes would easily move through the city; interconnectivity between neighborhoods would be improved; more travel would reroute off of US 101, relieving congestion; substandard bridges (e.g., Schooner Creek Bridge) will be replaced/reinforced; East Devils Lake Road would be improved to serve as a better alternative route to US 101; connectivity would be improved to allow for efficient emergency response.
- **Sandy Pfaff:** There would be an easy way to get from one end of the city to the other; there would be a service like a trolley with frequent headways (e.g., 20 minutes) that would be fun (especially for summer) and free.
- **Liz Bardon:** The transportation system would support improving health by promoting active transportation through improving access to activity generators throughout the city; the transportation system would be safe, convenient, and would encourage all modes of transportation.
- **Stephen Lewis:** The city would install "chirpers" at signalized pedestrian crossings; issues of low-hanging branches would be addressed as they are dangerous for those with vision impairments; there would be a well-developed multi-use transit system that would encourage people to get out of their cars.

- **Dennis Gibson:** Issues of old sidewalks, bumps in the road, etc. that make travel difficult for those in wheelchairs would be addressed; the city would have a fully developed sidewalk system (on both sides of the highway from Logan to SW 51st St); the idea of a light rail system from Portland to Newport would be investigated and potentially implemented.
- **Paul Robertson:** The transportation system would safely serve all users, with particular interest in bicyclists and pedestrians; improvements would protect air/water/soil; improvements would use right-of-way wisely; a bike sharing program would be implemented.
- **Carl Moseley:** Problems unresolved by the Lincoln City Pedestrian and Bicycle Plan along US 101 would be addressed, including: conflicting expectations of what US 101 should look like (between Pearls, serving businesses and freight, etc.), difficulty with funding for US 101 enhancements; through and freight traffic would flow smoothly through the city; there would be commercial multi-family lodging centers in each Pearl just off of US 101 (this could free parking along US 101), with quiet areas just off the highway were residents would comfortably walk and bike.
- **Robert Hunt:** The bike and pedestrian plan would be melded with the Transportation System Plan. The Transportation System Plan would be "age friendly", considering all age groups (including children and elderly); "active transportation" would be promoted and enhanced.
- **Ryan Green:** Public transportation would be targeted towards all users (not just elderly or disabled), which would help make the transit system more sustainable; it would be safe and easy to use public transportation to get to all areas of the city; a well-developed door-to-door transit system would be in place.
- **Pam Barlow Lind:** There would be safe access to jobs and services within the tribal community, especially for pedestrians and bicyclists; regional linkages would be well developed; the city would be exploring renewable energy and be up-to-date with technology.

Other PAC members that could not attend submitted emails describing their interests and visions for Lincoln City transportation. These emails are attached at the end of the meeting summary.

Steven Bechard, Lincoln City Chief of Police, also offered his vision for transportation in the city: the City would leverage funding to develop a mass transportation program (e.g., a trolley that runs up and down US 101) that could haul bikes, wheelchairs, and people in an effort to remove them off the highway for both convenience and safety reasons.

II. Project Orientation

John Bosket presented the following to the PAC through a PowerPoint presentation:

What is a TSP and why are they important? The TSP is a long-range plan that establishes a system of transportation facilities to meet current and future needs. It is the transportation element of the comprehensive plan. The TSP is important because it provides direction for developing the city's transportation system, provides a basis for making better decisions about how to invest in the transportation system, coordinates state, county, and local planning, and makes the city more competitive for state and federal transportation funding.

What should TSPs include? The TSP must provide direction for future decisions. This is done through documented vision, goals, and policies that describe the values and priorities of the community, as well as through amendments to the city's municipal code to support action and enforcement.

The TSP must also include projects to expand and improve the existing transportation system for all modes of travel. In addition to projects that build new facilities, an array of tools should also be provided to help maximize the return on investments made in facilities you already have though better management practices (e.g., street connectivity requirements, neighborhood traffic management, street design standards, standards for mobility and driveway spacing that vary with the intended function of the street). Furthermore, the TSP should include a strategic approach to planning future investments that acknowledges fiscal constraints.

The Lincoln City TSP development process: The TSP development process includes the following project stages:

- Establishing an initial set of TSP Goals and Policies
- Evaluation of Existing and Future Conditions
- Develop Evaluation Criteria
- Develop Transportation Solutions
- Draft Plan
- Adoption Hearings

During this process, there will be a series of PAC meetings, public open houses, city council updates, and other meetings/work sessions. To stay informed of project progress and upcoming events, PAC members and citizens are encouraged to regularly check our project website at http://www.lincolncitytsp.org.

PAC roles and responsibilities: the PAC will serve as community representatives and will help to develop the city's Vision, Goals, and Objectives; identify system needs; develop solutions; and evaluate and prioritize solutions. Our goal is to have the TSP reflect Lincoln City's interests and have the PAC willing to endorse the plan before Planning Commission and City Council.

III. Transportation Vision, Goals, and Objectives

This part of the meeting focused on describing values, key areas of interest, and desired direction for transportation system development in the future. The project team will take the input gained from this discussion and use it to draft a vision and complimentary goals and objectives for the TSP. While the vision, goals, and objectives are subject to change throughout the project, they will be used to guide the development of the types of improvements the community would like to see and evaluate the plan to ensure it aligns with local interests.

The Vision: What should the transportation system look like in 20 years and what should it accomplish?

In this part of the meeting, PAC members discussed what they thought was important to incorporate into Lincoln City's vision of its future transportation system. Ideas were documented on poster paper as committee members brainstormed. Ideas brought forth included:

- The transportation system supports an "age-friendly" city
- Improvements promote active transportation
- The city's street system is ADA accessible
- Transit is fully accessible from all parts of the city
- The city's transit system will be improved
- Transportation modes will be less reliant on using US 101
- The transportation system will be aesthetically enhanced to improve the quality of life for residents and to make the city more appealing to visitors
- The roadway outside of the fog line will be improved and fully utilized
- The city and citizens will become less oil dependent
- The transportation system will be improved in a way that protects the environment
- The city will install "chirpers" at signalized pedestrian crossings to improve pedestrian safety (specifically for the vision impaired)
- An alternative route to US 101 will be developed
- More east-west routes to cut across town will be developed
- Safe pedestrian crossings on US 101 will be developed
- The D River and Schooner Creek crossings will be improved in a proactive approach
- The transportation system will respond to the needs of an aging community
- The city will develop a fun, convenient, and inclusive mass transit system
- Improvements will reduce congestion
- Improvements will improve safety
- Improvements will enhance access to jobs
- Natural resources will be preserved
- Improvements will use available funds efficiently
- The TSP will embrace the Federal Safe Streets program
- Improvements will develop safe routes to school
- The TSP will retain the Lincoln City Walking and Bicycle Plan recommendations
- Safety education campaigns would be employed at schools
- Bus stops will be both safe and accessible
- The city will focus on keeping up with technology
- The city will make investments in renewable energy
- Regional linkages will be improved
- Access to services will be improved

Goals & Objectives: What do we want to accomplish and what should our priorities be?

Following the group discussion, PAC members broke into small groups and talked about possible approaches to addressing key issues in more detail. This setting was also used to explore opinions on subjects not already discussed with the larger group. Notes from these discussions were documented by each group and are provided below, categorized by subject area.

Mobility:

- Provide options for non-auto travel
- Provide options for transportation disadvantaged
- Create better equity between modes (e.g., road diet on US 101)
- Need an alternative north-south route to US 101
- Freight movement through US 101 must be maintained
- Keep delivery stops off US 101
- Better routes/signing for beach access
- Develop a walking culture
- Implement cost-effective pedestrian/bicycle improvements
- Change attitude towards US 101—get used to it! This arterial is seen as inefficient and complaints are overstated towards it. These complaints are often by those passing through the city.
- Manage summer congestion rather than expand roadways to minimize delays
- Use land-use planning strategies to lower travel demand
- Create Park-and-Ride lots
- Provide steady flow rather than stop-and-go
- Find the right speed limits
- Provide a trolley: Roads End to Cutler

Accessibility:

- Clear obstructions in sidewalks (e.g., utility poles)
- ADA ramps/accessibility should be a priority for quick-hit projects

Fiscal Goals:

- Leverage private money
- Use smaller investments to make incremental improvements
- Need to trust that money is being spent well (transparency)

- All users should share in costs
- Employ a diverse transportation funding structure
- Creative financing—look for unique methods
- Maximize ODOT efficiency
- Use of transient room tax money is legitimate for the purpose of increasing tourism

Safety:

- Increase enforcement of traffic laws
- Safety education and outreach programs at schools
- Kids need safe places to walk
    - US 101 crossings
    - Around bus stops
    - Develop a Safe Routes to School Plan
- Safer side streets
- Improve visibility on hills and blind curves (e.g., install mirrors)
- Improve evacuation routes (better signage and tsunami-ready infrastructure)

Other Comments:

- "Gallery" walk to weird little shops with passport stamps
- Tie TSP into neighborhood plans and visions

IV. Next Steps

The project team will form an initial vision with supporting goals and objectives from the input received tonight and will share them with the PAC. We will also be proceeding with the assessment of existing conditions and will begin forecasting conditions for the year 2035. Our next meetings will be in March, when we will discuss current and projected transportation issues and preferred methods for addressing them. In the meantime, please visit the project website http://www.lincolncitytsp.org and provide comments on issues you see in the city.

Emails from PAC members describing their interests and visions for Lincoln City transportation

Don Williams (Chamber of Commerce):

Sorry to be missing this first meeting.

As BAMA and Chamber representative I, of course, am concerned about the economic impact of transportation decisions.

I believe that we have an excellent opportunity to meld our new Walking/Biking Plan with a new transportation plan that will enhance and improve opportunities for visitors to arrive and leave their cars at their destinations and make use of walking, biking and public transport options. Residents will also benefit from this strategy with a reduction in traffic on the Oregon Coast Highway and perhaps encourage them to get out more often on busy weekends to enjoy their city.

Without fail, everyone that I spoke to about this plan wants to see some type of trolley in operation throughout the summer months. What type is still up for discussion.

Overall the idea of 2 trolleys on a fixed circuit up and down 101 from Lighthouse Square to either 51st or Streetcar Village operating between 9am and 9pm would be welcomed. Slight deviations of route could be used to service special events within the city.

With the 32nd and 101 highway restructuring we expect to see more pedestrians and bicyclists between the north and south ends of Lincoln City. We would like to see some improvements to Coast Street between SW 29th and SW 32 to tie in with the already excellent walking and biking options in Olivia Beach. This would allow easier non-vehicular access to public transportation depots on 32nd/101 as well as Nelscott's two excellent beach accesses.

51st Ave parking should also be looked at. Peak summertime use fills the area to capacity and beyond. It is our thought that some time of parking structure or parking meters should be utilized near the West end of 51st.

Well, it's a start. I apologize for not being able to make this meeting and look forward to seeing the notes.

Don Williams
President, Bay Area Merchants Association
Board member, Lincoln City Chamber of Commerce

Joell Archibald (Lincoln County Health and Human Services):

Public Health of Lincoln County appreciates being included at the table as a partner in the Lincoln City Transportation Management Plan process.

In May of 2012, the Institute of Medicine published a document entitled "Accelerating Progress in Obesity Prevention; Solving the Weight of the Nation". Obesity rates in the United States indicate that about 1/3 of all adults currently are classified as obese and the prevalence of obesity in children has risen from 5 to 17 % in the past 30 years. These rates are higher in ethnic minorities, low income, low levels of education and rural populations...all descriptors of a significant portion of Lincoln City residents.

Obesity is a multi-factoral challenge, which is "growing" rapidly. There is no easy fix and new partnerships and creative approaches are required.

The IOM report includes 5 goals with accompanying strategies and measures. The very first goal relates both to the work Lincoln City has undertaken as well as the work that public health is focused on relative to obesity. I would like to directly quote from the report:

"Goal 1: Make physical activity an integral and routine part of life.

Recommendation 1: Communities, transportation officials, community planners, health professionals and governments should make promotion of physical activity a priority by substantially increasing access to places and opportunities for such activity.

Strategy 1-1: Enhance the physical and built environment. Communities, organizations, community planners, and public health professionals should encourage physical activity by enhancing the physical and built environment, rethinking community design, and ensuring access to places for such activity.

Potential Actions: Communities, urban planners, architects, developers, and public health professionals developing and implementing sustainable strategies for improving the physical environment of communities that are as large as several square miles or more or as small as a few blocks in size in ways that encourage and support physical activity.

Communities and organizations developing and maintaining sustainable strategies to create and/or enhance access to places and programs where people can be physically active in a safe and enjoyable way."

I am eager to have public health contribute as one of many partners in supporting Lincoln City with examining and revising their Transportation Management Plan. Participating in robust discussions of how people move from place to place is directly linked with improving health outcomes for the residents in the north end of Lincoln County.

Joell England Archibald, RN, MBA
PH Division Director
Lincoln County Health and Human Services

LINCOLN CITY TRANSPORTATION SYSTEM PLAN PROJECT ADVISORY COMMITTEE (PAC) MEETING #2 SUMMARY

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

Date: Thursday, June 20, 2013

Time: 5:30 PM to 7:30 PM

Location: City Hall 801 SW Highway 101

Purpose: The purpose of this meeting is to review and discuss existing and future baseline transportation conditions in Lincoln City (Technical Memoranda #6, #7, and #8). An overview of key findings will be provided and the consultant will lead a discussion of potential options for addressing transportation needs. A new draft of the TSP vision, goals, and objectives (Technical Memorandum #5) has been developed based on PAC input from meeting #1 and will be briefly discussed.

I. Sign-in, Introductions, and Agenda Overview

The project team introduced the project schedule to the Project Advisory Committee (PAC) and noted that the next PAC meeting would likely be in late August or early September. The PAC was asked what they would like the purpose of their next meeting to be. The PAC decided that their next meeting would focus on the development of transportation system solutions.

II. Revised Transportation Vision, Goals, and Objectives

Members of the PAC discussed the desired transportation system in Lincoln City at the first PAC meeting. The following draft vision statement was developed from the input provided.

> *All transportation modes flow smoothly and safely to and throughout the city, meeting the needs of residents, businesses, visitors, and people of all physical and financial conditions. Connectivity is improved to support travel within and between the pearls, where mixed-use development is complemented by enhanced walking and biking environments. Environmental resources are protected, right of way is used wisely, and healthy lifestyles are promoted.*

The following goals were also developed from input at the November 13th PAC meeting.

- Goal 1: Provide for efficient motor vehicle travel to and through the city.
- Goal 2: Increase the convenience and availability of pedestrian and bicycle modes.
- Goal 3: Provide transit service and amenities that encourage a higher level of ridership.
- Goal 4: Provide an equitable, balanced and connected multi-modal transportation system.
- Goal 5: Enhance the health and safety of residents.
- Goal 6: Foster a sustainable transportation system.
- Goal 7: Ensure the transportation system supports a prosperous and competitive economy.

- Goal 8: Coordinate with local and state agencies and transportation plans.

The project team noted that the goals are not in order of priority and are intended to provide direction for the development of transportation system solutions. The project team asked the PAC if they were satisfied with the updated goals and objectives. The PAC was satisfied, with the following requested additions to the project objectives:

- Ensure the transportation system improves air and water quality.
- Ensure that freight deliveries are accommodated.

III. Existing and Future Baseline Transportation Conditions

The project team went over existing and future baseline (2035) transportation conditions. The city's population is currently 8,000, with up to 20,000 additional tourists visiting the city during the summer. Those 65 and older make up more than 20 percent of the population, while most residents (72 percent) commute to work via single occupant vehicles.

The PAC questioned how the work commute modes compared to similar cities. The project team noted that they are similar to Newport, with walking being higher in Lincoln City and biking higher in Newport.

Today, the highest walking and biking activity generally occurs near beach access and shopping. Typically more walking activity than biking occurs in the city. Transit service is provided via the OXO Connector accessing NW Oregon, Rose Lodge to Newport, LINC IntraCity Loop and Dial-a-Ride Service. Few north-to-south driving alternatives exist to US 101, which varies from 2 to 5 lanes through the city.

The PAC noted that walking is nearly impossible in Roads End today. The PAC questioned how much through traffic travels along us 101 through Lincoln City. The project team noted it is about 10 percent northbound and 12 percent southbound.

Most pedestrian and bicycle crashes occur along US 101, with 5 pedestrians hit between NW 18th to NW 15th and 3 bicyclists hit between NW 40th and NW 39th. Three pedestrian fatalities and 1 bicycle fatality have occurred since 2007.

The project team noted that the existing walking and biking counts were collected on different days. PAC members generally feel it is easier to walk than bike in Lincoln City. PAC members also feel that travel speeds are too high along US 101. PAC members noted that more police enforcement is needed at street crossings along US 101. They also noted that the streets look large, and make drivers feel like they can drive faster. The PAC suggested adding visual cues to the street to encourage more people to driver slower.

Household growth through 2035 is expected to be highest at the north end of the city, near Roads End. Employment growth through 2035 is expected to be highest near the Casino and at the south end of the city near Taft. During the summer peaks of 2035, 6 signalized intersections and 7 unsignalized intersections will experience long delays. Peak congestion will spread over multiple hours. On average weekday peaks in 2035, 2 signalized intersections and 3 unsignalized intersections will experience long delays. New growth areas will be underserved by transit in 2035, including the Roads End area. Many sidewalk and bikelane gaps will also exist in 2035.

The PAC questioned what the percent of growth was between today and 2035. The project team noted that housing is expected to increase 13 percent and employment 42 percent. The PAC was surprised that more traffic does not utilize East Devils Lake Road. The project team noted that it was just not that attractive of a route for through traffic. The PAC noted that the left turn to and from East Devils Lake Road is difficult.

IV. Discussion of types of potential solutions

The project team went over a toolbox of potential transportation solutions with PAC members. PAC members noted the following transportation solutions are needed:

- Bike parking
- Sidewalks on US 101
- Off-street parking locations and availability information need to be more readily available (wayfinding)
- Environmentally friendly off-street parking
- Handicapped parking spaces on US 101
- Consistent posted speeds along US 101
- Traffic calming measures
- Pedestrian countdown signals
- Audible crosswalks
- Curb ramps/retrofits
- Covered transit stops
- Sharrows on local streets rather than signage
- Trolley
- Zoning changes to allow mixed-uses
- LED lighting
- Transportation demand management with large employers

V. Questions/Comments from Public Attendees

No questions or comments were received from non-PAC members.

VI. Next Steps/Adjourn

The project team will develop initial evaluation criteria to provide a point-based technical rating method that will be used to evaluate how well proposed design alternatives meet the measure of effectiveness criteria. The project team will also begin the process of identifying transportation solutions to address the identified system gaps and deficiencies. At our next meeting we will discuss the project evaluation criteria and initial transportation solutions. In the meantime, please visit the project website http://www.lincolncitytsp.org and provide comments on the draft project deliverables.

LINCOLN CITY TRANSPORTATION SYSTEM PLAN PROJECT ADVISORY COMMITTEE (PAC) MEETING #3 SUMMARY

DKS

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

Date: Wednesday, November 6, 2013

Time: 5:30 PM to 7:30 PM

Location: City Hall 801 SW US 101

Purpose: The purpose of this meeting was to discuss the preliminary set of transportation projects that could potentially be included in the TSP's aspirational project list (i.e., a master list of all projects of interest if funding were not a constraint).

Attendees:

PAC Members	
Dennis Gibson	ADA advocate
Rebecca Austen	Lincoln County Public Health
Wes Ryan	Lodging Industry, Lincoln County Transit, and City Council
Jim Taylor	Nelscott Neighborhood Association
Liz Bardon	Samaritan North Lincoln Hospital
Amy Ramsdell	Oregon Department of Transportation
Bob Hunt	Pedestrian Advocate
Pamela Barlow-Lind	Confederated Tribes of Siletz Indians, Planner
Paul Robertson	Lincoln City Bicycle Advocacy Group
Project Team	
Stephanie Reid	Lincoln City City Engineer
Debra Martzahn	Lincoln City Senior Planner
Richard Townsend	Lincoln City Planning & Community Development Director
Terry Cole	Oregon Department of Transportation
John Bosket	DKS Associates
Kevin Chewuk	DKS Associates
Ben Fuller	DKS Associates
Other Attendees	
Dick Anderson	Mayor
Gary Ellingson	City Council
Chester Noreikis	City Council
Kyle Lindberg	Rep. Gomberg
Theresa Hoskins Michel	Nelscott neighborhood
Laurie Hoskins Quarton	Nelscott neighborhood
Cynthia Dorrell	Nelscott neighborhood
Soren Klingsporn	Community Sustainability Committee
Kathy Conner	Community Sustainability Committee
Patrick Wingard	DLCD

I. Project Status

John Bosket presented an overview of the project status. He mentioned that this PAC meeting was originally intended to be a review of the evaluation criteria. However, at the last PAC meeting it was agreed that the evaluation criteria could be reviewed via email and that the meeting time would be better spent getting feedback from PAC members regarding an initial set of potential projects that may be included in the TSP. With PAC member feedback, the consultant team will revise the projects, and present them during PAC meeting #4. This meeting will include a discussion of how projects align with the evaluation criteria and what collection of projects might be the best choice for a financially constrained subset of the aspirational list.

II. Preliminary Projects

John Bosket discussed several key projects that the consultant team wanted to bring special attention to. These projects include:

- New connection to Roads End from US 101, opposite East Devils Lake Road. This would be an east-west minor arterial.
- Bard Road improvements, which could include repaving, widening, and curve smoothing.
- New roadway connections identified in previous plans.
- One-way street conversions to provide shared use paths. Jim Taylor brought to light that converting Beach Avenue to a one-way street in Nelscott (project D38) is opposed by the neighborhood. He read a letter regarding this project as a representative of the Nelscott Neighborhood Association, included as an attachment below. Key points include:
  - What is the purpose of this project and where did it come from?
  - There was a similar idea proposed in the past and was turned down.
  - There are more year-round residents in this area compared to other areas of the city.
  - The Nelscott Neighborhood Association would need more project information to better evaluate the project and to survey residents.
- Shared use paths. Special attention was brought to the idea of paths along the beach, and a potential pedestrian bridge over Devils Lake.

III. US 101 Crossing Improvements

The consultants and city staff met with ODOT in Lincoln City and visited several key locations along US 101 where crossing improvements may be needed. John Bosket presented the treatments discussed during this field visit for each of the eight locations. The following comments were made by PAC members regarding these potential improvements:

New Crossing between NW 39th Street and NW 36th Street

- There is a lot going on—southbound drivers are racing to get ahead before the lanes merge. There are a lot of tourists using this area. A crossing improvement is necessary here.
- A PAC member asked if left turns into the Pig ’N Pancake could be made with the refuge island in the center turn lane. John Bosket responded, saying left turns could still be made using the inside travel lane.

Enhance Existing Mid-Block Crossings at NW 18th Street and NW 16th Street

- A PAC member suggested installing the 3' pedestrian crossing signs in the middle of the roadway.

Enhance Existing Marked Crossings from NW 15th Street through NE 11th Street

- Crosswalks angled across the street create longer crossing times for pedestrians—why not straighten them? As an example, pedestrians cut across the kinked crosswalk in Taft.
- A PAC member brought up the issue of turning left onto NE 11th Street with the proposed refuge island in the center turn lane. Like the Pig 'N Pancake, situation, left turns could be made from the inside travel lane.

Enhance Existing Marked Crossing at SE 3rd Street

- A PAC member liked the idea of a HAWK signal for SE 3rd Street, but not many people bike here. Therefore, there isn't a need to favor bikes here.
- If the HAWK signal is not carried forward, then an RRFB is needed.
- There is value in being consistent throughout the city. If RRFB's are used elsewhere in the city, then maybe we should be consistent at this location and using that treatment instead of a HAWK signal.

New Crossing at SW Bard Road/SE 19th Street

- A PAC member expressed concern for motorists turning left out at Bard Road.
- The crosswalk should be moved to the north approach of SE 19th Street. There is a lot going on at this location with southbound motorists jockeying for position.
- It is important to note that there are about 75 trips a day to Head Start off of SE 19th Street.
- Another PAC member prefers the shown location of the crossing. Drivers can use the signal at SW 12th Street to go north.

New Crossing at SE High School Drive

- There isn't value in installing a crosswalk at High School Drive. There is low pedestrian activity here, and no real demand.

New Crossing at SW Coast Avenue

- The PAC agreed that the proposed crossing at Coast Avenue should be moved north to Beach Avenue where there is more crossing traffic.
- Connectivity with the bus stop is great. Moving the shelter near Beach Avenue is something to consider.
- A PAC member asked if the fire signal just to the south could be used as a pedestrian crossing, as more people walk in this area.

Enhance Existing Marked Crossing at SW 50th Street

- PAC members like the proposed improvements shown.

IV. Alternative Transit Options

Ben Fuller led the discussion about alternative transit options in the city. Three transit options were presented:

1. Expand the existing LINC route.
2. Divide the LINC route into two halves—a north route and south route with a transfer location in between.
3. Add an express route along the highway.

The following comments were made about these presented transit options:

- Transit service should be provided on Sundays and during holidays.
- The PAC agreed that the LINC should not be split into north and south routes. People in the south half of the city typically go north.
- The existing LINC and county route combination is similar to what consultants show.
- Lincoln City has a good transit system already—just nobody uses it. What about incentives, bulk pricing, etc.
- A PAC member liked the idea of expanding the LINC to Neotsu.
- A PAC member asked if there has been any thought about incorporating a Park & Ride in the city. It was discussed that a Park & Ride is being planned at the south end of the casino parking lot.
- A PAC member liked some of the consultant's ideas presented in the transit project list, like the GPS tool.
- Transit service should be kept simple and consistent—seven days a week from 7 a.m. to 7 p.m.

Ben Fuller also presented two options for a potential trolley system. One option would hug the highway, while the other option would run along the coast. The following comments were made regarding a potential trolley system:

- The trolley needs to serve lodging areas.
- One PAC member brought up the idea of doing a loop where the trolley runs along the coast in one direction and along the highway in the opposite direction.
- The current casino bus will stop at any hotel by request.
- Trolley vehicles are expensive. It is better to use a regular vehicle (like a bus) instead.
- Might not be as black and white as a highway route versus a coast route. Maybe the route runs along the coast in north half of the city and along the highway in the south half of the city.

V. Transportation System Management and Operations Projects

John Bosket provided an overview of Transportation System Management and Operations (TSMO) projects, which include:

- Parking Management System: This project would install message signs that display available parking at major public parking lots and install public parking signs.
- Variable Message Sign System: This project would display traveler information at gateways to the city on variable message signs.

- Tourism Management Policy: This policy would be a fee charged to tourists for having multiple vehicles at vacation rentals/hotels.
- Business Incentives Program: This program would incentivize business in the city to promote visitors to come earlier and/or stay later.

VI. Potential US 101 Design Treatments

John Bosket led the discussion regarding the potential road diet locations identified in the Walking and Biking Plan, which include Oceanlake, Delake, and Taft. Terry Cole reminded the PAC that US 101 serves many functions and that in addition to local use, it is also a significant route for national defense, freight movement, and regional travel. While we can consider new designs for the highway as part of this process, other stakeholders such as these must be brought into the process before any decisions can be made. For example, there are statues in Oregon that limit some changes to highways on Freight Routes.

The following were general comments made regarding US 101:

- A PAC member asked if the Oceanlake couplet was considered. There was high resistance to the idea in the past. It is not being considered at this time.
- There was a general desire for consistency along the highway to avoid the constant widening and narrowing effect.
- There is a lack of refuges for turning vehicles.
- Buses get delayed in the summer because of congestion.

The following comments were made regarding **Oceanlake**:

- In Oceanlake, there is an issue of vehicles opening doors when parking along on the street. This is hazardous and stops traffic.
- Turn lanes are needed.
- Parking should be separated further from travel lanes.
- Restricted lefts are not an issue; some people do ignore the restrictions, however.
- A lot of the parking between 14th and 20th Streets needs to be taken out. However, loading bays are needed for deliveries. Parking needs to be directed to the parking lots off the highway, which are under-utilized.
- The 14th Street intersection is a nightmare in the summer. Parking needs to be removed from the highway. Refuge lanes should be considered.
- Protected lefts are needed at 14th Street.
- The PAC agreed that protected lefts are needed at 17th Street too.
- Bike lanes would be nice in Oceanlake.
- It would be hard to support reducing Oceanlake to three lanes, unless the freight stakeholders were in favor.
- There is a lot of variability in speeds in city. Would a three lane road diet reduce variability?

The following comments were made regarding **Delake**:

- The PAC brought up the project which discusses installing a signal at SW 14th Street near the outlet mall.
  - The existing signal at SW 12th Street is the only safe way to get across the highway.
  - Maybe the city should wait for the SW 32nd Street signal to go into place before making changes at SW 14th Street and SW 12th Street.

The following comments were made regarding **Taft**:

- It makes sense to have consistency from Cutler to the STIP project in Nelscott.
- There was general agreement that reconfiguring the highway to three lanes makes sense.
- Bike lanes may not be needed in the downhill direction, but may be needed in the uphill direction.
- Taft works pretty well as it is—the two through lanes help with queuing. The PAC shifted to agreeing that Taft should not be changed.
- Traffic backs up to SW 62nd Street every Saturday in September.

VII. Next Steps

John Bosket announced that the PAC members have until November 20th to provide comments. The project team will screen and refine the initial project list. At the next meeting, the PAC will be presented with the refined project list, evaluation criteria ratings, and cost estimates.

LINCOLN CITY TRANSPORTATION SYSTEM PLAN PROJECT ADVISORY COMMITTEE (PAC) MEETING #4 SUMMARY

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

Date: Tuesday March 11, 2014

Time: 5:30 PM to 7:30 PM

Location: City Hall 801 SW US 101

Purpose: The purpose of this meeting was to discuss the draft Transportation Solutions Memorandum and the draft Finance Program Memorandum with the Project Advisory Committee.

Attendees:

PAC Members	
Dennis Gibson	ADA advocate
Jim Taylor	Nelscott Neighborhood Association
Sandy Pfaff	Lincoln City Visitor and Convention Bureau
Amy Ramsdell	Oregon Department of Transportation
Bob Hunt	Pedestrian Advocate
Pamela Barlow-Lind	Confederated Tribes of Siletz Indians, Planner
Paul Robertson	Lincoln City Bicycle Advocacy Group
Project Team	
Stephanie Reid	Lincoln City City Engineer
Debra Martzahn	Lincoln City Senior Planner
Richard Townsend	Lincoln City Planning & Community Development Director
Lila Bradley	Lincoln City Public Works Director
Terry Cole	Oregon Department of Transportation
John Bosket	DKS Associates
Ben Fuller	DKS Associates
Other Attendees	
Dick Anderson	Mayor
Marge H.	UGB Homeowner, bus rider

I. Sign-In, Introductions, and Agenda Overview

Those in attendance introduced themselves, and John Bosket presented an overview of the meeting.

II. Project Status Update

John outlined the following project schedule with the TAC:

Draft Transportation Solutions Memorandum/Draft Finance Program Memorandum

- TAC #2 and PAC #4 (Today)
- Joint Planning Commission/City Council Work Session (April 29th)
- Open House #2 (May)
- City Council Update (May)

Draft TSP (May – July)

- TAC #3 and PAC #5 (July – August)
- Joint Planning Commission/City Council Work Session (July – August)
- Open House #3 (July – August)
- City Council Update (August – September)
- Adoption Hearings (September – November)

III. Financially Constrained Project Prioritization

John presented the projected revenues and expenditures over the next 20 years for the city, based on an average of the last five years of funding data. Over the next 20 years, it is expected that the city will have an additional $2.5 million to spend on transportation projects. This does not include exactions from future development or grants that could be obtained.

During the Technical Advisory Committee meeting, it was also noted that this estimate assumes that city expenditures for maintenance will be held at the same level as in the past five years. In reality, facilities are expected to deteriorate at a faster rate that would require more funding for maintenance. Therefore, the amount of revenue available for the construction of new projects could be far less than estimated if more funding is shifted to maintenance.

John described the current funding sources and potential areas to generate more funding. The PAC had the following comments regarding funding:

- Sandy Pfaff noted that the law restricts the use of transient room tax revenue and it should not be assumed that contributions for transportation purposes could be increased. Where applied to transportation projects, there must be a direct relationship to tourism.
- Lila mentioned that Urban Renewal pays about $100,000 for sidewalk/ADA improvements each year. The funding projections do not currently account for Urban Renewal contributions.
- Terry Cole stated that ODOT will be providing an estimate for a reasonable amount of state funding the city could assume would be available for transportation improvements over the next 20 years. It could be somewhere in the range of $10 to $20 million and may be most applicable to US 101 improvements.
- Some communities have an electricity fee that goes to funding street lighting.
- Gasoline prices in Lincoln City are already higher than in the valley, so a fuel tax would only make that difference worse.
- A PAC member asked if a street utility fee for transportation improvements included as part of monthly water bills make sense. A street utility fee is a way to also charge those who aren't year-round residents. Corvallis uses a utility fee to pay for transit, which is partially paid by students, who are also a significant portion of the transit users.
- The PAC seemed to willing consider increasing funding sources if doing so primarily targeted visitors.

- The PAC in general seemed in favor of replacing the Deferred Improvement Agreement (DIA) system with Fee in Lieu of Improvements as long as it would not negate existing DIA's.

PAC members were encouraged to use the comment form handed out during the meeting to provide additional comments on potential funding options.

IV. Overview of Draft Transportation Solutions

John presented the PAC with the priority projects discussed in the draft Transportation Solutions Memorandum. Key comments included:

- NW 30th is too steep to walk and, therefore, the sidewalk project should not be a priority project.
- In constrained areas, actual designs may need to differ from the standard designs recommended for new construction. As an example, a standard shared-use path along East Devils Lake Road may not be feasible or affordable, but a wide shoulders might serve the same need at a lower cost.
- Bike routes on city streets paralleling US 101 may be necessary through the Delake area because it may not be feasible to provide adequate bicycling facilities on the highway.
- Projects involving new road construction tend to be more expensive, but are generally constructed in segments as new development occurs, with a portion paid by development through exactions.
- Recommended priority new roadways provide alternate routes to US 101 and would primarily benefit local travelers.

PAC members were encouraged to use the comment form handed out during the meeting to provide additional comments on the priority projects.

