Chapter 12. Alternatives

In recent years, FHWA has placed renewed emphasis on improving the readability and reducing the length of the alternatives chapter. It is now a common practice to document alternatives development and screening in a technical report, with a brief summary of that process in the main body of the NEPA document. In some cases, the structure of the alternatives chapter itself is changed: the chapter begins by describing the alternatives carried forward for detailed study, and discusses alternatives screening at the end.

Condensing the alternatives chapter helps to focus the analysis on the issues of greatest interest to most readers; organizational changes also can help to improve readability. But as these changes are made, it is important to ensure that the analysis remains rigorous and precise. Some effective approaches that promote both readability and legal sufficiency include:

- **Explain the reasoning, not just the results, of the screening process.** The alternatives chapter, even if condensed, should describe a logical process that led to the screening decisions. This explanation should describe the preliminary alternatives considered, the criteria used to screen alternatives, and the rationale for eliminating some alternatives while others were carried forward. Visuals can be useful in depicting the steps in the screening process. Tables can be useful in listing the screening criteria and performance measures for those criteria.

- **Summarize the major elements of each detailed-study alternative.** The main body of the NEPA document should describe the major elements of each detailed-study alternative in a way that makes it easy for the reader to see the key differences. One effective approach is to provide a bullet-point list of the key elements of each alternative. Detailed descriptions of the alternatives can be provided in an appendix.

- **Describe the improvements included in the No Action alternative.** The No Action alternative is always one of the alternatives carried forward for detailed study. Like other detailed-study alternatives, it should be clearly described. The main body should summarize any noteworthy
future improvements that are assumed as part of the No Action; details should be provided in an appendix.

- **Use side-by-side figures to show differences among alternatives.** One useful technique for describing alternatives is to present them in a series of side-by-side figures, in which each alternative is shown on a separate figure.

- **Describe refinements made during the NEPA process.** After the detailed-study alternatives are identified, their design may be modified based on stakeholder input, additional engineering, more information about environmental impacts, or for other reasons. While not every minor change needs to be described in the NEPA document, it is helpful to summarize the noteworthy changes and explain why they were made.

- **Describe agency and public involvement in developing alternatives.** Under 23 USC 139, FHWA is required to give participating agencies and the public an “opportunity for involvement” in developing the alternatives for an EIS. It is helpful to describe that outreach in the alternatives chapter, including any major issues raised and how they were addressed.

For additional information on developing the range of alternatives, refer to the AASHTO Practitioner’s Handbook, “Defining the Purpose and Need and Determining the Range of Alternatives for Transportation Projects” (2006).
Screening Discussion Condensed; Moved to End of Chapter
(with details in appendix)

- NC: Mid-Currituck FEIS
- WA: Mukilteo FEIS
- alternatives chapter begins with a description of the alternatives that are studied in detail; screening process is summarized at the end of the chapter

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2.0 Alternatives

This chapter describes the five DEIS detailed study alternatives and the Preferred Alternative considered. It also describes the No-Build Alternative, as well as other alternatives considered but not selected for detailed study. The reasons why the Preferred Alternative was selected also are discussed. This chapter is divided into the following sections:

- Description of the detailed study alternatives, beginning on page 2-2;
- Description of how the detailed study alternatives differ in their ability to meet the project’s purpose and need, beginning on page 2-44;
- Description of the cost of each alternative and how each would be financed, beginning on page 2-46;
- Description of when and how each alternative would be built, beginning on page 2-50;
- Description of other alternatives considered but not selected for detailed study and why they were not selected, beginning on page 2-52; and
- A presentation of the reasons why the Preferred Alternative was selected, beginning on page 2-54.

Five detailed study alternatives were evaluated in the DEIS. They are named:

- ER2;
- MCB2/C1 (MCB2 using bridge corridor C1);
- MCB2/C2 (MCB2 using bridge corridor C2);
- MCB4/C1 (MCB4 using bridge corridor C1); and
- MCB4/C2 (MCB4 using bridge corridor C2).

The Preferred Alternative identified in this FEIS is MCB4/C1 with refinements made to help avoid and minimize impacts.

