FINAL DRAFT

Greater Astoria-Warrenton Area Regional Transportation System Refinement Plan

Volume I Refinement Plan

PREPARED FOR:

Oregon Department of Transportation
City of Astoria
City of Warrenton
Clatsop County

PREPARED BY:

CH2MHILL

Angelo planning group

Jeanne Lawson Associates, Inc.
public involvement specialists

October 2007

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Executive Summary

The Greater Astoria-Warrenton Area Regional Transportation System Refinement Plan (Regional Refinement Plan) effort is nearing completion after a 30-month effort. A revised Refinement Plan is currently being developed which identifies future regional transportation needs in the City of Astoria, the City of Warrenton, and western Clatsop County and recommends a set of improvements to meet those needs over the short-, medium-, and long-term. This document incorporates public and agency comments received on the draft document (issued in July 2007) and a revised draft document (issued in September 2007). This Refinement Plan will be brought to the Astoria City Council, Warrenton City Commission, and Clatsop County Board of Commissioners at a point in the future to be considered for adoption.

Specific objectives of the Refinement Plan were to:

- Provide up-to-date information about current and projected future traffic conditions along major transportation corridors within the study area;
- Evaluate proposed transportation improvements in relation to costs, available funding, local support, existing state and federal policies, effectiveness, purpose, and need;
- Provide a process for informed prioritization about regional transportation investments, so that local communities can work cooperatively to attract future transportation funding; and
- Develop necessary information to support updates of the Transportation System Plans (TSPs) of Astoria, Warrenton, and Clatsop County. The projects identified in these updates may also support a combined regional strategy of transportation improvement funding.

The study area for the Regional Refinement Plan includes the cities of Warrenton and Astoria as well as parts of northwestern Clatsop County. It stretches from the Columbia River on the north to the northern boundary of Gearhart on US 101 to the south, and from the western boundary of Knappa on US 30 on the east to the Pacific Ocean on the west.

The recommendations of this Refinement Plan are intended to be the primary reference for municipal, county and regional officials in the project area as they select regionally-significant projects to be requested for inclusion in the State Transportation Improvement Program (STIP). It is anticipated that Clatsop County, the City of Astoria and the City of Warrenton will amend their respective TSPs and Comprehensive Plans to include the recommendations from this Refinement Plan.

The decision-making structure for the Regional Refinement Plan included a Project Management Team (PMT), a Project Advisory Committee (PAC), input from elected officials, and input from the community. The Refinement Plan's PMT consisted of staff from ODOT, the Cities of Astoria and Warrenton, Clatsop County, and the Department of Land Conservation and Development (DLCD). The PMT met monthly by telephone throughout the refinement plan process to provide guidance and policy direction to the consultant team. The PAC was a 35-member committee of area elected officials, business owners, residents, and public agency staff. The group met at key milestones to provide guidance to the PMT.

Three public open houses were conducted during the project. All project material, including open house boards, comment forms, and summaries, were available on a project web site hosted by ODOT.

The team explored current and future transportation needs, including summertime traffic conditions, safety, and local and regional truck traffic patterns. Identified deficiencies included congestion concerns at 13 intersections in the area (none in unincorporated Clatsop County), delay concerns at 10 intersections (one, Miles Crossing, located in unincorporated Clatsop County), and safety concerns in downtown Astoria and along US 30 east of Astoria. A detailed study of regional truck movements identified that approximately half of westbound trucks (from John Day River Bridge) are regional in nature, while approximately one quarter of northbound trucks (from Warrenton) are regional in nature.

The Regional Refinement Plan recommends more than three dozen projects of varied scope, that have been organized into the following four priorities:

- *Priority 1: Protect the Existing System* – Priority 1 seeks to preserve the functionality of the existing transportation system by implementing land use and transportation policies that reduce vehicle conflict, improve traveler information, encourage travel outside peak congestion periods and support alternate modes of transportation.
- *Priority 2: Immediate Needs and Small-Scale Improvements* – Priority 2 identifies localized improvements that focus on a specific intersection or road segment. Priority 2 projects include improvements along US 101 in Warrenton, along BUS 101 in Clatsop County, and along US 101 and US 30 in Astoria.
- *Priority 3: Major Capacity Improvements to the Existing System* – Priority 3 includes major roadway capacity improvements to existing highways. Priority 3 recommendations include improvements to the New Youngs Bay Bridge and the Astoria-Warrenton Parkway.
- *Priority 4: Add New Facilities to the System* – The fourth priority adds new highway facilities to the transportation network. This includes the eastern segment of the Astoria Bypass through the Clatsop State Forest. It is not expected that this project would be funded within the planning timeframe (year 2025).

Improvements listed on the Recommended Project List are not guaranteed future funding and cannot be considered as reasonably likely to be funded during the identified planning horizon for the purpose of addressing OAR 660-0012-0060.

The next steps for the refinement are for the jurisdictions of Clatsop County, the City of Warrenton, and the City of Astoria to consider amending their respective TSPs to include recommendations from this project. Adoption of this refinement plan would be done by reference. Because the TSP is an element of the County's and cities' comprehensive plans, adopting the refinement plan is considered a legislative action. As such, the action is subject to legislative procedures in the respective land development ordinances.

Proposed implementation and policy language is essentially consistent with, and additive to, existing agency TSP language.

Introduction

The Greater Astoria-Warrenton Area Regional Transportation System Refinement Plan (Refinement Plan) identifies future regional transportation needs in the City of Astoria, the City of Warrenton, and western Clatsop County and recommends a set of improvements to meet those needs over the short-, medium-, and long-term. Specific objectives of the Refinement Plan were to:

- Provide up-to-date information about current and projected future traffic conditions along major transportation corridors within the study area;
- Evaluate proposed transportation improvements in relation to costs, available funding, local support, existing state and federal policies, effectiveness, purpose, and need;
- Provide a process for informed prioritization about regional transportation investments, so that local communities can work cooperatively to attract future transportation funding; and
- Develop necessary information to support updates of the Transportation System Plans (TSPs) of Astoria, Warrenton, and Clatsop County. The projects identified in these updates may also support a combined regional strategy of transportation improvement funding.

The recommendations of this Refinement Plan, composed as a Recommended Project List, are intended to be the primary reference for municipal, county and regional officials in the Greater Astoria-Warrenton area as they select regionally-significant projects to be requested for inclusion in the State Transportation Improvement Program (STIP), Oregon's four year transportation capital improvement program (CIP) which identifies the funding for, and scheduling of, transportation projects and programs.

This report (Volume I) provides a summary of the overall planning process for this plan, and documents each of the projects included on the Recommended Project List. A full list of the alternatives considered throughout the Refinement Plan process is provided in Volume II (Appendices) to this report.

It is anticipated that Clatsop County, the City of Astoria and the City of Warrenton will amend their respective TSPs and Comprehensive Plans to include the recommendations from this Refinement Plan.

In the greater context of project implementation, inclusion in this Refinement Plan illustrates that a project has been deemed necessary and feasible based on analysis performed. The next steps toward implementation of individual projects includes: adoption of this Refinement Plan by Clatsop County, Warrenton, and Astoria; design and environmental analysis; programmed governmental funding; and construction.

The chart on the next page depicts the steps involved in the project development process. Projects recommended in this Refinement Plan are generally at the end of the "Planning" step, though some projects are somewhat further along in the overall process.

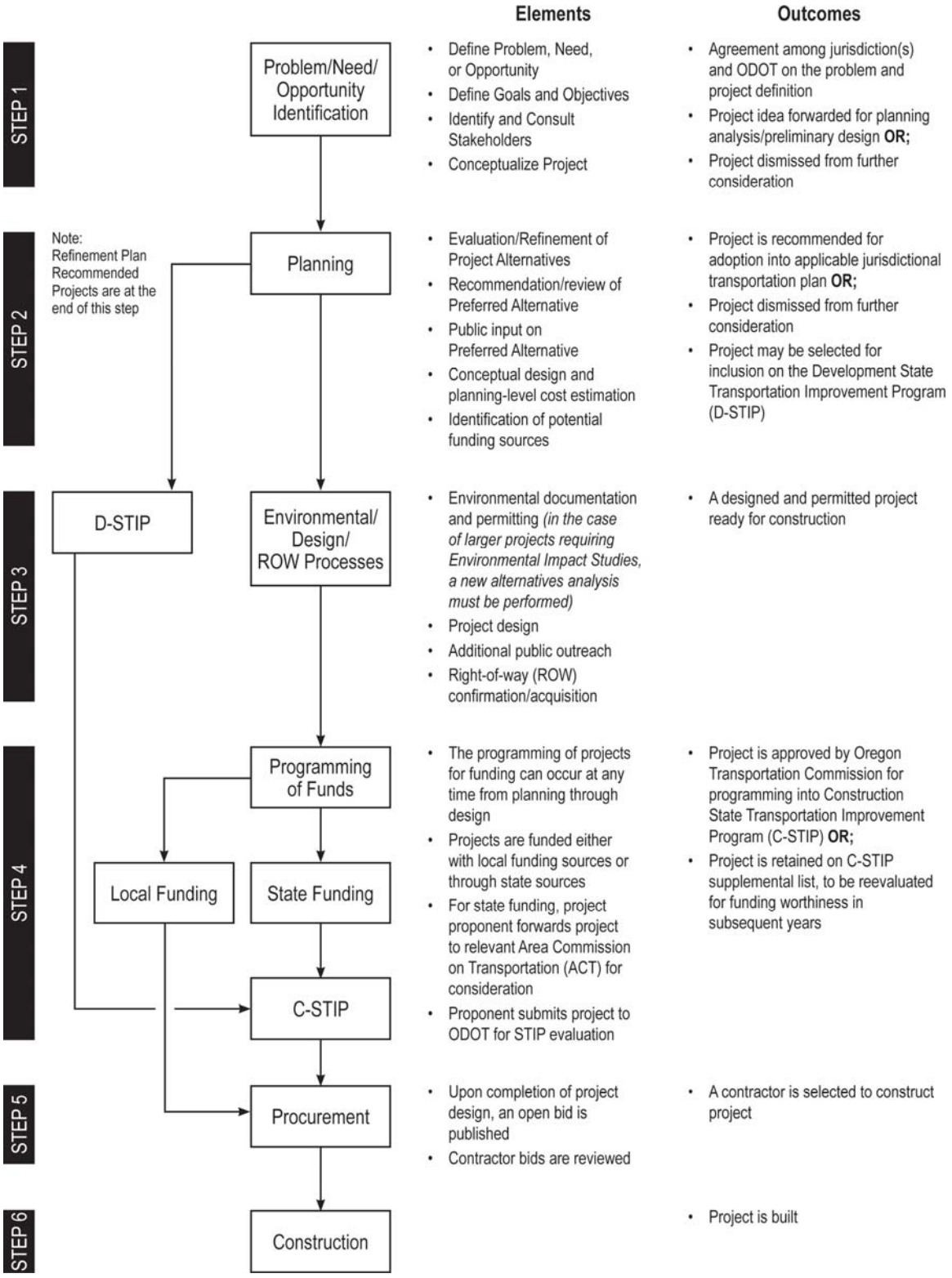

Chart 1:
Project Development Process

Background

The origins of this Refinement Plan date back to earlier considerations for constructing an Astoria Bypass as a solution to regional traffic problems in the Greater Astoria-Warrenton area. The Astoria Bypass has been the focus of several previous studies. In the mid 1990's a draft environmental impact statement (DEIS) evaluated the need for, and impacts of, a bypass from US 30 (near the John Day River) through State Forest Lands to OR 202 at Youngs Bay. Originally, the western terminus was US 101 at Smith Point. During that study, the western portion of the alignment was modified to follow the alignment of US 101 Business from the Old Youngs Bay Bridge to US 101 near Dolphin Road in Warrenton (also known at the "Extended Bypass" route or Astoria-Warrenton Parkway). Following the DEIS, the construction of this bypass was not funded.

Another alternative was studied in the *Extended Bypass Alignment Study* (1999) to address community concerns about potential impacts of the Astoria Bypass, including increased traffic in front of the Astoria High School and on the New Young's Bay Bridge; safety at several intersections; and maintenance of the Lewis and Clark Bridge and Old Young's Bay Bridge along the Warrenton-Astoria Highway. This study proposed an extended alignment, linking the Bypass to an Astoria Warrenton Parkway to avoid travel through Astoria and over the new Young's Bay Bridge. The Parkway alternative would begin at the intersection of OR 202 and US 101 Business, continue south across the Old Young's Bay Bridge, and then continue west along US 101 Business. A new east-west section of roadway would link US 101 Business with US 101 near Dolphin Road.

Regional transportation conditions have changed over the last decade. The economic and commercial character of the Astoria-Warrenton area has shifted from logging and fishing to tourism and other commercial activities. The City of Astoria has increasingly become a popular travel destination, rather than a center of port and marine operations. This has resulted in substantial shifts in truck traffic and seasonal travel patterns. That, in conjunction with the development of a new regional travel demand model for the study region, led to a reassessment of the Astoria Bypass and all other transportation system improvements included in local and regional plans. This Refinement Plan represents the culmination of that effort.

The complete Refinement Plan was conducted in two major phases. Phase I, completed in 2006, examined current and future transportation needs for the area, including the needs of residents, businesses, and visitors. Phase II, completed in 2007, evaluated several potential regional transportation solutions and recommended a set of improvements that meets the needs of Astoria and Warrenton while preserving the function of the regional transportation system.

Study Area

The study area for the Regional Refinement Plan, shown on Figure 1, includes the cities of Warrenton and Astoria as well as parts of unincorporated Clatsop County. It stretches from the Columbia River on the north to the northern boundary of Gearhart on US 101 to the south, and from the western boundary of Knappa on US 30 on the east to the Pacific Ocean on the west. Other than the urbanized areas of the City of Astoria and the City of Warrenton, there is limited development in the study area. The remainder of the area is

largely forest land and farm land, with some light industrial, marine industrial, agricultural, rural commercial, and rural residential uses.

Decision-Making Process

This section summarizes the decision-making structure for the Refinement Plan, including a brief description of the Project Management Team (PMT), Project Advisory Committee (PAC), and public involvement activities. The evaluation framework for the planning effort is also documented in this section. Additional information on public involvement activities is provided as Appendix A.

Project Management

The Refinement Plan's PMT consisted of staff from ODOT, the City of Astoria, the City of Warrenton, Clatsop County, and the Department of Land Conservation and Development (DLCD). PMT members are listed on the Acknowledgements page at the front of this report. The PMT met at key decision-making points in person, and by telephone on the second Thursday of each month throughout the refinement plan process to provide guidance and policy direction to the consultant team. Each member had an alternate that could attend if there were scheduling conflicts.

Project Advisory Committee

The Refinement Plan's PAC was a 35-member committee of area elected officials, business owners, residents, and public agency staff. The group represented a wide range of interests and met at key milestones to provide guidance to the PMT. The PAC met nine times between May 2005 and August 2007. Most meetings were held at the Holiday Inn Express in Astoria. In addition to the regular PAC meetings, three Truck subcommittee meetings were held between June and December 2005 and a special PAC work session focusing on Astoria-specific issues was held in February 2007.

Public Involvement

Astoria and Warrenton community members participated actively in this plan. Three public open houses were conducted during the project. The first, in January of 2006, presented technical truck and traffic findings and preliminary project alternatives. The second open house, in March of 2007, provided an update on the direction of the planning effort and solicited feedback on routing options in downtown Astoria. The third, in June 2007, was held to review the refinement plan's set of recommendations. The first two open houses were held in Astoria and the third open house was held in Warrenton. All project material, including open house boards, comment forms, and summaries, were available on a project web site hosted by ODOT.