After reviewing the priority projects, the revised US 101 highway options were presented to the PAC. The PAC had the following comments:

- Bob Hunt expressed an interest in the median refuge option for South Oceanlake.
- Paul Robertson would like to see a sharrow option for Oceanlake instead of bike lanes.
- While southbound bike traffic is higher than northbound bike traffic, northbound is the uphill direction in Oceanlake.
- A PAC member expressed that they would like to see the center turn lane removed in places where it is not needed.
- The Nelscott STIP project is costing $17 million. Another $1 to $2 million is needed to complete the path on the east side of the highway.
- It was noted that a pedestrian crossing on US 101 near SW 35th Street was discussed in the past. However, the new traffic signal at SW 32nd Street and the proposed pedestrian crossing near SE High School Drive might fill that need.
- John mentioned to the PAC that the Taft road diet could be completed with a simple paint job, and that if for some unforeseen circumstance in the future two travel lanes in each direction are needed again, it could be restriped back to its existing cross-section. A low-cost, non-permanent application was preferable to the PAC. Sandy Pfaff noted that projects such as this that can support bicycle tourism could be funded with Transient Room Tax revenue.

- It was noted that a pedestrian crossing improvement was previously identified in the Cutler District Community Vision and Corridor Plan and should be included.

LINCOLN CITY TRANSPORTATION SYSTEM PLAN

TECHNICAL ADVISORY COMMITTEE (TAC) MEETING #3 & PROJECT ADVISORY COMMITTEE (PAC) MEETING #5 SUMMARY

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

Date: July 14, 2015

Time: 5:30 p.m. to 7:30 p.m.

Location: City Hall Council Chambers, 801 SW Highway 101

Purpose: The purpose of this meeting was to discuss the Draft Transportation System Plan and implementing policy and code amendments. Because of the volume of material, meeting participants did not review these documents in their entirety, but instead focused on the recommended projects lists, priorities, and funding outlook. Committee members were to review these documents before the meeting and prepare questions and comments. Time was reserved to discuss questions and comments regarding any other elements of the materials.

Attendees:

PAC Members	
Jim Taylor	Nelscott Neighborhood Association
Ed Dreistadt	Lincoln City Visitor and Convention Bureau
Amy Ramsdell	Oregon Department of Transportation
Pam Lind	Confederated Tribes of Siletz Indians, Planner
Paul Robertson	Lincoln City Bike Advisory Committee
Wes Ryan	Lodging industry and county transit board
TAC Members	
Don Baker	North Lincoln Fire & Rescue
Cynda Bruce	Lincoln County Transit
Keith Kilian	Lincoln City Police Department
Alison Robertson	Lincoln City Sustainability Committee
Patrick Wingard	Dept. of Land Conservation and Development
Project Team	
Stephanie Reid	Lincoln City City Engineer
Debra Nicholson	Lincoln City Senior Planner
Richard Townsend	Lincoln City Planning & Community Development Director
Lila Bradley	Lincoln City Public Works Director
Terry Cole	Oregon Department of Transportation
John Bosket	DKS Associates
Kevin Chewuk	DKS Associates
Other Attendees	
David Gomberg	State Representative
Marge Hurl	Lincoln City Sustainability Committee
Chester Noreikis	City Council
Chetna Rice	n/a

I. Sign-in, Introductions, and Agenda Overview

Those in attendance introduced themselves, and the project team presented an overview of the meeting agenda.

II. Project Status Update – where we are and what's left to do

At the previous TAC and PAC meeting, the project team went over the draft version of Technical Memorandum #10 Transportation Solutions and the draft Finance Program Memorandum. Consultant John Bosket, DKS, told the group that since the previous meeting, the project team spent a lot of time refining the project list to ensure we had the best set of projects that matched the available funding and the TAC/PAC feedback. At this meeting, the project team presented the revised set of financially constrained transportation improvements as incorporated into the Draft TSP. John Bosket presented the final steps of the TSP project, which include:

- Holding a joint Planning Commission/City Council work session to review the Draft TSP on Tuesday, August 4th.
- Holding the final public event on the Draft TSP on Sunday, August 9th from 11:00 AM – 1:00 PM during the Farmers Market at the Lincoln City Cultural Center.
- Holding the adoption public hearings for the TSP with the Planning Commission and City Council, with the first Planning Commission hearing tentatively scheduled for September 15th.

III. Financially Constrained Project Prioritization

The project team reminded the TAC/PAC that we only have around $2.5 million to spend on city projects over the next 20 years and reasonably estimate an additional $5 to $10 million from state sources for investments that would be along or benefit the Highway 101 corridor.

The Draft TSP groups projects into four packages. In Package 1, the highest priority projects could be funded with the $2.5 million worth of city funds, and $5 to $10 million in state funds. Packages 2 and 3 each require a new revenue stream capable of yielding another $2.5 million. Package 4 includes all other projects in the TSP. Packages 2 through 4 are referred to as the Aspirational Plan. The Aspirational Plan includes all projects the city would like to do, though funding may not be likely within the 20-year period. The project team noted that the city is not locked into projects within each package, and can always change priorities as transportation needs change and opportunities arise over time.

The project team went over the projects in Package 1 and received the following feedback:

Transit Projects

- The director of Lincoln County Transit said these are great projects. She noted that having these projects in an adopted plan is helpful when applying for grants.
- Project T5 (working with Lincoln County Transit to improve service) could be in Package 1, but it is more administrative.

Asked by the project team if they agreed with the Transit projects in the Draft TSP; the TAC/PAC members said the projects were good. Someone suggested moving project T5 to Package 1.

Demand Management Projects

- Project M9 is to update the gravel road paving policy and should be in a policy section.
- Project M4 (Business incentives program): People want to come into the city as fast as they can and stay until check out time. Perhaps we can come up with some incentives to come early or leave later, but personal constraints always make it an issue. Can the city get people to come on Thursday? The motels are working to get people to come in earlier and leave later, but the realities are people can only come when they have the time. While it's a good idea, the reality is most people can only come to stay Friday and Saturday nights.
- Project M2 (Variable Message Sign System) is a lot of money for a few message signs. Smartphone applications provide a lot of good information already; phones and/or GPS units may provide better information for travel time. This project may not be necessary. Money could be better spent in other areas. The city doesn't have great alternate routes to provide choices anyway. Move this project to a lower priority.
- Project M10 (supplemental information signs and social media program): This is a good idea, but the city doesn't have great alternate routes. Move this project to a lower priority.

The project team asked committee members if they agreed with the Demand Management projects in the Draft TSP; the TAC/PAC members recommended making projects M2 and M10 lower priority (no longer in Package 1); moving project M9 to a policy section; and potentially using some of the funds that were allocated to these projects to provide city match funds for ODOT projects.

Driving Projects

- Project D6 (signal timing enhancements at West Devils Lake and Logan): The existing traffic signals at US 101/NE West Devils Lake Road and US 101/NW Logan Road intersections were operating poorly previously, but now seem to be working well. Move this project to a lower priority.
- A TAC/PAC member expressed dislike of the new protected/permissive (flashing yellow arrow) left turn phasing at the City Hall and NE 22nd Street traffic signals. The project team noted that this is an operational issue rather than a TSP issue, and that ODOT will follow up to see if modifications are needed.
- A TAC/PAC member questioned why projects D47 and D51 from the previous transportation solutions memorandum were not included in the Draft TSP list. The project team noted that Project D47 (SE Dune Avenue extension to SE 32nd Street) is in the Draft TSP list as project D19. City staff removed Project D51

(NW Jetty Avenue extension between NW 15th Street and NW 14th Street) due to right-of-way issues and existing development that make the project infeasible.

The project team asked TAC/PAC members if they agreed with the Driving projects in the Draft TSP; the TAC/PAC members recommended making project D6 a lower priority (not in Package 1).

Pedestrian Projects

- Project P19 (Oceanlake Midblock Crossings): The city noted that it already has completed this project, but is exploring a higher level of pedestrian protection.
- A TAC/PAC member noted that the flashing beacon at the pedestrian crossing near Starbucks seems to stay on for a long time. The project team noted that it is set for an amount of time to accommodate people with small children or in wheelchairs who may not be able to cross as quickly.
- A TAC/PAC member noted that the biggest problem at some of the unsignalized pedestrian crossings is knowing whether a vehicle is stopped to make a left-turn or stopped for pedestrians. The project team noted that a flashing beacon could help in these situations.
- Project P45 (SW Coast/Beach Crossing): The proposed location of the bus stop may block a driver's view of the pedestrian crossing when a bus is stopped and cause confusion as to whether someone is waiting for the bus or waiting to cross the street. A TAC/PAC member questioned why the crossing is so far south of Beach Avenue, adding that pedestrians will likely still cross at the intersection and not use the new crossing. The project team agreed to clarify that we are just looking for a crossing in this general location and a later project design phase would handle the specific details.
- Project P38 (SW Bard Crossing) and P45 (SW Coast/Beach Crossing): Consider a Rectangular Rapid Flash Beacon for these crossings.
- Project P46 (Fire Signal Crossing): Look at a pedestrian crossing at the fire signal, making it a higher priority than project P45. Trucks are coming up a steep hill when approaching this signal. Design challenges may require more money, generally closer to $300,000.
- Project P49 (Cutler Crossing): The TAC/PAC thinks a Rectangular Rapid Flash Beacon may be appropriate here because of the higher speeds in the southern end of town. A project team member advised against adding one, and instead suggested a gateway treatment or radar speed feedback signs. The TAC/PAC agreed to add a radar speed feedback sign project.

The project team asked TAC/PAC if they agreed with the Pedestrian projects in the Draft TSP; the TAC/PAC members recommended adding project P20 (South Oceanlake Unsignalized Crossings), P22 (NW Harbor Sidewalk Infill), and P46 to Package 1; making Project P21 (NW 14th Street Sidewalk Infill) a lower priority (no longer in Package 1); adding a speed feedback sign project along the highway at the southern end of the city; and revising the project description for project P45.

Biking Projects

- Shared street projects: The TAC/PAC like these projects, suggesting that they add to the aesthetic character of the city.
- Project B16 (Removal of motor vehicle lanes on Highway 101 to make buffered bike lanes through Taft): A TAC/PAC member expressed concern with reducing the travel lanes and questioned if cyclists need protection given they are coming downhill southbound. Someone warned that this project may not be well received by the community. The project team explained that this project is just changing the roadway striping, and is easily convertible back to five lanes should the roadway capacity be needed in the future. This project will also help with the pedestrian crossings. A few TAC/PAC members think this project will actually make traffic flow smoother through this part of the city by making the travel lanes more consistent. They suggested that it may be worth seeing if this project could improve traffic flow, and that it could also change the feel of the area, and make it more walkable and bike friendly. The TAC/PAC recommended leaving this project in Package 1, but not characterizing it as only a bike project.

The project team asked the TAC/PAC if they agreed with the Biking projects in the Draft TSP; the TAC/PAC members agreed with the Biking projects, but suggested modifying the description of project B16 to characterize it as more than just a biking project.

IV. Questions/Comments on other elements of the Draft TSP and code/policy amendments

- A TAC/PAC member suggested that footnotes be added to the project list to specify that funding will come from a variety of sources.
- A TAC/PAC member recommended that a total cost be added for each category of projects in the Draft TSP project list table.
- Vision zero: The TAC/PAC suggested that Lincoln City supports the “Vision Zero” goal of eliminating traffic fatalities and serious injuries. Members recommended that the TSP include a policy statement describing support for this goal.
- Finances: The TAC/PAC expressed concern about maintenance of existing streets and shortage of funds. They suggested that streets could start failing more quickly. A member questioned if the TSP improvement funds would compete with the need to maintain existing streets. The project team explained that the TSP funding assumption is that the city will continue to spend the same amount on maintenance as in the previous five years. A TAC/PAC member suggested that if the city initiated a local gas tax, it shouldn’t be on the high end, suggesting that the gas tax burden would be placed on lower wage workers who live outside of the city and thus travel greater distances. Lincoln City gas costs are already on the high end. A TAC/PAC member said that if the city didn’t do a gas tax, it would miss out on an opportunity. Other TAC/PAC members responded that increased taxes will be a non-starter with residents, and one member suggested bonds as opposed to new taxes, which is generally more acceptable because it isn’t permanent. Members agreed the city needs to show the value of any new proposed fee/tax, perhaps via better maintained transportation facilities and the revenue conversation should be taken up at the Planning Commission/ City Council work session.

DKS

V. Questions/Comments from Public Attendees

There were no questions from public attendees at the meeting.

VI. Recap of Next Steps/Adjourn

- Joint Planning Commission/City Council work session to review the Draft TSP on Tuesday, August 4th.
- Final public event on the Draft TSP on Sunday, August 9th from 11:00 AM – 1:00 PM during the Farmers Market at the Lincoln City Cultural Center.
- The TAC/PAC requested that the city send an email reminder to members regarding the upcoming public event.
- Recommended TSP: The project team will incorporate the feedback from the TAC/PAC, Planning Commission and City Council work session, and public event into the Recommended TSP for the adoption hearings.
- First adoption public hearing for the TSP with the Planning Commission is tentatively scheduled for September 15th.

LINCOLN CITY TRANSPORTATION SYSTEM PLAN

PUBLIC EVENT #1 SUMMARY

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

Date: Thursday, June 27, 2013

Time: 4:00 PM to 6:00 PM

Location: Lincoln City Cultural Center, 540 NE Highway 101

Transportation Goals

The public was asked to rank the following statements from 1 (most important) to 8 (least important) based on their vision of how the Transportation System Plan (TSP) should be developed and implemented. The following is a summary of the 26 responses.

- Provide for efficient motor vehicle travel to and through the city: Average ranking 3.0
- Increase the convenience and availability of pedestrian and bicycle modes: Average ranking 3.3
- Provide an equitable, balanced, and connected multi-modal transportation system: Average ranking 3.3
- Enhance the health and safety of residents: Average ranking 3.9
- Provide transit service and amenities that encourage a higher level of ridership: Average ranking 4.0
- Foster a sustainable transportation system: Average ranking 4.1
- Ensure the transportation system supports a prosperous and competitive economy: Average ranking 4.4
- Coordinate with local and state agencies and transportation plans: Average ranking 6.3

Walking

The public was asked where in the city they feel the safest when walking. The following is a summary of the responses.

- On the beach: 5 responses
- SW 51st Street (Taft): 4 responses
- On side streets: 3 responses
- On Sidewalks: 3 responses
- Near the library: 1 response
- Parks: 2 responses
- Downtown: 1 response
- Everywhere: 1 response
- Neotsu: 1 response

The public was asked what keeps them from walking instead of driving. The following is a summary of the responses.

- Bad weather: 15 responses
- Destinations are too far away: 14 responses
- Lack of sidewalks: 9 responses
- Too dark/unsafe: 6 responses

- No safe route to my destination: 4 responses
- Laziness: 1 response

The public was asked to identify the streets and intersections that need improvements to make walking and crossing the street safer (e.g. sidewalks). The following is a summary of the responses.

- Holmes Road: 4 responses
- US 101 through Nelscott: 4 responses
- More visible crosswalks: 4 responses
- Crosswalks on US 101 in Oceanlake :2 responses
- North end of US 101: 2 responses
- NW 15th Street: 1 response
- US 101 and SW 48th Street: 1 response
- Beach access streets: 1 response

Other walking comments from the public event:

- Audible chirpers are needed, in additional to pedestrian countdown signals (2 responses)
- Better crosswalk indicators needed at N 12th and US 101 and SE 19th and US 101
- Sidewalks are needed on every street
- The “zebra” crosswalk striping is better
- Visibility is important for street crossings, vegetation or trees can be a problem
- There are pedestrian conflicts with the westbound right-turn at the US 101/Logan Street intersection
- Need a crosswalk on Logan Street between Safeway and Lighthouse Square
- Need better enforcement of street crossings
- More time is needed for wider street crossings
- Curb extensions work better at mid-block locations and with center islands

Biking

The public was asked where in the city they feel the safest when biking. The following is a summary of the responses.

- Head to Bay Trail/separated from the street: 3 responses
- Nowhere: 2 responses
- Side streets: 2 responses
- Taft: 1 response
- Anywhere but the Oceanlake stretch of US 101: 1 response
- Near the hospital: 1 response
- Near the casino: 1 response
- West Devils Lake Road: 1 response

The public was asked what keeps them from biking instead of driving. The following is a summary of the responses.

- Bad weather: 12 responses
- Lack of bike lanes: 10 responses

- No safe route to my destination: 6 responses
- Destinations are too far away: 5 responses
- Too dark/unsafe: 3 responses
- Don't ride bikes: 3 responses
- Lack of bike parking: 2 responses

The public was asked what streets have the greatest potential to accommodate bikes. The following is a summary of the responses.

- West Devils Lake Road: 6 responses
- NW Jetty Avenue: 3 responses
- NW Harbor Avenue: 3 responses
- East Devils Lake Road: 2 responses
- SW 51st Street: 2 responses
- SW Coast Avenue: 2 responses
- None: 1 response
- Logan Road: 1 response
- Drift Creek Road: 1 response

The public was asked to identify the places they feel unsafe when riding a bike and why. The following is a summary of the responses.

- US 101 when it lacks bike accommodations: 8 responses
- US 101 due to the amount of traffic: 6 responses
- Side streets when they lack bike accommodations: 3 responses

Other biking comments from the public event:

- Bike trail requests at Chamber Office
- More visible bike parking and rentals
- Flooding on East Devils Lake Road is extremely challenging on bike
- Very narrow passage on the bridge on East Devils Lake Road, north of NE 22nd Street, without a shoulder
- Need shoulder or other bike accommodation on bridge over Schooner Creek on US 101

Transit

The public was asked to identify why they use public transit. The following is a summary of the responses.

- I don't use public transit: 19 responses
- Entertainment purposes (e.g. Going to the Casino) : 2 responses
- Commute to work: 1 response
- Going Shopping: 1 response

The public was asked how public transit service could be improved. The following is a summary of the responses.

- Increase bus frequency: 12 responses
- Add more stops: 9 responses

- Improve safety at bus stops/on bus: 7 responses
- Increase the service hours: 5 responses
- Implement a Trolley: 3 responses
- Add bus pull-outs of US 101: 1 response

Other ideas from the public to improve transit service include:

- Need improved transit to improve traffic flow along US 101
- Need more buses
- Transit service needs to be cheap
- Transit service needs to run later
- Make the transit schedules available at the Visitor Center

Other transit comments from the public event:

- Provide feeder transportation to outlying rural areas
- Add a bus stop at cultural center
- Bus access in Roads End
- Bus service along Devils Lake Boulevard at the north end of the city
- Not interested in a Trolley service
- Promote existing fixed-route transit service more for tourists
- Need transit service on Sunday
- Need longer hours for transit service, it is hard to use to travel to and from work
- Need more bus shelters
- Bus schedules need to be more accessible
- Implement shuttles from hotels to the Casino
- Implement a shuttle during special events

Driving

The public was asked to identify the streets or intersections that have the greatest need for improvements to make traveling by car safer and easier. The following is a summary of the responses.

- US 101: 4 responses
- US 101 in Nelscott: 4 responses
- US 101 in Oceanlake: 3 responses
- US 101/East Devils Lake Road intersection: 2 responses
- Holmes Road: 2 responses
- US 101/Neotsu Drive intersection: 1 response
- US 101/36th intersection: 1 response
- US 101/NW 15th Street intersection: 1 response
- Side streets and intersections need to be marked better: 1 response

- US 101/SE High School Drive: 1 response
- US 101/SE 48th intersection: 1 response
- US 101/SE 14th intersection: 1 response

Other driving comments from the public event:

- Plan for hovercraft cars
- Additional street connections needed to Roads End
- Need another street connection to US 101 serving areas north of Logan Road
- Plan for industrial needs near SE 23rd Drive
- Turning left from NE East Devils Lake Road onto southbound US 101 is terrible
- Need a left turn lane from southbound US 101 to NE East Devils Lake Road
- Road diet or shared use path for US 101 between Logan Road and NE East Devils Lake Road
- Road diet for US 101 in Oceanlake

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

LINCOLN CITY TRANSPORTATION SYSTEM PLAN

PUBLIC EVENT #2 SUMMARY

Date: Sunday, May 18, 2014

Time: Noon to 2:00 PM

Location: Lincoln City Cultural Center, 540 NE Highway 101

The project team held an open house to solicit public input on the draft set of recommended transportation solutions. The event was held during the farmer's market and attracted approximately 15 members of the public.

Several posters were on display, and handouts were provided. Those in attendance were asked to mark on posters which projects they felt should be prioritized along the US 101 corridor, and were asked to mark on the handout which city-funded projects they felt should be prioritized with the funding anticipated to be available. Posters presented at the open house are attached at the end of this summary.

PRIORITY PROJECTS FOR CITY FUNDING

The public was asked to pick their top priority projects on which available City transportation funding should be spent. The following is a summary of projects chosen by the participants:

- M5: Oceanlake Parking Management **(3 votes)**
- T3: Seasonal Trolley **(3 votes)**
- B3: Holmes/NE 30th Bike Facilities **(2 votes)**
- D1: North Lincoln City Circulation Study
- D8: Bard Road Improvement Study
- D14: Taft Beach Parking Local Connection
- D16: SW Jetty Realignment
- D17: SW Keel Connection
- M4: Business Incentives Program
- M6: Safe Routes to School Program
- P6: NE 28th St Sidewalk Infill
- P13: North Delake Sidewalk Network
- S7: Head to Bay Trail Expansion – West Devils Lake Road
- S8: East Delake Path – North
- B2: NW 39th/ Jetty Ave Bicycle Boulevard
- B6: North Delake Bike Facilities
- B8: Southeast Delake Bicycle Boulevard
- B9: Southwest Delake Bicycle Boulevard
- B11: Taft Bicycle Boulevard

Of the 59 potential city-funded projects, the public selected 19 as priorities. Three of the projects were selected as priority projects by multiple members of the public: M5 (Oceanlake Parking Management), B3 (Holmes/NE 30th Bike Facilities), and T3 (Seasonal Trolley).

The City's transportation funding expectations were presented to the public prior to starting the exercise. They were told to expect about $2 million in funding over the next 20 years. However, instead of limiting them to a budget of $2 million, the public was allowed to go over budget by up to $4 million, under the assumption that the remainder would need to be made up through the use of new revenue streams. With a total of $18.6 million worth of improvements selected by the public, the average individual spent $3.1 million on improvements ($1.1 million more than budgeted).

US 101 IMPROVEMENT PROJECTS

The public was asked select up to three sections of the highway through the city they think should be prioritized for bicycle and pedestrian improvements. The results are shown in Table 1.

As shown in Table 1, Segment 10 (SW 32nd and SW Beach) received the most votes for improvements. Other segments of highway with multiple selections include Segment 3 (NW 39th to NW 25th) and Segment 5 (NW 21st to NW 13th). While there was not a large number of participants, the result of this exercise shows that pedestrian and bicycle improvements are desired along US 101 throughout most of the city.

Table 1: US 101 Improvement Prioritization

Segment #	Location	Votes
1	East Devils Lake to Logan	1
2	Logan to NW 39th	0
3	NW 39th to NW 25th	2
4	NW 25th to NW 21st	0
5	NW 21st to NW 13th	2
6	NW 13th to City Hall	1
7	City Hall to SE 14th	1
8	SE 14th to SE 23rd	1
9	SE 23rd to SW 32nd	0
10	SW 32nd to SW Beach	3
11	SW Beach to SW 51st	1
12	SW 51st to SW Jetty	0
13	SW Jetty to City Limits	0

The public was to select which highway cross-section option they preferred for implementation in the Oceanlake Pearl (NW 21st to NW 13th).

A need to improve conditions in the Oceanlake Pearl from NW 21st to NW 13th had previously been expressed by many members of the public. Several options for reconfiguring the use of the available right-of-way between the existing buildings were presented for discussion. Among the comments received, every member of the public expressed their interest in removing parking so bike lanes could be included on the highway. Two members of the public preferred Option 3A (remove parking/curb extensions for bike lanes) and five members of the public preferred Option 3B (remove parking/curb extensions for bike lanes and reduce lane widths to provide a center buffer). No one expressed interest in Option 2 (remove parking/curb extensions for a center turn lane).

The public was asked to select their top US 101 pedestrian crossing improvements that they would like to see completed. The results are shown in Table 2.

As shown in Table 2, Crossing Improvement 9 (SW 50th) was the favored crossing project among the public. Of those that desired improvements at NW 39th, Option 1A (that does not eliminate the southbound left turn lane) was preferred over Option 1B.

Table 2: US 101 Pedestrian Crossing Prioritization

Location ID	Location Name	Votes
1A	NW 39th	2
1B	NW 39th	0
2	NW 18th/NW 16th	1
3A	NW 15th/NW 13th/NW 12th	1
3B	NE 11th	2
4	SE 3rd	0
5	SE 19th/SW Bard	3
6	SE High School	2
7	SW Beach	0
8	SW Coast	0
9	SW 50th	4
10	SW 62nd	0

OTHER COMMENTS

The following is a list of other comments received related to desired transportation improvements in Lincoln City:

- The City should chip in to help fund project D5 (NE East Devils Lake Flood Prevention).
- The design for shared-use paths looks great.
- The City should support project S3 (East Devils Lake Path)—**3 comments**.
- The City should support project M2 (Variable Message Sign System).
- The City should focus on crosswalk improvements and maintenance.
- Each property owner should have to pay for and install their own sidewalk.
- The City should go after grants for transit to tie into regional transit.
- There are traffic problems with pedestrian islands.
- The proposed reconfiguration of US 101 through Taft to include buffered bike lanes is a good idea—**2 comments**.
- No bikes on US 101.
- The City should charge visitors for parking.
- Sidewalk should be built on US 101 from the Outlet Mall to Nelscott.
- There should be a left turn lane at NW 15th to help get to the beach or a dedicated signal phase.
- Bike improvements should be made to stimulate the economy.
- The City should install a bike share system.

What is a Transportation System Plan?

The Transportation System Plan (TSP) reviews the current transportation network and identifies improvements that would make travel in Lincoln City better. A good plan balances the needs of walking, bicycling, driving, transit, and freight into an equitable and efficient transportation system.

Major Components of a TSP

We are here!

Goals and Objectives	Transportation Conditions	Alternatives Evaluation	Draft TSP	Final TSP
Develop project goals, objectives and evaluation criteria	Review the transportation system to identify current conditions and problems, and determine future needs through 2035	Identify and evaluate solutions and projects for the identified needs of the transportation system through 2035	The solutions and projects that best meet the project goals, objectives and evaluation criteria will be incorporated into a Draft TSP	Planning/City Commission Public Hearings, and City adoption of Final TSP.
	Community Event #1	Community Event #2	Community Event #3	Public Hearings

Early 2013 — Mid 2013 — Mid 2014 — Late 2014

How to Stay Involved

We are gathering information and ideas from residents, business owners, and stakeholders in Lincoln City and want to hear from you!

Get Involved

- Review the draft documents at **www.lincolncitytsp.org**
- Provide your comments at **www.lincolncitytsp.org**
- Attend community meetings

Future Community Events

- Review of Draft Plan: August 2014

Purpose of Today's Community Event

Tell us what projects you think are most important, or if we missed anything. Please fill out a comment form. It's your transportation system, we want to hear from you!

We want to hear from you...

Funding

- How would you spend $2 million on transportation?

Walking and Biking Projects along Highway 101

- What are the sections of the highway that most need walking and biking improvements?
- What are the most critical locations for improved pedestrian crossings?

Walking and Biking Projects through the City

- What walking and biking projects do you feel are the most important?
- Other ideas for walking or biking projects?

Transit Projects

- How is the transit service in the city?
- Do you think service should be expanded to an area of the city?
- What transit projects are the most important?

Driving Projects

- What driving projects are the most important?
- Do you have other ideas for driving projects?

The Cost of Transportation

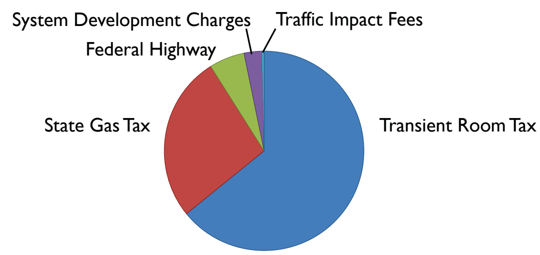
Maintaining and operating the city street network requires most of the revenue the city is able to generate for transportation uses. These costs will continue to increase over time, leaving fewer dollars available for the construction of new roads, sidewalks, bike lanes, and transit service.

Over the next 20 years, Lincoln City will use nearly all its transportation funding maintain existing infrastructure.

The City can expect ODOT to fund some improvements to state highways, the County to fund some projects on their roads, and developers to construct roads with new development.

Funding for Improvements: $2 million

Lincoln City's current transportation revenue sources



How would you spend $2 million on the city transportation system?

You will be given a handout with all the projects on the city transportation system. These projects can be viewed on the posters around the room. Identify the projects on the ledger (included with the handout) that you would spend the $2 million on the city transportation system.

What if more money were available?

If the City could increase funding for transportation in the future, how would you want to spend it?

Examples of new revenue sources are:

Transportation Utility Fee: A small ($1-$10) monthly fee included on all resident and business water bills (every $1 charged could raise $100,000 annually – or $2 million over 20 years)

Local Fuel Tax: A small (1 to 5 cents per gallon), voter-approved tax applied to gasoline sales in the city (potential to raise $100,000 annually – or $2 million over 20 years)

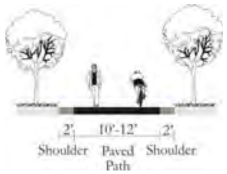
Local Improvement Districts: Voter-approved assessment on properties, paid through property taxes, to pay for specific projects that directly benefit those properties

If you think the city should raise additional revenue, identify your additional priorities on the project ledger beyond the $2 million. Remember we are only focusing on the city transportation system.

Walking Improvements

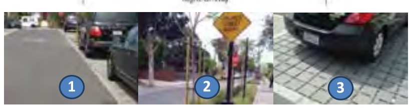
Potential walking improvements off US 101 include shared-use paths, sidewalks, and shared streets. Please place a sticky note or write directly on the map near the project(s) of which you have a suggestion, comment, question, concern or compliment. It's your transportation system, let us know what you think!

Shared-Use Path



The Head to Bay Trail along NE 22nd Street is an example of a Shared-Use Path

Shared Street



1 14-foot shared roadway

2 10 mph advisory speed limit and "shared street" signs

3 Stormwater is infiltrated through the use of permeable paving systems, landscape planters and other purposely located pervious surfaces

Proposed Pedestrian Improvements

- Proposed Shared-Use Path
- Proposed Sidewalk
- Proposed Shared Street
- Proposed Crossing Improvement
- Future Study

Existing Pedestrian Facilities

- Existing Sidewalks
- Existing Shared-Use Path
- Existing Trail

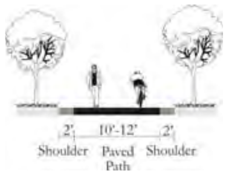
\# Transportation System Plan Project, to be Funded by the City

\# Transportation System Plan Project, to be Funded by ODOT, the County, or Private Development

Biking Improvements

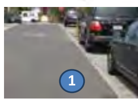
Potential bike improvements off US 101 include shared-use paths, bike lanes, bike boulevards, and shared streets. Please place a sticky note or write directly on the map near the project(s) of which you have a suggestion, comment, question, concern or compliment. It's your transportation system, let us know what you think!

Shared-Use Path

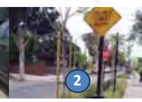


The Head to Bay Trail along NE 22nd Street is an example of a Shared-Use Path

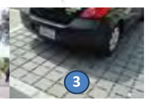
Shared Street



1 14-foot shared roadway



2 10 mph advisory speed limit and "shared street" signs



3 Stormwater is infiltrated through the use of permeable paving systems, landscape planters and other purposely located pervious surfaces

Bike Boulevard

Bike boulevards modify existing low volume, low speed streets to prioritize the through movement of bicyclists and pedestrians while maintaining local access for automobiles. They typically include wayfinding signage and pavement markings (SLMs), as well as traffic- calming features that reduce motor vehicle speeds and volumes.

Proposed Bike Improvements

- Proposed Shared-Use Path
- Proposed Bicycle Lane
- Proposed Bicycle Boulevard (Along Existing Street)
- Proposed Shared Street
- Bikes-in-Roadway Warning System
- Future Study

Existing Bike Facilities

- Existing Bicycle Lane
- Existing Shared-Use Path
- Existing Trail

\# Transportation System Plan Project, to be Funded by the City

\# Transportation System Plan Project, to be Funded by ODOT, the County, or Private Development

Driving Improvements

Potential driving improvements include new street extensions, street upgrades to City standards, intersection enhancements, and motor vehicle travel speed reduction measures. Please place a sticky note or write directly on the map near the project(s) of which you have a suggestion, comment, question, concern or compliment. It's your transportation system, let us know what you think!