The “ER” in ER2 stands for “Existing Roads.” A Mid-Currituck Bridge is not included in this alternative, but only widening existing US 158 and NC 12. The “MCB” stands for Mid-Currituck Bridge. MCB2 and MCB4 both include a Mid-Currituck Bridge and different amounts of improvements to existing US 158 and NC 12. The bridge components of MCB2 and MCB4 are evaluated with two bridge corridor alternatives (C1 and C2). The preferred bridge corridor, C1 as refined between the DEIS and FEIS to help avoid and minimize impacts, is included in the Preferred Alternative. The “C”
stands for “Central,” as opposed to other corridor possibilities further north (N) and south (S).

For all five DEIS alternatives, two hurricane evacuation options are considered. The preferred hurricane evacuation option is included in the Preferred Alternative. For the four MCB2 and MCB4 alternatives, two design options also are under consideration for the mainland approach to the bridge over Currituck Sound (between US 158 and Currituck Sound). The preferred design option is included in the Preferred Alternative.

The information included in this chapter is considered important to understanding the general characteristics of the detailed study alternatives and how they were selected. For readers desiring additional information on a particular topic, items contained on the compact disc (CD) that accompanies this FEIS, at public review locations listed in Appendix C, and on the NCTA web site at http://www.ncdot.gov/projects/midcurrituckbridge/ are referenced in the text.

## 2.1 Describe the alternatives considered.

### 2.1.1 What alternatives are considered?

**The five DEIS detailed study alternatives are considered in this FEIS.** They are named ER2, MCB2/C1, MCB2/C2, MCB4/C1, and MCB4/C2. The No-Build Alternative also is considered. The DEIS detailed study alternatives are shown on Figure 2-1. The alternatives screening process used to determine these detailed study alternatives is described in the Alternatives Screening Report (Parsons Brinckerhoff, 2009).

For all five DEIS alternatives, two hurricane evacuation options are considered. For the four MCB2 and MCB4 alternatives, two design options (Option A and Option B) also are considered for the mainland approach to the bridge over Currituck Sound (between US 158 and Currituck Sound). When impacts differ between the mainland approach road design options (Option A and Option B), the names of the alternatives are augmented with an additional suffix. For example, MCB with mainland design Option B and the C1 corridor is referred to as MCB2/B/C1.

**The Preferred Alternative is MCB4/C1 with refinements made to help avoid and minimize impacts.** The Preferred Alternative was selected based on cost and design considerations; travel benefits; community, natural resource, and other impacts; agency comments; and public involvement comments. The Preferred Alternative is illustrated in Figure 2-2. The features included in the Preferred Alternative to help avoid and minimize impacts in a cost-effective manner are described in Section 2.1.2.5.

### 2.1.2 Where would the alternative transportation improvements occur and what would they include?

The location and key components of the five DEIS detailed study alternatives are shown on Figure 2-1. The following paragraphs describe these alternatives. The CD includes
building the Currituck Sound bridge would be via Aydlett Road (between US 158 and Aydlett only) and Narrow Shore Road. Depending on allowable use of project right-of-way in Maple Swamp, the bridge corridor through Maple Swamp also may for used for access to the Narrow Shore Road area. Such a use, however, could not involve placing fill in wetlands. Construction materials and equipment also would be staged on vacant upland sites along Narrow Shore Road near the western Currituck Sound bridge ending.

On the Outer Banks with all the detailed study alternatives, including the Preferred Alternative, construction materials and equipment would be transported by truck via NC 12 to construction sites. Construction materials and equipment would be staged on vacant upland sites near the NC 12 widening areas and at the eastern endings of the C1 and C2 bridge corridors for the Currituck Sound bridge.

Oversize-overweight loads for certain bridge elements would be transported on US 158, NC 12, Aydlett Road, and Narrow Shore Road. Delivery of these oversize-overweight loads would be required to both sides of Currituck Sound. To ensure minimal traffic disruption, particularly on US 158 and NC 12 during peak travel periods, nighttime or other non-peak period delivery could be made when traffic volumes are at the lowest level if permitted by NCDOT. This would be more expeditious for the bridge construction and would limit traffic interruptions to periods of low travel demand.