Plan Goals and Objectives

The project team developed draft goals and evaluation criteria for the project based on input from the PMT and stakeholder interviews. The goals and evaluation criteria are provided in Table 1. They established a framework to assure that the plan responds to the goals and desires of the community. The draft alternatives were developed and refined to address these criteria.

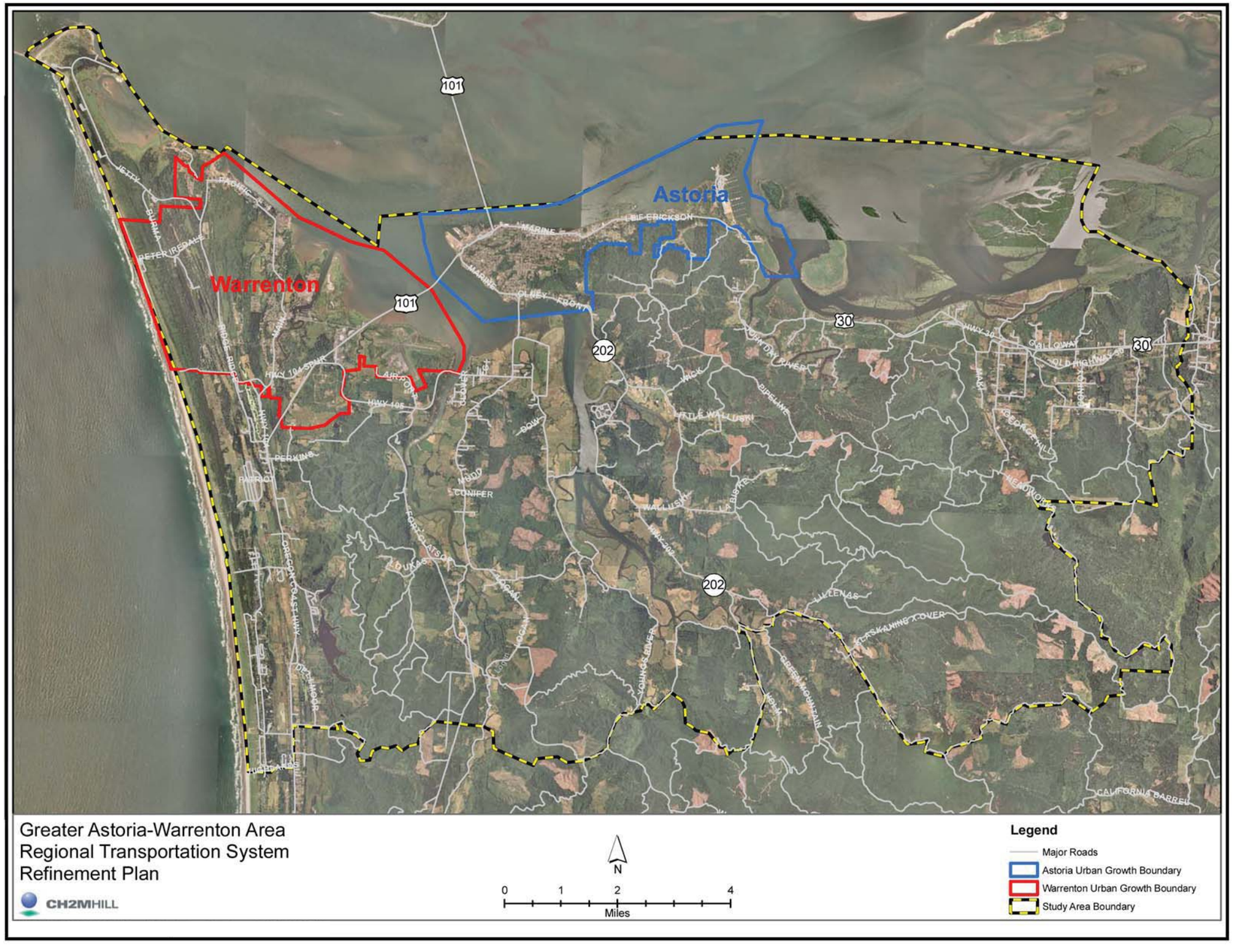

FIGURE 1
Study Area

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Table 1: Goals and Evaluation Criteria

VALUE	OBJECTIVE	CRITERIA
SAFETY	Provide for operational safety for all modes	Address known operational safety issues Avoid introducing new operational safety concerns Look for ways to minimize conflicts between commercial vehicles and automobiles, pedestrians, and bicyclists
	Provide for emergency response and management	Provide redundant routes to support regional emergency management Allow for quick response times
	Provide for safe transportation of hazardous materials	Provide routes outside of neighborhoods Avoid routes through traffic congestion areas Avoid routes through high concentrations of people Avoid environmentally sensitive areas
MOBILITY	Minimize congestion	Meet relevant mobility standards for state highways and local arterials and collectors Discourage traffic flow through neighborhoods Balance capacity needs of summertime seasonal traffic
	Provide connectivity	Provide good connectivity between regional routes Provide good connections between jobs and homes Provide good connections to the regional system for industrial and commercial uses Provide good connectivity for tourism Provide good connectivity between modes
	Support local and regional goals for mode choices	Support rail passenger service Support rail freight movement Support healthy local transit system Provide local bicycle transportation options Provide facilities for regional bicycle routes Provide safe, integrated system for pedestrians in urban areas Support local and regional trail system Provide adequate access to Astoria airport
	Maximize efficiency and life of existing system	Protect capacity and physical integrity of existing system Provide operational improvements
	Accommodate freight movement	Provide connectivity and capacity to freight generators and users Provide separation between freight and passenger traffic

VALUE	OBJECTIVE	CRITERIA
		Provide separation between freight and neighborhoods
		Provide separation between freight and downtown
LIVABILITY	Encourage Smart Growth Principles	Encourage focused development and redevelopment along transportation routes to prevent sprawl
		Encourage good design that improves community livability
	Support existing plans for Astoria/Warrenton that encourage people to live, work and play	Reduce number of trucks downtown Astoria/Warrenton
		Reduce impacts from trucks in downtown Astoria/Warrenton
		Support adequate parking in downtown Astoria/Warrenton
		Provide safe and efficient pedestrian environment in downtown Astoria/Warrenton
		Reduce non-destination passenger car trips in downtown Astoria/Warrenton
		Provide good connectivity for downtown businesses
		Consider alternative highway standards
	Support local and regional goals for mode choices	Support rail passenger service
		Support rail freight movement
		Support healthy local transit system
		Support local bicycle transportation options
		Support facilities for regional bicycle routes
		Provide safe, integrated system for pedestrians in urban areas
		Support local and regional trail system
		Provide adequate access to Astoria airport
	Support community development plans	Provide a system that supports community plans for residential areas, parks, schools, and community centers
	Protect neighborhoods	Avoid splitting neighborhoods
		Discourage through traffic in neighborhoods
		Support neighborhood vitality
ECONOMIC DEVELOPMENT	Support existing and planned commercial and industrial areas	Provide access to existing commercial and industrial areas
		Provide regional access to designated and planned commercial and industrial areas
		Link planned commercial and industrial areas into local network
		Provide parking for planned commercial and industrial areas

VALUE	OBJECTIVE	CRITERIA
	Accommodate freight movement	Provide connectivity and capacity to freight generators and users Provide adequate access to Astoria Airport
	Support tourism industry	Reduce truck impacts to downtown areas Provide good connections to major tourist facilities Provide adequate capacity for summertime volumes Improve tourism character Improve transportation experience for visitors while providing for commercial traffic
ENVIRONMENTAL	Provide strong environmental stewardship	Minimize impacts or look for opportunities to improve natural environment Minimize or mitigate impacts to built environment Protect social fabric of community Protect and/or mitigate impacts to wildlife corridors and connectivity
COST	Provide fundable solution	Provide strong stewardship of public funds Provide good opportunities for local funding leverage
	Provide balanced solution	Balance commerce, tourism, local, and regional project funding needs

Project Identification and Evaluation

This section summarizes the technical analysis conducted for the refinement plan. Additional information is provided in Volume II.

Plan and Policy Review

Project staff conducted a review of state, regional, and local level plans and policies that directly influence the Refinement Plan study area. Each of the projects recommended in this Refinement Plan were found to be in accordance with the regulations, goals, and objectives of all applicable plans. A tech memo detailing the relevance of other plans and policies to the Refinement Plan is presented in Appendix B.

Existing Conditions

An existing conditions analysis was performed to identify existing transportation deficiencies that were subsequently considered during the development of Refinement Plan alternatives. Locations with existing condition deficiencies (as opposed to locations where deficiencies are predicted only in the future) are given a high priority for scheduled improvements.

Analysis included a description of the project area, a brief inventory of current land uses, a comparison of existing roadway geometries in the study area against state standards, traffic operational and safety analysis, and a description of other transportation modes in the study area.

A detailed review of existing conditions, constraints, and opportunities is included in Appendix C. Key findings are as follows:

- ***Pedestrian Facilities:*** the majority of locations in both downtown Astoria and Warrenton meet state pedestrian standards, although many locations outside the downtowns of both cities do not have sidewalk facilities. A substandard sidewalk exists on the New Youngs Bay Bridge between Astoria and Warrenton.
- ***Bicycle Facilities:*** the bicycle system in the study area suffers from gaps in continuity. Most dedicated bikeways in the study area are located on State facilities rather than County roads. State facilities with on-street bicycle lanes are limited to US 30 through downtown Astoria, east of downtown Astoria, and through the Uniontown area. In other areas, bicyclists either share shoulders or lanes with pedestrians and motorists. No bicycle facilities and a substandard sidewalk exists on the New Youngs Bay Bridge between Astoria and Warrenton. Many roadways do not have striped shoulders at least four feet wide, and several do not have fog lines. Finally, there are many driveways through sections of the study area leading to residential and commercial developments. Turning at driveway locations can cause issues for bicycle travel.
- ***Traffic Operations:***
    - Of the thirty intersections analyzed in the study area, thirteen currently do not meet state traffic mobility standards (meaning that the ratio of the number of vehicles to the carrying capacity of the roadway at peak usage times exceeds state standards). Improvements are needed to mitigate conditions at these intersections.
    - The four intersections experiencing the worst traffic conditions are all minor street, stop controlled approaches with major street free movements. This is partly due to the high volume of traffic on the major street, making it difficult for the vehicles to get onto the main roadway, especially those turning left. These intersections include:
        - Marine Drive (US 30)/Exchange Street in Astoria
        - Marine Drive (US 30)/32nd Street in Astoria
        - Marine Drive (US 30)/7th Street in Astoria
        - US 101/Dolphin Road in Warrenton
    - Ten study intersections were identified as having queue length deficiencies, (meaning that the queue length exceeds vehicle storage capacity, resulting in a queue that extends to the next intersection). Of these ten intersections, four also experienced substandard traffic mobility conditions. These intersections include:
        - West Marine Drive (US 30)/Columbia Avenue/West Bond Street in Astoria
        - US 101/Harbor Street in Warrenton

- Marine Drive (US 30)/Exchange Street in Astoria
- Main Street/Skipanon Drive/Harbor Street in Warrenton

- ***Safety Conditions:***
  - None of the study intersections had a higher crash rate than 1.0. (a crash rate higher than 1.0 would indicate a safety concern).
  - Four roadway segments within the study area were ranked in the top 10-percent statewide according to the Safety Priority Index System (an index score for 0.10-mile roadway segments that incorporates crash frequency, crash rate, and crash severity)[1]. These sites include:
    - US 101 between Mileposts 4.05 and 4.20 – this includes the Smith Point Roundabout and the intersection of Marine Drive and Hamburg Avenue.
    - US 30 between Mileposts 84.01 and 84.19 – this area is located in the eastern section of the study area, immediately east of Ivy Station Road and west of Knappa Junction.
    - US 30 between Mileposts 98.30 and 98.43 – this section of US 30 is located in downtown Astoria, between approximately 6th Street and 11th Street.
    - US 101 Bus between Mileposts 0.93 and 1.09 – this area of US 101 Bus is located west of US 101 in Warrenton, in the vicinity of NE 2nd Street.

Future Conditions

The future conditions analysis conducted for this Refinement Plan entailed defining and analyzing 2025 traffic conditions in the region based on a "No-Build" future traffic model scenario (where forecasted conditions assume no capacity-related improvements are built) as well as nine "Build" future traffic model scenarios (where various improvements are assumed to be built in segments of the study area).

A review of the future traffic conditions analysis, including a description of each of the "Build" scenarios, is presented in Appendix D. Key findings of the "No-Build" scenario analysis are as follows:

- Of the thirty study area intersections, sixteen are forecasted to not meet state traffic mobility standards by 2025.
- Increased traffic volumes along US 30 and US 101 within the study area create bottleneck conditions at certain locations, notably east and west of the downtown Astoria couplet.
- Ten of the thirty study intersections are expected to have vehicle queues that exceed available storage. Seven of these queues occur along major streets.

Nine "Build" scenarios were analyzed as part of the future conditions analysis, to represent scenarios from each of the area TSPs (including preferred alternatives and other alternatives considered). Key findings of this analysis are as follows:

[1] The SPIS is a method of identifying locations where safety money may be spent to the highest benefit.

- No one Build scenario from past TSPs addressed all mobility issues identified through the existing and future no build traffic analysis. This indicated a change in overall traffic conditions from area TSP development.
- In general, the findings of the future Build analysis confirmed the localized recommendations from the Astoria, Warrenton, and Clatsop County TSPs.
- In general, scenarios which included major roadway capacity additions on US 101 resulted in a diversion to the highway from other routes.

Truck Study

A truck study was conducted to identify the major truck freight users and current truck travel patterns within the study area. Findings from the truck study were used to inform the identification and analysis of refinement plan alternatives by providing insight into current truck travel patterns and a general estimate of what portion of truck traffic would be expected to modify their travel patterns if a Bypass Route were available. The truck study was based on interviews with 14 area trucking businesses and a several-day data collection effort to identify truck volumes and movement within the study area.

A review of the truck study analysis is presented in Appendix E. Major findings from the truck study are as follows:

- Approximately half the trucks traveling from US 30 east of the study area are external-external trips (meaning that the trip started and ended outside Astoria), traveling through the City of Astoria to points south.
- Approximately twenty-percent of trucks traveling along US 101 from Warrenton or south are external-external, traveling through the City of Astoria and east along US 30.
- Almost one-third of truck trips coming from Washington State over the Astoria-Megler Bridge travel through the study area either to the east or to the south. An alternate route for trucks, depending on its location and alignment, would be expected to attract many of these trips.

The truck study showed a large volume of trucks traveling along US 30 through downtown Astoria. Although some of these trips could be expected to use an alternate alignment, the majority of trips in downtown are considered "local," meaning that the origin or destination was somewhere in Astoria or Warrenton. Therefore new alignments that bypassed the downtown completely are not likely to impact the travel patterns of the majority of trucks observed in downtown Astoria.

Transportation Demand Management Analysis

Transportation Demand Management (TDM) is generally defined as a strategy of actions that encourage a decrease in the demand for the existing transportation system. An analysis was conducted to identify TDM initiatives that could improve the efficiency of existing transportation facilities in downtown Astoria by changing demand patterns rather than embarking on capital improvements such as expanding or building new roadway facilities. Recommended strategies include working with the Chamber of Commerce to create

incentives for visitors to extend their stay in the area and avoid the peak travel times; implement Intelligent Transportation Systems (ITS) such as interactive websites and Variable Message Signs (VMS) that provide real-time traffic conditions along regional highways; and working with freight companies to provide incentives for trucks to travel through the area outside the peak travel times.