Transportation System Management and Operations (TSMO) Projects

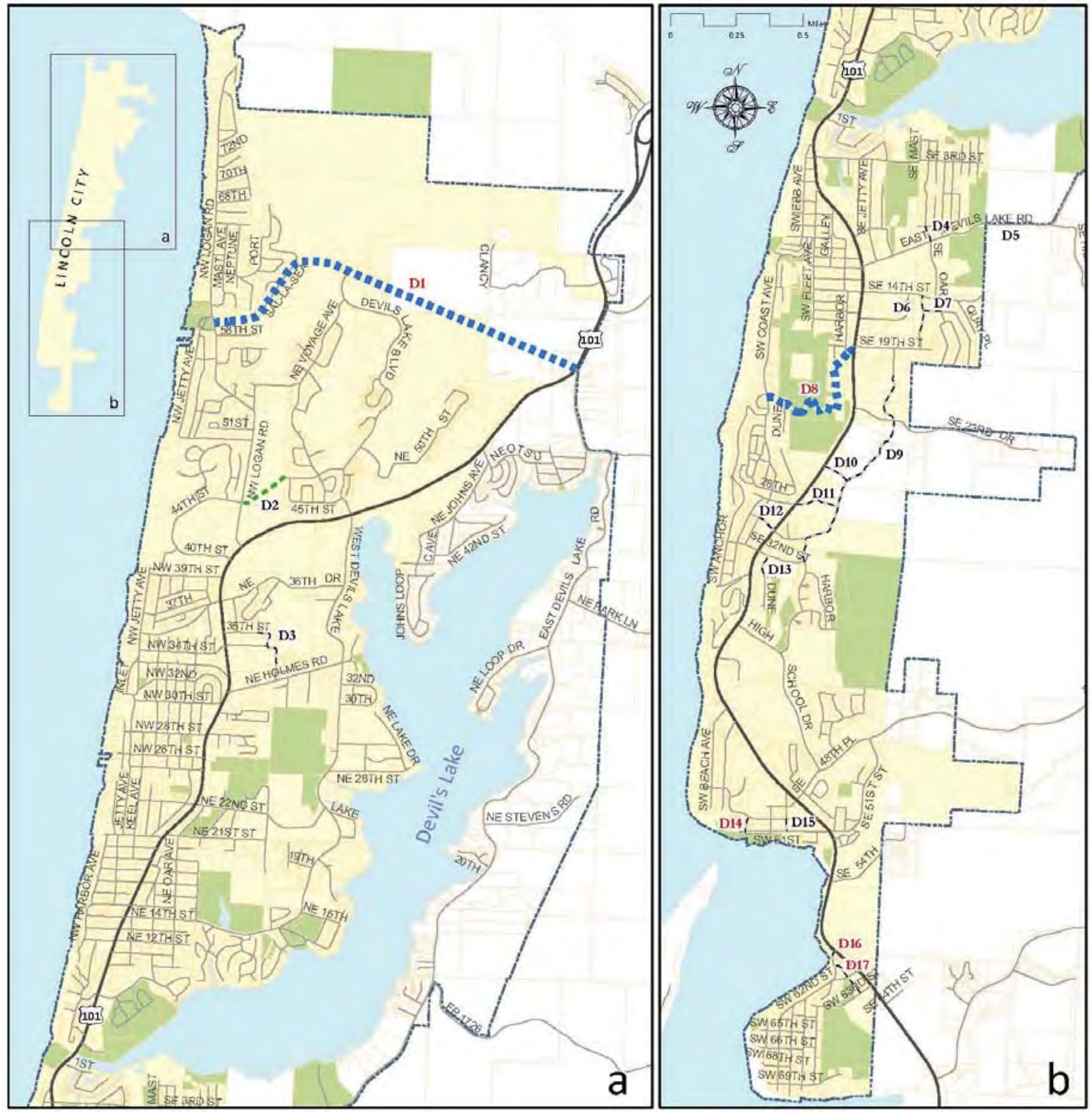
Project No.	Project Name	Project Extent	Project Elements
M1	Neighborhood Traffic Calming Program	Citywide	Implement program to process community requests for neighborhood traffic calming, investigate options, and implement improvements. Key areas for traffic calming investigations include: Roads End, NE Holmes Road, and Cutler.
M2	VMS System	North end of city and south end of city	Display traveler information at gateways to city on Variable Message Signs (VMS).
M3	Tourism Management Policy	Citywide	Develop a fee system that charges tourists for having multiple vehicles at vacation rentals/hotels.
M4	Business Incentives Program	Citywide	Develop an incentives program for Lincoln City businesses to promote visitors to come earlier and/or stay later, thus reducing peak traffic demands.
M5	Oceanlake Parking Management	Oceanlake	Enhance parking wayfinding in Oceanlake to direct visitors to public parking lots off US 101.
M6	Safe Routes to School Program	Citywide	Continue support of the Safe Routes to School Program.
M7	Tsunami Evacuation Route Identification	Citywide	Enhance tsunami evacuation route wayfinding throughout the city.

Proposed Driving Improvements

- Future Study
- Proposed Collector
- Proposed Local

\# Transportation System Plan Project, to be Funded by the City

\# Transportation System Plan Project, to be Funded by ODOT, the County, or Private Development



Transit Improvements

Potential transit improvements include increased bus stop amenities, extended service hours, and expanded service. Please place a sticky note or write directly on the map near the project(s) of which you have a suggestion, comment, question, concern or compliment. It's your transportation system, let us know what you think!

Transit Projects

Project No.	Project Name	Project Extent	Project Elements
T1	Amenity Improvements	Citywide	Upgrade amenities to include sheltered stops with seating, route information, and bicycle parking.
T2	Improved LINC Transit Service Hours	Citywide	Expand LINC hours of service.
T3	Seasonal Trolley	Citywide	Implement seasonal trolley service.
T4	Casino Park & Ride	South Casino parking lot	Develop Park & Ride at Casino and incorporate North by Northwest Connector amenities.
T5	Improved County Transit	Citywide	Work with Lincoln County Transit to improve operating hours and bus frequency.

Existing Bus Routes

LINC (Lincoln City Loop)

Newport-Lincoln City County Route

Existing Bus Stops

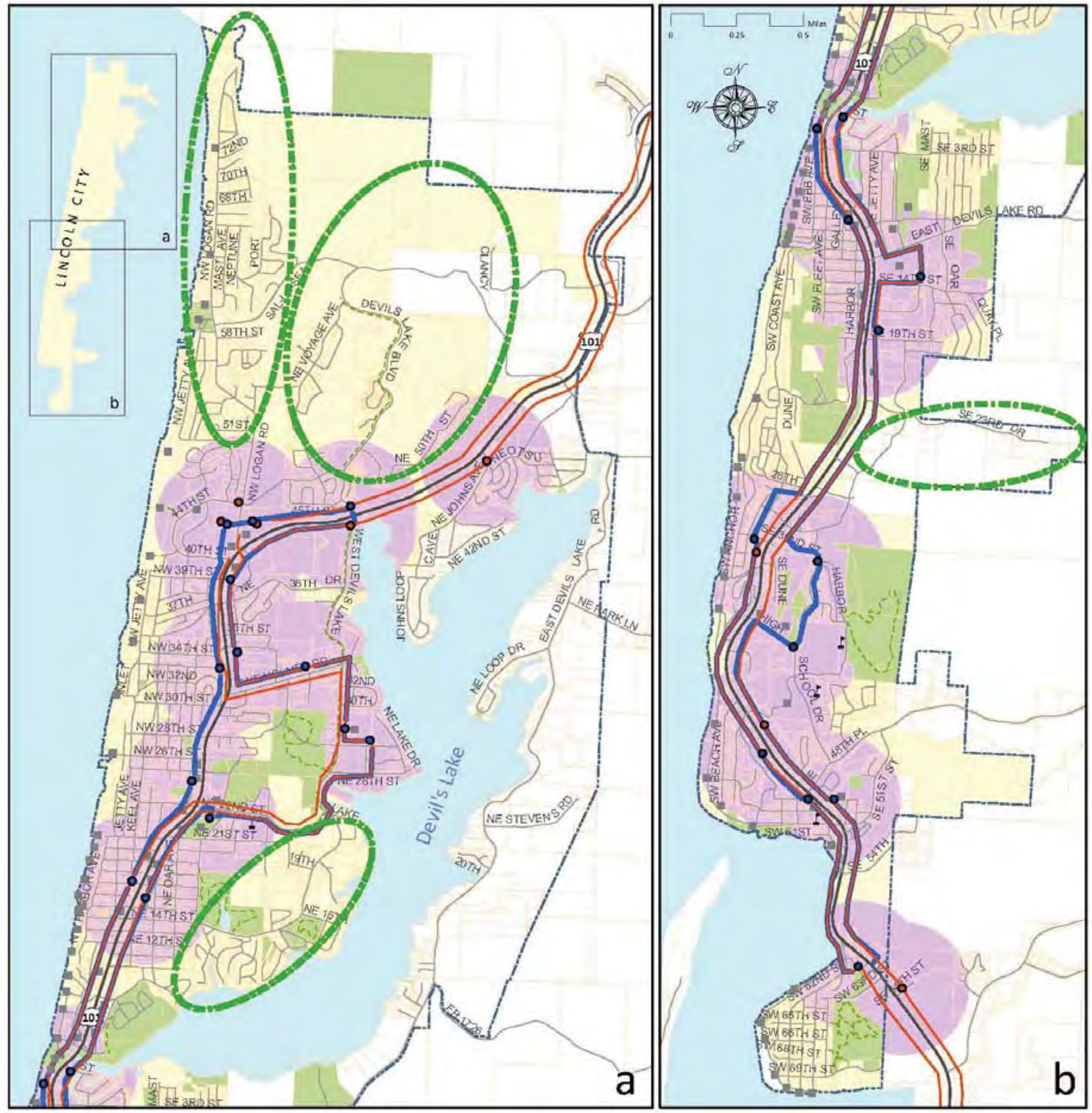
Service Coverage and Gaps

1/4 - Mile Buffer

Expected Growth Areas Unserved by Existing Transit

School

Activity Generator



Transportation on US 101

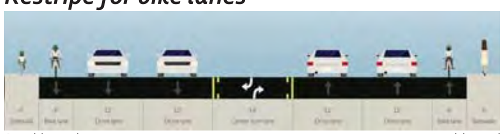
US 101 through most of Lincoln City does not provide adequate pedestrian and bicycle facilities, and experiences congestion during the summer.
For each segment of the highway, the project team evaluated several options, while recognizing funding, right-of-way, and environmental limitations. The outcome of the evaluation included recommendations that will improve pedestrian and bicycle safety, and manage congestion during the summer, while maintaining adequate traffic operations during non-summer months.
What are your priorities?

1. East Devils Lake Rd to Logan Rd:
Add shoulders and a shared-use path on south side

Westbound Eastbound

Estimated Cost:
$3.0 million

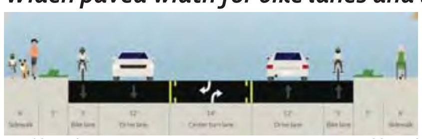
2. Logan Rd to NW 39th St:
Restripe for bike lanes



Southbound Northbound

Estimated Cost:
$25,000

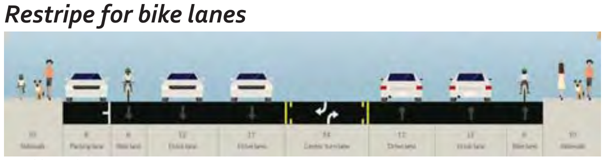
3. NW 39th to NW 25th St
Widen paved width for bike lanes and landscaped sidewalk



Southbound Northbound

Estimated Cost:
$24.0 million

4. NW 25th St to NW 21st St
Restripe for bike lanes



Southbound Northbound

Estimated Cost:
$50,000

5. NW 21st St to NW 13th St
(See Oceanlake Highway Design Options Poster)

6. NW 13th St to City Hall
Restripe for a southbound bike lane

Southbound Northbound

Estimated Cost:
$50,000

7. City Hall to SE 14th St
Restripe for bike lanes

Southbound Northbound

Estimated Cost:
$25,000

8. SE 14th St to SE 23rd Dr
Widen paved width for bike lanes and landscaped sidewalk

Southbound Northbound

Estimated Cost:
$14 million

9. SE 23rd Dr to SW 32nd St
Widen for a center turn lane, shoulders, and a shared-use path

Southbound Northbound

Estimated Cost:
$1 million

10. SW 32nd St to SW Beach Ave
Widen for shoulders and landscaped sidewalk on the east side

Southbound Northbound

Estimated Cost:
$26 million

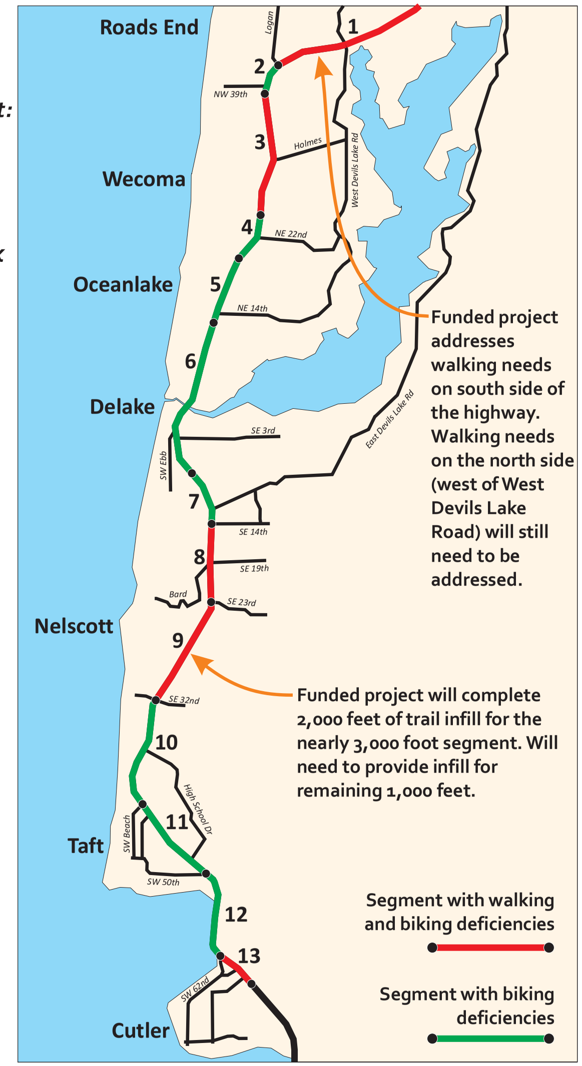
11. SW Beach Ave to SW 51st St
(See Potential Taft Highway Reconfiguration poster)

12. SW 51st St to SW Jetty Ave
(See project B12: Bike Warning Flashers on Schooner Creek Bridge)

13. SW Jetty Ave to City Limits
Widen for bike lanes and landscaped sidewalk

Southbound Northbound

Estimated Cost:
$12 million



Oceanlake Highway Design Options

US 101 through Oceanlake is heavily congested in the summer. Lack of turn lanes and bike lanes, and the presence of on-street parking restricts mobility and causes conflicts between cars, bikes, and pedestrians. The corridor is fully occupied with no room for widening. Any changes in Oceanlake would require removal of the on-street parking.

Do you think changes should be made to US 101 in Oceanlake? If so, which option do you prefer?

Option 1: Do Nothing

ADVANTAGES
- On-street parking
- Curb extensions for reduced crossing distances
- Buffer between sidewalk and motorists

DISADVANTAGES
- No bike facilities
- Worst option for auto mobility due to left turns and parking maneuvers made in highway lanes

Option 2: Remove Parking/Curb Extensions for Center Turn Lane

ADVANTAGES
- Best option for auto mobility
- Reduces chance for rear-end collisions

DISADVANTAGES
- No bike facilities
- Worst option for pedestrian crossings
- No buffer between motorists and sidewalk
- Likely to increase vehicle speeds through high pedestrian activity area

Option 3A: Remove Parking/Curb Extensions for Bike Lanes

ADVANTAGES
- Bike facilities provided
- Maintains buffer between motorists and sidewalk
- Improves pedestrian visibility at crosswalks

DISADVANTAGES
- No on-street parking available
- Pedestrian crossings lengthened

Option 3B: Remove Parking/Curb Extensions for Bike Lanes and Reduce Lane Widths for Center Buffer

ADVANTAGES
- Bike facilities provided
- Maintains buffer between motorists and sidewalk
- Improves pedestrian visibility at crosswalks
- Provides small pedestrian refuge at midblock crossings (would require additional 2' to provide comfortable refuge island)

DISADVANTAGES
- No on-street parking available
- Pedestrian crossings lengthened
- Travel lane and bike lane widths would be less than desired

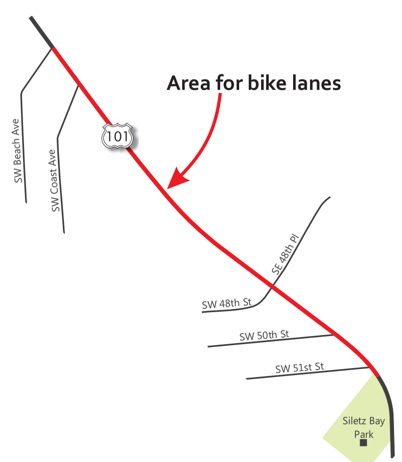
Potential Taft Highway Reconfiguration

SW Beach Ave to Siletz Bay Park

Converting the outside lanes on the highway to comfortable bike lanes could transform Taft into a complete multi-modal environment, encouraging more bicycle activity in the area. It would require low-cost painting and would complement the streetscape improvements already in place. Congestion would increase for drivers, but this area would continue to be one of the least congested segments of highway in the city.

ADVANTAGES
- Creates a bike-friendly environment and could be connected to a local recreational bike route in Taft
- Will result in less speeding
- Easier pedestrian crossings
- Puts a buffer between highway traffic and sidewalks to make walking more comfortable
- Retains all beautification enhancements already made
- Can be a low-cost trial project

DISADVANTAGES
- Increased congestion for drivers



Existing Configuration

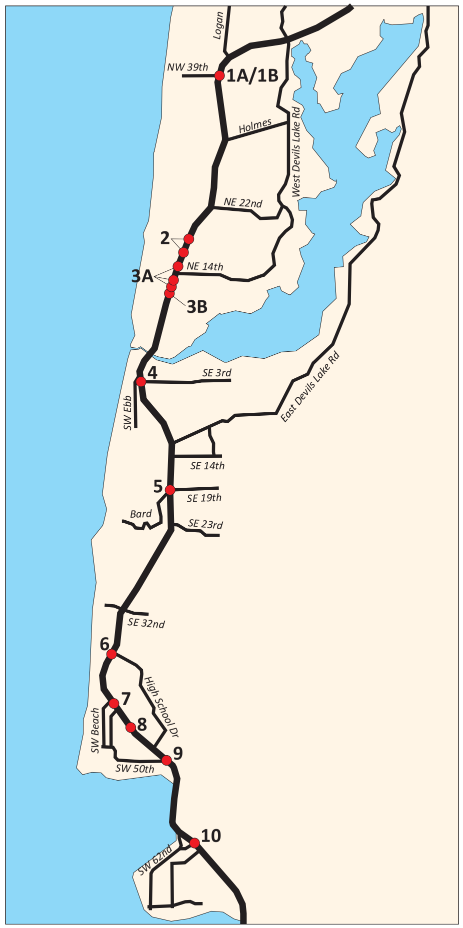
Bike Friendly Alternative

US 101 Crossing Improvement Projects

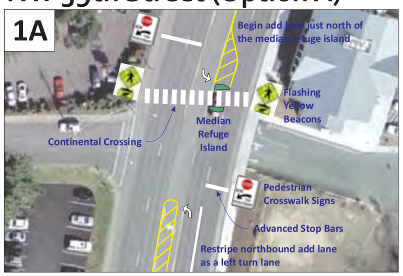
Improving the safety and convenience of pedestrian crossings along the highway is a high priority.

Which of these crossing projects are most critical?

Do you agree with the proposed treatments?



NW 39th Street (Option A)



NW 39th Street (Option B)

NW 18th Street & NW 16th Street

NW 15th, 13th, & 12th Street

NE 11th Street

SE 3rd Street

SE 19th Street/SW Bard Road

SE High School Drive

South of SW Beach Avenue

South of SW Coast Avenue

SW 50th Street

SW 62nd Street

DKS

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

LINCOLN CITY TRANSPORTATION SYSTEM PLAN

PUBLIC EVENT #3 SUMMARY

Date: Sunday, August 9, 2015

Time: Advertised as 11:00 AM to 1:00 PM (City staff were present 9:00 AM to 3:00 PM)

Location: Farmer's Market at the Lincoln City Cultural Center, 540 NE Highway 101

The project team held an open house to solicit public input on the draft Transportation System Plan project list. The event was held concurrently with the farmer's market. Not all attendees completed a comment form or signed in for the event, but participation is estimated to be 45 to 50 people.

Several posters were on display and handouts were provided. The materials were also made available via the project website. Those in attendance were asked to either place a marker on the poster or fill out a comment form, letting us know what projects were most important to them. Posters presented at the open house are attached at the end of this summary.

HIGH PRIORITY PROJECTS

The public was asked if we included the right projects in Package 1. Package 1 includes the highest priority projects that we believe could be funded over the next 20 years. Available funding is assumed to include about $2.5 million in local funds and from $5 to 10 million in state funds for projects benefiting Highway 101. The following is a summary of the changes they would like to see to Package 1:

- Four people suggested that Project T2 (Improved LINC Transit Service Hours) be included. It was specifically mentioned that Lincoln City needs improved transit for seniors, and better access to senior services outside Lincoln City. They further suggested that evening and Sunday service is needed.
- Project T5 (Improved County Transit) should be included.
- Two people suggested that Project T3 (Seasonal Trolley Feasibility Study) should be removed from Package 1.

- Two people suggested any project that adds rapid flashing beacons to street crossings.
- Any project that would reduce travel speeds along local streets.

Other general comments included:

- Four people suggested adding a project to improve traffic flow in Oceanlake. The need for a left-turn lane was mentioned each time.
- Two people think transit service is needed along East Devils Lake Road.
- Improved parking is needed near the SW Canyon Drive beach entrance.
- The intersection of NE Oar and NE 14th should be converted to all-way stop control.
- More off-street parking is needed near Highway 101.

FAVORITE PROJECTS

The public was asked to identify their top 3 favorite projects. The responses included:

- T1 (Transit Facility Improvements): 2 votes
- T2 (Improved LINC Transit Service Hours): 3 votes
- T5 (Improved County Transit): 2 votes
- M1 (Neighborhood Traffic Calming Program)
- M2 (VMS System)
- M3 (Tourism Management Policy)
- M5 (Oceanlake Parking Management)
- M6 (Safe Routes to School Program)
- M7 (Tsunami Evacuation Route Identification)
- M9 (Paving Gravel Roads Policy Update)
- D1 (North Lincoln City Circulation Study): 2 votes
- D2 (Logan Rd/NE Port Way Safety Improvement)
- D3 (NE 47th Extension)
- D4 (US 101/NE East Devils Lake Road Intersection Improvements)
- D5 (US 101/NE Neotsu Drive Intersection Improvements)
- D8 (NW Harbor Improvements)
- B1 (NW Logan Bike Lane Gaps)
- B8 (NE 13th/NE Keel Bicycle Boulevard)
- B12 (Restripe US 101 from city hall to SE 14th Street to include bike lanes. Retains five lanes)
- B15 (SE High School Bike Lanes)

DKS

- B18 (Bike warning flashers on US 101/Schooner Creek Bridge)
- P1 (Logan Road Interim Striping Project)
- P2 (NW Logan Sidewalk Infill)
- P38 (SW Bard Rd Crossing)
- P39 (Widen US 101 from SE 14th Street to SE 23rd Drive to include bike lanes and landscaped sidewalks).
- P42 (SE High School Dr/SE Fleet/SE Spyglass Ridge Sidewalk Infill)
- P44 (SE High School Dr Crossing)

REASONABLE FEE FOR IMMEDIATE PROJECT CONSTRUCTION

The public was asked if they would be willing to pay a reasonable fee for a limited time if it allowed certain projects to be constructed right away. The responses included:

- Two people said yes, without specifically mentioning any projects.
- One person said yes, for better public transit.
- Yes, for the following projects:
  - P45 (SW Coast/Beach Crossing)
  - P49 (Cutler Crossing)
  - M5 (Oceanlake Parking Management)
  - M7 (Tsunami Evacuation Route Identification)
  - M10 (Information Signs)
  - P4 (NE 39th St Crossing)
  - D2 (Logan Rd/NE Port Way Safety Improvement)
  - D21 (Taft Coordinated Signal Timing)
- One person said no.

OTHER COMMENTS

The following is a list of other comments received:

- Highway 101 needs to be widened north of Logan Road.
- Bard Road needs to be paved.
- Love all of the projects, especially the Harbor Road improvements.
- Do not repave 63rd Street.
- Remove the roadway striping along Logan Road to slow traffic.
- ODOT and the city should only do maintenance at night. It causes too much traffic during the day.
- Great figures, they are clean and easy to read; yet comprehensive.

- Need to consider trails with green spaces.
- Try to provide a more pedestrian friendly environment in the city.
- Need to provide separated left-turn lanes.
- Need rapid flashing beacons for all street crossings.
- Need to have consistent cross-section along Highway 101.
- A park and ride lot will not be useful without better public transit service.
- Safe bicycle and pedestrian routes are needed, especially to schools. The city should ask students what routes they take.
- How much would a Highway 101 bypass around the city be?
- Need to involve the neighborhood groups in reviewing the projects.
- A traffic signal should be installed at the US 101/NE Neotsu Drive intersection.
- Add a public parking lot in Roads End.
- Consider surface parking lots that are paid for by usage fees.
- Consider starting a “go fund me” site to help pay for some of the projects.
- Visitors should help pay for the transportation improvements needed.
- Consider an exception to the local fuel tax for residents.
- Consider increasing the Transient Room Tax and provide a larger share of the revenue to support transportation improvements.

Lincoln City Transportation System Plan

What is a Transportation System Plan?

Lincoln City's Transportation System Plan (TSP) will include investment and management strategies to meet transportation needs within the city over the next 20 years. This includes recommended projects to improve the safety, connectivity, and efficiency for driving, walking, biking, and riding transit. Having an adopted TSP will help Lincoln City make the best use of limited resources and compete for state and federal funding.

Major Components of a TSP

We are here!

Goals and Objectives	Transportation Conditions	Alternatives Evaluation	Draft TSP	Final TSP
Develop project goals, objectives and evaluation criteria.	Review the transportation system to identify current conditions and problems, and determine future needs through 2035.	Identify and evaluate solutions and projects for the identified needs of the transportation system through 2035.	The solutions and projects that best meet the project goals, objectives and evaluation criteria will be incorporated into a Draft TSP.	Planning/City Commission Public Hearings, and City adoption of Final TSP. The first Planning Commission hearing is September 15, 2015.
	Community Event #1	Community Event #2	Community Event #3	Public Hearings

Purpose of Today's Community Event

This is your opportunity to review and comment on priorities for walking, biking, driving, transit and demand management. Refer to the posters and a handout that summarizes the displayed projects. As you visit these displays, consider the following:

Transportation Funding

The city likely will have about $2.5 million to spend on transportation projects over the next 20 years. ODOT (Oregon Department of Transportation) may contribute $5 to $10 million for investments that would benefit the Highway 101 corridor. The full TSP project list, however, includes more than 120 projects, totaling an estimated $254 million. Because our needs exceed the money we have to spend, the TSP prioritizes projects and explores new revenue sources to fund additional improvements.

Draft TSP Projects

The Draft TSP groups projects into four packages.

- **Package 1** includes the highest priority projects that could be funded with the $2.5 million worth of city funds, and $5 to $10 million in state funds.
- **Packages 2 and 3** each require a new revenue stream capable of yielding another $2.5 million.
- **Package 4** includes all other projects in the TSP. Packages 2 through 4 are referred to as the Aspirational Plan. The Aspirational Plan includes all projects the city would like to do, though funding may not be likely within the 20-year period.

Please complete a comment form, and answer the following:

- Does Package 1 include the correct priorities or should it include others?
- How soon should the city make these improvements? Place a sticker near those that the city should do immediately.
- What would you be willing to pay for these and other projects? How should the city get the funding (e.g., gas tax, street fees, bond issue)?

Lincoln City Transportation System Plan
Public Event #3

City of Lincoln City

What is the Transportation System Plan?

Lincoln City's Transportation System Plan (TSP) will include investment and management strategies to meet transportation needs within the city over the next 20 years. This includes recommended projects to improve the safety, connectivity, and efficiency for driving, walking, biking, and riding transit. Having an adopted TSP will help Lincoln City make the best use of limited resources and compete for state and federal funding.

Transportation funding affects

It is estimated that the city will have around $2.5 million to spend on transportation projects over the next 20 years. In addition to this, there could be as much as $5 to $10 million available from state sources for investments that would benefit the Highway 101 corridor. However, the full TSP project list includes more than 120 projects, totaling an estimated $254 million worth of investments.

Because funding is very limited, identifying the highest priority projects that could be constructed with anticipated funding will be important. This is also a good time to consider if the city should explore new revenue streams to help fund transportation improvements in the future.

So what projects are most important to you?

The Draft TSP groups projects into four packages, which are indicators of priorities.

- **Package 1** includes the highest priority projects that could be funded with the $2.5 million worth of city funds, and $5 to $10 million in state funds that may be available.
- **Packages 2 and 3** each require a new revenue stream capable of yielding another $2.5 million.
- **Package 4** includes all other projects in the TSP.

The city is not required to construct projects in this order. It is simply a guide to help identify which projects may be of highest value considering the amount of funding expected to be available. The city can always change priorities over time as transportation needs change and opportunities arise.

The tables on the following pages provide descriptions of all projects recommended in the Draft TSP, including estimated costs and the package in which they should be included. The project numbers in the left hand column correspond with the projects illustrated on the maps. Please take some time to review these and fill out a comment form, letting us know what projects are most important to you.

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***
Transit Projects (not shown on maps)					
T1	Facility Improvements	Upgrade amenities to include sheltered stops with seating, route information, and bicycle parking.	$200,000	City	1
T2	Improved LINC Transit Service Hours	Expand LINC hours of service four hours from 5:45pm to 9:45pm, and add Sunday service. (Project cost for 20 years).	$3,375,000	City	4
T3	Seasonal Trolley Feasibility Study	Prepare an implementation plan for a seasonal trolley bus/double deck bus service, including expected costs, expected revenue, and potential funding sources.	$100,000	City	1
T4	North End Park & Ride	Develop Park & Ride at the North end and incorporate North by Northwest Connector and other transit amenities.	$75,000	City	1
T5	Improved County Transit	Work with Lincoln County Transit to identify potential improvements to operating hours and bus frequency.	$25,000	City/ County	2
Demand Management Projects (not shown on maps)					
M1	Neighborhood Traffic Calming Program	Implement program to process community requests for neighborhood traffic calming, investigate options, and implement improvements. Key areas for traffic calming investigations include: Roads End, NE Holmes Road, NW 39th, and Cutler.	$100,000	City	1
M2	VMS System	Display traveler information at gateways to city on Variable Message Signs (VMS).	$900,000	ODOT	1
M3	Tourism Management Policy	Develop a fee system that charges tourists for excessive vehicles at vacation rentals/hotels.	$30,000	City	4
M4	Business Incentives Program	Fund an incentives program for Lincoln City visitors to come earlier and/or stay later, thus reducing peak traffic demands. Project cost assumes $10,000 per year over 20 years.	$200,000	City	1
M5	Oceanlake Parking Management	Enhance parking wayfinding in Oceanlake to direct visitors to public parking lots.	$25,000	City	1
M6	Safe Routes to School Program	Continue support of the Safe Routes to School Program.	$10,000	City	1
M7	Tsunami Evacuation Route Identification	Enhance tsunami evacuation route wayfinding throughout the city.	$30,000	City	1

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***
M8	Bike Parking Program	Install new bike parking throughout the city.	$30,000	City	4
M9	Paving Gravel Roads Policy Update	Update city policy and schedule regarding paving gravel roads.	$10,000	City	1
M10	Information Signs	Information signs on travel time through the city, alternate routes and social media program.	$150,000	City	1
Driving Projects (see Map #1)					
D1	North Lincoln City Circulation Study	Determine roadway connectivity for north Lincoln City (bound by NW Logan Road, US 101, and the north UGB), including need for improved east-west connectivity.	$50,000	City	1
D2	Logan Rd/NE Port Way Safety Improvement	Logan Rd/NE Port Way safety improvements, such as intersection realignment, roundabout, or all-way stop control.	$1,200,000	Developer	4
D3	NE 47th Extension	Extend NE 47th St to the intersection of NW 44th St and NW Logan Rd; improvement includes sidewalks.	$4,300,000	Developer	4
D4	US 101/NE East Devils Lake Road Intersection Improvements	Widen the south leg of the US 101/NE East Devils Lake Road intersection for a center turn lane to allow for two-stage left turns.	Funded	ODOT/ Tribe	1
D5	US 101/NE Neotsu Drive Intersection Improvements	Widen the south leg of the US 101/NE Neotsu Drive intersection for a center turn lane to allow for two-stage left turns.	Funded	ODOT/ Tribe	1
D6	West Devils Lake/Logan Coordinated Signal Timing	Optimize the existing traffic signals at US 101/NE West Devils Lake Road and US 101/NW Logan Road by implementing coordinated signal timing plans, upgrading traffic signal controllers, and installing communication.	$150,000	ODOT	1
D7	NE Surf Extension	Extend NE Surf Ave to NE 34th and 35th St, while also connecting to NE 34th St; including sidewalks.	$3,425,000	Developer	4
D8	NW Harbor Improvements	Improve NW Harbor from NW 21st to NW 15th (designed and scheduled to be constructed 2015-2016); includes sidewalk on the west side and shared roadway markings for bikes.	Funded	City	1
D9	SE Neptune Extension	Extend SE Neptune Ave to SE East Devils Lake Rd at SE Oar Ave; improvement includes sidewalks.	$600,000	Developer	4

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***
D10	NE East Devils Lake Flood Prevention	Elevate NE East Devils Lake Rd (SE Port Ave to east of S Hill Rd) as identified in Lincoln County TSP, including a shared-use path on the north side. Work with county to develop a long-term solution to avoid flooding.	$25,075,000	County	4
D11	SE Port Extension	Extend SE Port Ave from SE Oar Ave to the proposed SE Mast Ave extension; improvement includes sidewalks.	$575,000	Developer	4
D12	SE Mast Extension	Extend SE Mast Ave to SE 14th St; improvement includes sidewalks.	$1,825,000	Developer	4
D13	Bard Rd Improvement Plan	Develop a plan for improving Bard Road for bike lanes, sidewalk, and curve smoothing and connectivity.	$75,000	City	1
D14	SE Lee Extension	Extend SE Lee Ave to SE 23rd Dr; install sidewalks along the west side and a shared use-path along the east side.	$11,900,000	Developer/ City	4
D15	SE Fleet Extension	Extend SE Fleet Ave to SE 23rd Dr, while also connecting to stub streets east of US 101; install sidewalks along the west side and a shared use-path along the east side.	$3,000,000	Developer/ City	4
D16	SE 27th St Extension	Extend SE 27th St east to the proposed SE Lee Ave extension, and upgrade existing facility; improvement includes sidewalks.	$1,400,000	Developer	4
D17	SE 28th St Realignment	Realign SE 28th St to the intersection of US 101 and SW 29th St, extend SE 28th St east to the proposed SE Lee Ave extension, and upgrade existing facility; install sidewalks along the north side and a shared-use path along the south side.	$2,925,000	Developer	4
D18	SW 30th Extension	Extend SW 30th St from SW Coast Ave to US 101 at SE 31st St; improvement includes sidewalks.	$1,425,000	Developer	4
D19	SE Dune Extension	Extend SE Dune Ave from SE 35th St to SE 32nd St, and close existing US 101 access; improvement includes sidewalks.	$1,000,000	Developer	4
D20	Schooner Creek Rd/Bear Creek Rd Improvement Plan	Study affordable improvements (e.g., grading, gravel) from intersection of Bear Creek Road and Salmon River Hwy (north of Lincoln City) to SE 51st Street	$150,000	City/ County/ ODOT	4
D21	Taft Coordinated Signal Timing	Optimize the existing traffic signals at US 101/SW 48th Street and US 101/SW 51st Street by implementing coordinated signal timing plans, upgrading traffic signal controllers, and installing communication.	$100,000	ODOT	1