2.5 Describe the other alternatives that were considered and explain why they are no longer under consideration

An alternatives screening study was conducted for the project. Its findings were discussed with federal and state environmental resource and regulatory agencies in a series of Turnpike Environmental Agency Coordination (TEAC) meetings in 2006, 2007, 2008, and 2009. Based on discussions at TEAC meetings, and written comments received from the agencies and public, the Alternatives Screening Report (Parsons Brinkerhoff, 2009) identified the DEIS detailed study alternatives described in Section 2.1. Alternatives were evaluated from the perspective of:

- Ability to meet the purpose and need and level of benefit offered in relation to those purposes;
- Improvement to system efficiency;
- Economic feasibility (cost and funding capacity); and
- Potential impacts on natural resources and communities.

The findings of the Alternatives Screening Report are summarized below. A description of the process followed and the specific numerical indications of benefit and environmental impact associated with the findings are included in that report. That report is included on the CD that accompanies this FEIS, at public review locations listed in Appendix C, and on the NCTA web site at http://www.ncdot.gov/projects/midcurrituckbridge/.
The other road widening and bridge alternatives considered were:

- ER1, which was identical to ER2 except NC 12 was assumed to be widened to four lanes instead of three lanes from US 158 to Albacore Street;

- MCB1, which was identical to MCB2 except NC 12 was assumed to be widened to four lanes instead of three lanes from US 158 to the Mid-Currituck Bridge terminus on the Outer Banks; and

- MCB3, which was identical to MCB4 except it did not include a third outbound lane on US 158 between the Wright Memorial Bridge and NC 12.

It was decided not to study ER1 and MCB1 in detail because the additional four-lane widening on NC 12 would result in more than 200 total displacements (including over 50 businesses) with these two alternatives.

MCB3 was dropped because it could only achieve a 2035 hurricane evacuation clearance time with construction of a third outbound lane on US 158 of 27 hours compared to 22 hours with the other alternatives. Clearance times with reversal of the center turn lane would be identical for MCB3 and MCB4 (27 hours). Therefore, it was only the third outbound lane option that was relevant to the decision to drop MCB3.

Other alternative concepts also were considered but were not carried forward as detailed study alternatives. These were: (1) shifting rental times; (2) transportation systems management; (3) bus transit; and (4) a ferry service across Currituck Sound as an alternative to a Mid-Currituck Bridge. The first three considered whether there were opportunities to reduce congestion and travel time by:

- Making better use of existing road capacity by shifting peak travel demand (asking property managers to start and end additional vacation home rental times on days other than Saturday and Sunday);

- Making minor improvements to the road system, including optimizing traffic signal timing, improving major intersections, and restricting side-road access where duplicate side roads exist; and

- Providing bus transit.

None of these alternatives was found to make more than a minimal reduction in congestion and travel time; thus, all were eliminated from consideration.

Building a ferry across Currituck Sound was considered as an alternative to a bridge. This alternative was dropped because a ferry would not notably reduce congestion or travel times, would be costly, and would require substantial dredging in Currituck Sound, with resulting impacts to the natural environment.

Several additional bridge corridors were considered and evaluated. The two selected for detailed study (C1 and C2) were the two that appeared to best balance community and
natural resource trade-offs while meeting the objectives of the project. The other corridors considered were C3, C4, C5, and C6, all in the Aydlett area but south of Aydlett Road. Alternatives north of the community of Aydlett and near the Intracoastal Waterway (N1 and N2) and further south in the Poplar Branch area (S) also were considered over the course of alternatives studies.

The No-Build Alternative was retained as a baseline for comparison with the detailed study alternatives. The identification of the No-Build Alternative as the Selected Alternative could be an outcome of this project’s decision-making process.

2.6 For what reasons did you choose the Preferred Alternative?

As indicated at the beginning of this chapter and described in Section 2.1.2.5, the Preferred Alternative is MCB4/A/C1 with refinements made to help avoid and minimize impacts. This preference is made taking into account the key findings associated with travel benefits; community, natural resource, and other impacts; public involvement comments; and financing and design considerations.

The Preferred Alternative is only a preference; it is not a final decision. The NEPA process will conclude with a ROD, which will document the Selected Alternative.

MCB4/A/C1 with refinements made to help avoid and minimize impacts is identified as the Preferred Alternative based on the considerations that follow. This list is not in order of importance, but is organized by issues as they are presented in this FEIS. Also, this list does not represent all benefits or impacts of the Preferred Alternative, just those elements that differentiated the Preferred Alternative when compared to the other detailed study alternatives. Quantities associated with the impact considerations are presented in Table S-1 in the Summary and the impact assessments in Chapter 3. Costs are also presented in Section 2.3.