Policies aimed at keeping streets and intersections clear are also quite beneficial to efficient operations and safety conditions on existing roads. Examples include: restricting/enforcing double parking; providing adequately sized bus stop, truck loading, and taxi zones; and restricting parking near intersections and crosswalks so as to provide adequate sight distance for pedestrians and motorists alike.

A review of recommended TDM programs and policies are found in Appendix F.

Downtown Astoria Alternate Truck Routes Analysis

Early in the Refinement Plan process, stakeholders stated that a major driver for the Astoria Bypass was to reduce the number of trucks in downtown Astoria. With the goal of addressing this strong concern in the near term, analyses were conducted to identify feasible alternate truck routes that would improve overall conditions in Downtown Astoria.

The analysis consisted of evaluating concepts from an earlier ODOT-led effort (West Astoria Couplet Development Improvements Summary Report) to improve the safety and operations of US 30 at its intersection with 8th Street and Commercial Street. This analysis resulted in the forwarding of a project improvement to redesign the US 30 connection in downtown Astoria that has been included on the Recommended Projects List of this Refinement Plan.

A full description of the alternatives considered during the Truck Routes Analysis is presented in Appendix G.

Transportation System Management Analysis

Transportation System Management (TSM) projects are generally defined as minor improvements to existing highway facilities that improve efficiency and capacity. The TSM analysis conducted for this Refinement Plan resulted in a forwarded set of project improvements that have been included on the Recommended Projects List. The recommended TSM projects are comprised of more than three dozen improvements in the City of Astoria, the City of Warrenton, and western Clatsop County.

A review of recommended TSM programs and policies are found in Appendix H. A description of recommended TSM projects is included in the next section.

Preferred Alternative

The Preferred Alternative is comprised of a series of projects that together will most effectively meet the needs of the future users of the regional transportation network. At the outset of the Refinement Plan's Phase 2, the PMT developed four major categories that align with the Oregon Highway Plan's (OHP) Major Improvements Policy (Policy 1G). These priorities, which are described below, assisted in prioritizing the implementation of Preferred Alternative projects. A memorandum describing the technical analysis conducted prior to the selection of Preferred Alternative recommendations is provided in Appendix I.

Priority 1: Protect the Existing System

Immediate concerns regarding truck traffic in downtown Astoria, peak seasonal traffic congestion, future commercial and industrial traffic-generating development in Warrenton, and the projected failing of numerous intersections should be given immediate attention. Relief from congestion and safety issues should be addressed in the short-term to greatest extent possible.

The OHP's Major Improvements Policy stipulates that the highest priority to address issues on the highway network is to preserve the functionality of the existing system through access management, improved traffic operations, alternate modes of transportation, and TDM projects. TDM projects do not change the physical roadway infrastructure, but are policies geared towards reducing travel during peak conflict or congestion periods.

In addition, the refinement plan's PAC requested that the following goal be added to the City of Astoria TSP as part of a Priority 1 policy: "Protect and enhance the pedestrian environment in downtown Astoria and the pedestrian connections between downtown and the riverfront."

Priority 1 projects are intended to be constructed in the short-term (0 to 10 years).

Priority 2: Improve the Efficiency and Capacity of Existing Highway Facilities; Focus on Immediate Needs and Small –Scale Improvements

The immediate concerns for the Astoria-Warrenton area are likely to require improvements that go beyond what meets the definition of Priority 1 projects. Priority 2 of OHP's Major Improvements Policy addresses improving the efficiency and capacity of existing facilities through targeted small-scale improvements focusing on TSM. TSM projects are localized improvements, focusing on a specific intersection or segment of road, that have the potential to provide very good benefits for a relatively small cost.

Priority 2 projects are intended to be constructed in the short term (0-10 years) or medium-term (10 to 20 years[1]).

Priority 3: Add Capacity to the Existing System: Astoria-Warrenton Parkway (Western Section of the North Clatsop/Astoria Bypass) and Replacement of the New Youngs Bay Bridge

Priority 3 projects include incremental improvements to the Warrenton-Astoria Highway (BUS 101) and major capacity improvements to the New Youngs Bay Bridge between Astoria and Warrenton. This approach assumes that Parkway (BUS 101) improvements can also be shown to serve an adequate purpose and need as an independent or "stand-alone" project based on future transportation need and usage.

The rationale for this prioritization is threefold – first, improvements to US 101 Bus would serve expected future development in parts of Warrenton and unincorporated Clatsop County, and can be used as soon as they are completed. Second, improvements can be organized into relatively small improvement projects that could be phased as funds are available. Third, there are opportunities for cost-sharing between ODOT and local agencies, with some potential funding from the expected development of the adjacent area.

[1] The planning horizon year for this plan is 2025, which is actually 18 years from the plan completion.

Priority 3 projects are generally anticipated for construction in the medium-term (10 to 20 years) or long-term (20+ years).

Priority 4: Add New Facilities to the System: Build the Eastern Section of the North Clatsop/Astoria Bypass

The lowest priority in the OHP Major Improvements Policy is to add new transportation facilities, such as a new highway or bypass, to the transportation network.

Priority 4 would construct the eastern segment of the Astoria Bypass, including improvements to OR 202 between BUS 101 and Williamsport Road, and construction of a new highway alignment through the Clatsop State Forest between OR 202 and US 30. Implementation of Priority 4 assumes that the project is (1) supported by Priority 3 Technical Analysis (to include an environmental analysis consistent with the National Environmental Policy Act (NEPA) and relevant exceptions to the Statewide Land Use Planning Goals), (2) adopted into applicable TSPs, and (3) has an adequate funding strategy.

Currently, available state funding for new highway construction of this type within the planning horizon period of the transportation plan is not anticipated. This Refinement Plan recommends reevaluation of this project at future county and municipal plan updates. ODOT does not oppose consideration of the Astoria Bypass segment as a local road facility.

This Priority 4 project is intended to be constructed in the long-term (20+ years).

Recommendations

The following is a comprehensive list of the projects recommended for implementation by this Refinement Plan. It is organized by priority (short-term, medium-term, and long-term) and numbered by jurisdiction. Order-of-Magnitude cost estimates and phasing recommendations for each project are located at the end of this section. Several of the projects listed in this section originated from previous planning efforts. The locations of recommended projects are depicted at the end of this section (see Figures 17 through 21).

It is important to note that the recommended projects on the State of Oregon transportation system that are included in the Refinement Plan are not guaranteed funding and implementation through their inclusion in this document. They cannot be considered to be reasonably likely to be constructed during the identified planning horizon. Consequently, these projects cannot be relied upon to support plan amendments or zone changes and achieve compliance with Oregon Administrative Rule 660-0012-0060 unless or until they are included in adopted State Transportation Improvement Program or a specific funding source is identified and supported by ODOT in writing or a funding plan that is supported by ODOT in writing is developed. The projects recommended in this document simply represent state and local agreement about transportation system needs in the Greater Astoria-Warrenton area that have been identified through extensive analysis. The process of funding recommended projects through the STIP is discussed in greater detail in the Funding section of this report.

Short-Term Project Improvement Descriptions

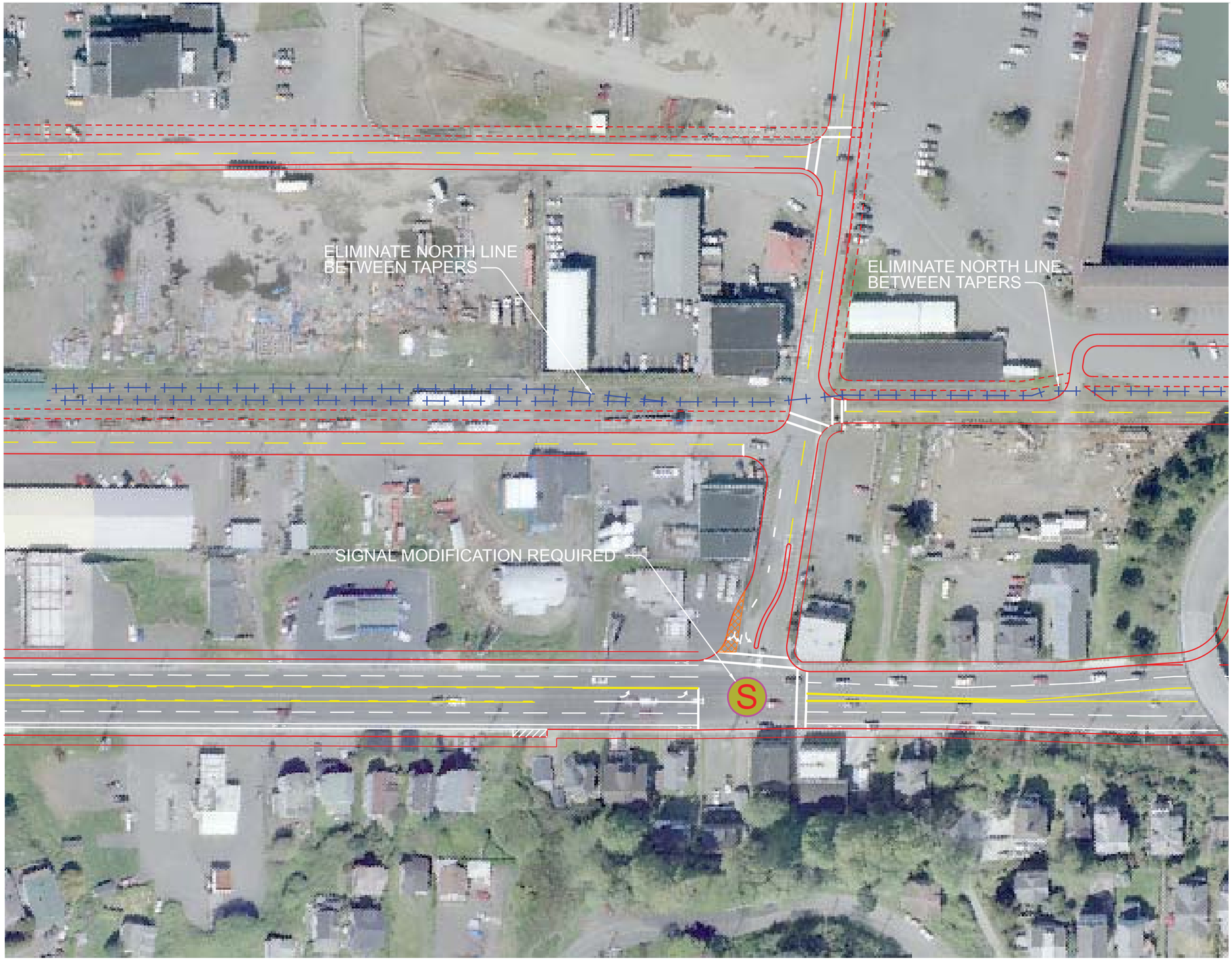
City of Astoria Improvements[1]

- **Project 101 – Signal at US 101 and Hamburg**
  In the short term, the Refinement Plan recommends restricting movements out of Hamburg Avenue from the north to right turns only. This does not restrict movement onto Hamburg from Marine Drive, nor does it restrict movement on Hamburg from the south. The restriction would encourage vehicle and truck traffic traveling east on Marine Drive to exit the Port site via Portway Street. In the long term, this project installs a traffic signal at the intersection of West Marine Drive (US 101 and US 30) and Hamburg Road. This would allow all turning movements to and from Hamburg Avenue, relieving over time some left-turning traffic from Portway Street.

- **Project 102 - Close East End of Taylor Avenue**
  Redesign the intersection of West Marine Drive/Taylor Avenue/Hamburg Avenue north of Marine Drive. Currently Taylor Avenue connects with Hamburg Avenue at West Marine Drive, creating a skewed and potentially dangerous intersection. Taylor Avenue provides access to a small number of homes along it and services RV travelers. This plan recommends closing Taylor Avenue at its east end (connection with Hamburg Avenue). Two two-way local access would be provided to and from OR 202 and the east end of Taylor Avenue would be redesigned to accommodate a RV turnaround area. Due to sight limitations and the proximity to the Smith Point roundabout, the Taylor Avenue connection with OR 202 would be restricted to right-turn only.

- **Project 103 - Portway Avenue**
  The Port Astoria/Uniontown Refinement Plan identified Portway Avenue as the gateway to the Port/Uniontown area, and a dividing line between the tourism-oriented commercial development to the east and marine industrial to the west. Improvements to this intersection therefore address its need to serve a variety of users, including trucks and pedestrians. At the intersection of West Marine Drive and Portway Street, the plan recommends moving the centerline of Portway Street to the west to accommodate trucks making westbound right turns, and modifying the intersection's approach lanes on Portway Street to two lanes (one left-turn only, one left- or right turn). Also at this intersection this plan recommends an eastbound left-turn lane on West Marine Drive, and improving Portway Street to existing City of Astoria road standards between Pier 1 and West Marine Drive. This project improvement is depicted on Figure 2.

[1] Projects to be constructed within the City of Astoria's Urban Growth Boundary.



Note: This figure is based on conceptual engineering.
Design may vary in design phase.

FIGURE 2
Recommended Improvements: Portway Avenue
(Project 103)

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- **Project 104 - Columbia Avenue/Bond Street**
  The plan recommends redesigning the intersection of Columbia Avenue/Bond Street/Marine Drive to create two approach lanes from Bond Street. This is accomplished by removing the existing floating island and approximately 150 feet of parking (4-5 parking stalls) on the north side of Bond Street near the throat of the intersection. This improvement allows two lanes of traffic to enter the intersection from Bond Street – the inner lane turning either southbound on Columbia Avenue or west on Marine Drive; and the outer lane turning west on Marine Drive, north on Columbia Avenue, or east on Marine Drive. Vehicles turning east on Marine Drive could turn right on red when the queue turning north or west is two vehicles or less.

- **Project 105 - Marine Drive Between 5th and 8th Streets**
  This project, originally recommended in the Astoria TSP, calls for installing a turning lane and a raised pedestrian island at intersections along Marine Drive (US 30) between 5th Street and 8th Street. This project increases automobile and pedestrian safety along Marine Drive, by allowing turning vehicles to pull out of the general-purpose travel lane, and for pedestrians to have a refuge island while crossing the highway, between directions of travel. Figure 3, left, depicts a typical pedestrian island. [1]

Figure 3: Example of Pedestrian Island

- **Project 106 - 7th Street**
  This project converts 7th Street into a southbound one-way between Marine Drive (US 30) and Bond Street. This project eliminates existing sight distance, turning, and traffic congestion issues associated with traffic turning onto Marine Drive from 7th Street; vehicles entering Marine Drive can do so safely from 6th or 5th Streets or by entering the Marine Drive/Commercial Street couplet at 8th Street.

[1] Photo Credit: City of Alexandria, Virginia, Department of Transportation and Environmental Services (http://alexandriava.gov/tes/td/traffic_calming/island.html)

- **Project 107 - Downtown Curb Extensions**
  The plan recommends construction of curb extensions at the intersections of Marine Drive (US 30) and 10th, 11th, and 12th Streets. Adding curb extensions at intersections (Figure 4)[1] will decrease the distance pedestrians must walk to cross Marine Drive and will make pedestrians more visible to motorists, thus improving pedestrian safety conditions in this area. This project supports one of the objectives of the Regional Refinement Plan to "protect and enhance the pedestrian environment in downtown Astoria and the pedestrian connections between downtown and the riverfront."