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***
D22	SW Fleet Extension	Upon redevelopment, extend SW Fleet Ave from SW 50th St to SW 51st St; improvement includes sidewalks.	$575,000	Developer	4
D23	Taft Beach Parking Local Connection	Create a new local connection from the west end of SW 51st St to SW 50th St; install sidewalks on the east side of the street and a shared-use path on the west side.	$275,000	Developer/ City	4
D24	SW Jetty Realignment	Realign SW Jetty Ave to perpendicularly connect to US 101, and improve SW Jetty Ave as a two-way minor collector; realignment includes developing a shared-use path along the west side and sidewalks on the east side.	$675,000	City	4
D25	SW Keel Connection	Extend SW Keel Ave from SW 63rd St to SW Jetty Ave; improvements include sidewalks along the east side and a shared-use path along the west side.	$1,150,000	City	4
Pedestrian Projects (see Map #2)					
P1	Logan Road Interim Striping Project	Interim pedestrian striping improvement along Logan Rd between 50th St and Roads End State Park	$100,000	City	1
P2	NW Logan Sidewalk Infill	Fill sidewalk 250' gap on west side of NW Logan Rd between US 101 and NW 50th St.	$13,000	Developer/ City	1
P3	Highway Improvements Segment 1	Install sidewalk along the north side of US 101 from NE West Devils Lake Road to NW Logan Road. Includes the 350' segment on the east side of Logan Road, at the US 101 intersection.	$3,600,000	ODOT	4
P4	NE 39th St Crossing	Stripe a continental crossing across US 101 on the north side of the NW 39th Street intersection. This improvement will restripe the highway so that the northbound lanes are reduced to a single through lane until after the crossing where they become two through lanes again. This improvement includes a median refuge island, RRFB's, advanced stop bars, and pedestrian crosswalk signs. See Volume 2, Section Q for a concept drawing.	$75,000	ODOT	1
P5	NW 39th St Sidewalk Infill	Add sidewalk on north side of NW 39th St from NW Port Ave to NW Jetty Ave.	$625,000	City	4

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***
P6	NW Jetty Sidewalk Infill (north segment)	Add sidewalk on the east side of NW 40th Place from NW 40th St to NW Jetty Ave, and on the west side of NW Jetty Ave from NW 40th Pl to NW 30th St.	$1,000,000	City	4
P7	NW Jetty Sidewalk Infill (south segment)	Add sidewalk on the west side of NW Jetty Ave from NW 30th St to NW 21st St.	$1,000,000	City	4
P8	NW 34th Street Sidewalk Infill	Add sidewalk to north side of NW 34th St from US 101 to NW Jetty Ave.	$900,000	City	4
P9	NW 30th Sidewalk Infill	Add sidewalk on both sides of NW 30th St from US 101 to NW Jetty Avenue.	$650,000	City	2
P10	NW 28th St Sidewalk Infill	Add sidewalk on both north and south sides of NW 28th St from US 101 to NW Jetty Ave.	$1,750,000	City	4
P11	NW 26th St Sidewalk Infill	Add sidewalk on north and south side of NW 26th St between NW Keel Ave to NW Jetty Ave.	$160,000	City	2
P12	NW 25th St Sidewalk Infill	Add sidewalk on north and south side of NW 25th between NW Keel Ave and NW Jetty Ave, and NW Oar Ave and US 101. Between NW Oar Ave and NW Keel Ave, add sidewalk to south side of street.	$660,000	City	2
P13	Highway Improvements Segment 3	Widen US 101 from NW 39th Street to NW 25th Street to include bike lanes and landscaped sidewalks (stays three lanes).	$28,800,000	ODOT	4
P14	NE Holmes Sidewalk Infill	Add sidewalk on both sides of NE Holmes from US 101 to NE West Devils Lake Road. Coordinate with project B4.	$850,000	City	2
P15	NE 28th St Sidewalk Infill	Add sidewalk to both sides of NE 28th Street east of NE West Devils Lake Road.	$650,000	City	4
P16	NE 22nd & Oar Pl Pedestrian Access	Provide pedestrian refuge from frequent turning vehicles by filling sidewalk gaps on north side of NE 22nd St between US 101 and NE Oar Place, and east side of NE Oar Place near NE 22nd Street.	$125,000	City	4
P17	NE Surf/NE 21st Sidewalk Network	Complete sidewalk on both sides of NE Surf Avenue between NE 22nd Street and NE 21st Street, on north side of NE 21st Street between NE Quay Place and NE Surf Avenue, and on both sides of NE 21st Street between US 101 and NE Quay Place.	$1,300,000	City	4
P18	NE 14th St Sidewalk Infill	Add sidewalks to the north side of NE 14th Street from US 101 to Regatta Park.	$895,000	City	1

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***
P19	Oceanlake Midblock Crossings	Expand no-parking zones to extend from the crosswalk to the advanced stop bars. See Volume 2, Section Q for a concept drawing.	$10,000	ODOT	1
P20	South Oceanlake Unsignalized Crossings	Expand no-parking zones around NW 15th Street and NW 13th Street to extend from the crosswalk to the advanced stop bars; install a median refuge island on the north approach of the NE 11th Street intersection; install pedestrian crosswalk signs at stop bars. See Volume 2, Section Q for a concept drawing.	$30,000	ODOT	4
P21	NW 14th St Sidewalk Infill	Add sidewalks to the north side of NW 14th Street from NW Harbor Ave to US 101.	$480,000	City	1
P22	NW Harbor Sidewalk Infill	Add sidewalk on the west side of NW Harbor Ave from NW 15th St to NW 12th St.	$300,000	City	3
P23	NW 12th Sidewalk Infill	Add sidewalk on both sides of NW 12th St from NW Harbor Ave to US 101.	$1,000,000	City	3
P24	NW Inlet Ave, NW 6th St, and NW 2nd St Sidewalk Infill	Add sidewalk on the west side NW Inlet Ave south of NW 12th St, south side of NW 6th St, and the south side of NW 2nd St.	$1,000,000	City	3
P25	SE 3rd St Crossing	Install RRFB's and pedestrian crosswalk signs at stop bars. See Volume 2, Section Q for a concept drawing.	$50,000	ODOT	1
P26	SE 3rd St Sidewalk Infill	Add sidewalks to the north side of SE 3rd St.	$1,000,000	City	4
P27	SE Neptune Ave Sidewalk Infill	Add sidewalks to both sides of SE Neptune Ave from SE 3rd St to SE 8th St.	$525,000	City	4
P28	SW Ebb St Sidewalk Infill	Add pedestrian improvements to the west side of SW Ebb Ave from US 101 to SW 9th St.	$400,000	City	4
P29	SW 9th St, and SW Fleet Ave Sidewalk Infill	Add pedestrian improvements to the south side of SW 9th St from SW Ebb Ave to SW Fleet Ave, and west side of SW Fleet Ave from SW 9th St to SW 12th St.	$175,000	City	4
P30	SW 11th & Coast Ave Pedestrian Corridor	Add sidewalk on east side of SW 11th Drive at SW 9th St to SW Coast Ave.	$2,950,000	City	4
P31	SW 12th St Sidewalk Infill	Add pedestrian improvements and stormwater to both sides of SW 12th St from SW Fleet Ave to US 101.	$350,000	City	4

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***
P32	SW Harbor Dr (SW 12th to SW 14th), and SW 14th St Sidewalk Infill	Add pedestrian improvements to both sides of SW Harbor Dr from SW 12th St to SW 14th St, and both sides of SW 14th St between SW Harbor Drive and US 101.	$325,000	City	4
P33	SW Harbor Dr (SW 14th to SW Bard) Sidewalk Infill	Add pedestrian improvements to the east side of SW Harbor Drive between SW 14th St and SW Bard Rd.	$275,000	City	4
P34	East Devils Lake Rd Sidewalk Infill	Sidewalk infill on the north side of East Devils Lake Rd from SE Jetty Ave to SE Oar Ave.	$175,000	Developer/ City	4
P35	SE Oar Ave Sidewalk Infill	Sidewalk infill on both sides of SE Oar Ave between East Devils Lake Rd and SE 14th St, and on the west side between SE 14th St and the end.	$825,000	Developer	4
P36	SE 14th St Sidewalk Infill	Sidewalk infill on both sides of SE 14th St between SE Marine Ave and SE Oar Ave.	$325,000	Developer	4
P37	SE 19th St Sidewalk Infill	Sidewalk infill on the north side of SE 19th St.	$350,000	Developer	4
P38	SW Bard Rd Crossing	Install a continental crossing across US 101 between the SW Bard Road and SE 19th Street intersections. This improvement includes a median refuge island in the center turn lane, a curb extension on the west side, wheelchair ramps with sidewalk on the east side, advanced stop bars, and pedestrian crosswalk signs at the crossing and at the stop bars. See Volume 2, Section Q for a concept drawing.	$75,000	ODOT	1
P39	Highway Improvements Segment 7	Widen US 101 from SE 14th Street to SE 23rd Drive to include bike lanes and landscaped sidewalks (stays four lanes).	$16,800,000	ODOT	4
P40	SW Coast Ave, SW Beach Ave, and SW 28th St Sidewalk Infill	Complete sidewalk gaps along the south side of SW 28th St between SW Beach Ave and SW Coast Ave, both sides of SW Coast Ave between SW Bard Rd and SW 24th Dr, and both sides of SW Coast Ave from SW Beach Ave to SW 29th St.	$995,000	City	4
P41	SE 23rd Drive Sidewalk Infill	Add sidewalk to both sides of SE 23rd Drive from US 101 to terminus of road.	$5,525,000	Developer	4
P42	SE High School Dr/SE Fleet/SE Spyglass Ridge Sidewalk Infill	Fill gap in sidewalk network along the north side of SE High School Dr, and west sides of SE Fleet Ave and SE Spyglass Ridge Dr.	$275,000	City	4

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***
P43	Highway Improvements Segment 9	Widen US 101 from SW 32nd Street to SW Beach Avenue to include bike lanes on both sides and a landscaped sidewalk on the east side. Retains three lanes, and narrows to two lanes in constrained areas.	$31,200,000	ODOT	4
P44	SE High School Dr Crossing	Install a continental crossing across US 101 between SE High School Drive and the motel driveway. This improvement includes a median refuge island in the center turn lane, advanced stop bars, and pedestrian crosswalk signs at the crossing and at the stop bars. See Volume 2, Section Q for a concept drawing.	$30,000	ODOT	4
P45	SW Coast/Beach Crossing	Install a midblock continental crossing across US 101 between SW Beach Avenue and SW Coast Avenue. This improvement includes a median refuge island, advanced stop bars, closing the ingress driveway just south of the proposed crossing, relocating the existing transit shelter to the proposed crossing, and pedestrian crosswalk signs at the crossing and at the stop bars. See Volume 2, Section Q for a concept drawing.	$100,000	ODOT	1
P46	Fire Signal Crossing	Install a pedestrian crossing at the fire signal, incorporating pedestrian push buttons to activate a pedestrian phase with the current fire signal. This improvement includes continental crossing, relocated stop bars, and pedestrian crosswalk signs at the stop bars. See Volume 2, Section Q for a concept drawing.	$100,000	ODOT	4
P47	SW 50th St Crossing	Restripe and realign the existing crossing at SW 50th Street as a continental crossing that is perpendicular to the roadway. This improvement includes adding downward arrow rider sign under existing crossing signs, advanced stop bars, and pedestrian crosswalk signs at stop bars. See Volume 2, Section Q for a concept drawing.	$30,000	ODOT	1
P48	SE 51st/Schooner Creek Sidewalk Infill	Add new sidewalks to both sides of SE 51st St from SE 48th Pl to US 101, and to the south side of SE Schooner Creek Rd from SE 51st St to the urban growth boundary.	$2,500,000	City	4

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***
P49	Cutler Crossing	Install a pedestrian crossing at the north leg of SW 62nd Street/US 101. This improvement includes continental crossing, a median refuge island, and pedestrian crosswalk signs. See Volume 2, Section Q for a concept drawing.	$75,000	ODOT	1
P50	Highway Improvements Segment 12	Widen US 101 from SW Jetty Avenue to city limits to include bike lanes and landscaped sidewalks (stays three lanes).	$14,400,000	ODOT	4
P51	Cutler Sidewalk Network	Add sidewalk to both sides of SW 62nd St between US 101 and SW Jetty Ave, both sides of SW 63rd St east of SW Keel Ave and the north side only west of SW Keel Ave, west side of SW Inlet Ave, west side of SW Fleet Ave, and south side of SW 69th St between SW Fleet Ave and SW Harbor Ave.	$2,875,000	City	4
Bicycle Projects (see Map #3)					
B1	NW Logan Bike Lane Gaps	Fill bike lane gaps on both side of NW Logan Rd from US 101 to north of NW 44th St.	$550,000	City	4
B2	Highway Improvements Segment 2	Restripe US 101 from NW Logan Road to NW 39th Street to include bike lanes. Retains five lanes.	$30,000	ODOT	1
B3	NW 39th, NW Jetty Ave, and NW 30th St Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating NW 39th St from US 101 to NW Jetty Ave, NW Jetty Ave from NW 39th St to NW 21st St, and NW 30th St from NW Jetty Ave to US 101 as a shared roadway for bikes.	$75,000	City	4
B4	Holmes Rd Bike Facilities	Add bike lanes to both sides of NE Holmes Rd from NE West Devils Lake Rd to US 101. Coordinate with project P14.	$1,475,000	City	4
B5	Highway Improvements Segment 4	Restripe US 101 from NW 25th Street to NW 21st Street to include bike lanes. Retains parking and five lanes.	$75,000	ODOT	1
B6	NE 21st Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating NE 21st St from US 101 to the dead-end as a shared roadway for bikes.	$30,000	City	1

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***
B7	North Delake Bike Facilities	Add pavement markings/signage (e.g., sharrows), designating NW Harbor Ave from NW 15th St to NW 12st St, NW/NE 14th Street (NW Harbor to NE Keel), NW/NE 12th Street (NW Harbor to NE Keel) and NW Inlet Ave (NW 12th to US 101) as a shared roadway for bikes.	$50,000	City	1
B8	NE 13th/NE Keel Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating NE 13th St from NE Keel Ave to its east terminus, and NE Keel Ave from NE 14th St to NE 10th St as a shared roadway for bikes.	$30,000	City	1
B9	Highway Improvements Segment 5	Restripe US 101 from NW 13th Street to city hall to include a southbound bike lane by reducing existing lane widths. Retains five lanes.	$75,000	ODOT	1
B10	Southeast Delake Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating the route as a shared roadway for bikes. The route includes: SE 1st St from US 101 down to SE 2nd Ct, across the channel via a pedestrian/bicycle bridge to SE 3rd St, along SE 3rd St from the bridge to SE Jetty Ave, and along Jetty Ave to SE East Devils Lake Rd.	$850,000	City	4
B11	Southwest Delake Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating SW Ebb Ave from US 101 to SW 6th St, SW 6th St from SW Ebb Ave to SW Fleet Ave, SW Fleet Ave from SW 6th St to SW 12th St, and SW 12th St, SW Harbor Ave from SW 12th St to SW Bard Rd as a shared roadway for bikes.	$275,000	City	4
B12	Highway Improvements Segment 6	Restripe US 101 from city hall to SE 14th Street to include bike lanes. Retains five lanes.	$30,000	ODOT	1
B13	SE Oar Ave Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating SE Oar Ave from East Devils Lake Rd to the end of SE 14th St as a shared roadway for bikes.	$30,000	City	4
B14	SW Coast Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating SW Coast Ave from SW Bard Rd to US 101/SW 32nd St as a shared roadway for bikes.	$75,000	City	4

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***
B15	SE High School Bike Lanes	Add bike lanes to both sides of SE High School Dr from US 101 to SE Spy Glass Ridge Dr and both sides of SE 48th Pl from SE High School Dr to SE Inlet Ave.	$2,325,000	City	4
B16	Highway Improvements Segment 10	Replace the outside travel lanes along US 101 through Taft, between SW Beach Avenue and Siletz Park with buffered bike lanes.	$75,000	ODOT	1
B17	Taft Bicycle Boulevard	Add pavement markings/signage (e.g., sharrows), designating S 48th (west of SE Inlet Ave, and from High School Dr to SE 51st St), SW Ebb Ave, and SW/SE 51st St (east of SW Ebb Ave) as shared roadways for bikes.	$75,000	City	4
B18	Bike warning flashers on US 101/Schooner Creek Bridge	Install "Bikes on Bridge" warning signs and actuated flashing beacons at each end of the Schooner Creek Bridge on US 101. Improvement includes bicycle detection.	$75,000	ODOT	1
Shared-Use Path Projects (see Map #2 and #3)					
S1	NE Devils Lake Blvd Trail Expansion - Phase 1	Continue the shared-use path along the west side of NE Devils Lake Blvd. north of NE Voyage Ave.	$375,000	Developer/ City	4
S2	NE Devils Lake Blvd Trail Expansion - Phase 2	Replace existing sidewalk on the west side of NE Devils Lake Blvd from US 101 to NE 47th St with a shared-use path.	$600,000	City	4
S3	Head to Bay Trail Expansion - NE 22nd St	Replace existing sidewalk with shared-use path along the south side of N 22nd St from NE Quay Pl to NE Surf Ave and along the west side of NE Quay Pl from NE 22nd St to NE 21st St.	$1,075,000	City	4
S4	NE 21st Path	Create a shared-use path from NE 21st Street/NE Surf Avenue to the NE Tide Avenue terminus.	$325,000	City	4
S5	Head to Bay Trail Expansion - West Devils Lake Road	Fill gaps in Head to Bay path along the west side of NE West Devils Lake Rd between NE 26th St and NE Port Ave (includes boardwalk over creek).	Funded	City	1
S6	East Devils Lake Path	Create a shared-use path along the west side of NE East Devils Lake Rd from US 101 to SE Oar Ave.	$22,625,000	County	4

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***
S7	East Delake Path - North	Create a shared-use path connecting NE Keel Ave/NE 10th St, US 101/NE 1st St, and US 101/SE 1st St. Includes a hanging pedestrian/bicycle bridge on the east side of the highway.	$3,000,000	City	4
S8	D River Hanging Bridge	Create a shared-use path along the west side of US 101 from NE 1st Street to SE 1st Street, which includes a hanging pedestrian/bicycle bridge on the D River Bridge.	$625,000	ODOT	1
S9	SE Lee to SE Oar Path	Create a shard-use path from SE Lee Ave to the end of SE Oar Ave.	$625,000	City	4
S10	Highway Improvements Segment 8	Complete the shared-path along the east side US 101 between SE 23rd Drive and SW 32nd Street.	$1,200,000	ODOT	1
S11	Nelscott to Taft Path	Create a shared-use path connecting Nelscott to Taft from SE Fleet Ave/SE 32nd St to US 101 behind the high school, north of the elementary school, and south of the baseball field; then from US 101 to the SW 48th St terminus and to SW 50th St.	$10,600,000	Developer	4
S12	Siletz Park Path	Create a shared-use path connecting SW 52nd Court to the proposed Schooner Creek Hanging Bridge.	$375,000	City	4
S13	Highway Improvements Segment 11	Install a shared-use path along the west side of US 101 between Siletz Park and SW Jetty Avenue. This includes a hanging pedestrian/bicycle bridge on the Schooner Creek Bridge.	$3,600,000	ODOT	1
S14	Cutler Loop Path	Create a shared-use path loop along the beachfront, behind the wetland park, and along the proposed SW Keel Ave alignment.	$7,475,000	City	4

Transportation System Plan Project List (DRAFT)

Project #	Project Description	Project Elements*	Estimated Cost (2014 Dollars)	Primary Funding Source**	Improvement Package***

*The project design elements depicted are identified for the purpose of creating a reasonable cost estimate for planning purposes. The actual design elements for any project are subject to change, and will ultimately be determined through a preliminary and final design process, and are subject to city and/or ODOT approval.

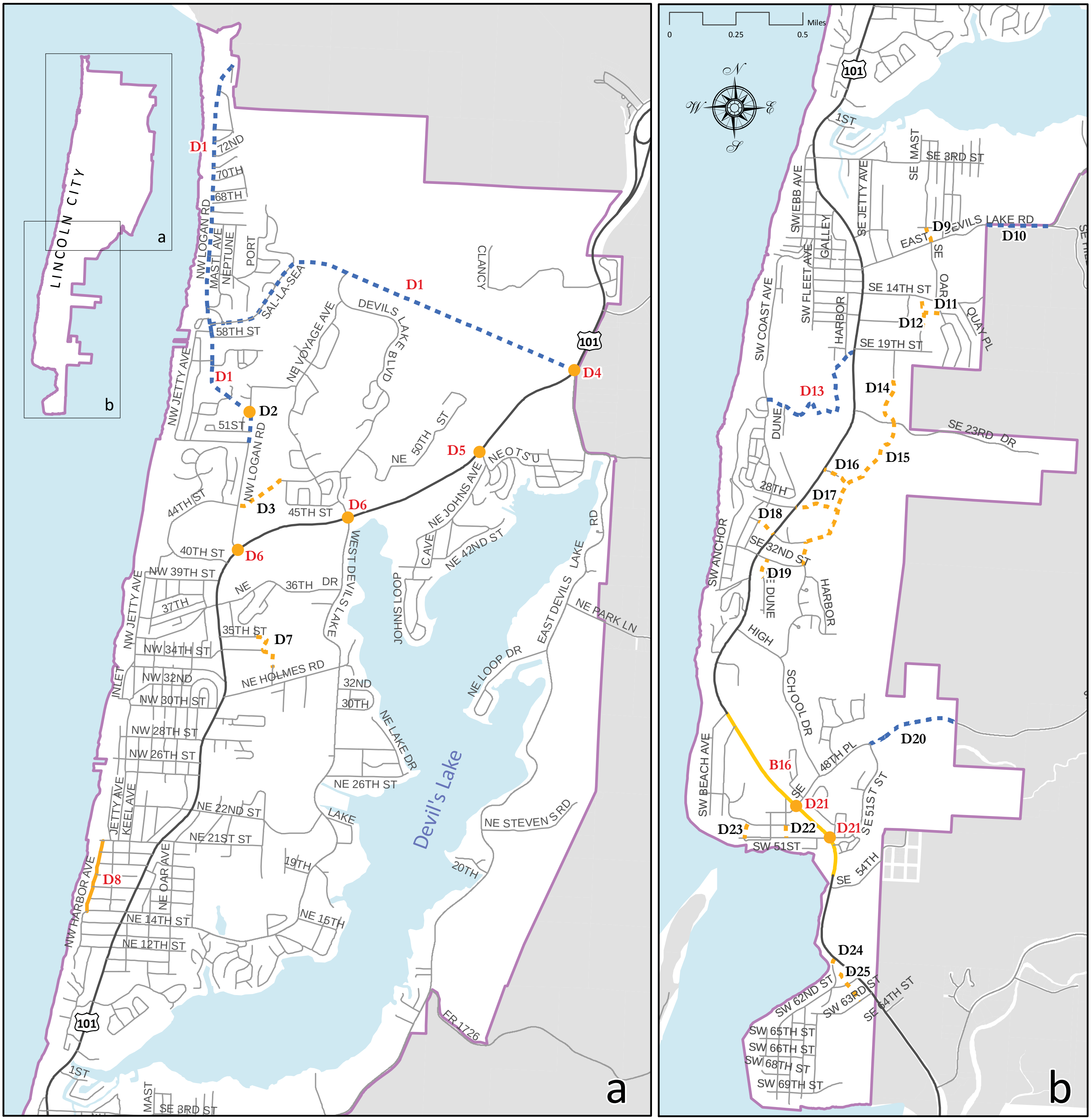
**Primary funding source is based on the agency who has jurisdiction over an existing facility, or who is expected to construct a new facility.

***Improvement Package 1: Financially Constrained Plan (Totals the $2.5 million likely to be available through existing city funding sources. Package 1 also includes a reasonable estimate of how the city would use revenue from various state and/or federal sources).

Improvement Package 2: Relies on $2.5 million of additional funding that would be available if the city opted to add one of the new funding sources described on page 62 of the TSP.

Improvement Package 3: Relies on $2.5 million of additional funding that would be available if the city opted to add one of the new funding sources described on page 62 of the TSP.

Improvement Package 4: Comprised of the aspirational projects, those remaining projects that likely would not have city or state funding by 2035.



1 Planned Driving Investments

Lincoln City

Transportation System Plan

Driving Improvements

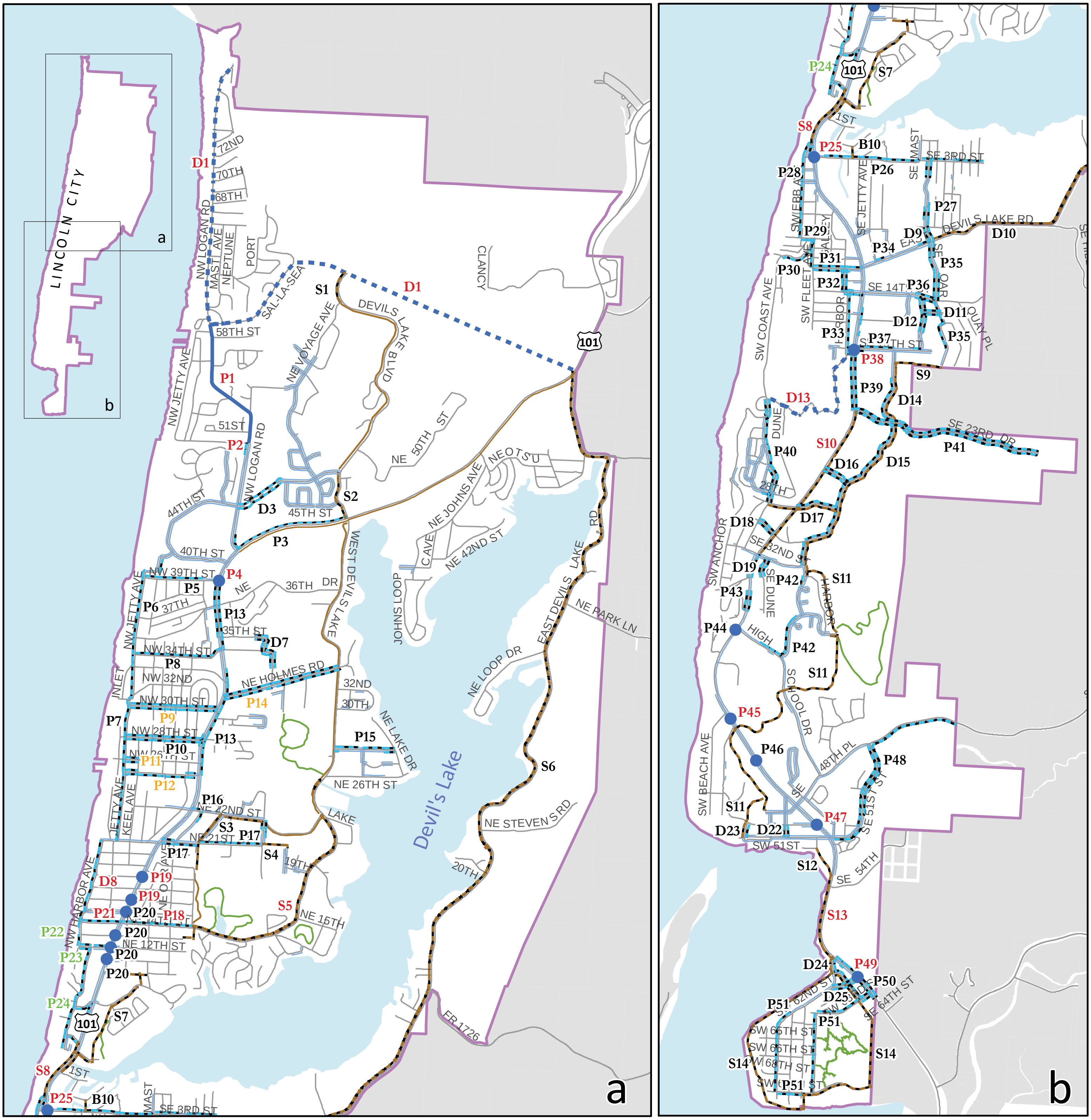
- Future Study
- Planned Street
- Planned Street Improvement
- Planned Intersection Improvement

\# Project included in the Financially Constrained Plan (Package 1)

\# Project included in the Aspirational Plan (Package 4)

Urban Growth Boundary

DKS



2 Planned Walking Investments

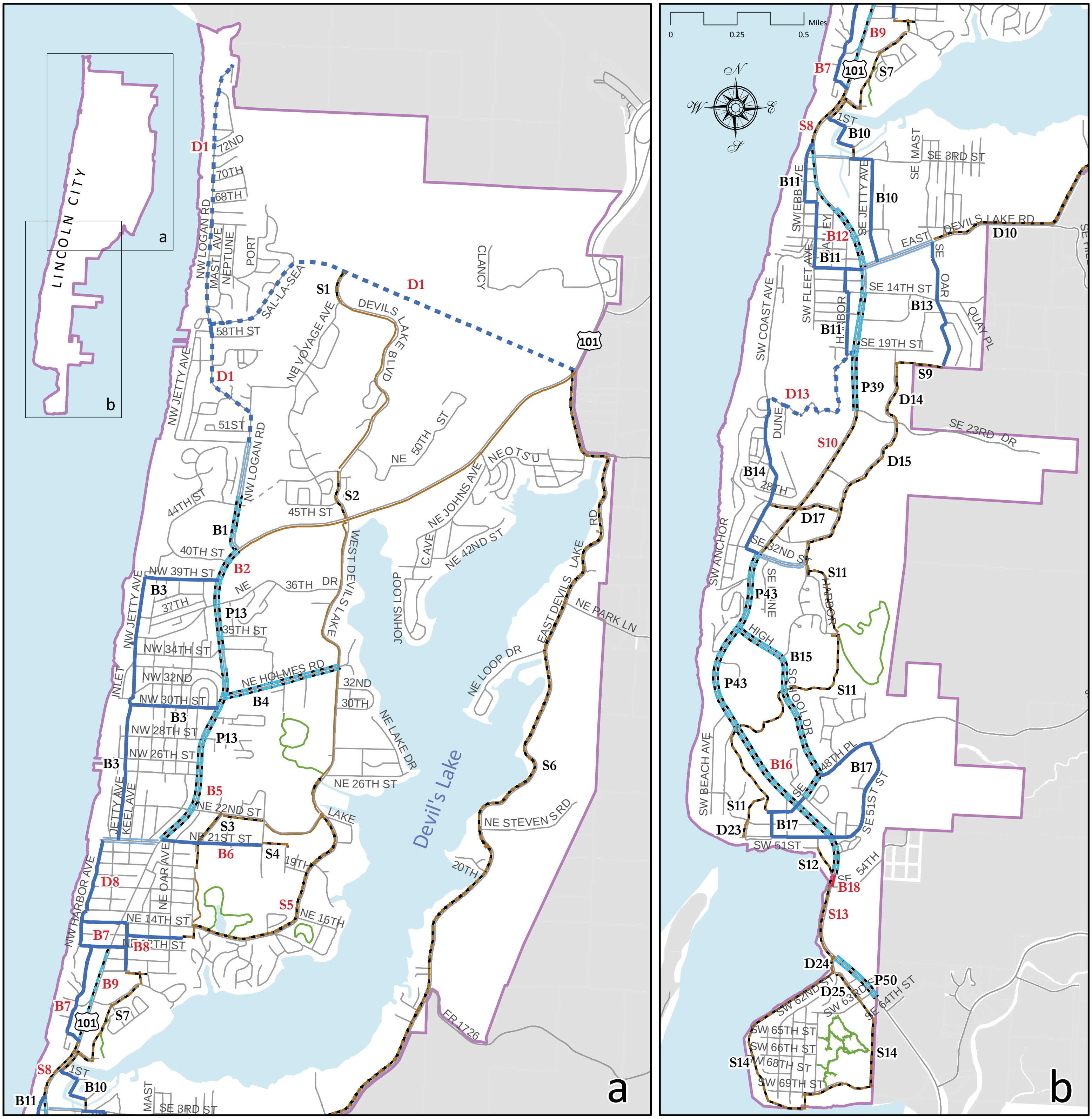
Lincoln City

Transportation System Plan

Pedestrian Improvements

Planned Shared-Use Path	Existing Sidewalks	# Project included in the Financially Constrained Plan (Package 1)
Planned Sidewalk	Existing Shared-Use Path	# Project included in the Financially Constrained Plan (Package 2)
Interim Pedestrian Striping	Existing Trail	# Project included in the Financially Constrained Plan (Package 3)
Future Study		# Project included in the Aspirational Plan (Package 4)
Planned Crossing Improvement		Urban Growth Boundary

DKS



3 Planned Biking Investments

Lincoln City
Transportation System Plan

Biking Improvements

- Planned Shared-Use Path
- Planned Bicycle Lane
- Planned Bicycle Boulevard (Along Existing Street)
- Bikes-in-Roadway Warning System
- Future Study
- Existing Bicycle Lane
- Existing Shared-Use Path
- Existing Trail
- # Project included in the Financially Constrained Plan (Package 1)
- # Project included in the Aspirational Plan (Package 4)
- Urban Growth Boundary

DKS

(This page intentionally left blank)

Section S

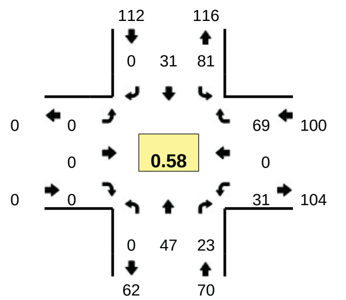
Traffic Counts

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

Type of peak hour being reported: Intersection Peak — Method for determining peak hour: Total Entering Volume

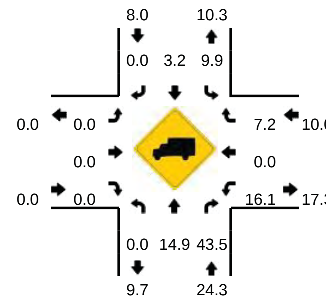
LOCATION: SE High School Dr -- Spyglass Ridge Dr — **QC JOB #:** 10782525

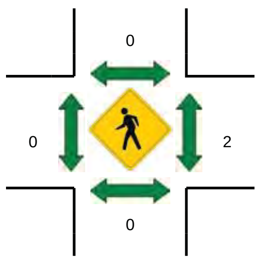
CITY/STATE: Lincoln City, OR — **DATE:** Tue, Oct 02 2012