Travel Benefit Considerations

- The Preferred Alternative, as well as MCB4, would provide substantial congestion reduction and travel time benefits while minimizing the widening of NC 12, and also would not require widening of US 158 from the Wright Memorial Bridge to NC 12, or an interchange at the US 158/NC 12 intersection.

- Should additional improvements to NC 12 and US 158 and a US 158/NC 12 interchange (e.g., the components of MCB2 not included in the Preferred Alternative and MCB4) be pursued in the future, they could be built without additional impact over that defined for MCB2. With the Mid-Currituck Bridge included in the Preferred Alternative and MCB4, a future interchange at NC 12 and US 158 would not carry as much traffic (traffic would divert to the Mid-Currituck Bridge), and the interchange configuration would result in fewer community and access impacts than without a Mid-Currituck Bridge (ER2).
Techniques to note: 
- alternatives chapter begins with description of detailed-study alternatives; screening process is summarized at the end of the chapter
2 ALTERNATIVES

This chapter describes the alternatives being evaluated in this EIS, and summarizes how they were developed. It discusses each alternative’s permanent facilities and operations, as well as temporary construction activities. It also briefly describes alternatives that are no longer being considered. The chapter concludes with a discussion of separate projects that are in this project’s vicinity, and the next steps in the project’s development.

2.1 Proposed Alternatives

The project is considering four alternatives, as shown on Figure 2-1:

- The No-Build Alternative maintains the existing facility but does not improve it; this alternative provides a basis for comparing the effects of the Build alternatives.
- The Preferred Alternative (a modified Elliot Point 2 Alternative) would relocate the terminal to the western portion of the Mukilteo Tank Farm as part of an integrated multimodal center; the existing terminal would be removed.
- The Existing Site Improvements Alternative would construct an improved multimodal facility by replacing the existing Mukilteo ferry terminal with an expanded terminal at the current site.
- The Elliot Point 1 Alternative would relocate the terminal to the eastern portion of the Mukilteo Tank Farm as part of an integrated multimodal center and remove the existing terminal.

The Preferred Alternative and the Elliot Point 1 Alternative assume transfer of the Mukilteo Tank Farm from the U.S. Air Force to the Port of Everett, consistent with federal legislation passed in 2001 (see Section 2.4).

2.1.1 No-Build Alternative

The No-Build Alternative provides a baseline against which to compare the effects of the Build alternatives. It includes what would be needed to maintain the existing ferry terminal at a functional level. Under the No-Build Alternative, an improved multimodal transportation facility to meet future demand or operational needs would not be developed. Instead, the No-Build Alternative assumes that maintenance and structure replacements would occur in accordance with legislative direction to maintain and preserve ferry facilities, but WSDOT would make no investments to improve the operation, safety, security, or capacity at the terminal. Figure 2-2 shows the key elements of the terminal and the areas that would be affected by planned maintenance and preservation activities.
• Clearing, grubbing, excavation, fill, grading, and disposal of materials
• Construction of temporary in-water structures
• Construction or reconstruction of structures, including retaining walls, bulkheads, and the terminal buildings (including associated footings)
• Pile driving
• Drilled shaft or stone column installation (could require temporary roads or fill in shoreline and beach areas)
• Concrete casting
• Roadway construction, including intersections, signal systems, sidewalks, bicycle facilities, and trails
• Landscaping
• Transport of workers, equipment, materials, and debris
• Storage of equipment, including heavy trucks, cranes, and bulldozers, as well as storage of construction materials and debris

2.3 Alternatives Development Process

Nearly three decades of planning activities have focused on different approaches and alternatives to address the need for an improved multimodal facility serving travel between Whidbey Island and the Mukilteo area. Alternatives for improving the terminal have been discussed in various efforts since the 1970s. The City of Mukilteo completed a Mukilteo Multimodal Terminal and Access Study in 1995 (City of Mukilteo 1995). WSDOT began detailed master plan efforts with multiple concepts in the Mukilteo Multimodal Terminal Master Plan Design Report (WSDOT 2004). This was followed by additional planning, design, and environmental studies of a variety of concepts.