Figure 4: Example of an Intersection Curb Extension

- **Project 108 – Signal at Exchange Street**


Figure 5: Intersection of Marine Drive and Exchange Street

Install a traffic signal at the intersection of Marine Drive (US 30) and Exchange Street (Figure 5). The east end of downtown Astoria is a bottleneck as the highway transitions from four travel lanes in the downtown couplet to three travel lanes between 16th and Exchange Street, to two travel lanes between Exchange and 33rd Street. Exchange Street serves a moderate amount of traffic destined to the Columbia Memorial Hospital, Clatsop County Community College, and other uses south of downtown. Traffic turning from westbound Marine Drive must wait for a gap in oncoming traffic to turn onto Exchange Street. This signal project would increase traffic mobility and safety conditions at this intersection.

- **Project 109 - 37th Street**
  This project channelizes and restripes the intersection at US 30 and 37th Street, constructs bulb-outs, improved lighting, and prohibits parking, as a way to improve operations for

[1] Photo Source Credit: City of Alexandria, Virginia, Department of Transportation and Environmental Services (http://alexandriava.gov/tes/td/traffic_calming/island.html)

drivers at this intersection. This intersection serves residents of a residential development between US 30 and the Columbia River. This project addresses sight distance issues for vehicles traveling northbound on 37th Street, and for pedestrians crossing the highway at this location.

- **Project 110 - Nimitz Road**
  At the intersection of US 30 and Nimitz Road, realign the intersection, stripe the roadway, and create a westbound right-turn deceleration area. This project increases traffic safety conditions by improving sight distance and facilitates truck turning movements.
- **Project 111 - OR 202 and Denver Street**
  This project entails the installation of a left-turn refuge lane and a westbound deceleration lane on Denver Street at intersection of OR 202 and Denver Street. This project improves traffic mobility and overall safety conditions at the intersection.
- **Project 112 - OR 202 between 8th and Wall Streets**
  The Refinement Plan recommends the following improvements on OR 202 between 8th Street and Wall Street: 1) Install a center turn lane for entire length of segment; 2) Install westbound right-turn deceleration lane on OR 202 at intersection with 11th Street; 3) Widen 11th Street at intersection with OR 202. Implementation of this project will improve traffic mobility conditions on OR 202 and create better turning access for large trucks at the intersection of OR 202 and 11th Street.
- **Project 113 - OR 202 and Kearney Street**
  This project entails redesigning the existing intersections of OR 202 at Kearney and 2nd Streets to create one wide common right-angle intersection with OR 202 and the installation of an eastbound left-turn lane pocket on OR 202 at the redesigned common intersection. In addition to improving overall safety and traffic mobility conditions in this area, the redesigned intersection will be wide enough to accommodate large truck turns.
- **Project 114 - US 30 at Franklin Avenue**
  The Refinement Plan recommends modifying Franklin Avenue to one-way (eastbound) between US 30 and 33rd Street and rerouting westbound vehicles to signalized intersection at US 30 and 33rd Street.

- **Project 115 - East of the Downtown Couplet**
  This project entails adding curb extensions (at specified quadrants) at the intersections of 16th, 17th, and 18th Streets and mid-block (Figure 6)[1] between 18th and 20th on the south side of US 30 (pending ODOT approval). According to the ODOT Transportation and Growth Management program, a curb extension can help make a mid-block crosswalk more visible to drivers (Main Street: When a Highway Runs through It, pg. 59).

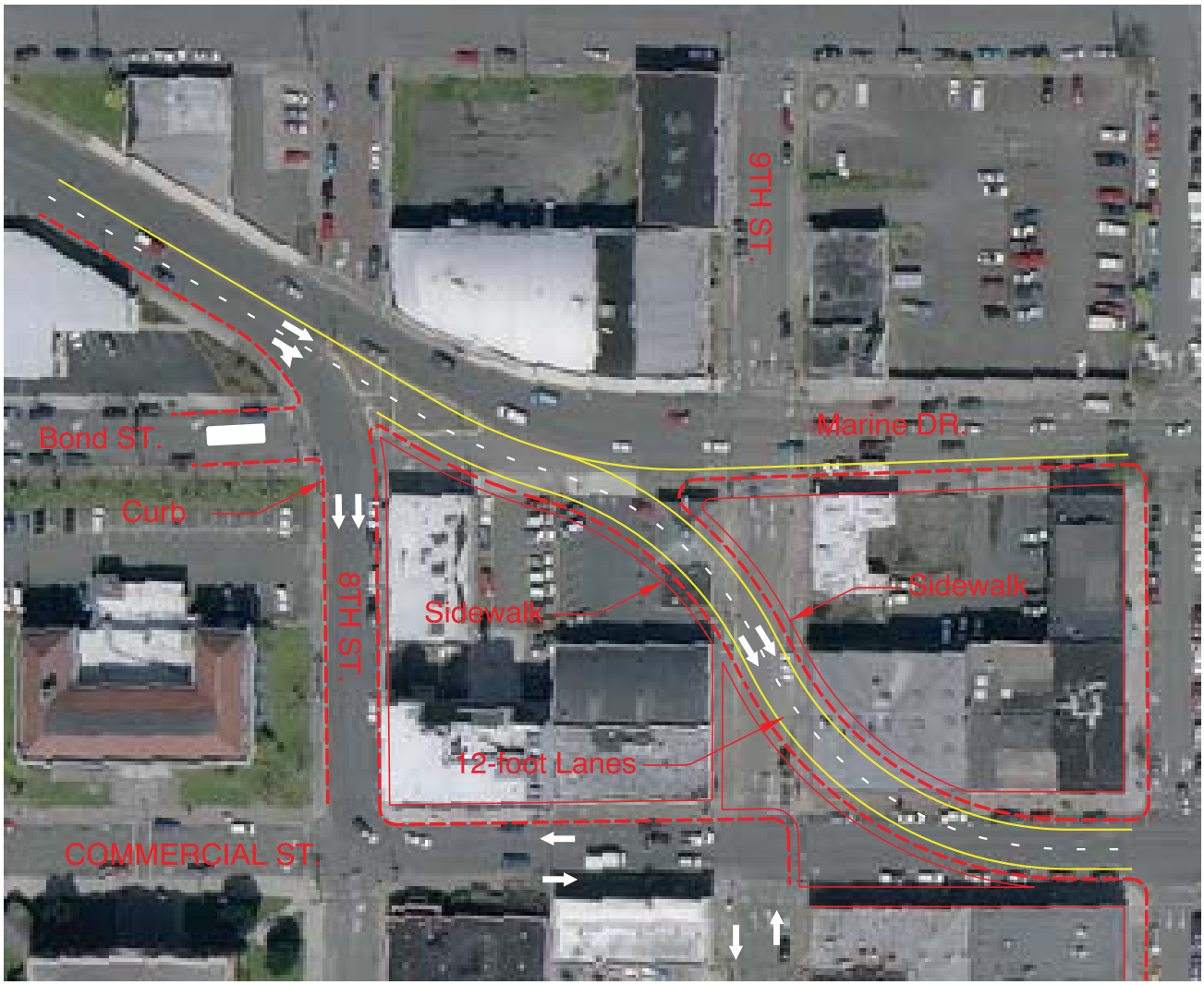
Figure 6: Example of a Mid-Block Curb Extension

- **Project 116 - Median Between 18th and 20th**
  The Refinement Plan recommends adding a center median on Marine Drive (US 30) between 18th Street and 20th Street. By separating opposing traffic flows, restricting mid-block turning movements, and providing a visual cue for motorists to slow down, adding a center median will improve traffic safety and mobility conditions along this segment of US 30.
- **Project 117 – Marine Drive/Commercial Street**
  The Refinement Plan recommends realigning the intersection of Marine Drive (US 30) and Commercial Street to be a three-legged "T" intersection. This project adds a left-turn lane onto US 30 to help drivers access Commercial Street. The realigned intersection will improve motorist visibility along the highway and provide a better turning radius for large trucks making left turns.
- **Project 118 – Marine Drive/Exchange Street/23rd Street**
  The Refinement Plan recommends realigning Exchange Street so that it forms a four-legged 90-degree intersection with Marine Drive (US 30) and 23rd Street. It is also recommended that a traffic signal be added at the realigned intersection. The combination of these two actions will significantly improve traffic conditions at this currently problematic intersection.
- **Project 119 - New Street Between 29th and 32nd Streets**
  This project constructs a new local east-west street and alley along the RiverWalk Trail between 29th Street and 32nd Street. This street would serve residents of the Mill Pond and other residential developments in this section of Astoria, and connect with the Safeway store in the vicinity of 33rd Street. This improvement is intended to channel traffic to and from US 30 at key intersections, improving local connectivity and reducing delay on the highway itself.

[1] Photo Source Credit: City of Surrey Traffic Calming Program Website (http://www.binnie.com/traffic/tc_devices/tc_curbext.htm)

- **Project 120 – US 30: 35th Street to Nimitz Drive**
  This project entails constructing new sidewalks on the north side of US 30 between 35th Street and 37th Street and on the south side of US 30 between 48th Street and Nimitz Drive. These improvements will fill in existing sidewalk gaps along US 30, thereby greatly enhancing the pedestrian environment.
- **Project 121 – US 30: 33rd Street to 47th Street**
  This project would improve bicycling conditions and meet an existing bicycle network need in Astoria through the extension of on-street bicycle lanes on US 30 between 33rd Street and 47th Street (where pavement width allows).
- **Project 122 – US 30 and 54th Street**
  This project improves traffic mobility and safety conditions at the intersection of US 30 and 54th Street through the provision of alignment, channelization, signing, and striping improvements.
- **Project 123 – US 30 and Old US 30**
  This project improves safety conditions at the intersection of US 30 and Old US 30 (eastern –most intersection) by restricting vehicles on US 30 to westbound right turn-ins only. Currently, topographical constraints and poor line-of-sight conditions combined with fast-moving traffic make left turns at this intersection problematic – this intersection modification would disallow such left turns.
- **Project 124 – US 30 and Liberty Lane**
  This project entails realigning US 30 at South Tongue Point (Liberty Lane) and providing a left-turn pocket lane on US 30, thereby improving traffic mobility and safety conditions at this intersection.
- **Project 125 - West End of Couplet**
  This project shifts the US 30 connection with Commercial Street from 8th Street (existing) to immediately east of 9th Street (see Figure 7). The purpose of this project is to improve safety at the west end of the couplet. Currently large vehicles moving eastbound on US 30 need to use both travel lanes to maneuver the 45-degree turn from 8th Street onto Commercial Street. Automobiles need to yield to trucks taking the turn, increasing the potential for rear-end or sideswipe crashes. In addition, pedestrians crossing US 30 at 8th Street do not have a dedicated signal for safe crossing and traffic volumes and site distance on US 30 make a safe crossing at this location difficult. The 8th Street and Commercial Street area is identified as a high-crash location as part of the state's Statewide Priority Index System (SPIS). ODOT and the City of Astoria analyzed a number of potential alternatives to improve safety at this location. This project decreases the curvature of the highway and shifts the curve east by traveling through portions of the block between 8th and 9th Streets, and between 9th and 10th Streets. Two properties would likely require relocation as a result of this project. As shown in the figure, the existing Commercial Street west of 9th Street would be disconnected from the Highway.
- **Project 126 - US 30 Turn Lane between Exchange and 32nd Street**
  This project adds a continuous two-way left turn lane along US 30 between Exchange Street and 32nd Street (see Figures 8 and 9). It transitions to existing two-way left turn lanes to both the east and west of this project. The purpose of this project is to improve safety and reduce delay caused by vehicles stopped in the through-travel lane to take a

left turn. Currently, left-turning traffic needs to wait for gaps in oncoming traffic to make left turns. High volumes in the opposing direction mean fewer gaps, and turning traffic delay through vehicles behind them. This project is expected to improve traffic mobility conditions and allowing safer and more convenient access to local streets and driveways on this section of US 30. This project widens the highway cross section to include two 12-foot travel lanes, a 14-foot center turn lane, and 5-foot bicycle lanes on both the north and south sides of the highway. The cross section is placed within the existing curb-to-curb width. On-street parking between 27th Street and 32nd Street is removed. Sidewalk width does not change from what exists – 5-foot on the south side, and 5 to 11-feet on the north side (11' west of 29th Street, 5' east of 29th Street). Through the design phase of this project, ODOT will look for opportunities to implement "pockets" of on-street parking, similar to what exists west of this section near the Aquatic Center. Furthermore, the City of Astoria will explore the possibility of shared off-street lots that could be used for customer and employee parking in the vicinity of this project.



Note: This figure is based on conceptual engineering. Design may vary in design phase.

Project as shown may not meet full ODOT design standard for horizontal clearance; deviation would be required.

FIGURE 7
Recommended Improvements:
West End of Downtown Astoria
Couplet (Project 125)

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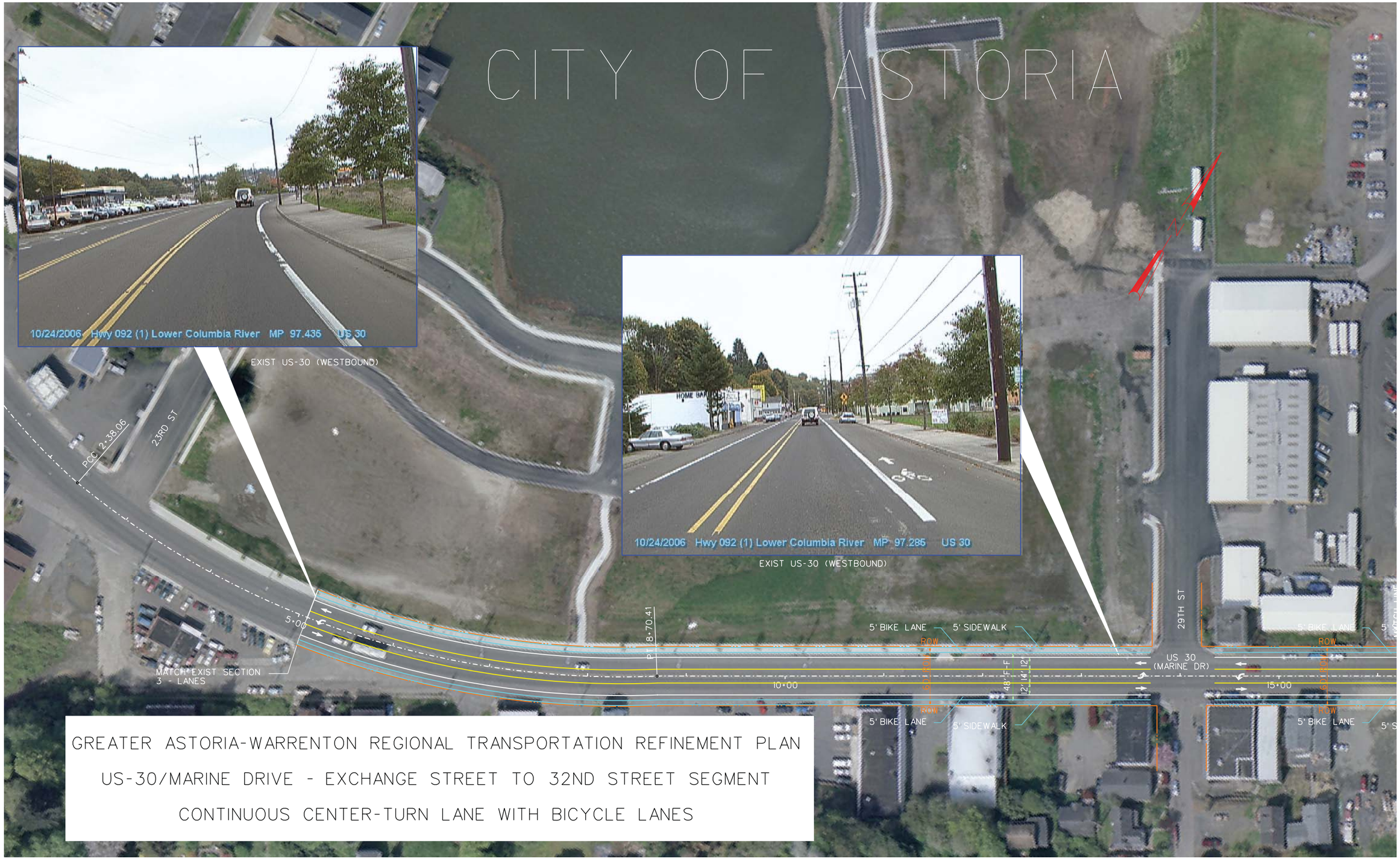

Note: This figure is based on conceptual engineering. Design may vary in design phase.