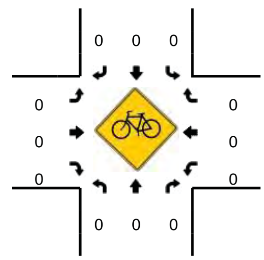


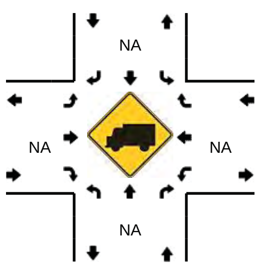
Peak-Hour: 2:55 PM -- 3:55 PM

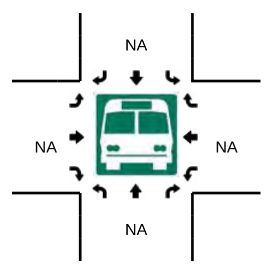
Peak 15-Min: 3:40 PM -- 3:55 PM











5-Min Count Period Beginning At	SE High School Dr (Northbound) Left	Thru	Right	U	SE High School Dr (Southbound) Left	Thru	Right	U	Spyglass Ridge Dr (Eastbound) Left	Thru	Right	U	Spyglass Ridge Dr (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:25 PM	0	0	0	0	2	1	0	0	0	0	0	0	1	0	1	0	5	
2:30 PM	0	0	2	0	3	0	0	0	0	0	0	0	2	0	2	0	9	
2:35 PM	0	2	3	0	0	6	0	0	0	0	0	0	2	0	1	0	14	
2:40 PM	0	2	2	0	1	5	0	0	0	0	0	0	2	0	1	0	13	
2:45 PM	0	0	1	0	3	7	0	0	0	0	0	0	5	0	4	0	20	
2:50 PM	0	6	0	0	3	2	0	0	0	0	0	0	0	0	7	0	18	
2:55 PM	0	2	1	0	9	3	0	0	0	0	0	0	2	0	2	0	19	149
3:00 PM	0	14	3	0	3	4	0	0	0	0	0	0	3	0	3	0	30	162
3:05 PM	0	8	0	0	3	1	0	0	0	0	0	0	0	0	2	0	14	164
3:10 PM	0	5	2	0	2	2	0	0	0	0	0	0	0	0	1	0	12	168
3:15 PM	0	1	0	0	6	4	0	0	0	0	0	0	1	0	0	0	12	175
3:20 PM	0	2	1	0	6	1	0	0	0	0	0	0	3	0	2	0	15	181
3:25 PM	0	2	0	0	8	2	0	0	0	0	0	0	1	0	5	0	18	194
3:30 PM	0	1	1	0	8	3	0	0	0	0	0	0	1	0	3	0	17	202
3:35 PM	0	5	6	0	9	2	0	0	0	0	0	0	1	0	0	0	23	211
3:40 PM	0	1	1	0	11	2	0	0	0	0	0	0	4	0	8	0	27	225
3:45 PM	0	3	5	0	11	3	0	0	0	0	0	0	10	0	23	0	55	260
3:50 PM	0	3	3	0	5	4	0	0	0	0	0	0	5	0	20	0	40	282
3:55 PM	0	1	1	0	0	3	0	0	0	0	0	0	2	0	7	0	14	277
4:00 PM	0	1	1	0	6	4	0	0	0	0	0	0	1	0	4	0	17	264
4:05 PM	0	2	1	0	1	2	0	0	0	0	0	0	2	0	6	0	14	264
4:10 PM	0	4	5	0	1	9	0	0	0	0	0	0	2	0	2	0	23	275
4:15 PM	0	1	2	0	2	1	0	0	0	0	0	0	0	0	5	0	11	274
4:20 PM	0	1	0	0	2	3	0	0	0	0	0	0	3	0	3	0	12	271

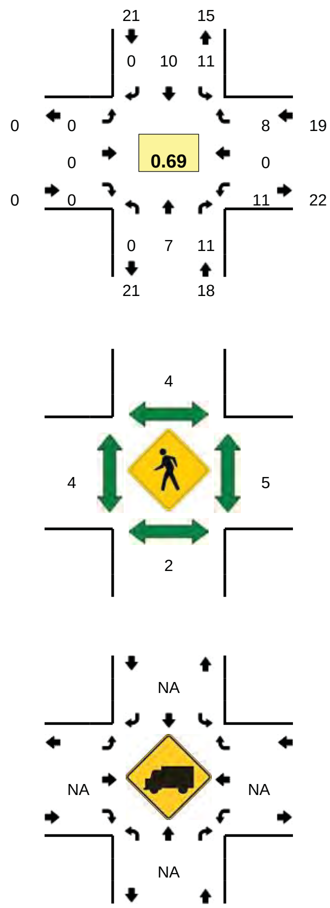
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	0	28	36	0	108	36	0	0	0	0	0	0	76	0	204	0	488
Heavy Trucks	0	4	12		4	0	0		0	0	0		12	0	12		44
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

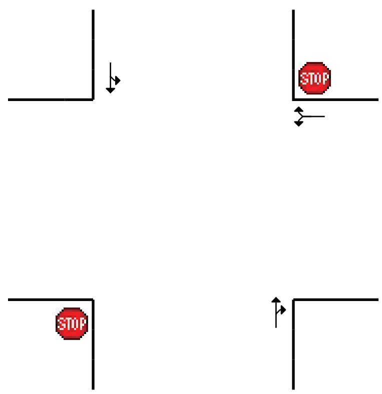
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

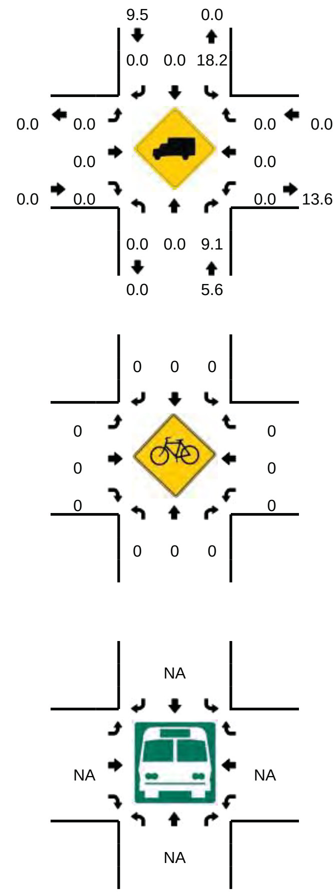
LOCATION: SW Anchor Dr -- SW 32nd St | **QC JOB #:** 10782524

CITY/STATE: Lincoln City, OR | **DATE:** Tue, Oct 02 2012



Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:25 PM -- 4:40 PM





5-Min Count Period Beginning At	SW Anchor Dr (Northbound) Left	Thru	Right	U	SW Anchor Dr (Southbound) Left	Thru	Right	U	SW 32nd St (Eastbound) Left	Thru	Right	U	SW 32nd St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	3	52
3:05 PM	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	4	53
3:10 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	49
3:15 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	0	5	48
3:20 PM	0	1	1	0	1	0	0	0	0	0	0	0	1	0	1	0	5	48
3:25 PM	0	1	3	0	0	0	0	0	0	0	0	0	3	0	0	0	7	51
3:30 PM	0	0	2	0	1	1	0	0	0	0	0	0	0	0	1	0	5	50
3:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	50
3:40 PM	0	0	3	0	1	0	0	0	0	0	0	0	0	0	2	0	6	54
3:45 PM	0	1	2	0	2	0	0	0	0	0	0	0	2	0	0	0	7	53
3:50 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	52
3:55 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	49
4:00 PM	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	4	50
4:05 PM	0	1	0	0	3	1	0	0	0	0	0	0	0	0	0	0	5	51
4:10 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	52
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	49
4:20 PM	0	1	1	0	1	2	0	0	0	0	0	0	0	0	0	0	5	49
4:25 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	0	4	46
4:30 PM	0	0	2	0	1	2	0	0	0	0	0	0	3	0	1	0	9	50
4:35 PM	0	2	1	0	0	2	0	0	0	0	0	0	1	0	2	0	8	56
4:40 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	3	53
4:45 PM	0	0	2	0	1	0	0	0	0	0	0	0	1	0	2	0	6	52
4:50 PM	0	0	2	0	1	1	0	0	0	0	0	0	3	0	0	0	7	57
4:55 PM	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3	58

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	0	8	16	0	8	16	0	0	0	0	0	0	16	0	20	0	84
Heavy Trucks	0	0	4		0	0	0		0	0	0		0	0	0		4
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

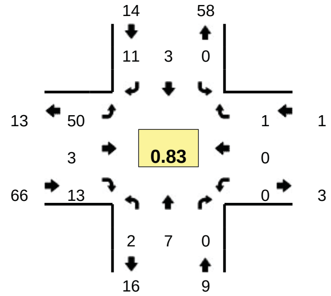
Comments:

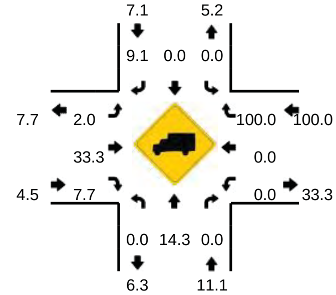
Report generated on 10/15/2012 11:08 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

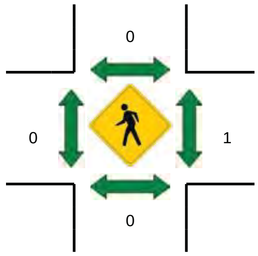
Type of peak hour being reported: Intersection Peak — Method for determining peak hour: Total Entering Volume

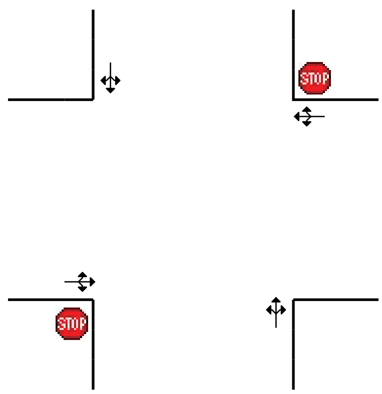
LOCATION: Oar St -- SE 14 St — **QC JOB #:** 10782523
CITY/STATE: Lincoln City, OR — **DATE:** Tue, Oct 02 2012

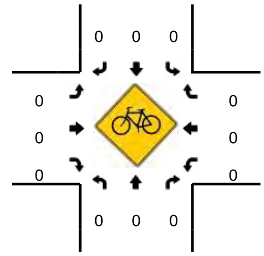
Peak-Hour: 3:30 PM -- 4:30 PM
Peak 15-Min: 3:45 PM -- 4:00 PM

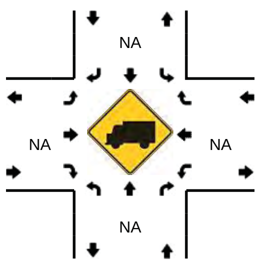


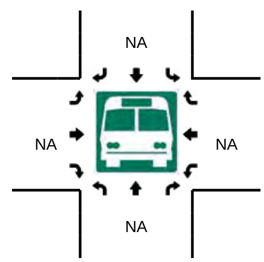












5-Min Count Period Beginning At	Oar St (Northbound) Left	Thru	Right	U	Oar St (Southbound) Left	Thru	Right	U	SE 14 St (Eastbound) Left	Thru	Right	U	SE 14 St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:00 PM	0	2	0	0	0	0	0	0	2	0	0	1	0	0	0	0	5	65
3:05 PM	0	0	0	0	0	1	1	0	4	1	0	0	0	0	0	0	7	68
3:10 PM	0	0	0	0	0	1	0	0	4	0	0	0	0	0	1	0	6	68
3:15 PM	0	0	0	0	0	0	3	0	5	0	0	0	0	0	0	0	8	72
3:20 PM	0	0	0	0	0	0	2	0	5	0	0	0	0	1	0	0	8	73
3:25 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	71
3:30 PM	0	0	0	0	0	0	4	0	7	1	1	0	0	0	0	0	13	78
3:35 PM	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	4	79
3:40 PM	0	0	0	0	0	0	2	0	4	0	1	0	0	0	0	0	7	81
3:45 PM	0	1	0	0	0	0	0	0	3	0	3	0	0	0	0	0	7	82
3:50 PM	0	2	0	0	0	0	1	0	6	0	1	0	0	0	0	0	10	87
3:55 PM	1	1	0	0	0	0	0	0	8	0	0	0	0	0	0	0	10	87
4:00 PM	1	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	4	86
4:05 PM	0	1	0	0	0	1	1	0	1	2	0	0	0	0	0	0	6	85
4:10 PM	0	0	0	0	0	0	1	0	5	0	1	0	0	0	0	0	7	86
4:15 PM	0	0	0	0	0	1	0	0	2	0	2	0	0	0	0	0	5	83
4:20 PM	0	1	0	0	0	1	0	0	5	0	1	0	0	0	1	0	9	84
4:25 PM	0	1	0	0	0	0	1	0	5	0	1	0	0	0	0	0	8	90
4:30 PM	0	0	0	0	0	0	1	0	4	0	0	0	0	0	0	0	5	82
4:35 PM	0	2	0	0	0	0	3	0	4	0	0	0	0	0	0	0	9	87
4:40 PM	2	0	0	0	0	0	0	0	5	0	1	0	0	0	0	0	8	88
4:45 PM	0	0	0	0	0	1	2	0	2	1	0	0	0	0	0	0	6	87
4:50 PM	0	0	0	0	0	0	1	0	3	0	0	0	0	0	1	0	5	82
4:55 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	74

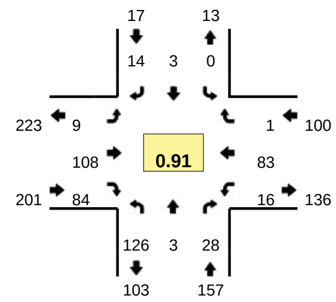
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	4	16	0	0	0	0	4	0	68	0	16	0	0	0	0	0	108
Heavy Trucks	0	4	0		0	0	0		4	0	4		0	0	0		12
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

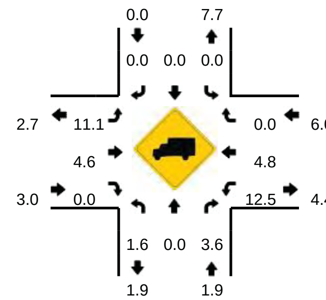
Report generated on 10/15/2012 11:08 AM — SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

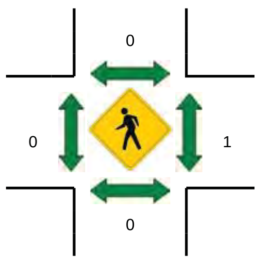
Type of peak hour being reported: Intersection Peak
Method for determining peak hour: Total Entering Volume

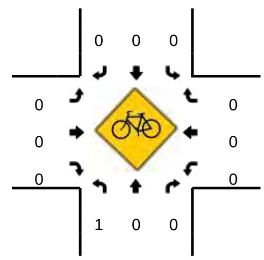
LOCATION: Oar Ave -- SE Devil's Lake Rd
QC JOB #: 10782522
CITY/STATE: Lincoln City, OR
DATE: Tue, Oct 02 2012

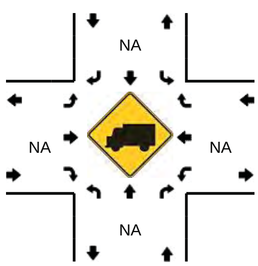


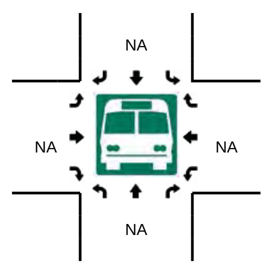
Peak-Hour: 3:15 PM -- 4:15 PM
Peak 15-Min: 3:55 PM -- 4:10 PM











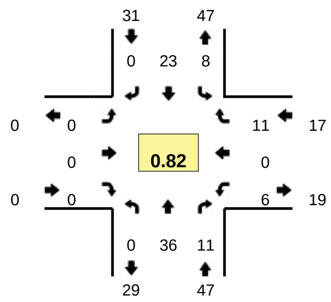
5-Min Count Period Beginning At	Oar Ave (Northbound) Left	Thru	Right	U	Oar Ave (Southbound) Left	Thru	Right	U	SE Devil's Lake Rd (Eastbound) Left	Thru	Right	U	SE Devil's Lake Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:45 PM	8	0	0	0	0	0	1	0	1	4	11	0	2	7	0	0	34	
2:50 PM	13	1	2	0	0	0	0	0	0	6	7	0	0	10	0	0	39	
2:55 PM	8	0	1	0	0	0	1	0	1	5	5	0	2	3	1	0	27	408
3:00 PM	13	0	1	0	0	0	0	0	1	3	7	0	1	5	0	0	31	415
3:05 PM	6	0	2	0	0	0	0	0	0	5	7	0	3	8	0	0	31	420
3:10 PM	17	0	2	0	0	0	1	0	0	6	9	0	0	3	0	0	38	421
3:15 PM	12	0	2	0	0	0	1	0	0	7	10	0	1	4	0	0	37	426
3:20 PM	16	0	4	0	0	0	2	0	0	8	6	0	2	9	0	0	47	439
3:25 PM	10	0	0	0	0	0	0	0	1	6	9	0	1	7	0	0	34	440
3:30 PM	9	0	4	0	0	2	1	0	0	11	10	0	1	8	0	0	46	455
3:35 PM	9	0	4	0	0	0	0	0	1	8	6	0	1	8	0	0	37	437
3:40 PM	8	0	2	0	0	0	0	0	1	7	7	0	1	8	0	0	34	435
3:45 PM	7	0	3	0	0	0	1	0	1	9	6	0	1	6	0	0	34	435
3:50 PM	12	0	1	0	0	0	1	0	1	10	2	0	2	5	0	0	34	430
3:55 PM	15	3	5	0	0	1	1	0	0	11	6	0	1	7	0	0	50	453
4:00 PM	5	0	1	0	0	0	2	0	0	14	8	0	3	8	1	0	42	464
4:05 PM	11	0	2	0	0	0	2	0	2	10	5	0	0	6	0	0	38	471
4:10 PM	12	0	0	0	0	0	3	0	2	7	9	0	2	7	0	0	42	475
4:15 PM	7	0	2	0	0	0	0	0	0	2	8	0	0	6	0	0	25	463
4:20 PM	8	0	2	0	1	0	0	0	1	5	11	0	1	4	0	0	33	449
4:25 PM	11	0	4	0	0	0	0	0	2	6	5	0	0	3	0	0	31	446
4:30 PM	13	0	2	0	0	1	0	0	1	4	4	0	0	7	0	0	32	432
4:35 PM	5	0	0	0	2	0	0	0	3	4	9	0	3	7	0	0	33	428
4:40 PM	9	0	2	0	0	0	0	0	0	8	7	0	0	6	0	0	32	426

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	124	12	32	0	0	4	20	0	8	140	76	0	16	84	4	0	520
Heavy Trucks	4	0	4		0	0	0		0	8	0		0	4	0		20
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

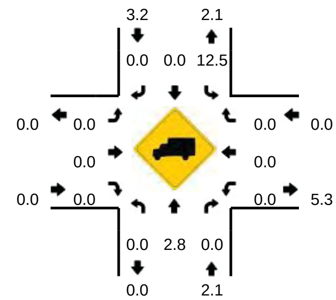
Comments:

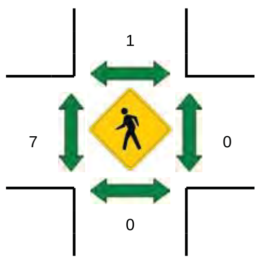
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

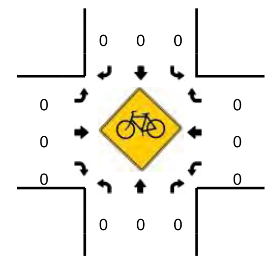
LOCATION: NW Harbor Ave -- NW 14th St | **QC JOB #:** 10782521
CITY/STATE: Lincoln City, OR | **DATE:** Wed, Oct 03 2012

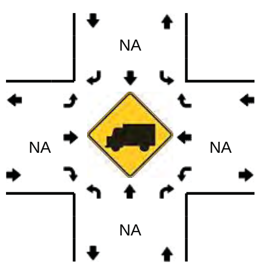


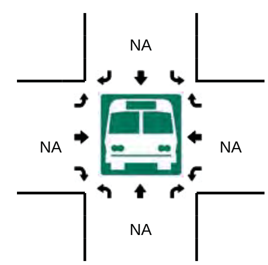
Peak-Hour: 3:55 PM -- 4:55 PM
Peak 15-Min: 4:25 PM -- 4:40 PM











5-Min Count Period Beginning At	NW Harbor Ave (Northbound) Left	Thru	Right	U	NW Harbor Ave (Southbound) Left	Thru	Right	U	NW 14th St (Eastbound) Left	Thru	Right	U	NW 14th St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:00 PM	0	3	1	0	0	2	0	0	0	0	0	0	0	0	2	0	8	74
3:05 PM	0	1	1	0	0	3	0	0	0	0	0	0	0	0	3	0	8	78
3:10 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	75
3:15 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	68
3:20 PM	0	4	0	0	0	2	0	0	0	0	0	0	0	0	1	0	7	70
3:25 PM	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	65
3:30 PM	0	2	0	0	0	2	0	0	0	0	0	0	1	0	1	0	6	66
3:35 PM	0	4	0	0	1	2	0	0	0	0	0	0	0	0	1	0	8	67
3:40 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	66
3:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	62
3:50 PM	0	3	1	0	1	2	0	0	0	0	0	0	0	0	0	0	7	61
3:55 PM	0	5	2	0	2	1	0	0	0	0	0	0	0	0	0	0	10	64
4:00 PM	0	4	0	0	0	3	0	0	0	0	0	0	1	0	0	0	8	64
4:05 PM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	1	0	5	61
4:10 PM	0	5	1	0	1	6	0	0	0	0	0	0	0	0	1	0	14	73
4:15 PM	0	1	1	0	1	2	0	0	0	0	0	0	0	0	0	0	5	76
4:20 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	70
4:25 PM	0	3	2	0	0	2	0	0	0	0	0	0	1	0	1	0	9	76
4:30 PM	0	2	1	0	2	2	0	0	0	0	0	0	1	0	2	0	10	80
4:35 PM	0	4	2	0	0	0	0	0	0	0	0	0	1	0	3	0	10	82
4:40 PM	0	4	0	0	1	1	0	0	0	0	0	0	0	0	2	0	8	88
4:45 PM	0	0	1	0	1	3	0	0	0	0	0	0	1	0	0	0	6	93
4:50 PM	0	5	1	0	0	1	0	0	0	0	0	0	1	0	1	0	9	95
4:55 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	87

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	0	36	20	0	8	16	0	0	0	0	0	0	12	0	24	0	116
Heavy Trucks	0	0	0		4	0	0		0	0	0		0	0	0		4
Pedestrians		0				0				12				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

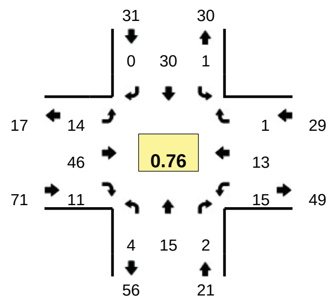
Type of peak hour being reported: Intersection Peak — Method for determining peak hour: Total Entering Volume

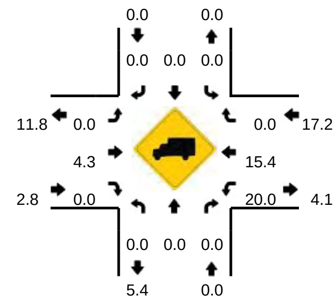
LOCATION: NE 21st St -- NE Oar Ave — **QC JOB #:** 10782520

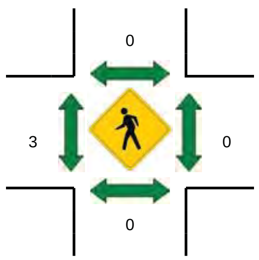
CITY/STATE: Lincoln City, OR — **DATE:** Wed, Oct 03 2012

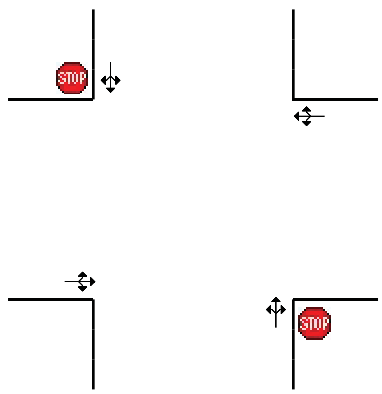
Peak-Hour: 2:50 PM -- 3:50 PM

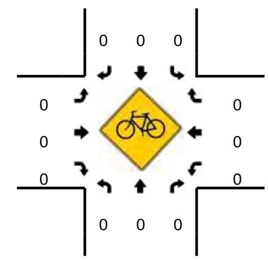
Peak 15-Min: 3:05 PM -- 3:20 PM

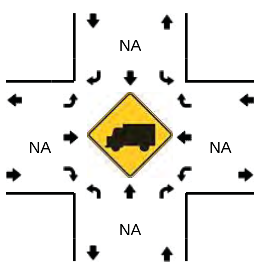


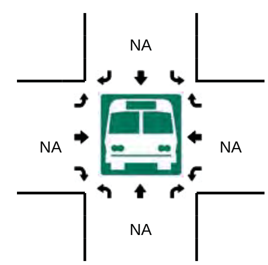












5-Min Count Period Beginning At	NE 21st St (Northbound) Left	Thru	Right	U	NE 21st St (Southbound) Left	Thru	Right	U	NE Oar Ave (Eastbound) Left	Thru	Right	U	NE Oar Ave (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:20 PM	0	0	1	0	0	2	0	0	0	1	0	0	1	1	0	0	6	
2:25 PM	1	0	2	0	0	1	0	0	0	4	1	0	0	0	0	0	9	
2:30 PM	0	0	0	0	1	3	0	0	0	1	0	0	1	1	0	0	7	
2:35 PM	0	1	0	0	0	0	1	0	0	2	1	0	0	0	0	0	5	
2:40 PM	1	1	0	0	0	1	0	0	0	4	1	0	0	0	0	0	8	
2:45 PM	0	1	0	0	0	1	0	0	1	4	1	0	0	1	0	0	9	
2:50 PM	0	2	0	0	0	2	0	0	1	3	1	0	0	0	0	0	9	
2:55 PM	0	2	0	0	0	2	0	0	0	2	0	0	0	1	0	0	7	85
3:00 PM	1	1	1	0	0	1	0	0	2	4	2	0	1	0	0	0	13	90
3:05 PM	0	0	0	0	0	3	0	0	1	6	1	0	1	5	0	0	17	102
3:10 PM	1	1	0	0	0	2	0	0	2	6	0	0	1	2	0	0	15	112
3:15 PM	1	1	0	0	0	2	0	0	1	9	1	0	1	1	1	0	18	123
3:20 PM	0	1	0	0	0	4	0	0	2	1	0	0	0	0	0	0	8	125
3:25 PM	0	0	1	0	0	4	0	0	1	4	1	0	3	0	0	0	14	130
3:30 PM	0	1	0	0	0	0	0	0	2	2	3	0	4	1	0	0	13	136
3:35 PM	0	0	0	0	0	4	0	0	1	1	0	0	1	1	0	0	8	139
3:40 PM	1	2	0	0	0	4	0	0	0	3	1	0	2	0	0	0	13	144
3:45 PM	0	4	0	0	1	2	0	0	1	5	1	0	1	2	0	0	17	152
3:50 PM	0	0	0	0	1	3	0	0	0	0	0	0	3	0	0	0	7	150
3:55 PM	1	1	0	0	0	3	0	0	0	3	0	0	1	0	0	0	9	152
4:00 PM	4	0	2	0	0	1	1	0	0	1	2	0	0	1	0	0	12	151
4:05 PM	0	3	0	0	0	0	0	0	1	0	2	0	1	0	0	0	7	141
4:10 PM	2	2	1	0	0	2	0	0	2	2	2	0	0	0	1	0	14	140
4:15 PM	0	0	0	0	0	4	0	0	0	1	3	0	1	1	0	0	10	132

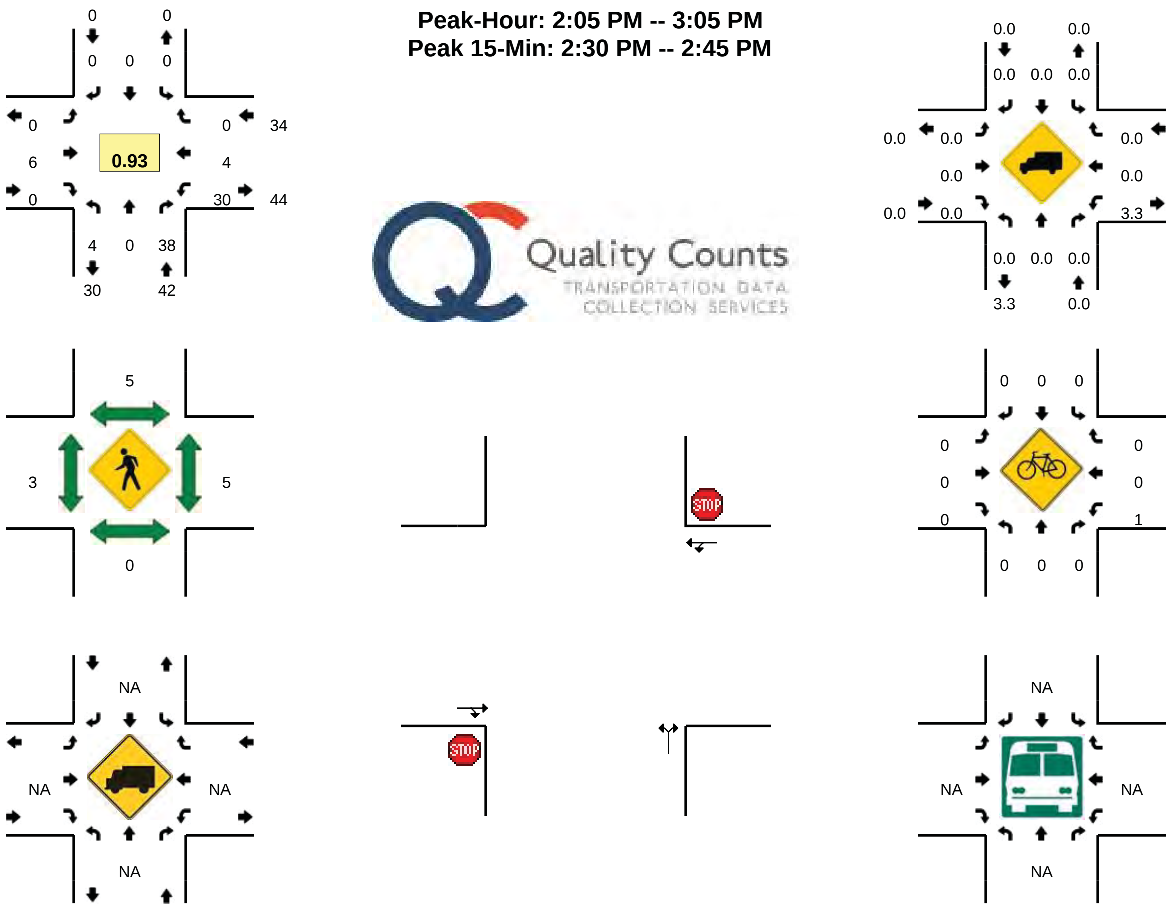
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	8	8	0	0	0	28	0	0	16	84	8	0	12	32	4	0	200
Heavy Trucks	0	0	0		0	0	0		0	4	0		8	4	0		16
Pedestrians		0				0				12				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: NW Harbor Ave -- NW 21st St | **QC JOB #:** 10782519
CITY/STATE: Lincoln City, OR | **DATE:** Wed, Oct 03 2012

Peak-Hour: 2:05 PM -- 3:05 PM
Peak 15-Min: 2:30 PM -- 2:45 PM



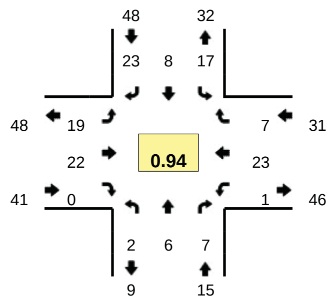
5-Min Count Period Beginning At	NW Harbor Ave (Northbound) Left	Thru	Right	U	NW Harbor Ave (Southbound) Left	Thru	Right	U	NW 21st St (Eastbound) Left	Thru	Right	U	NW 21st St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	4	
2:05 PM	1	0	3	0	0	0	0	0	0	1	0	0	4	0	0	0	9	
2:10 PM	1	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	4	
2:15 PM	0	0	4	0	0	0	0	0	0	0	0	0	3	0	0	0	7	
2:20 PM	1	0	2	0	0	0	0	0	0	1	0	0	2	0	0	0	6	
2:25 PM	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	7	
2:30 PM	0	0	3	0	0	0	0	0	0	0	0	0	1	1	0	0	5	
2:35 PM	0	0	2	0	0	0	0	0	0	2	0	0	1	0	0	0	5	
2:40 PM	0	0	6	0	0	0	0	0	0	0	0	0	6	0	0	0	12	
2:45 PM	0	0	4	0	0	0	0	0	0	0	0	0	1	0	0	0	5	
2:50 PM	1	0	1	0	0	0	0	0	0	0	0	0	2	1	0	0	5	
2:55 PM	0	0	4	0	0	0	0	0	0	0	0	0	5	0	0	0	9	78
3:00 PM	0	0	4	0	0	0	0	0	0	1	0	0	2	1	0	0	8	82
3:05 PM	0	0	1	0	0	0	0	0	0	0	0	0	3	1	0	0	5	78
3:10 PM	0	0	2	0	0	0	0	0	0	1	0	0	2	1	0	0	6	80
3:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	2	1	0	0	4	77
3:20 PM	0	0	5	0	0	0	0	0	0	1	1	0	2	1	0	0	10	81
3:25 PM	0	0	2	0	0	0	0	0	0	1	0	0	2	1	0	0	6	80
3:30 PM	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	4	79
3:35 PM	0	0	5	0	0	0	0	0	0	0	0	0	2	0	0	0	7	81
3:40 PM	0	0	0	0	0	0	0	0	0	1	0	0	3	1	0	0	5	74
3:45 PM	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	3	72
3:50 PM	0	0	6	0	0	0	0	0	0	0	1	0	1	0	0	0	8	75
3:55 PM	0	0	5	0	0	0	0	0	0	0	0	0	3	0	0	0	8	74