Appendix E, Alternatives No Longer Considered, identifies the previously considered alternatives developed throughout the planning process and summarizes the reasons why other alternatives are no longer being considered. The project has also produced an Alternatives History through 2009 report (WSDOT 2010), which provides additional detail on the alternatives and concepts previously considered.

Alternatives Considered for the Current EIS

The discussion below describes how WSDOT developed the alternatives now being considered. In 2010, WSDOT developed nine concepts, or initial alternatives, to meet the purpose and need of the project. The focus was on improved constructability and environmental performance compared to the alternatives considered in the 2004 EA and 2006 EIS processes, particularly in terms of impacts on cultural resources and marine and shoreline areas. These initial alternatives built on lessons learned through earlier efforts to address current terminal deficiencies, improve operating efficiency and safety, reduce costs, and develop more compact designs to reduce impacts on archaeological sites and natural resources.
Using transportation performance, constructability, policy, and environmental measures, FTA, WSDOT, and their stakeholders evaluated the initial alternatives. The initial alternatives included modifying the current terminal site; relocating the terminal to Elliot Point north of the existing terminal; or relocating it entirely to Edmonds or Everett:

- **Existing Mukilteo Terminal**
  - No-Build Alternative
  - Existing Site Improvements Alternative
- **Elliot Point (Mukilteo Tank Farm)**
  - Elliot Point – Option 1
  - Elliot Point – Option 2
  - Elliot Point – Option 3
  - Mount Baker Terminal
- **Edmonds**
  - Edmonds – Existing Terminal
  - Edmonds – Existing Site Improvements
  - Point Edwards
- **Everett**
  - Port of Everett South Terminal

The alternatives were evaluated by WSDOT and FTA using a set of criteria based on the project’s purpose and need. These criteria included the ability of each alternative to meet the project’s design, operational, environmental, and technical objectives. The results were shared with agencies, tribes, and the public during the scoping period. At the conclusion of the scoping process in 2010, WSDOT and FTA found that the three Build alternatives in Mukilteo have the best potential to meet the project’s purpose and need and achieve regulatory and stakeholder approvals. The public comments during the scoping period overwhelmingly supported this direction.

Some public comments also suggested the project should include park-and-ride spaces to serve people who may want to drive to the terminal and then walk on to the ferry. WSDOT does not currently have spaces for this purpose at Mukilteo, although the City of Mukilteo has monthly permit spaces near the current terminal. WSDOT considered the direction of the Long-Range Plan, as well as cost, environmental impacts, safety, transportation benefits, and the limited available waterfront land in evaluating the various concepts. WSDOT found that alternatives focusing on multimodal improvements, reducing vehicle trips, improving safety and security, and minimizing environmental impacts best met the purpose and need.

The alternatives that failed to advance for evaluation in the EIS included relocating the terminal to the Port of Everett South Terminal or Edmonds, and developing a ferry terminal at the Port of Everett Mount Baker Terminal. These alternatives failed to satisfy the project’s purpose and need because of worsened transportation performance, including traffic impacts, longer travel times, reduced service, and poor
multimodal connections; environmental impacts stemming from the displacement or conflicts with existing marine-dependent uses; and socioeconomic impacts anticipated from the loss or reduction of service to the city of Mukilteo. During scoping, the project also received written comments from a large number of its participating and cooperating agencies opposing the Everett and Edmonds alternatives.

Appendix E, Alternatives No Longer Considered, details the rejected alternatives, shows the screening evaluation measures and results, and describes the extensive process FTA and WSDOT conducted with the public, the project’s cooperating and participating agencies, and interested tribes. All of these stakeholders reviewed the evaluation results and participated in the identification of the alternatives for inclusion in the EIS.

Other Alternatives Previously Considered

During the initial EIS process starting in 2006, another set of alternatives was also studied. These alternatives were removed from further consideration after they were determined to be no longer reasonable for WSDOT to pursue, based on potential impacts on archaeological resources, the amount of over-water construction, geotechnical conditions, and technical issues. The project at that time had a series of alternatives using the Mukilteo Tank Farm and a No-Build Alternative.