FIGURE 8
Recommended Improvements: US 30 between Exchange and 32nd Street (West End)
(Project 126)

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Note: This figure is based on conceptual engineering. Design may vary in design phase.

FIGURE 9
Recommended Improvements: US 30 between Exchange and 32nd Street (East End) (Project 126)

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- **Project 127 - 45th Street**
  The Plan recommends installing left-turn pockets in both the eastbound and westbound directions on US 30 at the intersection with 45th Street, as illustrated in Figure 10. The purpose of this project is to improve safety and reduce congestion. The project reduces delay caused by vehicles stopped in the through-travel lane waiting for gaps in oncoming traffic to make left turns at this unsignalized intersection. Left-turn pockets are expected to reduce the number of rear-end crashes at this intersection, and improve overall traffic mobility conditions. This project widens the roadway width in the vicinity of 45th Street by shifting the sidewalks on both the north and south sides of the highway out by 3' on both the north and south sides of US 30, providing an additional 6' that can be used as a parking lane on either side of the highway. The cross section for this option is two 14' travel lanes, a 10' left turn pocket, and 8' parking lane. This option does not require additional right of way.

- **Project 128 - 48th Street to 50th Street**
  This project widens the paved area of US 30 between 48th Street and 50th Street to include a continuous two-way left-turn lane and 4-foot shoulders, as shown in Figure 11. The project is intended to improve safety and reduce congestion along this section of US 30. No local streets connect with US 30 between 48th Street and 50th Street, though more than one dozen residences directly access the highway. This project reduces the traffic delay caused by vehicles stopped in the through-travel lane waiting for gaps in oncoming traffic to make left turns, thereby improving traffic mobility conditions and allowing safer and more convenient access to local driveways for residents on this section of US 30.

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Note: This figure is based on conceptual engineering. Design may vary in design phase.

FIGURE 10
Recommended Improvements:
US 30 and 45th Street Intersection
(Project 127)

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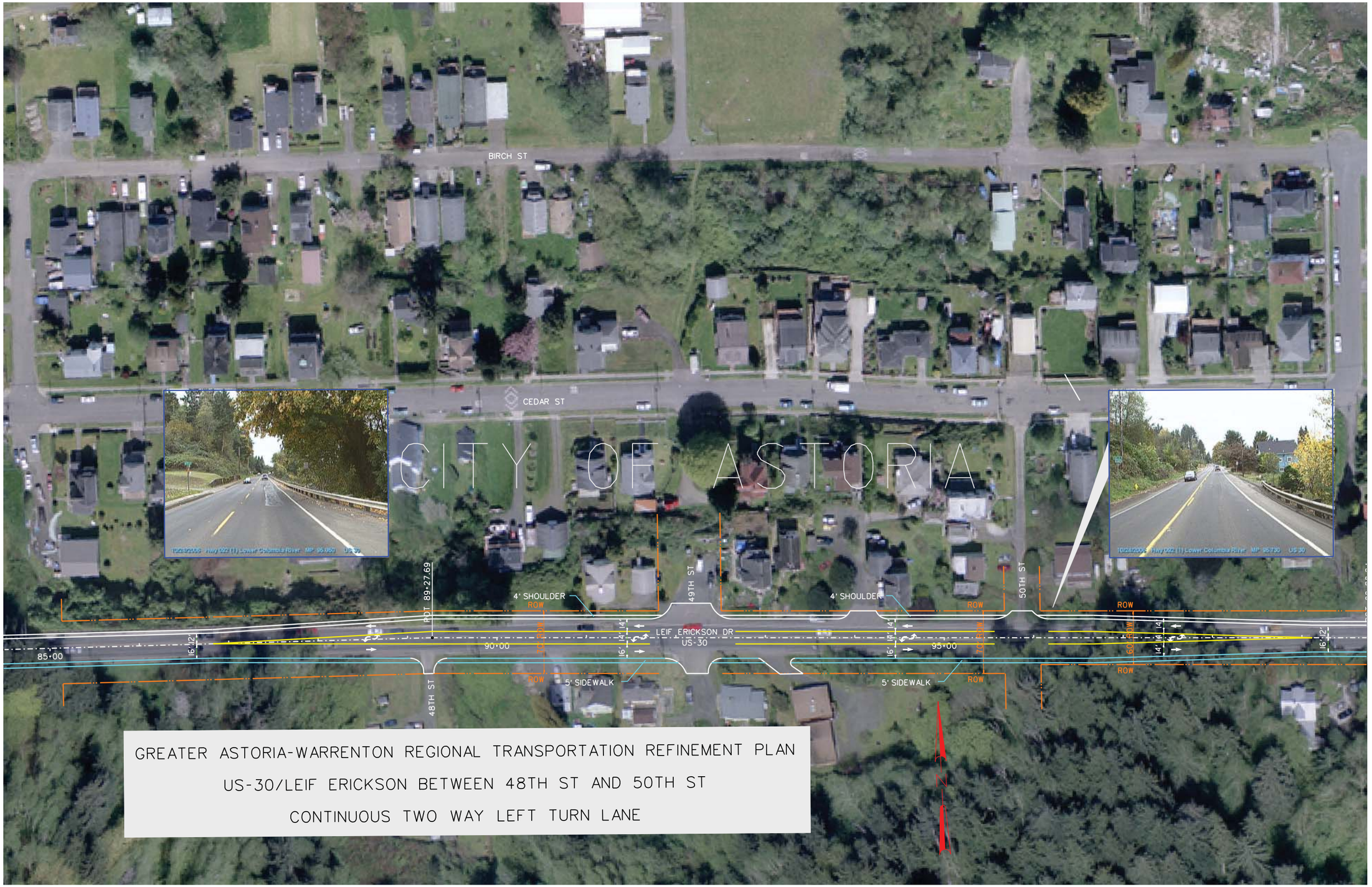

Note: This figure is based on conceptual engineering. Design may vary in design phase.

FIGURE 11
Recommended Improvements: US 30 between 48th Street and 50th Street (Project 128)

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City of Warrenton Improvements[1]

- **Project 201 - Harbor Street/Main Avenue**
  The refinement plan recommends the installation of a traffic signal at the intersection of N. Main Avenue/Harbor Street and S. Main Avenue/Skipanon Drive, and the addition of 100-foot left-turn lane pockets at both the north and south approaches to this intersection (N. Main Avenue/Harbor Street). The intent of this project is to improve mobility in this area, which connects US 101 with downtown Warrenton.
- **Project 202 - US 101/Harbor Street**
  This plan recommends restriping the approach lanes on Harbor Street to allow left-turns from the outside approach lane. Under this recommendation, the inside approach lane would remain left-turn only. A conceptual design of this project is illustrated as Figure 12. This requires an acceptance lane on US 101 northbound. This acceptance lane could be extended to the beginning of the roadway approach to the New Young's Bay Bridge. This project would improve mobility at this intersection, which has a heavy eastbound to northbound traffic flow.
- **Project 203 - Harbor Street/Neptune Street**
  This project modifies the intersection of Harbor Street and Neptune Drive to be right-in/right-out turns only through the installation of a raised island. Traffic accessing Harbor Street to and from the Costco and Fred Meyer developments would do so via Marlin Avenue or via US 101. Currently, left turn-in and left–out maneuvers at this intersection create problematic operational and safety conditions that would be mitigated by this improvement.
- **Project 204 - Harbor Street/Marlin Avenue**
  The Refinement Plan recommends installation of a traffic signal at the intersection of Harbor Street and Marlin Avenue and the provision of driveway access to Marlin Avenue for both Costco and Fred Meyer. A connection between the Costco and Fred Meyer parking lots is also recommended to improve circulation between the two developments. Currently, access is provided from the Costco parking lot to Neptune Street. With the implementation of Project 203 above, access to and from downtown Warrenton is reduced. New access to Marlin Avenue and improvements to the intersection of Harbor Street and Marlin Avenue would mitigate this impact. Outreach to property owners along Marlin Avenue would be needed through design of this improvement.

[1] Projects taking place within City of Warrenton Urban Growth Boundary

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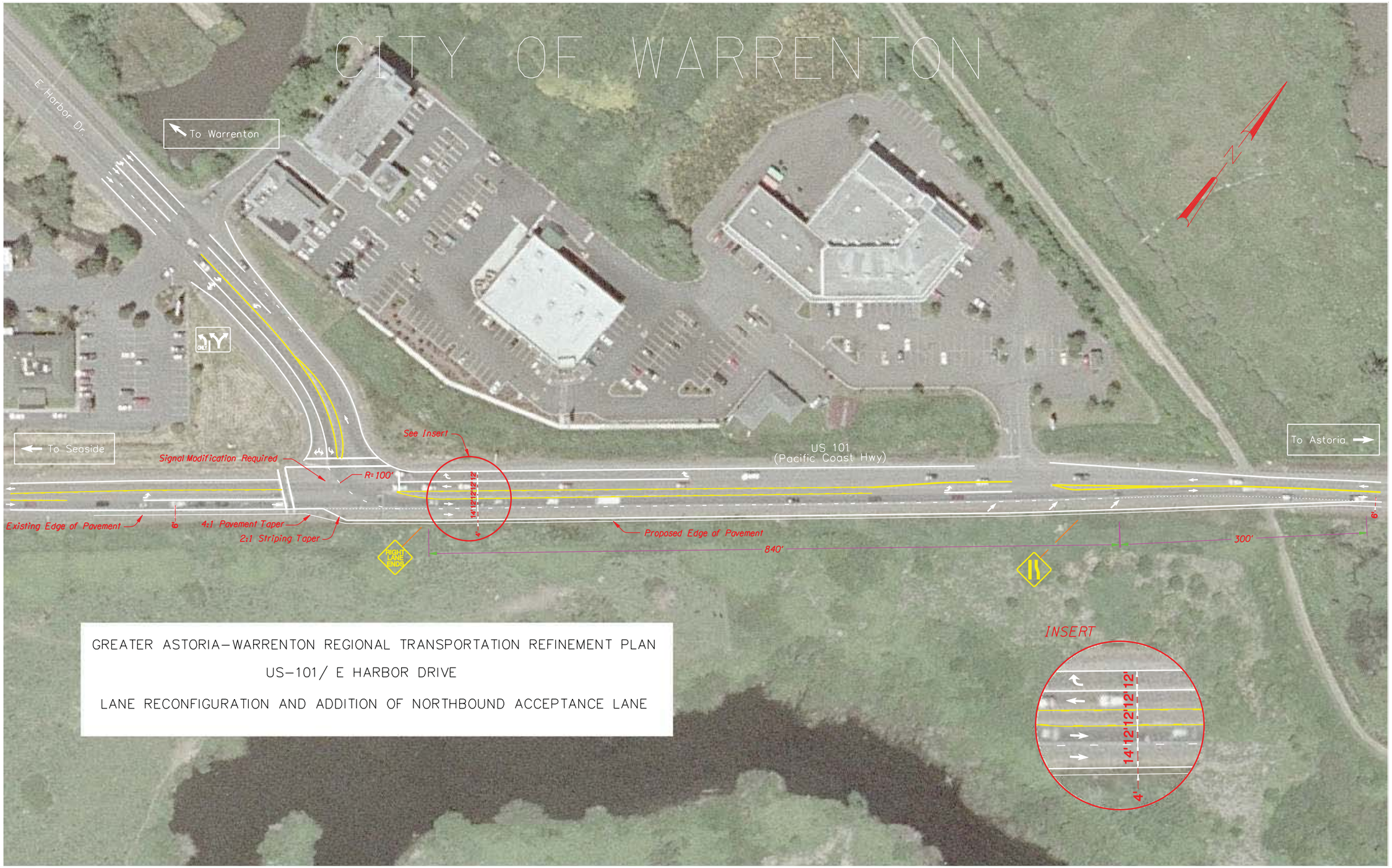

Note: This figure is based on preliminary engineering and is intended for conceptual purposes only. Actual design is subject to change subsequent to further analysis.

FIGURE 12
Recommended Improvements at Intersection of US 101 and Harbor Street (Project 202)

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- **Project 205 - Marlin Avenue between Harbor Street and US 101**
  This project adds roadway shoulders, striped bicycle lanes, and sidewalks to Marlin Avenue between US 101 and Harbor Street. The intent of this project is to improve safety conditions for pedestrians and bicyclists along Marlin Avenue. Outreach to property owners along Marlin Avenue would be needed through design of this improvement.

- **Project 206 - US 101/Highway 104 Spur**
  At the intersection of US 101 and Highway 104 Spur, the plan recommends eliminating southbound left turns from US 101, and restriping the existing turning lane to serve as a refuge for vehicles that have turned left onto northbound US 101 from eastbound Highway 104 Spur. The intent of this project is to reduce congestion from the western section of this intersection, and to provide a safe place for vehicles moving northbound while they wait for a gap in traffic to enter the northbound travel lane.

- **Project 207 - US 101/Perkins Road**
  The Refinement Plan recommends several geometric changes to the US 101/Perkins Road intersection. This intersection, which is south of Warrenton, is in a 55 miles-per-hour speed zone with limited visibility. During periods of high traffic volumes on US 101, turning left from Perkins Lane is difficult. These improvements include 1) Restricting the east leg of the intersection (Perkins Lane east of the highway) to right-in/right-out turns only; 2) Eliminating left turns from US 101 southbound; 3) Converting the US 101 southbound left-turn lane into a refuge for vehicles turning northbound onto the highway from Perkins Lane (west of the highway); and 4) Add a 150' eastbound right turn pocket on Perkins Lane west of the highway. The intent of this project is to improve mobility and safety at this intersection.

Clatsop County Improvements[1]

- **Project 301 through Project 305 - Clatsop County Roads**
  Widen the existing shoulders on the following roadway segments to safely accommodate bicycle and pedestrian travel:
  - Youngs River Road between Miles Crossing and Tucker Creek
  - Lewis and Clark Road between Miles Crossing and Tucker Creek
  - Walluski Loop Road [entire road length]
  - Old Highway 30 and Hillcrest Loop Road between US 30 and Conroy Road
  - Logan Road [entire road length south of Miles Crossing]

[1] Projects taking place in Clatsop County (outside municipal Urban Growth Boundaries)

- **Project 306 - Miles Crossing**
  This project adds a 250' eastbound left-turn pocket at the intersection of US 101 Business and Youngs River Road/Lewis and Clark Road (Miles Crossing). This improvement is subject to further review by ODOT The Miles Crossing area (Figure 13) is anticipated to experience moderate growth over the planning horizon due to the availability of an upgraded sewer system. Over the long term, a delay at this unsignalized intersection was identified. A long-term treatment for this area will be addressed in the forthcoming Miles Crossing/Jeffers Garden Refinement Plan.