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	0	0	44	0	0	0	0	0	0	8	0	0	32	4	0	0	88
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				4				4				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

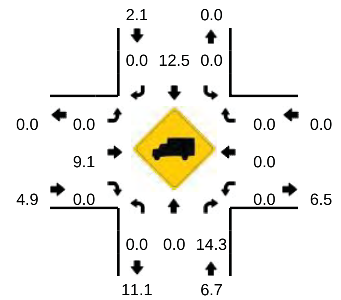
Comments:

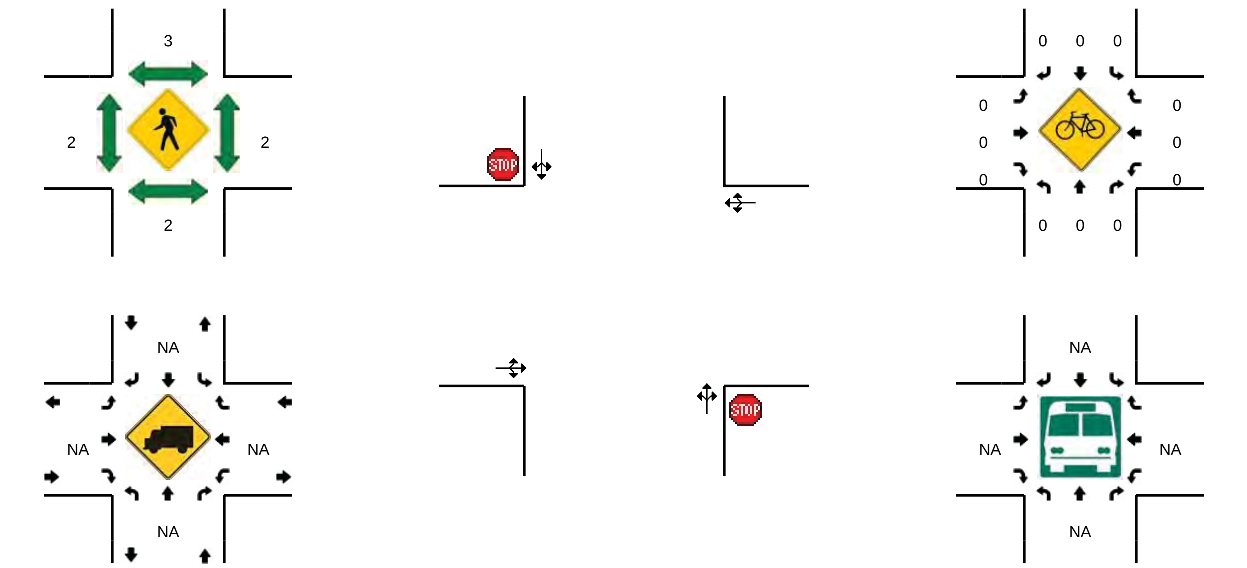
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: NW Jetty Ave -- NW 21st St | **QC JOB #:** 10782518
CITY/STATE: Lincoln City, OR | **DATE:** Wed, Oct 03 2012



Peak-Hour: 2:30 PM -- 3:30 PM
Peak 15-Min: 3:05 PM -- 3:20 PM





5-Min Count Period Beginning At	NW Jetty Ave (Northbound) Left	Thru	Right	U	NW Jetty Ave (Southbound) Left	Thru	Right	U	NW 21st St (Eastbound) Left	Thru	Right	U	NW 21st St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:00 PM	1	1	0	0	2	0	2	0	2	0	0	0	0	1	0	0	9	
2:05 PM	0	0	0	0	0	0	2	0	3	1	0	0	0	3	3	0	12	
2:10 PM	2	0	0	0	1	0	2	0	0	1	0	0	0	2	1	0	9	
2:15 PM	0	0	1	0	2	0	4	0	0	1	1	0	0	3	0	0	12	
2:20 PM	0	1	2	0	2	1	0	0	1	2	0	0	1	1	0	0	11	
2:25 PM	0	0	0	0	1	2	2	0	3	0	0	0	0	1	2	0	11	
2:30 PM	1	0	2	0	2	1	1	0	3	1	0	0	0	1	0	0	12	
2:35 PM	0	0	1	0	1	0	1	0	0	4	0	0	0	1	0	0	8	
2:40 PM	0	0	0	0	1	0	2	0	2	3	0	0	0	5	1	0	14	
2:45 PM	0	1	0	0	1	0	1	0	3	0	0	0	1	2	0	0	9	
2:50 PM	0	0	1	0	0	3	2	0	1	1	0	0	0	1	1	0	10	
2:55 PM	0	1	0	0	2	0	3	0	1	3	0	0	0	1	0	0	11	128
3:00 PM	0	0	0	0	0	0	2	0	2	4	0	0	0	1	0	0	9	128
3:05 PM	0	0	0	0	3	2	3	0	0	1	0	0	0	4	1	0	14	130
3:10 PM	0	1	0	0	2	1	2	0	1	2	0	0	0	2	1	0	12	133
3:15 PM	0	0	2	0	2	0	3	0	1	0	0	0	0	1	1	0	10	131
3:20 PM	0	0	0	0	1	1	2	0	4	1	0	0	0	3	1	0	13	133
3:25 PM	1	3	1	0	2	0	1	0	1	2	0	0	0	1	1	0	13	135
3:30 PM	0	0	1	0	1	0	1	0	1	0	1	0	0	1	0	0	6	129
3:35 PM	1	0	0	0	0	0	0	0	2	5	0	0	0	0	1	0	9	130
3:40 PM	0	1	1	0	1	0	2	0	0	0	1	0	0	1	1	0	8	124
3:45 PM	0	0	1	0	1	0	2	0	1	2	0	0	0	1	0	0	8	123
3:50 PM	0	0	1	0	3	0	1	0	4	2	0	0	0	2	0	0	13	126
3:55 PM	1	0	0	0	0	0	2	0	5	1	0	0	1	1	1	0	12	127

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	0	4	8	0	28	12	32	0	8	12	0	0	0	28	12	0	144
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	0	0		4
Pedestrians		8				4				4				0			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

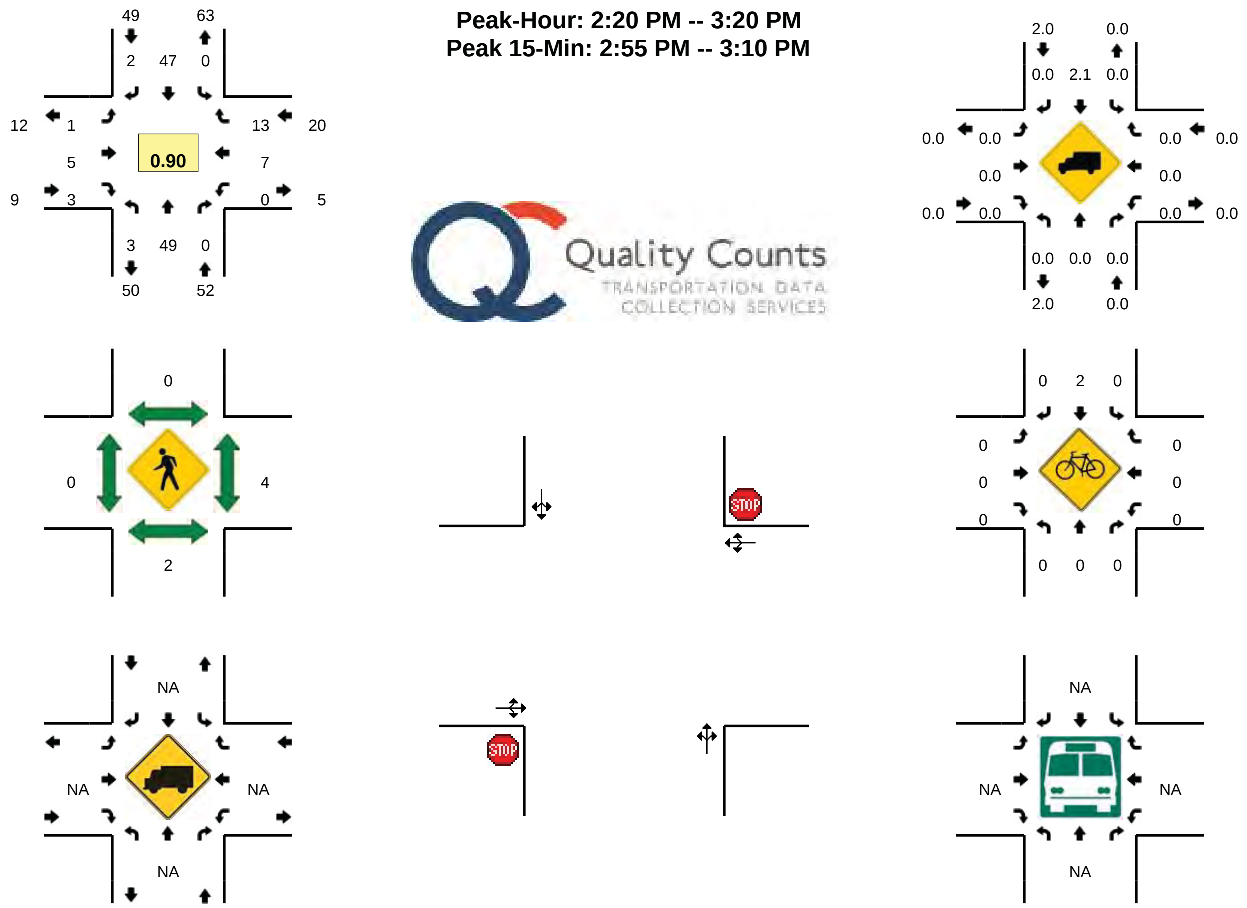
Type of peak hour being reported: Intersection Peak — Method for determining peak hour: Total Entering Volume

LOCATION: NW Jetty Ave -- NW 26th St — **QC JOB #:** 10782517

CITY/STATE: Lincoln City, OR — **DATE:** Wed, Oct 03 2012

Peak-Hour: 2:20 PM -- 3:20 PM

Peak 15-Min: 2:55 PM -- 3:10 PM



5-Min Count Period Beginning At	NW Jetty Ave (Northbound) Left	Thru	Right	U	NW Jetty Ave (Southbound) Left	Thru	Right	U	NW 26th St (Eastbound) Left	Thru	Right	U	NW 26th St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:00 PM	0	3	1	0	0	3	0	0	0	1	0	0	0	1	1	0	10	
2:05 PM	1	4	0	0	0	5	0	0	1	0	0	0	0	0	0	0	11	
2:10 PM	0	2	0	0	0	6	0	0	0	0	0	0	0	0	0	0	8	
2:15 PM	0	2	0	0	0	4	0	0	0	0	0	0	0	1	1	0	8	
2:20 PM	0	6	0	0	0	3	0	0	0	0	0	0	0	0	2	0	11	
2:25 PM	1	7	0	0	0	4	0	0	0	0	0	0	0	1	1	0	14	
2:30 PM	0	5	0	0	0	4	0	0	0	0	0	0	0	0	1	0	10	
2:35 PM	0	4	0	0	0	3	0	0	0	0	0	0	0	0	1	0	8	
2:40 PM	0	5	0	0	0	4	0	0	0	1	0	0	0	1	0	0	11	
2:45 PM	0	4	0	0	0	1	0	0	0	0	2	0	0	0	4	0	11	
2:50 PM	1	2	0	0	0	3	1	0	0	1	0	0	0	1	1	0	10	
2:55 PM	0	3	0	0	0	5	0	0	1	0	0	0	0	1	0	0	10	122
3:00 PM	0	4	0	0	0	4	0	0	0	0	0	0	0	3	1	0	12	124
3:05 PM	0	3	0	0	0	7	1	0	0	1	0	0	0	0	2	0	14	127
3:10 PM	0	2	0	0	0	4	0	0	0	2	0	0	0	0	0	0	8	127
3:15 PM	1	4	0	0	0	5	0	0	0	0	1	0	0	0	0	0	11	130
3:20 PM	0	4	0	0	0	4	0	0	0	0	0	0	0	0	1	0	9	128
3:25 PM	2	5	0	0	0	4	0	0	0	0	1	0	0	1	3	0	16	130
3:30 PM	0	3	0	0	1	1	0	0	0	0	0	0	0	0	0	0	5	125
3:35 PM	0	3	0	0	1	0	0	0	0	0	0	0	0	1	0	0	5	122
3:40 PM	0	2	0	0	0	3	0	0	1	1	0	0	0	0	1	0	8	119
3:45 PM	0	4	0	0	1	4	0	0	0	1	0	0	0	0	1	0	11	119
3:50 PM	0	4	0	0	0	2	0	0	0	1	1	0	0	1	0	0	9	118
3:55 PM	0	6	0	0	0	1	1	0	0	0	0	0	0	0	1	0	9	117

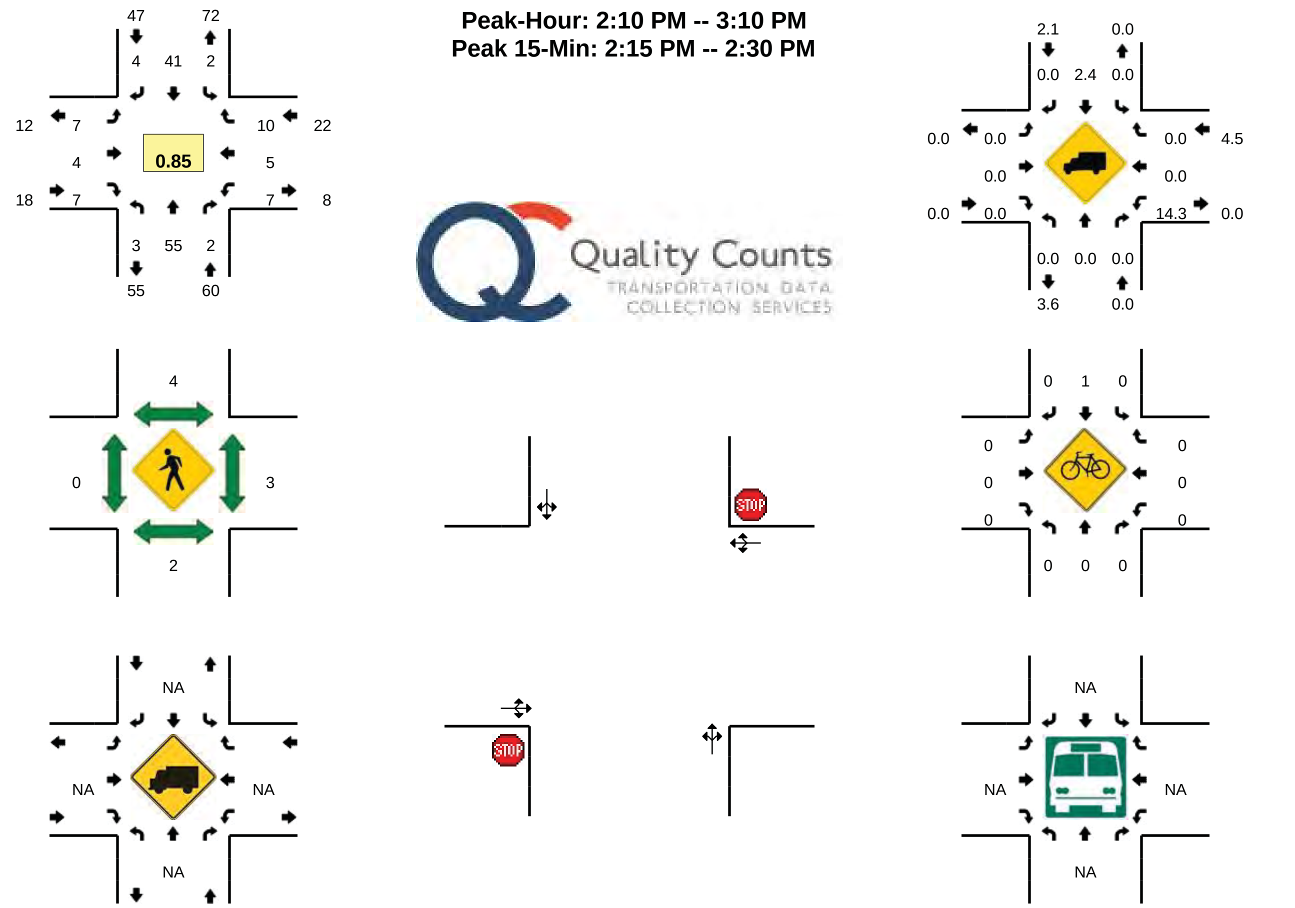
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	0	40	0	0	0	64	4	0	4	4	0	0	0	16	12	0	144
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: NW Jetty Ave -- NW 30th St | **QC JOB #:** 10782516
CITY/STATE: Lincoln City, OR | **DATE:** Wed, Oct 03 2012

Peak-Hour: 2:10 PM -- 3:10 PM
Peak 15-Min: 2:15 PM -- 2:30 PM



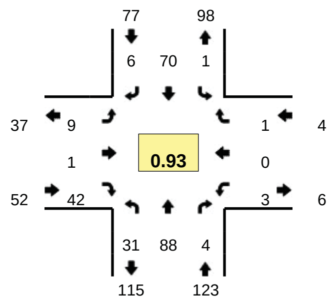
5-Min Count Period Beginning At	NW Jetty Ave (Northbound) Left	Thru	Right	U	NW Jetty Ave (Southbound) Left	Thru	Right	U	NW 30th St (Eastbound) Left	Thru	Right	U	NW 30th St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:00 PM	1	5	0	0	0	2	1	0	0	0	0	0	0	0	1	0	10	
2:05 PM	0	5	0	0	0	4	1	0	0	0	0	0	0	1	0	0	11	
2:10 PM	0	2	1	0	1	2	0	0	0	0	1	0	2	0	3	0	12	
2:15 PM	0	2	0	0	0	1	1	0	5	1	3	0	0	0	0	0	13	
2:20 PM	0	4	0	0	0	2	0	0	0	2	1	0	0	1	1	0	11	
2:25 PM	1	9	0	0	0	4	1	0	1	0	0	0	1	0	2	0	19	
2:30 PM	0	4	1	0	0	3	0	0	0	0	0	0	1	0	0	0	9	
2:35 PM	1	4	0	0	0	3	0	0	0	0	0	0	0	0	1	0	9	
2:40 PM	1	4	0	0	0	3	1	0	0	0	1	0	0	0	0	0	10	
2:45 PM	0	6	0	0	0	1	0	0	0	1	0	0	0	0	1	0	9	
2:50 PM	0	6	0	0	0	5	0	0	0	0	0	0	0	0	1	0	12	
2:55 PM	0	3	0	0	1	3	0	0	1	0	1	0	1	2	0	0	12	137
3:00 PM	0	5	0	0	0	6	1	0	0	0	0	0	0	1	1	0	14	141
3:05 PM	0	6	0	0	0	8	0	0	0	0	0	0	2	1	0	0	17	147
3:10 PM	1	1	0	0	1	4	0	0	0	0	0	0	2	1	0	0	10	145
3:15 PM	1	5	0	0	1	2	0	0	0	0	0	0	0	0	0	0	9	141
3:20 PM	0	3	2	0	0	3	0	0	0	0	1	0	0	0	1	0	10	140
3:25 PM	1	9	0	0	0	4	0	0	0	0	1	0	0	2	1	0	18	139
3:30 PM	0	3	0	0	0	1	0	0	0	0	0	0	0	1	0	0	5	135
3:35 PM	0	3	1	0	0	2	0	0	1	0	0	0	1	0	1	0	9	135
3:40 PM	0	3	0	0	1	3	0	0	1	0	0	0	0	2	1	0	11	136
3:45 PM	0	2	1	0	0	4	0	0	0	0	1	0	0	1	1	0	10	137
3:50 PM	0	4	1	0	0	1	0	0	0	0	0	0	1	0	2	0	9	134
3:55 PM	0	5	1	0	0	1	1	0	0	0	0	0	1	1	0	0	10	132

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	4	60	0	0	0	28	8	0	24	12	16	0	4	4	12	0	172
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				4				0				12			16
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

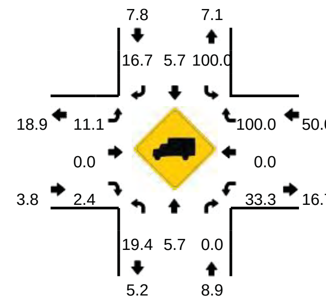
Comments:

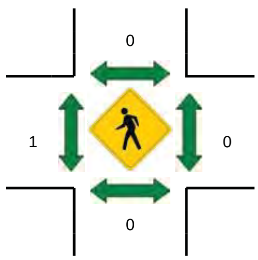
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

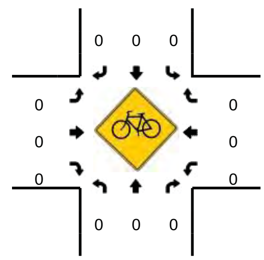
LOCATION: NE Holmes Rd -- NE West Devils Lake Rd | **QC JOB #:** 10782515
CITY/STATE: Lincoln City, OR | **DATE:** Wed, Oct 03 2012

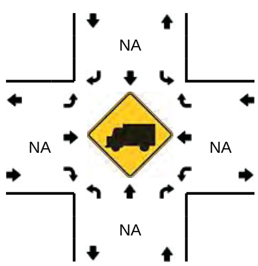


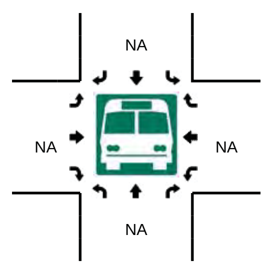
Peak-Hour: 2:25 PM -- 3:25 PM
Peak 15-Min: 3:10 PM -- 3:25 PM











5-Min Count Period Beginning At	NE Holmes Rd (Northbound) Left	Thru	Right	U	NE Holmes Rd (Southbound) Left	Thru	Right	U	NE West Devils Lake Rd (Eastbound) Left	Thru	Right	U	NE West Devils Lake Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:00 PM	3	5	0	0	0	7	2	0	0	0	2	0	0	0	1	0	20	
2:05 PM	3	5	0	0	0	10	1	0	0	0	0	0	1	0	0	0	20	
2:10 PM	4	8	0	0	0	9	0	0	1	0	8	0	0	0	0	0	30	
2:15 PM	2	4	0	0	1	5	0	0	0	0	5	0	0	0	0	0	17	
2:20 PM	2	6	0	0	0	7	0	0	1	0	2	0	0	0	0	0	18	
2:25 PM	5	4	0	0	0	7	1	0	1	0	4	0	0	0	1	0	23	
2:30 PM	4	5	0	0	0	8	0	0	0	0	2	0	0	0	0	0	19	
2:35 PM	2	8	0	0	0	8	2	0	1	0	3	0	0	0	0	0	24	
2:40 PM	2	8	0	0	0	5	0	0	0	0	2	0	0	0	0	0	17	
2:45 PM	2	6	2	0	0	10	0	0	0	0	3	0	0	0	0	0	23	
2:50 PM	1	4	0	0	1	4	0	0	1	0	3	0	0	0	0	0	14	
2:55 PM	3	11	0	0	0	4	1	0	1	0	7	0	2	0	0	0	29	254
3:00 PM	3	6	0	0	0	6	1	0	1	0	3	0	1	0	0	0	21	255
3:05 PM	1	9	1	0	0	4	0	0	1	0	1	0	0	0	0	0	17	252
3:10 PM	3	5	0	0	0	4	1	0	0	0	1	0	0	0	0	0	14	236
3:15 PM	2	13	0	0	0	2	0	0	2	0	6	0	0	0	0	0	25	244
3:20 PM	3	9	1	0	0	8	0	0	1	1	7	0	0	0	0	0	30	256
3:25 PM	3	8	0	0	0	6	0	0	1	0	3	0	0	0	0	0	21	254
3:30 PM	4	8	0	0	0	1	1	0	0	0	1	0	0	0	0	0	15	250
3:35 PM	2	8	1	0	0	9	1	0	0	0	1	0	0	0	0	0	22	248
3:40 PM	1	13	0	0	0	2	1	0	1	0	2	0	0	0	0	0	20	251
3:45 PM	0	8	1	0	0	2	0	0	0	0	3	0	1	0	0	0	15	243
3:50 PM	1	7	0	0	0	5	0	0	0	0	1	0	0	0	0	0	14	243
3:55 PM	4	6	1	0	1	6	1	0	0	0	3	0	1	0	0	0	23	237

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	32	108	4	0	0	56	4	0	12	4	56	0	0	0	0	0	276
Heavy Trucks	12	12	0		0	8	4		4	0	4		0	0	0		44
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

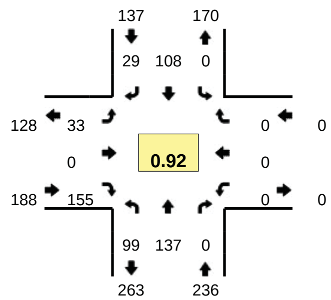
Comments:

Report generated on 10/15/2012 11:08 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

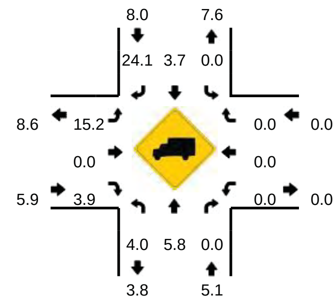
Type of peak hour being reported: Intersection Peak — Method for determining peak hour: Total Entering Volume

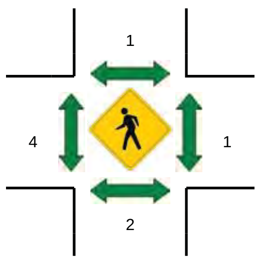
LOCATION: NW Logan Rd -- NW 44th St — **QC JOB #:** 10782514

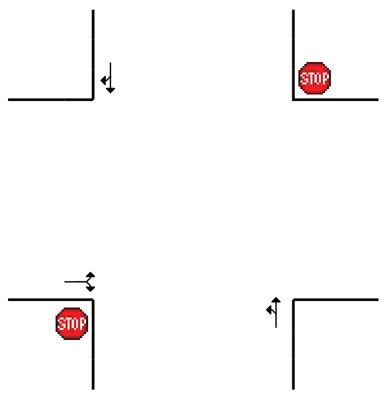
CITY/STATE: Lincoln City, OR — **DATE:** Wed, Oct 03 2012

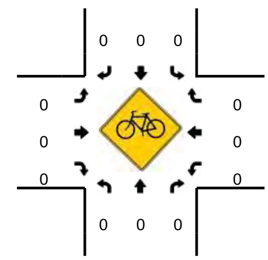


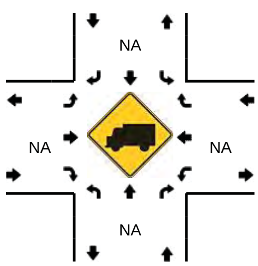
Peak-Hour: 3:10 PM -- 4:10 PM
Peak 15-Min: 3:35 PM -- 3:50 PM

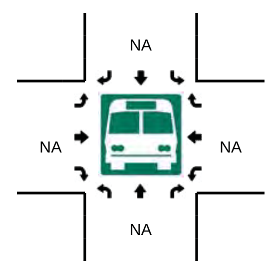












5-Min Count Period Beginning At	NW Logan Rd (Northbound) Left	Thru	Right	U	NW Logan Rd (Southbound) Left	Thru	Right	U	NW 44th St (Eastbound) Left	Thru	Right	U	NW 44th St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:40 PM	15	12	0	0	0	7	6	0	3	0	8	0	0	0	0	0	51	
2:45 PM	6	9	0	0	0	9	1	0	6	0	14	0	0	0	0	0	45	
2:50 PM	10	7	0	0	0	8	0	0	1	0	7	0	0	0	0	0	33	
2:55 PM	5	10	0	0	0	11	3	0	1	0	4	0	0	0	0	0	34	487
3:00 PM	11	6	0	0	0	10	3	0	1	0	13	0	0	0	0	0	44	490
3:05 PM	8	6	0	0	0	7	0	0	5	0	5	0	0	0	0	0	31	484
3:10 PM	2	16	0	0	0	8	3	0	6	0	13	0	0	0	0	0	48	485
3:15 PM	12	7	0	0	0	9	0	0	6	0	8	0	0	0	0	0	42	484
3:20 PM	5	9	0	0	0	9	5	0	1	0	16	0	0	0	0	0	45	490
3:25 PM	5	10	0	0	0	10	1	0	2	0	10	0	0	0	0	0	38	486
3:30 PM	8	13	0	0	0	8	2	0	2	0	14	0	0	0	0	0	47	497
3:35 PM	12	12	0	0	0	10	5	0	4	0	8	0	0	0	0	0	51	509
3:40 PM	8	11	0	0	0	7	2	0	2	0	15	0	0	0	0	0	45	503
3:45 PM	14	10	0	0	0	14	2	0	2	0	15	0	0	0	0	0	57	515
3:50 PM	8	13	0	0	0	8	2	0	1	0	8	0	0	0	0	0	40	522
3:55 PM	9	8	0	0	0	13	1	0	1	0	8	0	0	0	0	0	40	528
4:00 PM	12	18	0	0	0	8	2	0	1	0	20	0	0	0	0	0	61	545
4:05 PM	4	10	0	0	0	4	4	0	5	0	20	0	0	0	0	0	47	561
4:10 PM	6	7	0	0	0	12	1	0	4	0	9	0	0	0	0	0	39	552
4:15 PM	11	8	0	0	0	10	2	0	1	0	12	0	0	0	0	0	44	554
4:20 PM	8	5	0	0	0	5	2	0	2	0	11	0	0	0	0	0	33	542
4:25 PM	5	14	0	0	0	10	0	0	3	0	9	0	0	0	0	0	41	545
4:30 PM	6	8	0	0	0	8	3	0	2	0	12	0	0	0	0	0	39	537
4:35 PM	6	6	0	0	0	7	2	0	3	0	11	0	0	0	0	0	35	521

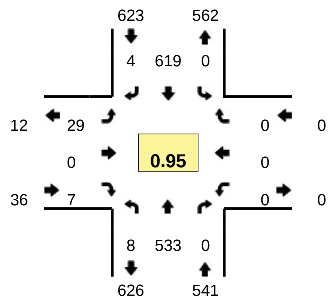
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	136	132	0	0	0	124	36	0	32	0	152	0	0	0	0	0	612
Heavy Trucks	12	12	0		0	0	12		4	0	4		0	0	0		44
Pedestrians		0				4				4				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

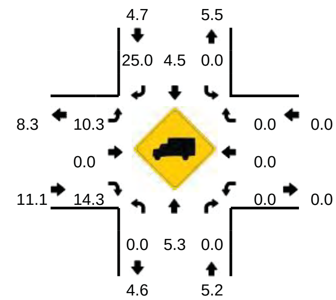
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

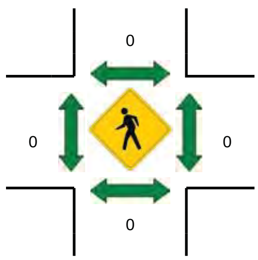
LOCATION: US 101 -- SW 62nd St | **QC JOB #:** 10782513

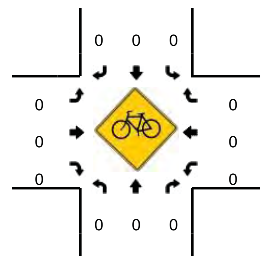
CITY/STATE: Lincoln City, OR | **DATE:** Tue, Oct 02 2012

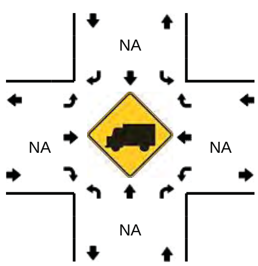


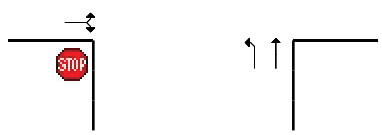
Peak-Hour: 3:30 PM -- 4:30 PM
Peak 15-Min: 3:30 PM -- 3:45 PM

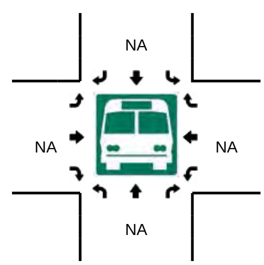












5-Min Count Period Beginning At	US 101 (Northbound) Left	Thru	Right	U	US 101 (Southbound) Left	Thru	Right	U	SW 62nd St (Eastbound) Left	Thru	Right	U	SW 62nd St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:00 PM	1	47	0	0	0	55	0	0	1	0	0	0	0	0	0	0	104	1182
3:05 PM	1	48	0	0	0	50	0	0	4	0	0	0	0	0	0	0	103	1181
3:10 PM	0	41	0	0	0	50	0	0	5	0	1	0	0	0	0	0	97	1171
3:15 PM	1	35	0	0	0	43	0	0	0	0	0	0	0	0	0	0	79	1162
3:20 PM	1	42	0	0	0	31	0	0	3	0	1	0	0	0	0	0	78	1154
3:25 PM	0	50	0	0	0	41	0	0	3	0	0	0	0	0	0	0	94	1140
3:30 PM	0	50	0	0	0	50	0	0	3	0	1	0	0	0	0	0	104	1143
3:35 PM	2	55	0	0	0	48	0	0	2	0	0	0	0	0	0	0	107	1154
3:40 PM	0	50	0	0	0	50	1	0	3	0	0	0	0	0	0	0	104	1158
3:45 PM	0	44	0	0	0	53	0	0	1	0	0	0	0	0	0	0	98	1170
3:50 PM	1	35	0	0	0	53	0	0	0	0	1	0	0	0	0	0	90	1168
3:55 PM	0	46	0	0	0	38	1	0	4	0	0	0	0	0	0	0	89	1147
4:00 PM	0	34	0	0	0	52	0	0	4	0	1	0	0	0	0	0	91	1134
4:05 PM	1	54	0	0	0	55	0	0	3	0	1	0	0	0	0	0	114	1145
4:10 PM	2	52	0	0	0	46	0	0	3	0	1	0	0	0	0	0	104	1152
4:15 PM	0	29	0	0	0	49	0	0	2	0	1	0	0	0	0	0	81	1154
4:20 PM	1	39	0	0	0	67	1	0	2	0	0	0	0	0	0	0	110	1186
4:25 PM	1	45	0	0	0	58	1	0	2	0	1	0	0	0	0	0	108	1200
4:30 PM	0	44	0	0	0	53	0	0	3	0	0	0	0	0	0	0	100	1196
4:35 PM	1	29	0	0	0	39	0	0	5	0	1	0	0	0	0	0	75	1164
4:40 PM	0	44	0	0	0	48	0	0	5	0	0	0	0	0	0	0	97	1157
4:45 PM	1	44	0	0	0	40	0	0	5	0	1	0	0	0	0	0	91	1150
4:50 PM	1	30	0	0	0	57	0	0	2	0	0	0	0	0	0	0	90	1150
4:55 PM	0	36	0	0	0	37	0	0	4	0	0	0	0	0	0	0	77	1138