Project components under consideration in 2006 (see Appendix E Alternatives No Longer Considered) had some similarities to the current Mukilteo Tank Farm alternatives. The biggest differences were:

- A ferry dock with two ferry slips
- Incidental commercial space for retail and other services
- A 275- to 480-stall parking structure

2.4 Other Activities in the Area

The following actions are planned or have been recently completed by others in the project area. While WSDOT is coordinating with the other parties, the activities that are described in the following pages are separate actions that could be taken even if the Mukilteo Multimodal Project is not developed. The EIS sections on cumulative effects discuss the impacts of the Mukilteo Multimodal Project in combination with these and other past, current, or planned activities and projects.

U.S. Air Force Mukilteo Tank Farm

The nearly 20-acre parcel called the Mukilteo Tank Farm, east of the current ferry terminal, was used as a fuel storage and transfer facility, operated through McChord Air Force Base, from 1953 to 1973. The U.S. Air Force continued ownership after that, but operated the facility through the Defense Energy Support Center (DESC) within the Defense Logistics Agency (DLA). In 1972, the NOAA Mukilteo Research Station began operations on a portion of the property. Fuel storage and transfer operations on the site ceased in 1989 and the Air Force removed the ten bulk fuel aboveground storage tanks in 1999.
Screening Criteria and Steps Are Clearly Explained

- OR: OR 62 FEIS
2.2 Screening Criteria and Evaluation Measures

Early in the project, ODOT sought input on potential solutions to the problems identified in the Purpose and Need. As described more fully in Section 7.4.1, ODOT held public meetings to obtain input and ideas for potential alternatives. ODOT also requested (and received) ideas from the public in Moving Ahead, an insert in the Medford Mail Tribune. The PDT and CAC (described more fully in Section 7.3) also developed a range of potential alternatives, some of which had been identified during the North Medford Interchange project. Overall, ODOT received 23 concepts. Many of those concepts were similar. Four concepts recommended converting the existing OR 62 into a limited-access highway and providing frontage and/or “backage” roads for local access. Those four concepts were grouped together to become the “Existing Highway Build Alternative.”

Ten concepts recommended bypassing existing OR 62, using a variety of slightly different alignments. Those ten concepts were grouped together to become the “Bypass Alternative,” which later was refined to become the SD and DI Alternatives. After the grouping, there were 11 alternatives that constituted the “wide range of alternatives” that were subjected to the screening criteria. During the screening process, the SD Alternative was added to the set of 11 alternatives, for a total of 12 alternatives.

This section describes the application of the screening criteria and evaluation measures that was conducted to narrow the wide range of alternatives to the two build alternatives that are evaluated in the EIS. Figure 2-12 provides a schematic illustration of the alternatives narrowing process.

The project used a two-part screening process to evaluate and dismiss alternatives. The initial screen was a pass/fail evaluation of each alternative’s ability to address the basic transportation issues as defined in the transportation problem. This screen evaluated whether each alternative would separate through-trips from local trips and thereby sufficiently address future capacity needs. Alternatives that passed the initial screen were advanced to the second screen. The second screen evaluated the degree to which each alternative met the project’s Purpose and Need and the project’s Goals and Objectives using the project’s evaluation measures for transportation issues. If an alternative did not address the transportation problem, it could not meet the project’s Purpose and Need.

Figure 2-12 Alternatives Narrowing Process

Techniques to note:
- alternatives chapter explains the criteria and process used to screen alternatives, with reference to more detail in tech.report

For further information regarding the process of developing and selecting project alternatives, see the Alternatives Considered Technical Report, Highway 62 Corridor Project. This report is available from the ODOT contact person identified on page i of this EIS.
The two-part screening process is described in greater detail in Sections 2.2.1 Application of Initial Screen and 2.2.2 Evaluation Criteria. Section 2.3 Alternatives Considered but Eliminated from Further Consideration, provides maps and descriptions of all of the alternatives that were evaluated and dismissed. Section 2.4 Comparison of Alternatives provides a comparison of the SD and DI Alternatives that are evaluated in this DEIS.

2.2.1 Initial Screening Process

As stated above, the initial screen was a pass/fail evaluation of the alternative’s ability to address the basic transportation issues as defined in the transportation problem. The initial screen evaluated whether each alternative would separate through-trips from local trips and therefore be likely to meet future capacity needs. The OR 62 Transportation Problem was first defined in the Oregon Highway 62 Origin and Destination Study (1999). This study documented trip types and travel behavior on OR 62. The study concluded that 60 percent of the total OR 62 trips have an origin and/or destination within the OR 62 project area while the remaining 40 percent have an origin and destination outside of the OR 62 project area. OR 62 is used both as a local connector as well as a regional and interurban connector.