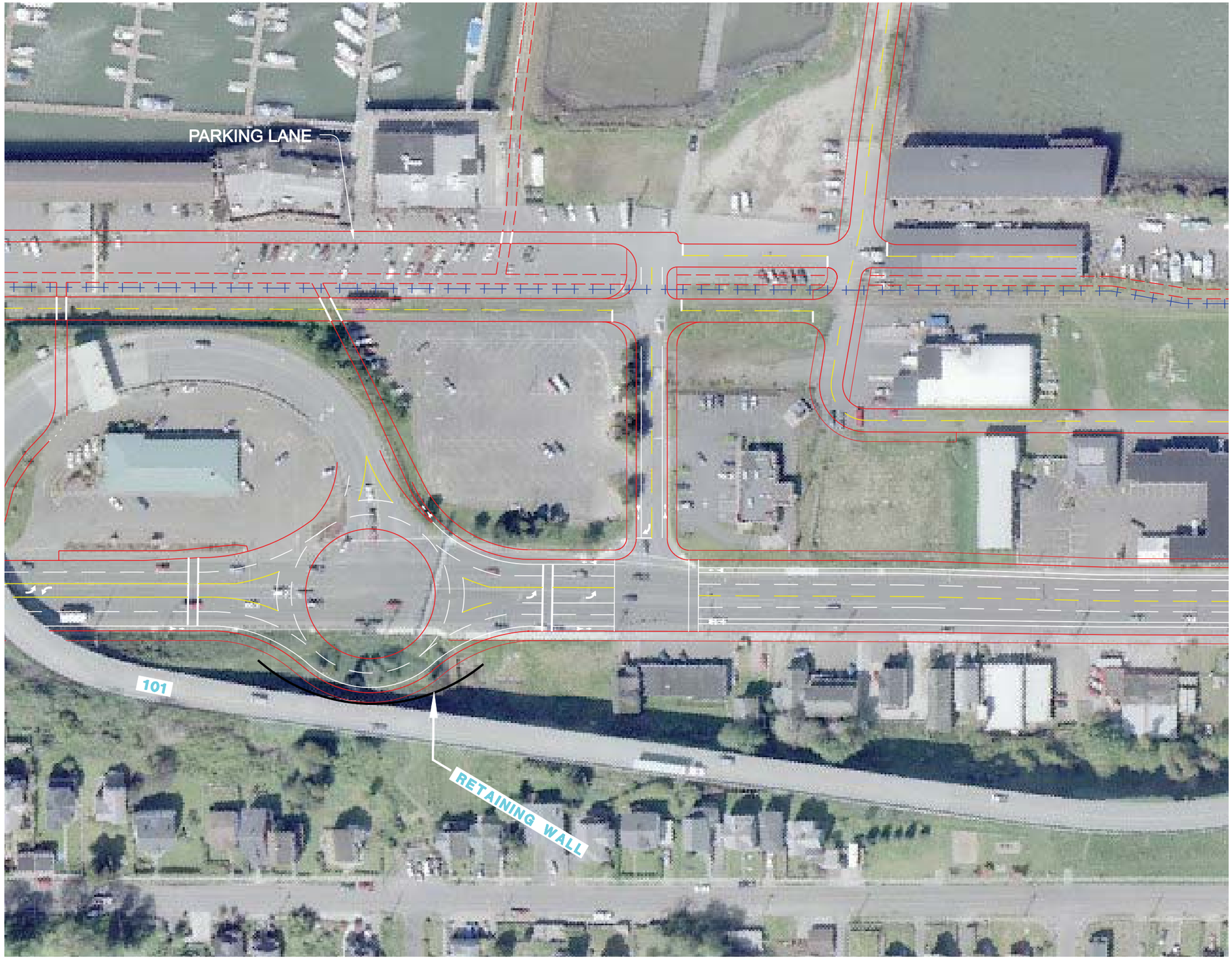
Figure 13: Miles Crossing

Medium-Term Project Improvement Descriptions

City of Astoria Improvements

- **Project 129 - Widen Marine Drive through Uniontown Area**
  This refinement plan recommends a change in the Marine Drive cross section to allow for on-street parking and to widen sidewalks to 10' where possible. Existing ODOT right-of-way in the study area varies between approximately 90' and 120' west of the Astoria-Megler Bridge, and 83' and 124' east of the Astoria-Megler Bridge. To avoid impacting existing structures, two cross sections are recommended – a minimum and a recommended. The roadway improvements would accommodate four travel lanes, a center-turn lane where possible, bicycle lanes, on street parking (where possible), and 10' sidewalks. This project is intended to improve mobility and safety along this corridor.

- **Project 130 - US 101/US 30 at Astoria-Megler Bridge**
  This recommendation entails constructing a two-lane roundabout at the juncture of US 101/US 30 at the Astoria-Megler Bridge to accommodate future traffic volumes along West Marine Drive, to/from the Astoria-Megler Bridge, and traffic accessing the Astoria Port/Uniontown area. The roundabout at the Astoria-Megler Bridge would consist of two travel lanes, similar in size to the Smith Point Roundabout (see Figure 14). Projects 130 and 131 are coordinated and would be implemented concurrently. Current analysis



Note: This figure is based on conceptual engineering. Design may vary in design phase.

FIGURE 14
Roundabout at US 101/US 30/
Astoria-Megler Bridge Vicinity
(Project 130)

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of this project does not meet the mobility standards required by ODOT. Implementation of the roundabout project is subject to further review by ODOT during the design phase.

- **Project 131 – West Marine Drive /Basin Street**

  This project would be constructed concurrent with the two-lane roundabout described above (Project 130). The signal at Basin Street would be replaced with a flashing yellow light (subject to approval by the State Traffic Engineer). Left turns from Basin Street onto Marine Drive would no longer be allowed, though the right-in, right-out, and left-in movements would still remain. Traffic wishing to travel east on US 30 from Basin would take a right onto Marine Drive and take a U-turn via the roundabout. The objective of the project is to deemphasize Basin Street as an intersection, considering its close proximity to the Astoria-Megler Bridge (approximately 280 feet). Traffic would be encouraged to access the highway via Portway Street.

- **Project 132 - US 101 Business/OR 202**
  This refinement plan recommends improvements to the intersection of US 101Business and OR 202 to realign it as a signalized four-legged intersection with 5th Street to the north. Improvements included in this recommendation are to: 1) Realign 7th Street to intersect OR 202 at 5th Street; 2) Realign US 101 Bus to form a complete 4-legged intersection at 5th Street; 3) Convert the northbound right-turn from US 101 Bus into a free movement that merges onto OR 202; and 4) Install traffic signal. This recommendation will address expected future congestion concerns at this location, and reduce driver confusion at this intersection.

City of Warrenton Improvements

- **Project 209 – New Roadway in Vicinity of North Coast Business Park**

  This project constructs a new two-lane roadway spur from US 101 in the vicinity of Dolphin Road to connect with BUS 101 through the North Coast Business Park. This new section of roadway would provide a more direct connection between BUS 101 and Warrenton, and is designed to accommodate traffic associated with the land use growth predicted to take place in the Business Park area and its environs. This project would be constructed as part of the Astoria-Warrenton Parkway improvements (Projects 209-211 and 307-310).

- **Project 210 – New Connection at US 101/Astoria-Warrenton Parkway (US 101 Bus)**

  This project entails the construction of a new intersection just north of Dolphin Road to connect US 101 (Oregon Coast Highway) and the new alignment of US 101 Bus (Astoria-Warrenton Parkway – see Project 209 above). This recommendation comes after the potential need for a grade-separated interchange was investigated; initial analysis performed during the Refinement Plan process indicated that an at-grade intersection at this location was adequate.

  The new intersection will provide an efficient and safe connection between US 101 and the realigned Warrenton-Astoria Parkway. [The decision to build either an intersection (at-grade connection) or interchange will be determined pending operational analysis to be conducted in the upcoming Miles Crossing/Jeffers Garden Refinement Plan]. This project would be constructed as part of the Astoria-Warrenton Parkway improvements (Projects 209-211 and 307-310).

- **Project 211 – Realign Dolphin Road**

  This project entails realigning Dolphin Road to connect with the new alignment of BUS 101 (Astoria-Warrenton Parkway), as well as the elimination of the existing intersection of Dolphin Road and US 101 (Oregon Coast Highway). This project will be done in conjunction with the overall Astoria-Warrenton Parkway modernization. This project would be constructed as part of the Astoria-Warrenton Parkway improvements (Projects 209-211 and 307-310). Based on the speed at which adjacent properties are privately developed, this project may be constructed at an earlier time than is currently forecasted in this Refinement Plan (this scenario would involve privately funded elements of the project). Figure 15 depicts existing intersection.

Figure 15: Existing Intersection of US 101 and Dolphin Road

Clatsop County Improvements

- **Project 307 – Widen/Modernize Astoria-Warrenton Parkway**

  This project entails widening the Astoria-Warrenton Parkway (US 101 Bus) between OR 202 in the east and US 101 (Oregon Coast Highway) in the west to include access and bicycle/pedestrian improvements. It is assumed that two lanes will serve as adequate capacity for the Astoria-Warrenton Parkway, though this concept will be designed in conceptual form through the Miles Crossing/Jeffers Garden Refinement Plan. This project will provide the additional roadway capacity needed to accommodate expected increases in regional traffic. On-street bicycle lanes and continuous sidewalks will be constructed as part of the roadway improvements. This project would be constructed as part of the Astoria-Warrenton Parkway improvements (Projects 209-211 and 307-310).

- **Project 308 – Replace the Old Youngs Bay Bridge**

  This project replaces the existing Old Youngs Bay Bridge (Figure 16) with a new bridge structure designed to handle greater vehicle capacity so as to meet forecasted increases in regional traffic. It is assumed that the bridge width would be two or three lanes, though this concept will be designed in conceptual form through the Miles Crossing/Jeffers Garden Refinement Plan. This project would be constructed as part of the Astoria-Warrenton Parkway improvements (Projects 209-211 and 307-310).

Figure 16: Old Youngs Bay Bridge[1]

- **Project 309 - Replace the Lewis and Clark Bridge**

  This project entails replacing the existing Lewis and Clark Bridge with a new bridge structure designed to handle greater vehicle capacity so as to meet forecasted increases in regional traffic. It is assumed that the bridge width would be two or three lanes, though this concept will be designed in conceptual form through the Miles Crossing/Jeffers Garden Refinement Plan. This project would be constructed as part of the Astoria-Warrenton Parkway improvements (Projects 209-211 and 307-310).

[1] Photo Source Credit: Structurae website: http://en.structurae.de/photos/index.cfm?JS=48656

Long-Term Project Improvement Descriptions

City of Warrenton Improvements

- **Project 212 –Replace the New Youngs Bay Bridge[1]**

  This project entails improving or replacing the existing New Youngs Bay Bridge (a two-lane lift-span bridge) with a new four-lane, non-lift structure with full ODOT-standard bicycle and pedestrian facilities (respective facilities of at least six-foot each for bicyclists and pedestrians). The new bridge's extra vehicle capacity would accommodate forecasted increases in regional traffic, served by four travel lanes north and south of the bridge. Additionally, because the new bridge would be designed as a fixed span, periodic delays caused by the existing bridge lifts would be eliminated. Proposed bridge work would take place within an estuary, therefore extensive analysis and evaluation will need to be performed to satisfy state environmental regulations; notably the requirements of Statewide Land Use Planning Goals 16 (Estuarine Resources), and 17 (Coastal Shorelands). It should be noted that a similar high-level of environmental analysis would need to be performed for all bridge widening projects recommended by this Refinement Plan (see Projects 308 and 309).

Clatsop County Improvements

- **Project 310 – US 30 between Fern Hill Road and John Day River Bridge**

  This project entails adding an eastbound climbing travel lane on US 30 between Fern Hill Road and the John Day River Bridge. Adding a climbing lane will address future traffic demand needs on this section of US 30, which is forecasted to operate at a substandard level if no roadway improvements are done. The addition of a climbing lane will mitigate travel delay caused by slow-moving vehicles ascending eastbound US 30 and will mitigate safety problems associated with vehicles attempting to overtake slower-moving vehicles.

- **Project 311 – US 101 between Camp Rilea and Delmoor Loop Road**

  This project entails widening the existing two-lane roadway on US 101 (Oregon Coast Highway) to a four-lane roadway (from the existing two-lanes) from Camp Rilea Road to Delmoor Loop Road. Adding additional vehicle capacity improves future 2025 traffic mobility conditions on this section of US 101, which is forecasted to operate at a substandard level if no roadway improvements are done. Adding a travel lane will mitigate travel delay caused by large/ slow-moving vehicles and will mitigate safety problems associated with vehicles attempting to overtake these slower-moving vehicles.

- **Project 312 – North Clatsop Bypass (Eastern Segment of Astoria Bypass)**

  This project entails constructing a new two-lane highway through the Clatsop State Forest between OR 202 east of Williamsport Road and US 30 near the John Day River Bridge. Due to topography and expected usage by commercial trucks, climbing lanes are expected to be needed in both directions along the Bypass. It is expected that the Bypass could be designated as a statewide expressway. The Oregon Highway Design Manual stipulates maximum grade on a rural expressway as 6 percent. Designing the Bypass to state design standards would entail 12-foot travel and climbing lanes, 8-foot

[1] This project spans the jurisdictions of Astoria and Warrenton.

shoulders, and a 14 to 22-foot nontraversible median. This project is pending future justification subject to technical validation analysis, environmental analysis, and funding feasibility. The Astoria Bypass is not a planned facility and may not be constructed until authorized by a subsequent land use decision. The Bypass is not needed to meet current transportation needs, but would be a logical connection to meet future needs and reduce truck conflicts in downtown Astoria. This project is suggested for consideration when future land use decisions, such as Urban Growth Boundary (UGB) amendments, are considered. Designation of this project as a planned facility or improvement would require an amendment to the Clatsop County and Astoria TSPs, including a Goal Exception or a UGB expansion.