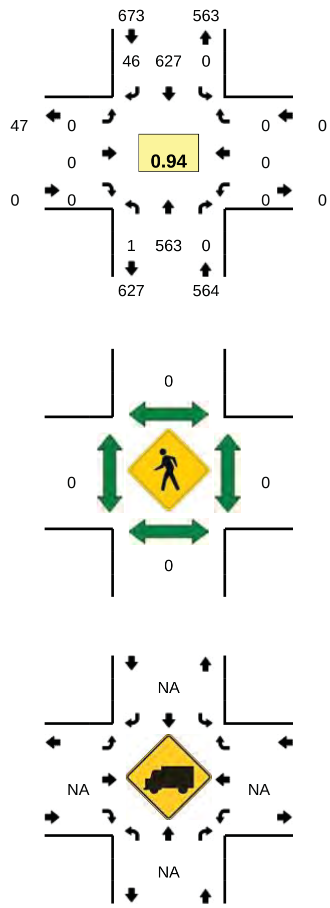
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	8	620	0	0	0	592	4	0	32	0	4	0	0	0	0	0	1260
Heavy Trucks	0	32	0		0	20	0		0	0	0		0	0	0		52
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

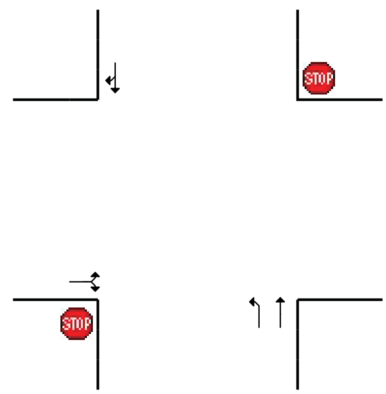
Comments:

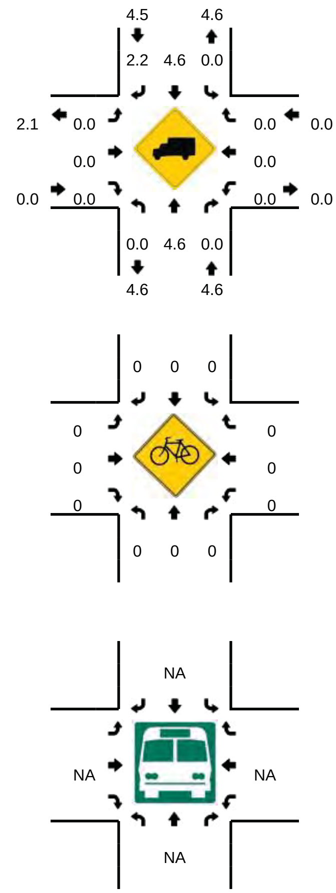
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: US 101 -- SW Jetty Ave | **QC JOB #:** 10782512
CITY/STATE: Lincoln City, OR | **DATE:** Tue, Oct 02 2012

Peak-Hour: 3:35 PM -- 4:35 PM
Peak 15-Min: 4:20 PM -- 4:35 PM







5-Min Count Period Beginning At	US 101 (Northbound) Left	Thru	Right	U	US 101 (Southbound) Left	Thru	Right	U	SW Jetty Ave (Eastbound) Left	Thru	Right	U	SW Jetty Ave (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:00 PM	0	50	0	0	0	62	2	0	0	0	0	0	0	0	0	0	114	1208
3:05 PM	2	52	0	0	0	46	4	0	0	0	0	0	0	0	0	0	104	1207
3:10 PM	0	42	0	0	0	50	4	0	0	0	0	0	0	0	0	0	96	1202
3:15 PM	0	38	0	0	0	45	2	0	0	0	0	0	0	0	0	0	85	1196
3:20 PM	0	46	0	0	0	29	0	0	0	0	0	0	0	0	0	0	75	1181
3:25 PM	0	46	0	0	0	38	3	0	0	0	0	0	0	0	0	0	87	1158
3:30 PM	0	47	0	0	0	49	3	0	0	0	0	0	0	0	0	0	99	1155
3:35 PM	0	60	0	0	0	46	4	0	0	0	0	0	0	0	0	0	110	1164
3:40 PM	0	54	0	0	0	52	3	0	0	0	0	0	0	0	0	0	109	1176
3:45 PM	0	46	0	0	0	56	3	0	0	0	0	0	0	0	0	0	105	1196
3:50 PM	0	32	0	0	0	50	2	0	0	0	0	0	0	0	0	0	84	1175
3:55 PM	0	51	0	0	0	39	4	0	0	0	0	0	0	0	0	0	94	1162
4:00 PM	0	41	0	0	0	53	3	0	0	0	0	0	0	0	0	0	97	1145
4:05 PM	0	57	0	0	0	58	3	0	0	0	0	0	0	0	0	0	118	1159
4:10 PM	1	55	0	0	0	43	6	0	0	0	0	0	0	0	0	0	105	1168
4:15 PM	0	33	0	0	0	50	3	0	0	0	0	0	0	0	0	0	86	1169
4:20 PM	0	38	0	0	0	69	6	0	0	0	0	0	0	0	0	0	113	1207
4:25 PM	0	48	0	0	0	64	3	0	0	0	0	0	0	0	0	0	115	1235
4:30 PM	0	48	0	0	0	47	6	0	0	0	0	0	0	0	0	0	101	1237
4:35 PM	0	33	0	0	0	43	4	0	0	0	0	0	0	0	0	0	80	1207
4:40 PM	0	51	0	0	0	44	2	0	0	0	0	0	0	0	0	0	97	1195
4:45 PM	0	50	0	0	0	45	1	0	0	0	0	0	0	0	0	0	96	1186
4:50 PM	0	32	0	0	0	54	6	0	0	0	0	0	0	0	0	0	92	1194
4:55 PM	0	40	0	0	0	38	4	0	0	0	0	0	0	0	0	0	82	1182

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	0	536	0	0	0	720	60	0	0	0	0	0	0	0	0	0	1316
Heavy Trucks	0	24	0		0	24	0		0	0	0		0	0	0		48
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

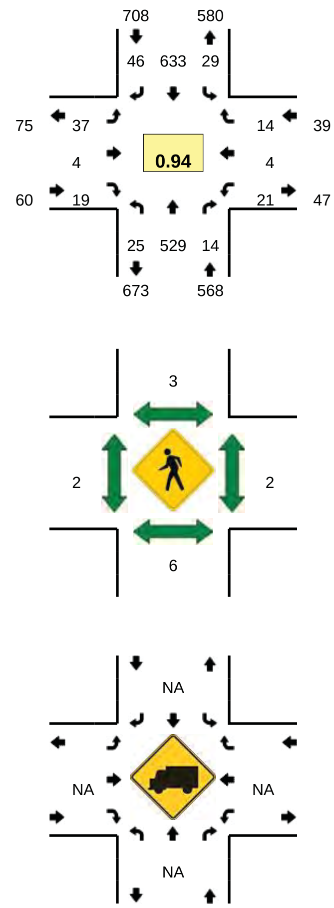
Comments:

Report generated on 10/15/2012 11:08 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

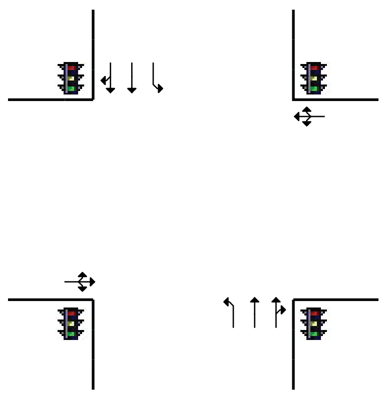
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

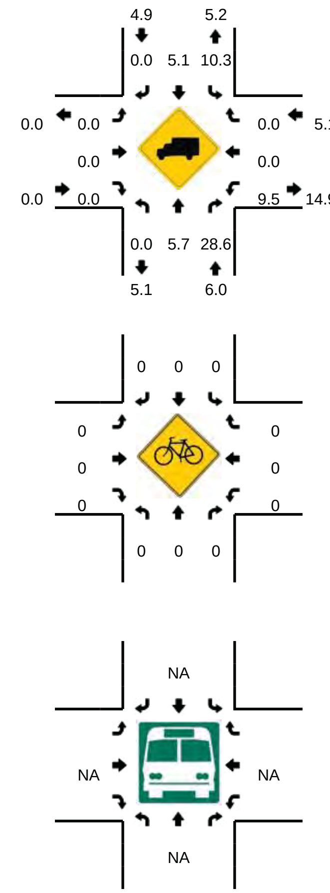
LOCATION: US 101 -- SW 51st St | **QC JOB #:** 10782511

CITY/STATE: Lincoln City, OR | **DATE:** Tue, Oct 02 2012



Peak-Hour: 3:30 PM -- 4:30 PM
Peak 15-Min: 3:35 PM -- 3:50 PM





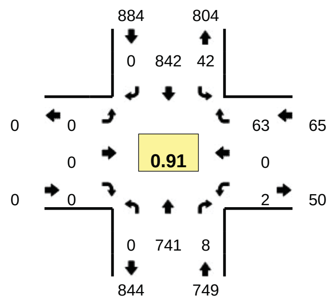
5-Min Count Period Beginning At	US 101 (Northbound) Left	Thru	Right	U	US 101 (Southbound) Left	Thru	Right	U	SW 51st St (Eastbound) Left	Thru	Right	U	SW 51st St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:00 PM	3	51	2	0	1	54	2	0	1	0	1	0	2	0	2	0	119	1332
3:05 PM	1	35	3	0	1	42	2	0	4	0	3	0	1	0	0	0	92	1310
3:10 PM	1	47	2	0	1	61	5	0	2	1	0	0	2	0	1	0	123	1322
3:15 PM	1	40	1	0	2	34	1	0	5	0	2	0	2	0	0	0	88	1310
3:20 PM	1	42	1	0	3	34	1	0	4	1	0	0	1	2	0	0	90	1294
3:25 PM	1	47	5	0	1	41	4	0	5	0	2	0	0	0	1	0	107	1282
3:30 PM	2	48	2	0	2	51	5	0	3	0	2	0	2	0	3	0	120	1295
3:35 PM	2	51	1	0	1	53	5	0	5	0	3	0	1	1	3	0	126	1297
3:40 PM	3	52	3	0	2	45	2	0	4	0	1	0	1	1	1	0	115	1314
3:45 PM	1	51	0	0	2	59	6	0	2	0	0	0	4	1	0	0	126	1346
3:50 PM	2	29	0	0	3	50	2	0	2	1	2	0	1	0	0	0	92	1319
3:55 PM	3	41	0	0	3	44	2	0	0	1	0	0	3	0	2	0	99	1297
4:00 PM	0	43	1	0	2	50	4	0	3	0	1	0	2	0	1	0	107	1285
4:05 PM	2	56	0	0	0	51	4	0	5	1	2	0	0	1	2	0	124	1317
4:10 PM	2	45	3	0	7	47	4	0	3	0	1	0	1	0	0	0	113	1307
4:15 PM	3	32	0	0	3	54	3	0	2	1	2	0	2	0	0	0	102	1321
4:20 PM	3	30	3	0	2	60	4	0	5	0	3	0	2	0	1	0	113	1344
4:25 PM	2	51	1	0	2	69	5	0	3	0	2	0	2	0	1	0	138	1375
4:30 PM	1	46	1	0	1	47	0	0	5	0	3	0	1	0	0	0	105	1360
4:35 PM	1	34	0	0	4	43	3	0	0	0	1	0	1	0	1	0	88	1322
4:40 PM	2	38	2	0	2	50	0	0	3	0	0	0	2	1	2	0	102	1309
4:45 PM	3	50	3	0	0	56	2	0	3	0	0	0	1	0	0	0	118	1301
4:50 PM	1	26	1	0	3	45	5	0	7	1	0	0	4	1	1	0	95	1304
4:55 PM	4	35	0	0	2	35	6	2	4	0	3	0	1	3	2	0	97	1302

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	24	616	16	0	20	628	52	0	44	0	16	0	24	12	16	0	1468
Heavy Trucks	0	24	4		0	28	0		0	0	0		0	0	0		56
Pedestrians		0				8				4				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

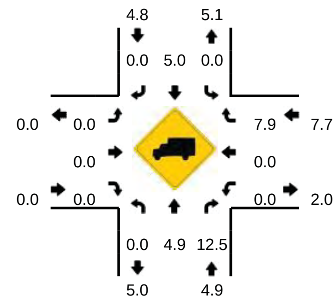
Comments:

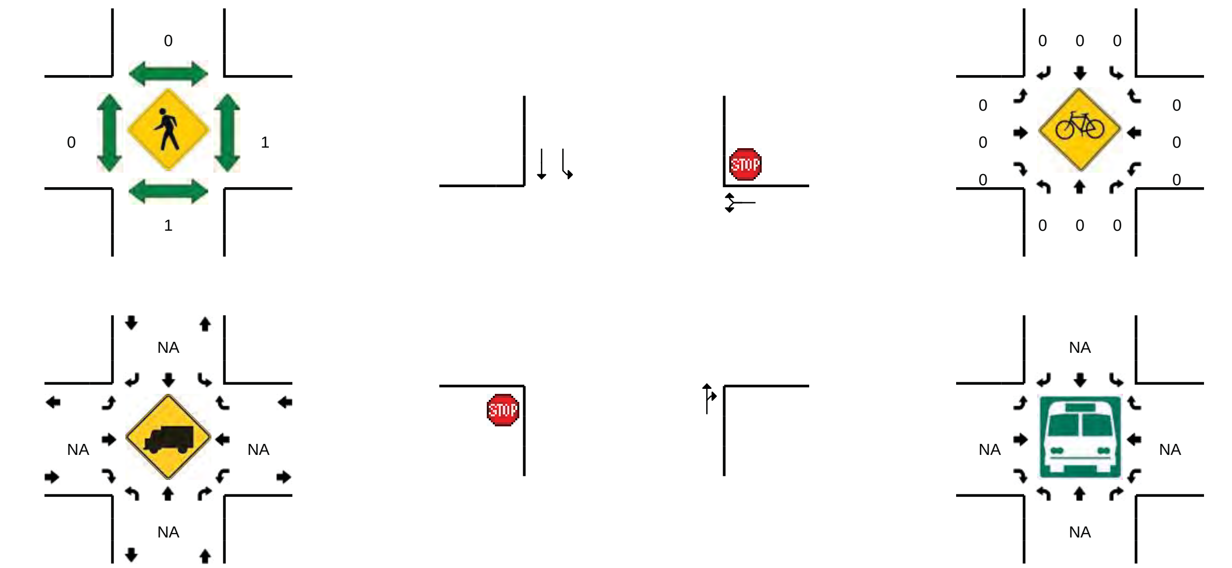
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: US 101 -- SE 32nd St | **QC JOB #:** 10782509
CITY/STATE: Lincoln City, OR | **DATE:** Tue, Oct 02 2012



Peak-Hour: 3:30 PM -- 4:30 PM
Peak 15-Min: 3:40 PM -- 3:55 PM





5-Min Count Period Beginning At	US 101 (Northbound) Left	Thru	Right	U	US 101 (Southbound) Left	Thru	Right	U	SE 32nd St (Eastbound) Left	Thru	Right	U	SE 32nd St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:00 PM	0	71	2	0	4	73	0	0	0	0	0	0	1	0	4	0	155	1542
3:05 PM	0	67	3	0	0	73	0	0	0	0	0	0	1	0	4	0	148	1574
3:10 PM	0	65	1	0	3	62	0	0	0	0	0	0	0	0	2	0	133	1580
3:15 PM	0	50	0	0	3	47	0	0	0	0	0	0	1	0	2	0	103	1559
3:20 PM	0	44	1	0	0	51	0	0	0	0	0	0	0	0	3	0	99	1522
3:25 PM	0	49	1	0	0	73	0	0	0	0	0	0	0	0	1	0	124	1531
3:30 PM	0	78	1	0	2	76	0	0	0	0	0	0	0	0	1	0	158	1562
3:35 PM	0	56	0	0	5	76	0	0	0	0	0	0	0	0	4	0	141	1565
3:40 PM	0	65	0	0	4	62	0	0	0	0	0	0	0	0	5	0	136	1587
3:45 PM	0	78	1	0	5	76	0	0	0	0	0	0	1	0	13	0	174	1645
3:50 PM	0	75	1	0	3	61	0	0	0	0	0	0	0	0	16	0	156	1651
3:55 PM	0	54	1	0	2	57	0	0	0	0	0	0	0	0	7	0	121	1648
4:00 PM	0	63	2	0	2	72	0	0	0	0	0	0	0	0	1	0	140	1633
4:05 PM	0	68	0	0	2	71	0	0	0	0	0	0	0	0	1	0	142	1627
4:10 PM	0	56	1	0	8	68	0	0	0	0	0	0	0	0	7	0	140	1634
4:15 PM	0	56	1	0	3	89	0	0	0	0	0	0	0	0	2	0	151	1682
4:20 PM	0	41	0	0	2	61	0	0	0	0	0	0	0	0	4	0	108	1691
4:25 PM	0	51	0	0	4	73	0	0	0	0	0	0	1	0	2	0	131	1698
4:30 PM	0	63	0	0	6	53	0	0	0	0	0	0	1	0	2	0	125	1665
4:35 PM	0	57	1	0	3	70	0	0	0	0	0	0	0	0	2	0	133	1657
4:40 PM	0	52	0	0	0	77	0	0	0	0	0	0	0	0	1	0	130	1651
4:45 PM	0	66	2	0	4	90	0	0	0	0	0	0	0	0	3	0	165	1642
4:50 PM	0	53	2	0	3	63	0	0	0	0	0	0	0	0	4	0	125	1611
4:55 PM	0	50	1	0	2	89	0	0	0	0	0	0	0	0	2	0	144	1634

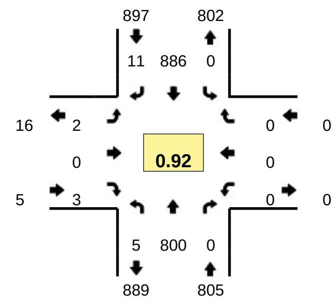
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	0	872	8	0	48	796	0	0	0	0	0	0	4	0	136	0	1864
Heavy Trucks	0	36	0		0	40	0		0	0	0		0	0	16		92
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

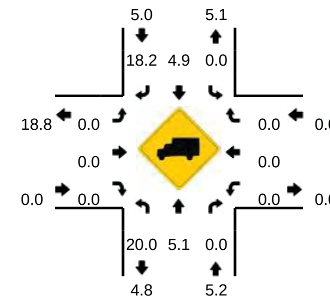
Report generated on 10/15/2012 11:08 AM

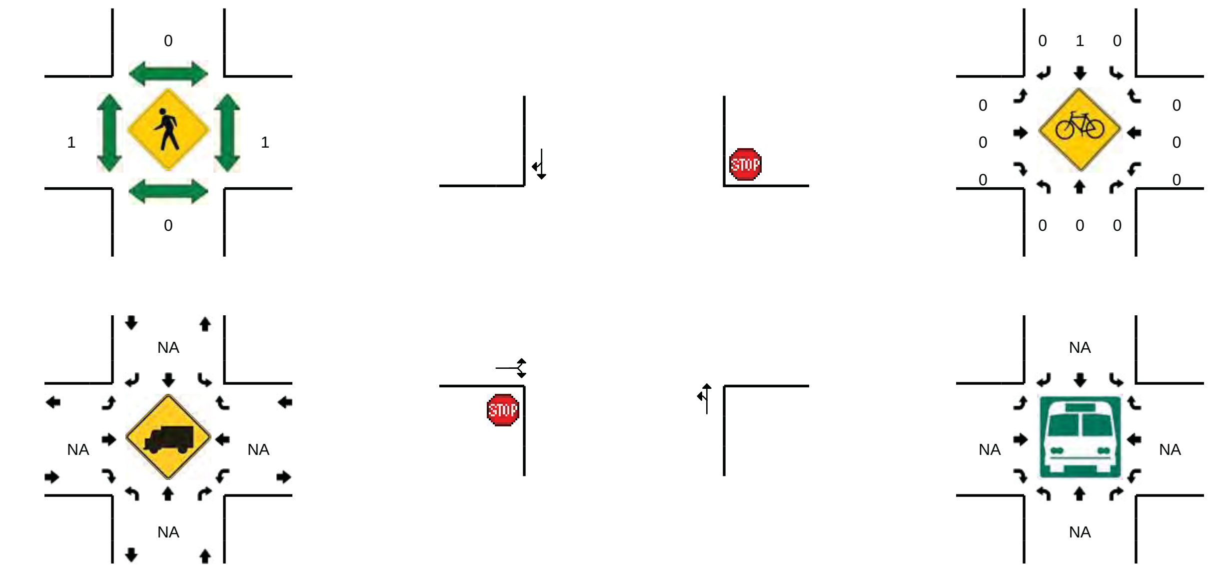
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: US 101 -- SE 29th St | **QC JOB #:** 10782508
CITY/STATE: Lincoln City, OR | **DATE:** Tue, Oct 02 2012



Peak-Hour: 3:30 PM -- 4:30 PM
Peak 15-Min: 3:40 PM -- 3:55 PM





5-Min Count Period Beginning At	US 101 (Northbound) Left	Thru	Right	U	US 101 (Southbound) Left	Thru	Right	U	SE 29th St (Eastbound) Left	Thru	Right	U	SE 29th St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
3:00 PM	0	74	0	0	0	81	1	0	0	0	0	0	0	0	0	0	156	1556
3:05 PM	0	70	0	0	0	66	1	0	0	0	0	0	0	0	0	0	137	1576
3:10 PM	0	74	0	0	0	73	1	0	0	0	0	0	0	0	0	0	148	1598
3:15 PM	1	57	0	0	0	48	0	0	1	0	0	0	0	0	0	0	107	1573
3:20 PM	0	43	0	0	0	51	0	0	0	0	1	0	0	0	0	0	95	1548
3:25 PM	0	51	0	0	0	76	0	0	0	0	0	0	0	0	0	0	127	1550
3:30 PM	0	72	0	0	0	78	1	0	0	0	1	0	0	0	0	0	152	1569
3:35 PM	1	65	0	0	0	83	0	0	0	0	0	0	0	0	0	0	149	1589
3:40 PM	0	68	0	0	0	68	0	0	0	0	0	0	0	0	0	0	136	1611
3:45 PM	0	93	0	0	0	80	0	0	0	0	0	0	0	0	0	0	173	1658
3:50 PM	1	93	0	0	0	61	1	0	0	0	0	0	0	0	0	0	156	1667
3:55 PM	1	58	0	0	0	64	2	0	0	0	0	0	0	0	0	0	125	1661
4:00 PM	0	64	0	0	0	77	1	0	1	0	0	0	0	0	0	0	143	1648
4:05 PM	1	63	0	0	0	75	2	0	1	0	0	0	0	0	0	0	142	1653
4:10 PM	0	65	0	0	0	76	0	0	0	0	0	0	0	0	0	0	141	1646
4:15 PM	0	60	0	0	0	90	3	0	0	0	2	0	0	0	0	0	155	1694
4:20 PM	0	47	0	0	0	58	0	0	0	0	0	0	0	0	0	0	105	1704
4:25 PM	1	52	0	0	0	76	1	0	0	0	0	0	0	0	0	0	130	1707
4:30 PM	0	59	0	0	0	67	1	0	0	0	1	0	0	0	0	0	128	1683
4:35 PM	0	64	0	0	0	65	1	0	0	0	0	0	0	0	0	0	130	1664
4:40 PM	0	47	0	0	0	78	2	0	0	0	0	0	0	0	0	0	127	1655
4:45 PM	0	72	0	0	0	97	0	0	0	0	0	0	0	0	0	0	169	1651
4:50 PM	1	53	0	0	0	62	1	0	1	0	1	0	0	0	0	0	119	1614
4:55 PM	0	52	0	0	0	98	3	0	0	0	1	0	0	0	0	0	154	1643

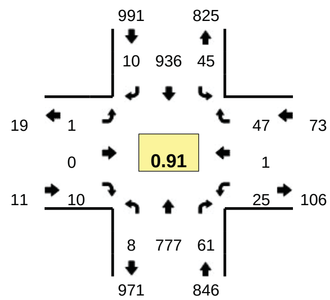
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	4	1016	0	0	0	836	4	0	0	0	0	0	0	0	0	0	1860
Heavy Trucks	4	48	0		0	36	4		0	0	0		0	0	0		92
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

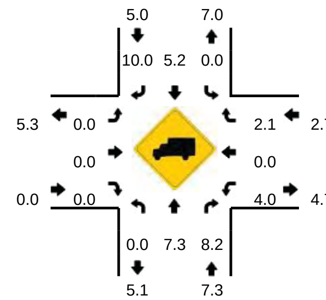
Comments:

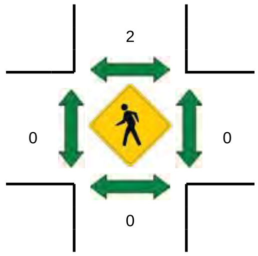
Type of peak hour being reported: Intersection Peak Method for determining peak hour: Total Entering Volume

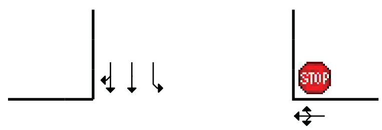
LOCATION: US 101 -- SE 14th St **QC JOB #:** 10782507
CITY/STATE: Lincoln City, OR **DATE:** Tue, Oct 02 2012

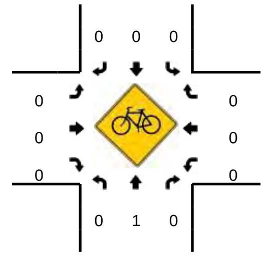
Peak-Hour: 3:20 PM -- 4:20 PM
Peak 15-Min: 3:40 PM -- 3:55 PM

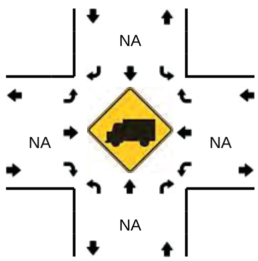


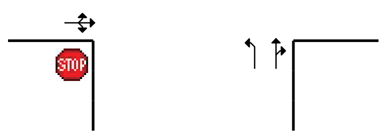


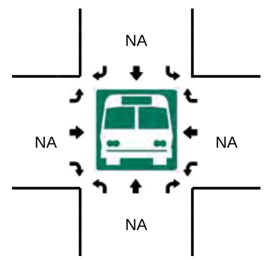












5-Min Count Period Beginning At	US 101 (Northbound) Left	Thru	Right	U	US 101 (Southbound) Left	Thru	Right	U	SE 14th St (Eastbound) Left	Thru	Right	U	SE 14th St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:50 PM	0	68	0	0	2	63	0	0	0	0	0	0	2	0	2	0	137	
2:55 PM	1	51	8	0	2	95	0	0	0	0	0	0	3	0	2	0	162	1683
3:00 PM	0	66	6	0	3	63	0	0	0	0	0	0	0	0	1	0	139	1683
3:05 PM	0	78	6	0	5	82	0	0	0	0	0	0	3	0	5	0	179	1747
3:10 PM	0	64	6	0	1	66	0	0	0	0	1	0	0	0	2	0	140	1748
3:15 PM	1	69	2	0	4	48	1	0	0	0	0	0	3	0	5	0	133	1740
3:20 PM	0	46	5	0	2	75	2	0	0	0	1	0	2	0	7	0	140	1751
3:25 PM	0	58	1	0	2	77	0	0	0	0	2	0	1	0	3	0	144	1748
3:30 PM	0	62	4	0	4	81	0	0	0	0	1	0	1	0	2	0	155	1758
3:35 PM	1	63	10	0	5	78	2	0	0	0	1	0	4	0	1	0	165	1783
3:40 PM	0	60	7	0	5	90	0	0	0	0	1	0	3	0	1	0	167	1812
3:45 PM	1	95	5	0	2	72	2	0	0	0	1	0	2	0	5	0	185	1846
3:50 PM	2	95	9	0	7	60	0	0	0	0	0	0	1	0	1	0	175	1884
3:55 PM	2	56	3	0	4	78	3	0	0	0	0	0	4	0	5	0	155	1877
4:00 PM	0	66	5	0	1	67	1	0	1	0	1	0	3	1	6	0	152	1890
4:05 PM	1	61	5	0	3	84	0	0	0	0	0	0	2	0	4	0	160	1871
4:10 PM	0	58	4	0	3	77	0	0	0	0	1	0	1	0	5	0	149	1880
4:15 PM	1	57	3	0	7	97	0	0	0	0	1	0	1	0	7	0	174	1921
4:20 PM	0	52	1	0	3	74	1	0	0	0	0	0	3	0	4	0	138	1919
4:25 PM	0	45	8	0	9	67	0	0	0	0	1	0	0	0	7	0	137	1912
4:30 PM	1	61	3	0	2	74	0	0	0	0	0	0	2	0	3	0	146	1903
4:35 PM	1	72	1	0	3	79	2	0	0	0	1	0	2	0	4	0	165	1903
4:40 PM	0	43	1	0	5	61	0	0	0	0	0	0	2	0	4	0	116	1852
4:45 PM	0	55	3	0	5	88	0	0	0	0	3	0	3	1	1	0	159	1826

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	12	1000	84	0	56	888	8	0	0	0	8	0	24	0	28	0	2108
Heavy Trucks	0	48	8		0	72	0		0	0	0		0	0	4		132
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

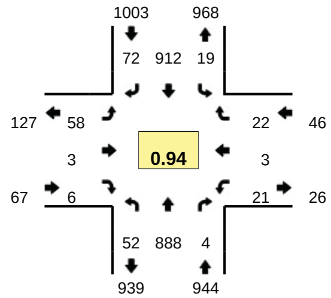
Report generated on 10/15/2012 11:08 AM SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

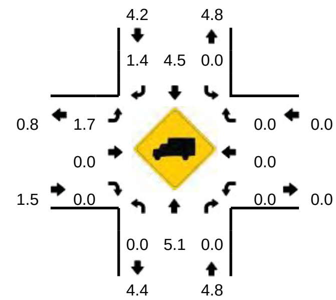
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

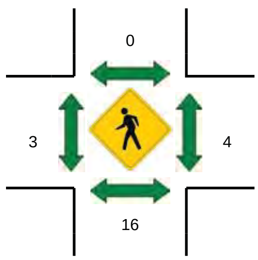
LOCATION: US 101 -- Burger King/City Hall | **QC JOB #:** 10782506

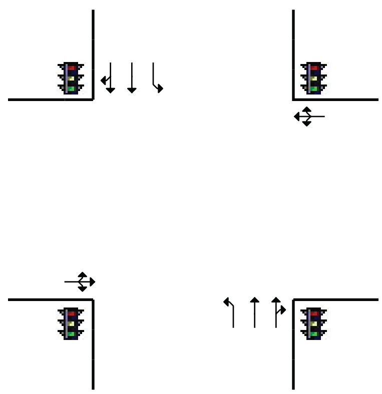
CITY/STATE: Lincoln City, OR | **DATE:** Tue, Oct 02 2012

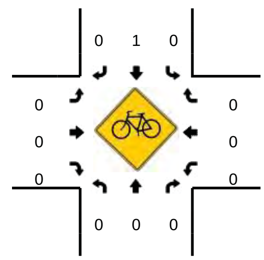
Peak-Hour: 3:25 PM -- 4:25 PM
Peak 15-Min: 3:45 PM -- 4:00 PM

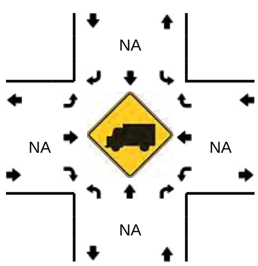


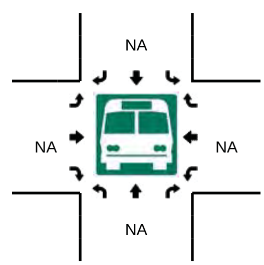












5-Min Count Period Beginning At	US 101 (Northbound) Left	Thru	Right	U	US 101 (Southbound) Left	Thru	Right	U	Burger King/City Hall (Eastbound) Left	Thru	Right	U	Burger King/City Hall (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:55 PM	5	48	1	0	1	83	8	0	1	0	1	0	1	0	4	0	153	1854
3:00 PM	6	63	0	0	0	53	8	0	4	0	1	0	0	0	1	0	136	1833
3:05 PM	6	71	1	0	0	71	10	0	3	0	1	0	2	0	2	0	167	1868
3:10 PM	6	70	1	0	2	64	10	0	4	3	1	0	1	0	3	0	165	1865
3:15 PM	6	96	1	0	1	57	4	0	0	0	0	0	2	0	3	0	170	1884
3:20 PM	6	67	1	0	0	59	8	0	2	1	1	0	3	0	5	0	153	1865
3:25 PM	5	63	0	0	2	81	8	0	9	0	1	0	0	0	3	0	172	1892
3:30 PM	2	58	0	0	0	74	5	0	5	0	0	0	3	0	0	0	147	1885
3:35 PM	4	64	1	0	4	90	5	0	3	1	0	0	0	0	1	0	173	1891
3:40 PM	6	62	0	0	3	71	8	0	4	1	0	0	3	0	3	0	161	1898
3:45 PM	5	87	0	0	0	66	8	0	5	0	0	0	2	0	0	0	173	1921
3:50 PM	4	107	0	0	1	55	4	0	8	0	1	0	1	0	0	0	181	1951
3:55 PM	3	82	0	0	3	87	7	0	4	0	0	0	2	1	2	0	191	1989
4:00 PM	3	67	1	0	2	62	6	0	4	0	2	0	3	0	1	0	151	2004
4:05 PM	11	81	1	0	2	87	7	0	4	0	0	0	0	0	4	0	197	2034
4:10 PM	1	81	0	0	1	86	2	0	4	1	1	0	1	0	4	0	182	2051
4:15 PM	3	63	1	0	0	77	7	0	3	0	0	0	5	1	2	0	162	2043
4:20 PM	5	73	0	0	1	76	5	0	5	0	1	0	1	1	2	0	170	2060
4:25 PM	4	55	1	0	0	74	6	0	4	0	0	0	1	0	2	0	147	2035
4:30 PM	5	58	1	1	3	65	8	0	1	0	1	0	0	0	3	0	146	2034
4:35 PM	6	78	1	0	1	71	7	0	3	0	1	0	3	0	1	0	172	2033
4:40 PM	8	55	0	0	2	80	7	0	5	0	0	0	2	1	3	0	163	2035
4:45 PM	4	73	0	0	0	74	8	0	6	0	1	0	2	0	3	0	171	2033
4:50 PM	4	72	1	0	3	63	3	0	2	0	0	0	0	0	3	0	151	2003

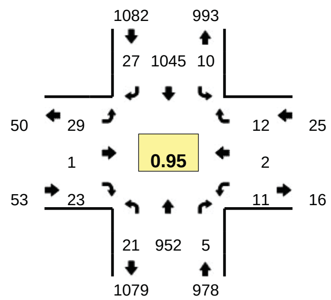
Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	48	1104	0	0	16	832	76	0	68	0	4	0	20	4	8	0	2180
Heavy Trucks	0	40	0		0	36	4		0	0	0		0	0	0		80
Pedestrians		12				0				0				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

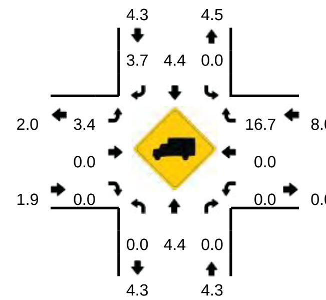
Comments:

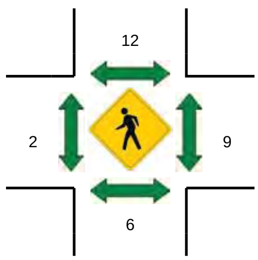
Type of peak hour being reported: Intersection Peak — Method for determining peak hour: Total Entering Volume

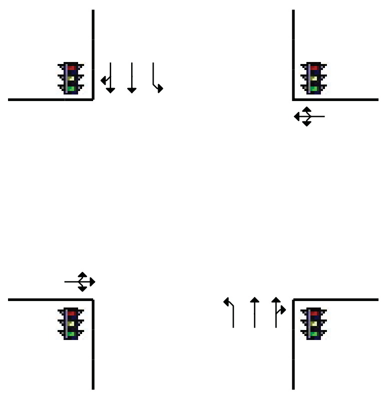
LOCATION: US 101 -- SE 1st St — **QC JOB #:** 10782505
CITY/STATE: Lincoln City, OR — **DATE:** Tue, Oct 02 2012

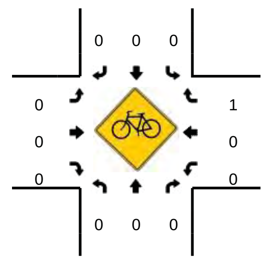
Peak-Hour: 3:30 PM -- 4:30 PM
Peak 15-Min: 3:45 PM -- 4:00 PM

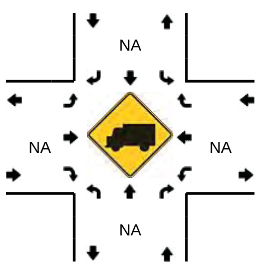


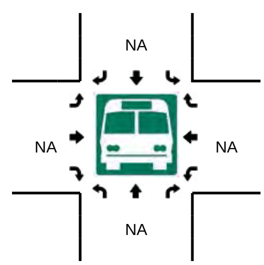












5-Min Count Period Beginning At	US 101 (Northbound)				US 101 (Southbound)				SE 1st St (Eastbound)				SE 1st St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	2	61	1	0	0	55	3	0	0	1	3	0	0	0	0	0	126	1907
3:05 PM	6	77	0	0	1	90	3	0	2	0	1	0	1	0	2	0	183	1935
3:10 PM	1	78	1	0	1	70	2	0	3	0	5	0	0	0	3	0	164	1934
3:15 PM	3	101	2	0	0	66	3	0	3	0	3	0	0	0	1	0	182	1931
3:20 PM	1	63	0	0	0	82	5	0	2	0	1	0	0	0	2	0	156	1941
3:25 PM	1	64	0	0	1	84	3	0	2	0	5	0	1	0	0	0	161	1954
3:30 PM	2	81	0	0	1	86	7	0	1	0	2	0	0	0	1	0	181	1976
3:35 PM	2	66	0	0	0	104	4	0	3	0	5	0	0	0	0	0	184	1990
3:40 PM	1	71	0	0	0	82	0	0	4	0	2	0	1	0	0	0	161	1987
3:45 PM	0	88	0	0	1	78	0	0	1	0	1	0	0	0	1	0	170	1987
3:50 PM	0	95	2	0	1	82	5	0	3	1	0	0	1	0	1	0	191	2021
3:55 PM	3	103	0	0	1	81	1	0	1	0	4	0	4	1	1	0	200	2059
4:00 PM	0	75	0	0	2	83	0	0	3	0	1	0	1	1	1	0	167	2100
4:05 PM	3	75	0	0	1	88	1	0	0	0	1	0	1	0	1	0	171	2088
4:10 PM	2	77	0	0	0	110	2	0	2	0	3	0	0	0	0	0	196	2120
4:15 PM	4	88	1	0	0	79	2	0	5	0	2	0	1	0	1	0	183	2121
4:20 PM	4	70	1	0	1	87	3	0	1	0	2	0	0	0	3	0	172	2137
4:25 PM	0	63	1	0	2	85	2	0	5	0	0	0	2	0	2	0	162	2138
4:30 PM	0	72	0	0	0	79	1	0	2	0	1	0	1	0	0	0	156	2113
4:35 PM	2	67	3	0	1	97	1	0	1	0	1	0	0	0	1	0	174	2103
4:40 PM	3	75	0	0	1	72	2	0	2	0	5	0	0	0	1	0	161	2103
4:45 PM	1	66	0	0	1	71	1	0	4	0	2	0	1	0	0	0	147	2080
4:50 PM	1	68	0	0	0	97	4	0	1	0	1	0	0	0	1	0	173	2062
4:55 PM	1	76	1	0	0	88	5	0	0	0	3	0	0	0	0	0	174	2036

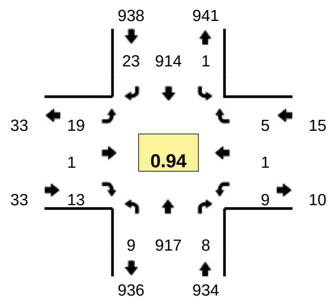
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	1144	8	0	12	964	24	0	20	4	20	0	20	4	12	0	2244
Heavy Trucks	0	40	0		0	56	4		4	0	0		0	0	0		104
Pedestrians		4				8				4				4			20
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

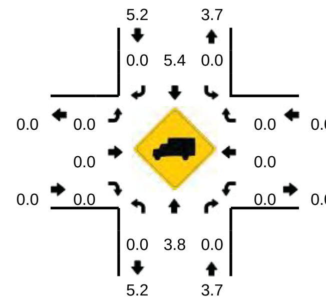
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

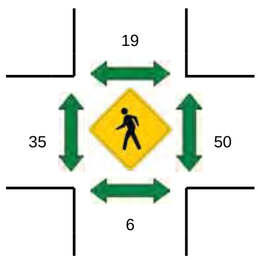
LOCATION: US 101 -- NE 17th St | **QC JOB #:** 10782504

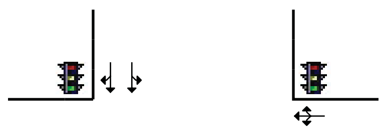
CITY/STATE: Lincoln City, OR | **DATE:** Thu, Oct 04 2012

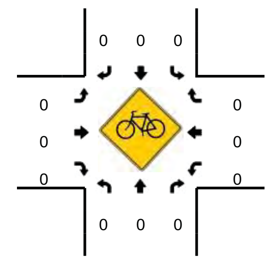


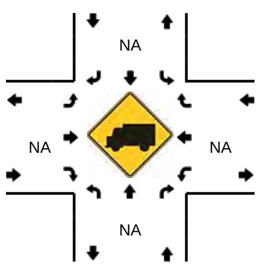
Peak-Hour: 3:05 PM -- 4:05 PM
Peak 15-Min: 3:10 PM -- 3:25 PM

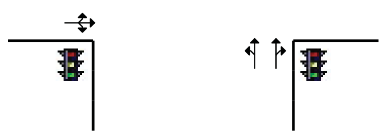


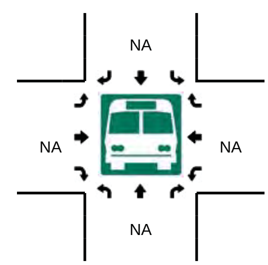












5-Min Count Period Beginning At	US 101 (Northbound) Left	Thru	Right	U	US 101 (Southbound) Left	Thru	Right	U	NE 17th St (Eastbound) Left	Thru	Right	U	NE 17th St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:35 PM	3	60	0	0	0	73	3	0	2	0	1	0	1	0	0	0	143	
2:40 PM	1	83	0	0	0	74	0	0	2	0	0	0	1	0	0	0	161	
2:45 PM	2	75	1	0	0	63	2	0	0	0	3	0	1	0	2	0	149	
2:50 PM	0	73	0	0	0	67	0	0	1	0	1	0	0	0	0	0	142	
2:55 PM	4	82	1	0	0	69	0	0	0	0	0	0	0	0	0	0	156	1854
3:00 PM	1	72	0	0	0	50	1	0	4	0	2	0	0	0	0	0	130	1816
3:05 PM	0	82	1	0	0	75	1	0	1	0	1	0	1	0	1	0	163	1828
3:10 PM	2	99	0	0	0	72	2	0	1	1	1	0	4	0	0	0	182	1845
3:15 PM	2	70	2	0	0	85	1	0	1	0	5	0	0	0	1	0	167	1850
3:20 PM	0	69	1	0	0	84	6	0	2	0	0	0	1	0	1	0	164	1860
3:25 PM	1	83	1	0	0	74	3	0	3	0	0	0	1	0	0	0	166	1883
3:30 PM	0	82	1	0	1	81	0	0	3	0	0	0	0	0	1	0	169	1892
3:35 PM	0	70	0	0	0	89	0	0	1	0	4	0	1	0	0	0	165	1914
3:40 PM	0	61	0	0	0	62	0	0	1	0	2	0	0	0	0	0	126	1879
3:45 PM	2	73	1	0	0	61	2	0	1	0	0	0	0	1	0	0	141	1871
3:50 PM	0	77	1	0	0	80	3	0	0	0	0	0	0	0	0	0	161	1890
3:55 PM	1	85	0	0	0	61	1	0	2	0	0	0	0	0	1	0	151	1885
4:00 PM	1	66	0	0	0	90	4	0	3	0	0	0	1	0	0	0	165	1920
4:05 PM	2	79	2	0	0	58	3	0	3	0	1	0	0	0	0	0	148	1905
4:10 PM	1	70	0	0	0	76	2	0	1	0	2	0	4	0	0	0	156	1879
4:15 PM	4	77	0	0	0	84	2	0	1	0	3	0	1	0	0	0	172	1884
4:20 PM	3	59	1	0	0	83	3	0	1	0	3	0	0	0	0	0	153	1873
4:25 PM	1	72	0	0	0	58	3	0	0	0	2	0	0	0	0	0	136	1843
4:30 PM	2	63	0	0	0	76	2	0	3	0	2	0	0	0	2	0	150	1824

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	16	952	12	0	0	964	36	0	16	4	24	0	20	0	8	0	2052
Heavy Trucks	0	44	0		0	32	0		0	0	0		0	0	0		76
Pedestrians		12				4				48				36			100
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

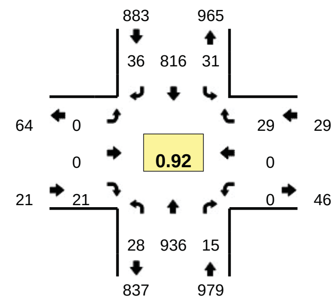
Comments:

Report generated on 10/15/2012 11:08 AM

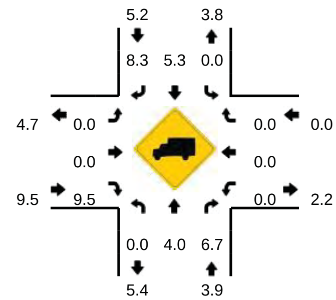
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

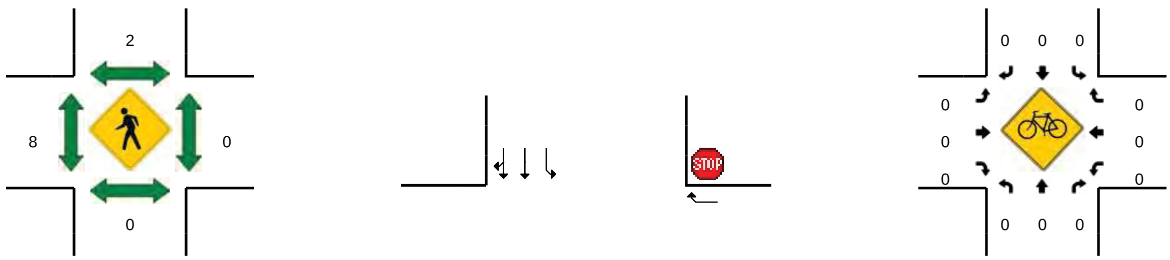
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

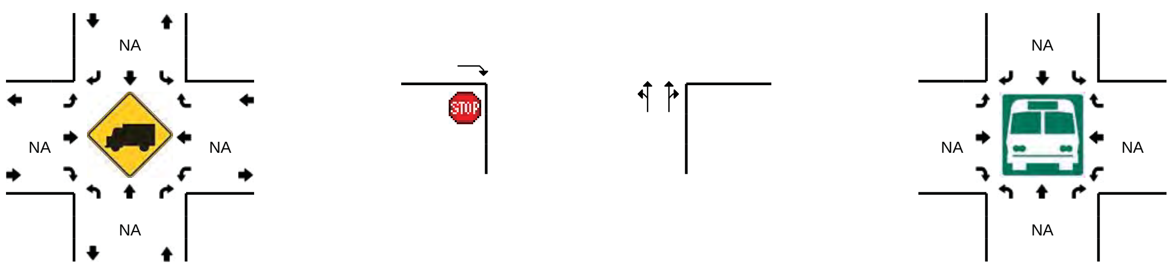
LOCATION: US 101 -- NE 21st St | **QC JOB #:** 10782503
CITY/STATE: Lincoln City, OR | **DATE:** Wed, Oct 03 2012



Peak-Hour: 3:05 PM -- 4:05 PM
Peak 15-Min: 3:05 PM -- 3:20 PM







5-Min Count Period Beginning At	US 101 (Northbound) Left	Thru	Right	U	US 101 (Southbound) Left	Thru	Right	U	NE 21st St (Eastbound) Left	Thru	Right	U	NE 21st St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:35 PM	2	64	1	0	0	75	2	0	0	0	0	0	0	0	5	0	149	
2:40 PM	2	69	1	0	2	70	4	0	0	0	1	0	0	0	1	0	150	
2:45 PM	0	65	2	0	3	78	7	0	0	0	1	0	0	0	2	0	158	
2:50 PM	2	58	2	0	0	75	4	0	0	0	1	0	0	0	0	0	142	
2:55 PM	1	82	1	0	0	73	0	0	0	0	1	0	0	0	5	0	163	1719
3:00 PM	4	52	0	0	0	62	5	0	0	0	1	0	0	0	6	0	130	1711
3:05 PM	2	90	1	0	5	56	4	0	0	0	5	0	0	0	3	0	166	1735
3:10 PM	2	82	1	0	1	86	6	0	0	0	2	0	0	0	4	0	184	1764
3:15 PM	6	76	1	0	6	74	5	0	0	0	2	0	0	0	1	0	171	1803
3:20 PM	1	80	2	0	2	61	3	0	0	0	1	0	0	0	2	0	152	1823
3:25 PM	1	79	0	0	3	84	4	0	0	0	0	0	0	0	4	0	175	1853
3:30 PM	4	66	1	0	2	64	2	0	0	0	1	0	0	0	1	0	141	1881
3:35 PM	0	61	2	0	2	54	2	0	0	0	2	0	0	0	1	0	124	1856
3:40 PM	4	83	0	0	2	61	2	0	0	0	1	0	0	0	2	0	155	1861
3:45 PM	5	86	1	0	1	72	4	0	0	0	0	0	0	0	3	0	172	1875
3:50 PM	0	91	3	0	2	65	0	0	0	0	0	0	0	0	3	0	164	1897
3:55 PM	1	76	1	0	2	81	1	0	0	0	2	0	0	0	1	0	165	1899
4:00 PM	2	66	2	0	3	58	3	0	0	0	5	0	0	0	4	0	143	1912
4:05 PM	1	79	4	0	1	70	1	0	0	0	2	0	0	0	2	0	160	1906
4:10 PM	3	64	0	0	2	67	4	0	0	0	1	0	0	0	4	0	145	1867
4:15 PM	4	63	0	0	0	73	0	0	0	0	2	0	0	0	6	0	148	1844
4:20 PM	2	69	0	0	2	51	2	0	0	0	0	0	0	0	2	0	128	1820
4:25 PM	1	60	0	0	3	56	2	0	0	0	0	0	0	0	2	0	124	1769
4:30 PM	2	82	0	0	1	78	0	0	0	0	0	0	0	0	3	0	166	1794

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	40	992	12	0	48	864	60	0	0	0	36	0	0	0	32	0	2084
Heavy Trucks	0	56	4		0	32	4		0	0	4		0	0	0		100
Pedestrians		0				4				16				0			20
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

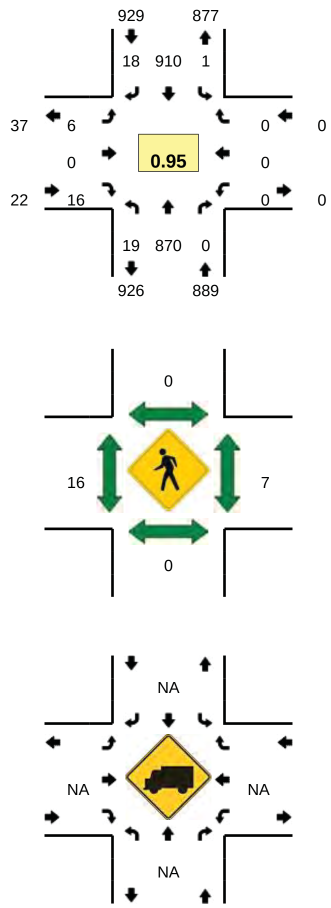
Comments:

Report generated on 10/15/2012 11:08 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

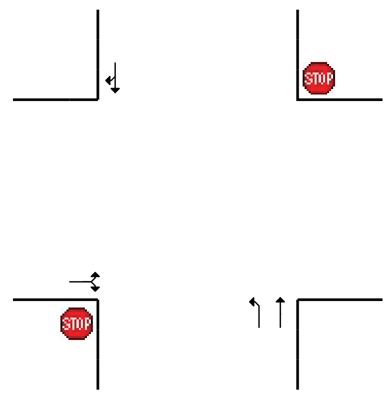
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

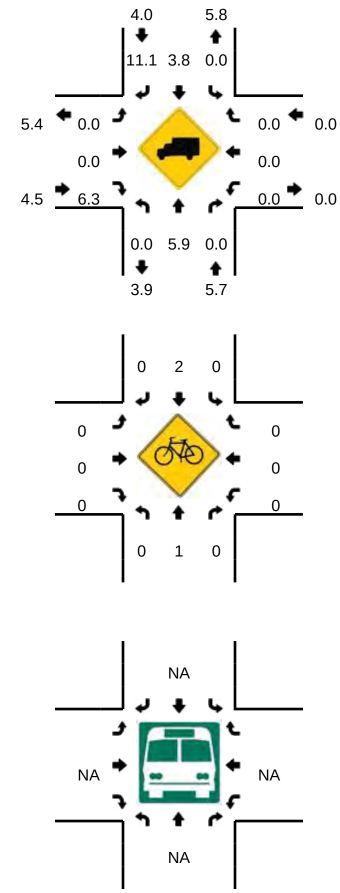
LOCATION: US 101 -- NE 30th St | **QC JOB #:** 10782502

CITY/STATE: Lincoln City, OR | **DATE:** Wed, Oct 03 2012



Peak-Hour: 3:10 PM -- 4:10 PM
Peak 15-Min: 3:55 PM -- 4:10 PM





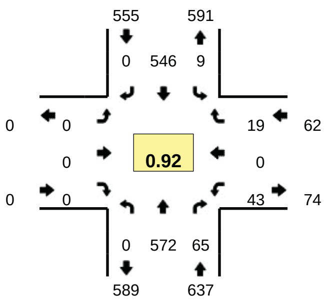
5-Min Count Period Beginning At	US 101 (Northbound) Left	Thru	Right	U	US 101 (Southbound) Left	Thru	Right	U	NE 30th St (Eastbound) Left	Thru	Right	U	NE 30th St (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:40 PM	0	86	0	0	0	85	0	0	0	0	1	0	0	0	0	0	172	
2:45 PM	1	69	0	0	0	60	1	0	1	0	0	0	0	0	0	0	132	
2:50 PM	0	67	0	0	0	67	0	0	0	0	3	0	0	0	0	0	137	
2:55 PM	1	78	0	0	0	87	2	0	0	0	0	0	0	0	0	0	168	1695
3:00 PM	1	70	0	0	0	59	1	0	1	0	1	0	0	0	0	0	133	1696
3:05 PM	1	66	0	0	0	85	2	0	0	0	0	0	0	0	0	0	154	1719
3:10 PM	0	68	0	0	0	86	1	0	0	0	1	0	0	0	0	0	156	1728
3:15 PM	3	90	0	0	0	73	0	0	0	0	2	0	0	0	0	0	168	1766
3:20 PM	0	73	0	0	0	73	1	0	1	0	1	0	0	0	0	0	149	1775
3:25 PM	3	75	0	0	0	54	1	0	1	0	4	0	0	0	0	0	138	1778
3:30 PM	1	78	0	0	0	77	0	0	0	0	0	0	0	0	0	0	156	1802
3:35 PM	3	66	0	0	0	57	1	0	1	0	1	0	0	0	0	0	129	1792
3:40 PM	0	67	0	0	0	97	3	0	0	0	2	0	0	0	0	0	169	1789
3:45 PM	1	51	0	0	0	80	3	0	0	0	1	0	0	0	0	0	136	1793
3:50 PM	3	62	0	0	0	90	1	0	0	0	0	0	0	0	0	0	156	1812
3:55 PM	1	74	0	0	0	68	4	0	1	0	1	0	0	0	0	0	149	1793
4:00 PM	2	95	0	0	0	74	1	1	0	0	1	0	0	0	0	0	174	1834
4:05 PM	2	71	0	0	0	81	2	0	2	0	2	0	0	0	0	0	160	1840
4:10 PM	2	59	0	0	0	75	2	0	0	0	5	0	0	0	0	0	143	1827
4:15 PM	3	70	0	0	0	75	4	2	2	0	3	0	0	0	0	0	159	1818
4:20 PM	1	66	0	0	0	64	1	1	1	0	2	0	0	0	0	0	136	1805
4:25 PM	2	50	0	0	0	61	1	1	1	0	2	0	0	0	0	0	118	1785
4:30 PM	1	85	0	0	0	73	4	0	2	0	1	0	0	0	0	0	166	1795
4:35 PM	1	62	0	0	0	71	1	1	2	0	0	0	0	0	0	0	138	1804

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	20	960	0	0	0	892	28	4	12	0	16	0	0	0	0	0	1932
Heavy Trucks	0	44	0		0	32	4		0	0	0		0	0	0		80
Pedestrians		0				0				12				0			12
Bicycles	0	1	0		0	1	0		0	0	0		0	0	0		2
Railroad																	
Stopped Buses																	

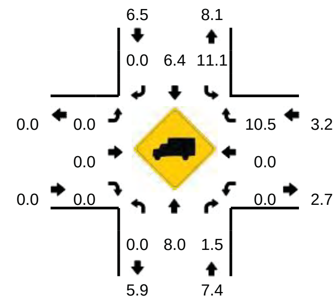
Comments:

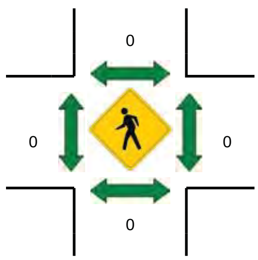
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

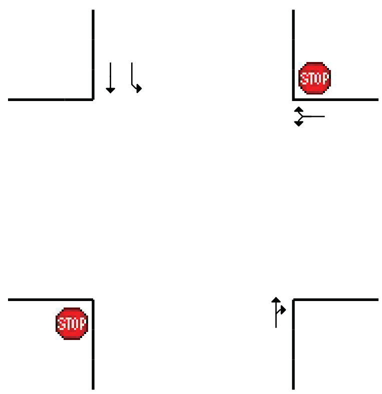
LOCATION: US 101 -- Neotsu Rd | **QC JOB #:** 10782501
CITY/STATE: Lincoln City, OR | **DATE:** Wed, Oct 03 2012

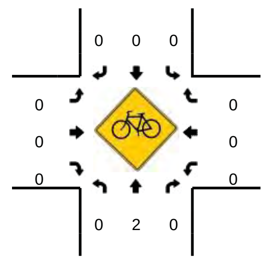


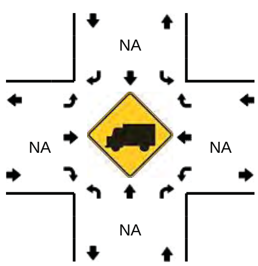
Peak-Hour: 2:50 PM -- 3:50 PM
Peak 15-Min: 3:00 PM -- 3:15 PM

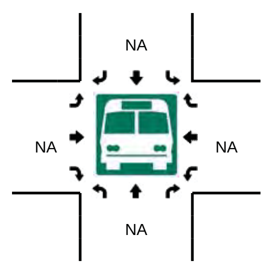












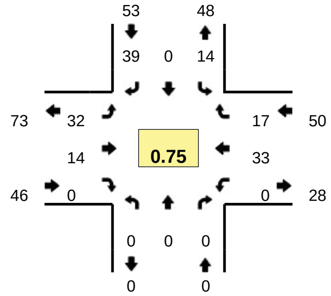
5-Min Count Period Beginning At	US 101 (Northbound) Left	Thru	Right	U	US 101 (Southbound) Left	Thru	Right	U	Neotsu Rd (Eastbound) Left	Thru	Right	U	Neotsu Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
2:20 PM	0	38	1	0	2	40	0	0	0	0	0	0	6	0	2	0	89	
2:25 PM	0	41	7	0	0	32	0	0	0	0	0	0	5	0	2	0	87	
2:30 PM	0	34	4	0	1	50	0	0	0	0	0	0	2	0	2	0	93	
2:35 PM	0	35	3	0	1	55	0	0	0	0	0	0	4	0	0	0	98	
2:40 PM	0	41	8	0	1	35	0	0	0	0	0	0	3	0	1	0	89	
2:45 PM	0	45	3	0	0	46	0	0	0	0	0	0	6	0	3	0	103	
2:50 PM	0	47	6	0	1	41	0	0	0	0	0	0	4	0	0	0	99	
2:55 PM	0	45	5	0	2	48	0	0	0	0	0	0	4	0	0	0	104	1129
3:00 PM	0	40	5	0	1	58	0	0	0	0	0	0	5	0	4	0	113	1157
3:05 PM	0	42	6	0	1	51	0	0	0	0	0	0	5	0	0	0	105	1156
3:10 PM	0	51	5	0	1	58	0	0	0	0	0	0	5	0	4	0	124	1185
3:15 PM	0	52	2	0	0	37	0	0	0	0	0	0	2	0	1	0	94	1198
3:20 PM	0	49	4	0	0	32	0	0	0	0	0	0	4	0	2	0	91	1200
3:25 PM	0	59	3	0	0	32	0	0	0	0	0	0	5	0	1	0	100	1213
3:30 PM	0	48	5	0	1	34	0	0	0	0	0	0	1	0	1	0	90	1210
3:35 PM	0	35	7	0	0	52	0	0	0	0	0	0	2	0	1	0	97	1209
3:40 PM	0	50	11	0	2	46	0	0	0	0	0	0	2	0	4	0	115	1235
3:45 PM	0	54	6	0	0	57	0	0	0	0	0	0	4	0	1	0	122	1254
3:50 PM	0	40	2	0	0	49	0	0	0	0	0	0	4	0	2	0	97	1252
3:55 PM	0	42	5	0	0	45	0	0	0	0	0	0	0	0	2	0	94	1242
4:00 PM	0	37	3	0	0	37	0	0	0	0	0	0	2	0	1	0	80	1209
4:05 PM	0	60	12	0	2	41	0	0	0	0	0	0	7	0	3	0	125	1229
4:10 PM	0	52	6	0	0	38	0	0	0	0	0	0	2	0	2	0	100	1205
4:15 PM	0	48	5	0	0	53	0	0	0	0	0	0	4	0	2	0	112	1223

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
All Vehicles	0	532	64	0	12	668	0	0	0	0	0	0	60	0	32	0	1368
Heavy Trucks	0	36	0		4	60	0		0	0	0		0	0	0		100
Pedestrians		0				0				0				0			0
Bicycles	0	2	0		0	0	0		0	0	0		0	0	0		2
Railroad																	
Stopped Buses																	

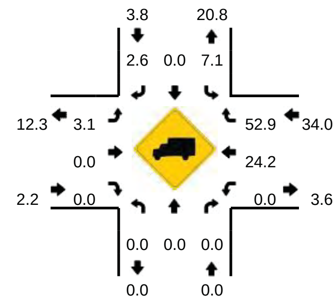
Comments:

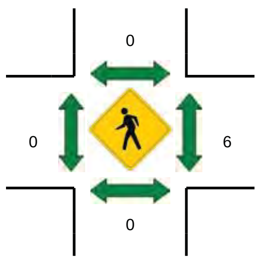
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

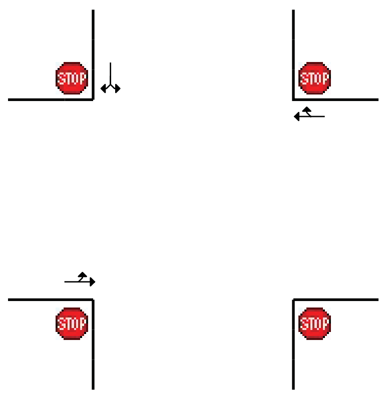
LOCATION: SE High School Dr -- SW 48th St | **QC JOB #:** 10782526
CITY/STATE: Lincoln City, OR | **DATE:** Tue, Oct 02 2012

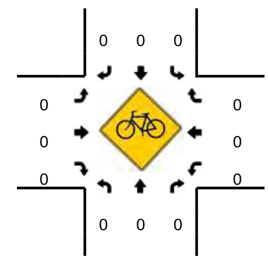


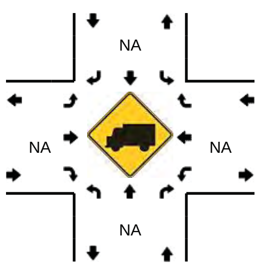
Peak-Hour: 2:20 PM -- 3:20 PM
Peak 15-Min: 2:55 PM -- 3:10 PM

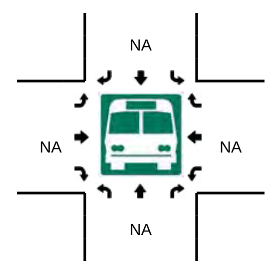












5-Min Count Period Beginning At	SE High School Dr (Northbound)				SE High School Dr (Southbound)				SW 48th St (Eastbound)				SW 48th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	0	0	4	0	3	2	0	0	0	3	0	0	12	
2:05 PM	0	0	0	0	1	0	5	0	1	2	0	0	0	3	3	0	15	
2:10 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	2	3	0	6	
2:15 PM	0	0	0	0	1	0	1	0	1	2	0	0	0	2	0	0	7	
2:20 PM	0	0	0	0	1	0	4	0	0	0	0	0	0	5	0	0	10	
2:25 PM	0	0	0	0	0	0	1	0	1	1	0	0	0	5	2	0	10	
2:30 PM	0	0	0	0	1	0	2	0	4	0	0	0	0	3	0	0	10	
2:35 PM	0	0	0	0	1	0	3	0	6	1	0	0	0	2	1	0	14	
2:40 PM	0	0	0	0	1	0	1	0	3	0	0	0	0	2	3	0	10	
2:45 PM	0	0	0	0	1	0	2	0	3	1	0	1	0	2	4	0	14	
2:50 PM	0	0	0	0	2	0	1	0	3	1	0	0	0	3	2	0	12	
2:55 PM	0	0	0	0	0	0	6	0	6	0	0	0	0	2	1	0	15	135
3:00 PM	0	0	0	0	3	0	7	0	2	2	0	0	0	2	0	0	16	139
3:05 PM	0	0	0	0	3	0	8	0	1	4	0	0	0	2	1	0	19	143
3:10 PM	0	0	0	0	0	0	2	0	2	2	0	0	0	2	3	0	11	148
3:15 PM	0	0	0	0	1	0	2	0	0	2	0	0	0	3	0	0	8	149
3:20 PM	0	0	0	0	2	0	1	0	0	3	0	0	0	2	1	0	9	148
3:25 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4	142
3:30 PM	0	0	0	0	1	0	1	0	1	0	0	0	0	1	4	0	8	140
3:35 PM	0	0	0	0	0	0	5	0	1	1	0	0	0	2	1	0	10	136
3:40 PM	0	0	0	0	0	0	0	0	2	3	0	0	0	1	1	0	7	133
3:45 PM	0	0	0	0	1	0	12	0	3	0	0	0	0	2	4	0	22	141
3:50 PM	0	0	0	0	1	0	7	0	1	4	0	0	0	1	1	0	15	144
3:55 PM	0	0	0	0	1	0	2	0	1	0	0	0	0	0	1	0	5	134

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	0	0	0	24	0	84	0	36	24	0	0	0	24	8	0	200
Heavy Trucks	0	0	0		4	0	0		0	0	0		0	4	4		12
Pedestrians		0				0				0				20			20
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/15/2012 11:08 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212