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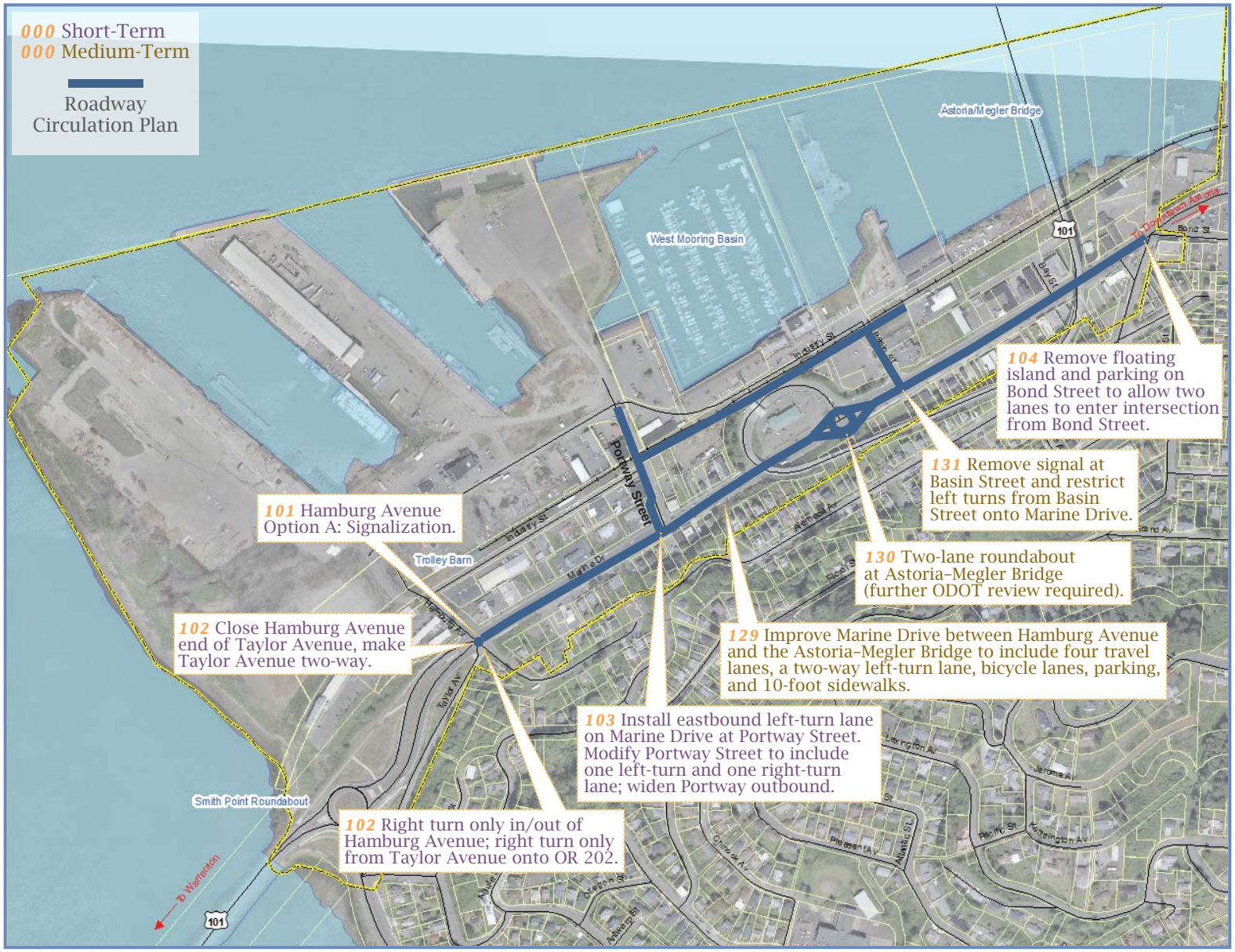

FIGURE 17
Recommended Projects: Port of Astoria/Uniontown Area
(Short-Term Projects 101–104; Medium-Term Projects 129–131)

[Back of Figure]

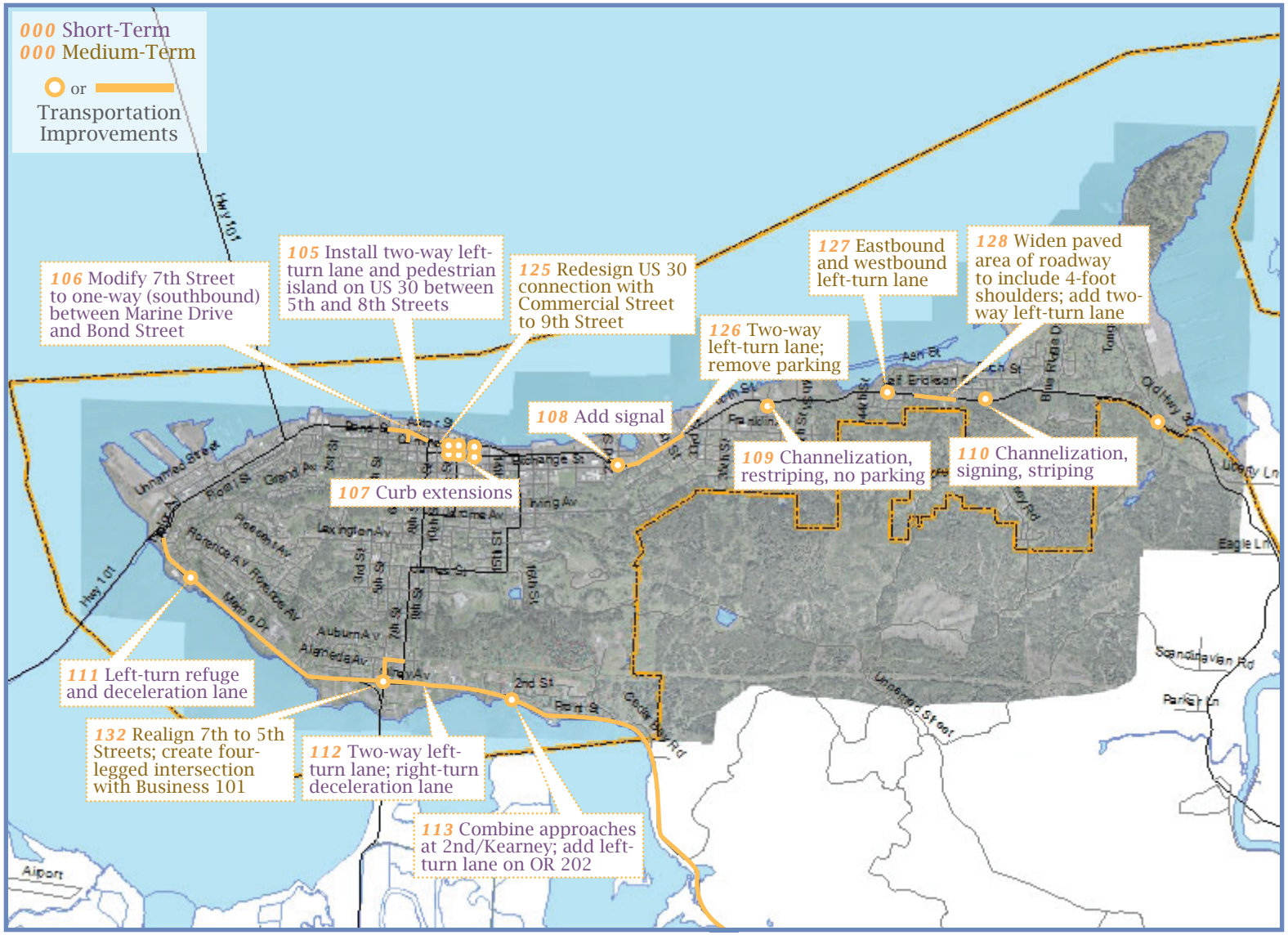

FIGURE 18
Recommended Projects: Astoria (Throughout City)
(Short-Term Projects 105–113; Medium-Term Projects 125–128 and 132)

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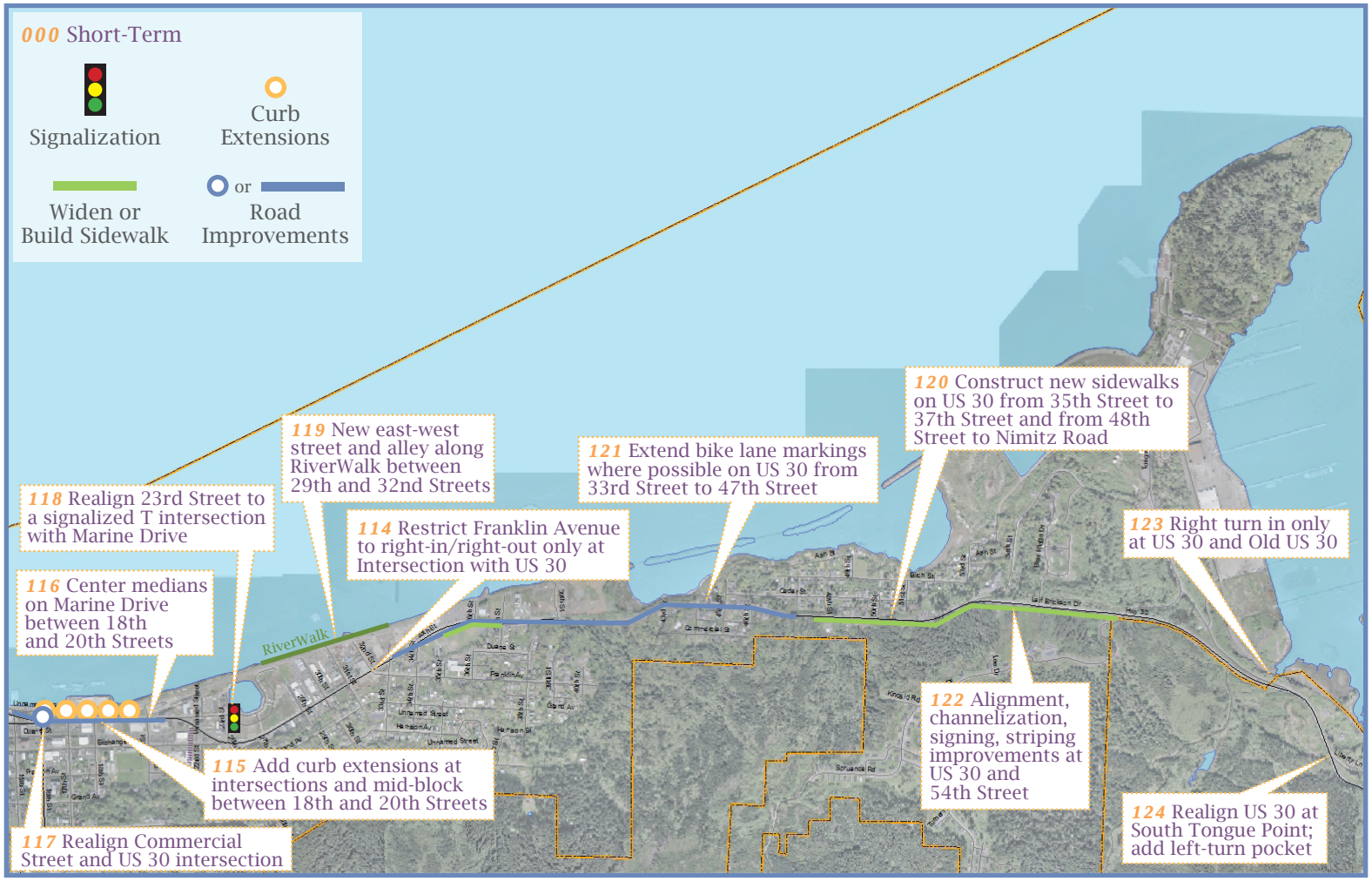

FIGURE 19
Recommended Projects: Astoria Gateway/East Gateway Area
(Short-Term Projects 114–124)

Note: All projects shown are short-term.

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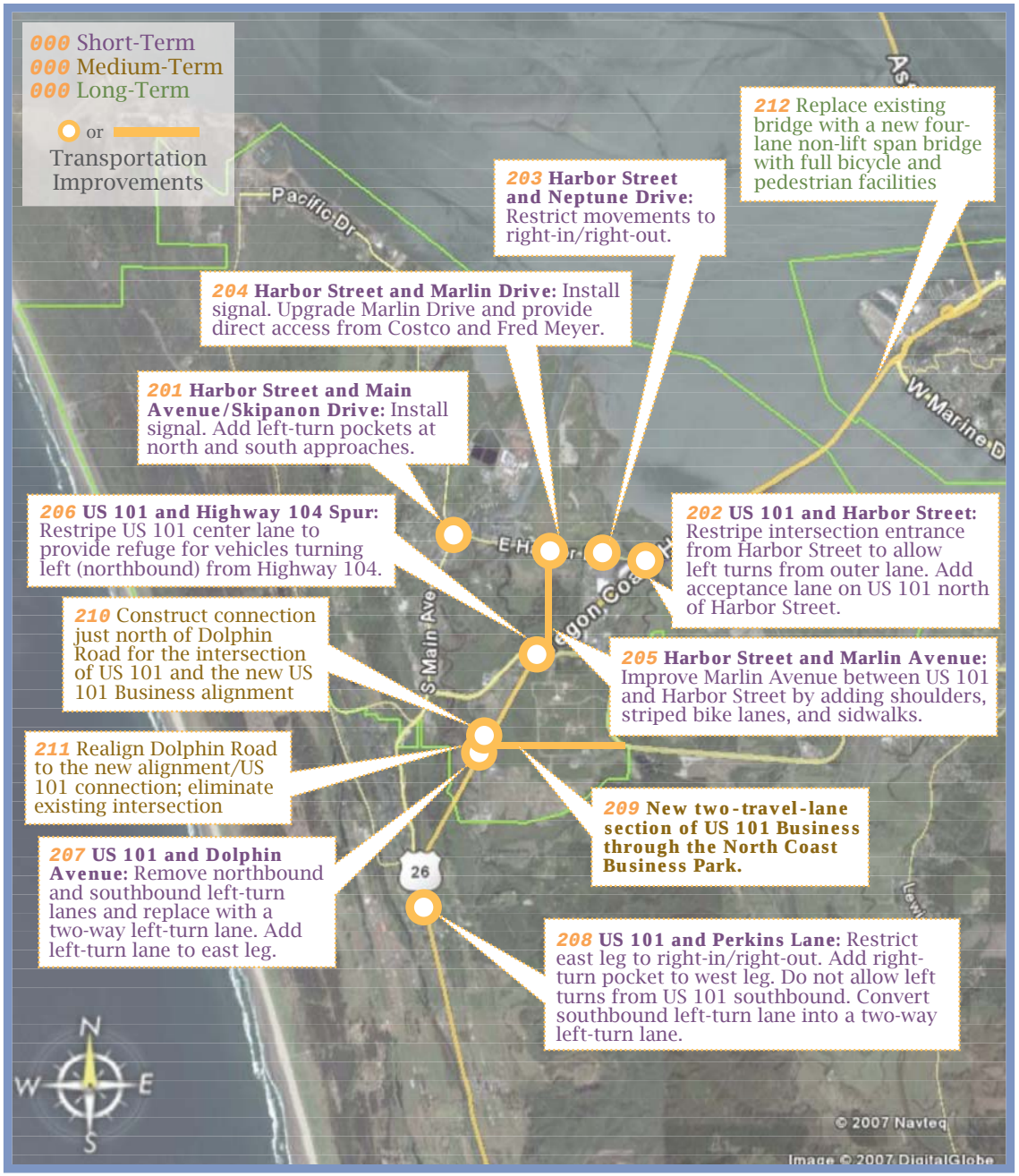

FIGURE 20
Recommended Projects: Warrenton
(Short-Term Projects 201–208; Medium-Term Projects 209–211; Long-Term Project 212)

[Back of Figure]

FIGURE 21
Recommended Projects: Clatsop County
(Short-Term Projects 301–306; Medium-Term Projects 307–309; Long-Term Projects 311 and 312)

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Implementation

This section describes order-of-magnitude cost estimates for each of the projects recommended by the refinement plan, provides an overview of potential funding sources, and details the plan and code amendment process to adopt the refinement plan.

Construction Cost Estimates

Cost estimates have been provided for all projects recommended in this Refinement Plan (see Table 2). Costs to design and construct each of the recommended projects were estimated at a planning level. Cost estimates are provided in Year 2007 dollars, and include engineering design fees and right-of-way costs. Estimates do not include environmental analysis, permitting, or utility relocation costs. See Appendix J for more detailed cost estimate information of each project improvement.

Funding

As noted earlier in this Refinement Plan, the improvements listed on the Recommended Project List are not guaranteed future funding and cannot be considered as reasonably likely to be funded during the identified planning horizon for the purpose of addressing OAR 660-0012-0060. For recommended projects to be considered reasonably likely to be funded during the identified planning horizon, they must either be selected for inclusion on the State Transportation Improvement Program (STIP), associated with a specific source of funding that is supported by ODOT in writing, or identified in a funding plan that is supported by ODOT in writing. The STIP is a project scheduling and funding document.

Unlike project lists contained in the STIP and Metropolitan Transportation Improvement Programs (MTIP's), the Refinement Plan project list is not required by federal or state law to be "fiscally constrained". Fiscal constraint is defined as a "*demonstration of sufficient funds (Federal, State, local, and private) to implement proposed transportation system improvements, as well as to operate and maintain the entire system, through the comparison of revenues and costs*."[1] This means that this Refinement Plan can provide a single comprehensive list of regional transportation improvement needs and associated costs without having to provide fiscal rationale as to how the respective projects will be funded. However, with this rationale, the projects cannot be used to support subsequent local land use changes.

The Refinement Plan Recommended Project List therefore acts only as a reference for regional and local officials in the Greater Astoria-Warrenton area to consult when (1) considering projects to propose to the State for inclusion in the STIP, (2) developing priorities for local funding, (3) determining project needs associated with private development proposals, and (4) determining projects needed to support publicly initiated plan amendments or zone changes. Because the cost of needed transportation improvements across the state far exceeds available funds, state officials must decide what projects to fund on the state transportation system, through inclusion on the STIP, based on

[1] Source: Federal Highway Administration web page: http://www.fhwa.dot.gov/planning/fcdef62805.htm

a thorough evaluation of all projects proposed statewide. This evaluation and selection process is detailed in the *STIP User's Guide* (ODOT, 2003)[1].

Funding for improvements in the Astoria-Warrenton region will come from a variety of sources, including federal, state, and local funds (Appendix J). One of the most effective funding strategies for transportation improvement is to provide "local match." This means that locally provided transportation money can be used to attract limited STIP funds. To the extent that any major transportation project in the Astoria-Warrenton region is able to generate "local match" funding, the likelihood of making these improvements will significantly increase. Funding for projects within this Refinement Plan is described in more detail as Appendix J.

State Funding

As noted earlier, State funding for transportation projects is done through the STIP. The STIP lists transportation projects that are approved for construction as well as transit programs and other projects that are funded during the next three years. The fourth year that is programmed in the STIP is advisory only and funding is not obligated to those projects.

Under the umbrella of the STIP are various programs through which applicable projects may be funded. The largest five programs, which account for more than ninety-percent of funds awarded through state programs, are: Modernization, Safety, Bridge Replacement and Rehabilitation, Operations, and Pavement Preservation.

Projects being recommended by this Refinement Plan may be funded through the following STIP programs (also referred to "work types"):

- **Modernization –** provides funding for capital construction projects that add capacity to the highway system, either by adding lanes or building new highways or investing in other system improvements that result in added highway system capacity.
- **Operations –** funds projects that improve the efficiency of the transportation system through the replacement of aging infrastructure and the deployment of technology that allows the existing system to meet increased demands. The Operations Program consists of four sub-categories: (1) Intelligent Transportation Systems (ITS); (2) Signs, Signals, and Illumination; (3) Slides and Rockfalls and; (4) TDM.
- **Safety –** funds projects that have been selected through the state's Safety Management System, which tracks the location, frequency and severity of crashes.
- **Bridge Replacement and Rehabilitation –** provides funding for bridges that have been prioritized for repair and replacement through the state's Bridge Monitoring System.
- **Bicycle and Pedestrian –** provides funding through a combination of regional funding allocations, emergency grants, and a statewide competitive grant application process.

The work type that may be applicable to each Refinement Plan recommended project is called out on the detailed Recommended Project List provided in Appendix J.

[1] STIP User's Guide available online at: http://www.oregon.gov/ODOT/TD/TP/stipGuide.shtml

Local Funding

Some examples of possible local matches funding sources include:

- **Development Fees**: This source of funds assumes that those who develop property that will directly benefit from new highway improvements can be expected to contribute towards these improvements. Use of developer fees requires local city and county government adoption. An example of such a fee is a Local Improvement District (LID) assessment. A LID is a system whereby adjacent and benefiting property owners share in the expense of public improvements through the formation of a special assessment district. A LID (which would need to be established through the adoption of an ordinance) allows a government entity to issue bonds which are paid for over a period of time through assessments on benefiting properties. Improvement projects related to the Astoria-Warrenton Parkway would be good candidates for funding through a LID.
- **System Development Charges:** Similar to Development Fees, system development charges (SDC's) are structured so that those who benefit also contribute to improvements. Transportation-related SDC's, which can only be levied on new developments, are fees charged to recover all or part of the cost of building transportation infrastructure needed to serve the development upon which the fee was levied.
- **Tolling**: The use of tolls must be authorized by the State. However, a clear demonstration of local support for tolling would go far in making such a mechanism feasible. In order to assess various tolling strategies, a separate tolling study would be required. Both the New Youngs Bay Bridge and the proposed Astoria Bypass could have a study done to determine the feasibility of charging tolls on the respective facilities.
- **Local Gas or Room Taxes:** These revenue sources can be adopted by local cities and counties, and collected over time, to add up to funding for transportation projects. Transportation projects funded with these revenue sources tend to be on strictly local rather than regional or interstate facilities and are generally geared toward benefiting the local economy (e.g. street landscaping/beautification; pedestrian and bicycle facilities).

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Table 2: Construction Cost Estimates

Project ID #	Project Location/Facility	Description of Improvement	Estimated Cost (2007 Dollars)
Short-Term: 0-10 Years			
101	US 101 at Hamburg Avenue	Install traffic signal	$348,000
102	US 101 at Taylor Avenue	Close Hamburg end of Taylor. Allow two-way traffic along Taylor and area for turn around at Hamburg. Make entry on OR 202 right-turn only (eastbound traffic to use roundabout).	$60,000
103	US 101 at Portway Street	Install eastbound left turn lane on Marine Drive. Move centerline to west to accommodate trucks making westbound right turn. Modify Portway to allow two lanes exiting, including one left-turn, and one left- or right-turn lane. Modify signal to accommodate this change.	$672,000
104	US 30 at Columbia Avenue/Bond Street	Remove floating island and 150 feet of parking on the north side of Bond Street to create two incoming lanes to intersection.	$203,000
105	US 30 between 5th Street and 8th Street	Install a turn lane and raised island for pedestrians	$1,615,000
106	US 30 at 7th Street	Modify 7th Street between Marine Drive and Bond Street to one-way southbound	$8,000
107	US 30 at 10th Street, 11th Street, and 12th Street	Construct curb extensions	$404,000
108	US 30 at Exchange Street	Add traffic signal and lengthen left turn pocket on westbound approach to 400-feet.	$348,000
109	US 30 at 37th Street	Channelize, restripe, and prohibit parking	$81,000
110	US 30 at Nimitz Drive	Realign and stripe to improve sight distance and facilitate truck turning movements, including a westbound right-turn deceleration area	$162,000
111	OR 202 at Denver Street	Install left-turn refuge for eastbound traffic and a westbound deceleration lane	$404,000
112	OR 202 at 8th Street to Wall Street	Install center turn lane, right-turn deceleration lane on OR 202 westbound at 11th Street, and widen 11th Street to allow better turning access for large trucks	$1,615,000
113	OR 202 at Kearney/2nd Street	Redesign Kearney and Second Street intersection to make one common right-angle approach to OR 202 and adequate for truck turning. On OR 202, install left-turn lane in the eastbound direction.	$404,000
114	US 30 at Franklin Avenue	Restrict Franklin Avenue at intersection to right-in/right-out only.	$60,000
115	US 30 between 16th Street and 20th Street	Add curb extensions (at specified quadrants) at the intersections of 16th, 17th, and 18th Streets. Add a mid-block curb extension between 18th and 20th on the south side of US 30 (pending ODOT approval).	$238,000
116	US 30 between 18th Street and 20th Street	Add center median	$538,000
117	US 30 at Commercial Street	Realign intersection to 90 degrees and add turn lane on US 30	$557,000
118	US 30 at 23rd Street and Exchange Street	Add a traffic signal. Realign Exchange Street so that it forms a four-legged intersection with 23rd and US 30.	$1,071,000
119	North of US 30 between 29th Street and 32nd Street	Provide a new east-west street and alley along the RiverWalk Trail between 29th and 32nd	$1,579,000
120	US 30 between 35th Street and Nimitz Drive	Build new sidewalks between 35th Street and 37th Street and on the south side of U.S. Highway 30 from 48th Street to Nimitz Drive.	$1,259,000
121	US 30 between 33rd Street and 47th Street	Extend on-street bicycle lanes where pavement width allows.	$20,000
122	US 30 at 54th Street	Provide alignment, channelization, signing, and striping improvements	$866,000
123	US 30 at Old US 30	Restrict ntersection to westbound right-in only.	$60,000
124	US 30 at South Tongue Point Rd (Liberty Lane)	Realign intersection and provide left-turn pocket	$385,000
125	Downtown Astoria	Redesign US 30 Connection with Commercial to 9th Street. Remove traffic signal at West Marine Drive and 9th Street. Place stop sign at southbound approach of 9th Street.	$4,912,000
126	US 30 Between Exchange Street and 32nd Street	Add two-way left turning lane, removing parking	$41,000
127	US 30 at 45th Street	Add eastbound and westbound left turn lane	$17,000
128	US 30 Between 48th and 50th Street	Widen paved area of roadway to include 4-foot shoulders and add two-way left turning lane	$148,000
201	Harbor Street at Main Avenue/Skipanon Drive	Install traffic signal, construct 100' left turn pocket at southbound approach, 150' left turn pocket at northbound approach, and lengthen turn pocket at westbound approach to 250'.	$365,000
202	US 101 at Harbor Street	Change the lane geometry on Harbor from one left-turn only and one right-turn only lane to one left-turn only and one left/right turn lane. Add acceptance lane on US 101 northbound for approximately 540' plus the taper length. Modify signal to allow room for acceptance lane.	$378,000
203	Harbor Street at Neptune Drive	Make intersection right-in/right-out only.	$40,000
204	Harbor Street at Marlin Avenue	Install a signal, add 200' left turn pocket at westbound approach, lengthen right turn pocket to 175' at eastbound approach, lengthen right turn pocket to 125' at northbound approach, and provide driveway access to Costco and Fred Meyer (currently only accessible via Neptune) out to Marlin Avenue. Connect the Costco and Fred Meyer parking lots.	$315,000
205	Marlin Avenue between Harbor Street and US 101	Improve Marlin Avenue between Harbor Street and US 101 through the addition of shoulders, striped bike lanes, and sidewalks. This improvement would require acquisition of right-of-way from adjacent property owners.	$1,244,000
206	US 101 at Hwy 104 Spur	Restripe north leg center lane to allow refuge for eastbound left turning vehicles.	$30,000
207	US 101 at Dolphin Road	Remove northbound and southbound left turn lane and replace with two-way left turning lanes. Add a 150-foot westbound left turn lane.	$508,000

Project ID #	Project Location/Facility	Description of Improvement	Estimated Cost (2007 Dollars)
208	US 101 at Perkins Road	Restrict Perkins Road to right-in/right-out east of the highway (through vehicles will turn right and lefts will be rerouted to US 101 / Dolphin Road). Disallow left turns from US 101 southbound (turns to be made at Dolphin Road instead). Remove southbound left turn lane and replace with a two way left turn lane. Add a 350' eastbound right turn pocket.	$508,000
301	Youngs River Road between Miles Crossing and Tucker Creek	Add two feet to existing shoulders.	$1,860,000
302	Lewis and Clark Road between Miles Crossing and Tucker Creek	Add two feet to existing shoulders.	$1,262,000
303	Walluski Loop Road	Add two feet to existing shoulders.	$2,657,000
304	Old Highway 30 and Hillcrest Loop Road between US 30 and Conroy Road	Add two feet to existing shoulders.	$2,837,000
305	Logan Road south of Miles Crossing	Add two feet to existing shoulders.	$345,000
306	Miles Crossing	Add a 250-foot eastbound left turn pocket.	$122,000
		Short-Term Improvements Total Costs	**$30,546,000**
Medium-Term: 10-20 Years			
129	West Marine Drive (US 101/US 30) between Hamburg Avenue and Columbia Avenue/Bond Street	Widen cross-section between Hamburg and Bridge to 108 feet, to include four travel lanes, a center turn lane, bicycle lanes, parking, and 10-foot sidewalks.	$2,073,000
		Widen cross-section between Bridge and Columbia/Bond to 94 feet, to include four travel lanes, bicycle lanes, parking, and 10-foot sidewalks.	$1,476,000
130	US 101/US 30 at Astoria-Megler Bridge	Construct two-lane roundabout (further review by ODOT required).	$2,081,000
131	US 30 at Basin Street	Remove signal and restrict left turns from Basin. Changes would be constructed as part of roundabout project.	$150,000
132	US 101 Bus / OR 202 intersection	Realign 7th Street to intersect OR 202 at 5th Street, realign US 101 Bus to complete the 4-legged intersection at 5th Street. Install traffic signal. Make the northbound right turn from US 101 Bus a free movement that merges onto OR 202.	$2,184,000
307	US 101 Bus between OR 202 and new alignment	Widen US 101 Bus to three or five lanes, including access and bicycle/pedestrian imrpovements (bridge costs itemized elsewhere)	$17,263,000
308	Old Youngs Bay Bridge on US 101 Bus	Replace existing bridge	$24,377,000
309	Lewis and Clark Bridge on US 101 Bus	Replace existing bridge	$12,318,000
209	New US 101 Bus Spur	Build a new two-travel lane section of US 101 Bus through the North Coast Business Park to intersect with US 101	$3,582,000
210	US 101 at Dolphin Road	Realign Dolphin Road to the new alignment / US 101 connection and eliminate existing intersection of US 101 and Dolphin road	$664,000
		Medium-Term Improvements Total Costs	**$66,168,000**
Long-Term: 20+ Years			
211	New Youngs Bay Bridge on US 101	Replace existing bridge with a new four-lane non-lift span bridge with full standard bicycle and pedestrian facilities	$428,758,000
310	US 30 between Fern Hill Road and John Day River Bridge	Add an eastbound climbing lane.	$13,192,000
311	US 101 between Camp Rilea Road and Delmoor Loop Road	Widen US 101 to four lanes.	$22,374,000
312	North Clatsop Bypass Eastern Extension (proposed)	Construct new roadway through Clatsop State Forest between OR 202 and US 30 and improvements to OR 202 between US 101 Bus and Williamsport Road *(pending future justification subject to technical validation analysis, environmental analysis and funding strategization)*.	$97,455,000
		Long-Term Improvements Total Costs	**$561,779,000**
		TOTAL SUM OF SHORT, MEDIUM, AND LONG-TERM IMPROVEMENTS	**$658,493,000**

Adoption Process

The next steps for the refinement are for the jurisdictions of Clatsop County, the City of Warrenton, and the City of Astoria to consider amending their respective TSPs to include recommendations from this project. Adoption of this refinement plan would be done by reference. Because the TSP is an element of the County's and cities' comprehensive plans, adopting the refinement plan is considered a legislative action. As such, the action is subject to legislative procedures in the respective land development ordinances. Proposed implementation language for each local jurisdiction is found in Appendix K.

Proposed implementation and policy language is essentially consistent with, and additive to, existing local TSP language. Only in the case of Astoria are there proposed amendments to existing policy language.