The initial screen consisted of travel demand forecasting using the Rogue Valley Council of Government (RVCOG) EMME/2 regional travel demand computer model. Travel demand models are widely used for transportation project development, transportation planning and land use planning. This model was used to determine how well each alternative would address travel demand on OR 62 in the year 2035. ²

The EMME/2 travel demand model breaks the regional road system into links or segments. The beginning and end point for each link is an intersection with another roadway. Each link has general characteristics like number of travel lanes and speed; these characteristics determine the link’s carrying capacity. The EMME/2 model assigns traffic to the regional road network based on travel patterns, population, employment areas, and other factors. Results of the EMME/2 model runs show capacity on road links expressed as a demand-to-capacity ratio (d/c). The d/c is the number of vehicles at a snapshot in time, divided by the capacity of the roadway. D/C is generally reported as a decimal, e.g. 0.8 or 1.2. A road link with a d/c greater than 1.0 would be extremely congested (demand for the roadway is greater than the roadway’s capacity), while a link with a low d/c such as 0.2 would be free-flowing. The d/c also implies how the intersections at either end of the link are operating. If the d/c of the roadway link is greater than 1.0, the intersections at either end of that link would also be over capacity and congestion will occur in the form of queues.

Since the model capacities are generally less than the detailed operational capacities, links with a d/c less than 1.0 would range from relatively free of issues to having problems that could be solved with a reasonable level of effort. Results that include links that are over capacity (d/c >1.0) indicate serious issues that would require a substantial level of additional improvements.

The d/c analysis that was used for this initial screen allowed all 12 alternatives to be evaluated at the appropriate level of detail and within a reasonable amount of time. The travel demand model d/c ratios included in this chapter cannot be compared with v/c ratios included in Section 3.1 Transportation Facilities, because those v/c ratios were developed using a more detailed analysis and a different methodology.

² ODOT projects typically use a 20-year planning horizon. The traffic analysis for this screen was conducted in 2005 and used 2030 as its forecast year. Although the OR 62 Corridor Solutions Project has since extended the forecast year to 2035 for the DEIS traffic analysis, the conclusions based on 2030 traffic remain valid.
For the initial screen, each alternative was added to the EMME/2 regional road network and travel demand model d/c ratios were obtained for the year 2030. Project staff converted model outputs for each alternative into diagrams like the one shown in Figure 2-13. This figure shows travel demand model d/c ratios for the No Build Alternative conditions in 2030. The red dotted lines represent segments of OR 62 that would have a d/c ratio of greater than 1.0. In similar figures for other alternatives that were considered, segments of OR 62 that would have a d/c ratio of less than 1.0 are shown with pale green lines. As shown in Figure 2-13, all segments of OR 62 between I-5 and Dutton Road are forecasted to have travel demand model d/c ratio of greater than 1.0 and experience heavy congestion in 2030 if no additional improvements are made to the highway.

The travel demand model d/c ratios on OR 62 for each alternative were compared to No Build Alternative conditions in the year 2030 to determine the effectiveness of each proposed alternative. Alternatives that not only showed improved travel demand model d/c ratios on OR 62 compared to the 2030 No Build Alternative conditions, but also had d/c ratios less than 1.0, were assumed to address the project’s transportation problem and were therefore advanced for further study in the second screen. Those alternatives were then subjected to a more detailed evaluation as described in Section 2.2.3 Evaluation Criteria.

Alternatives that included multiple segments of OR 62 with travel demand model d/c ratios greater than 1.0 were dismissed from further consideration. The assumption was that there would need to be substantial changes to the proposed alternative in order to reduce the forecasted volumes to acceptable levels. If an alternative resulted in worse travel demand model d/c ratios than the 2030 No Build Alternative – that is, it contained more “failing” segments of OR 62 than the No Build Alternative – it would obviously fail to solve the congestion problem on OR 62. Failing to solve the congestion (capacity) problem would also fail to improve intersection operations and safety. Alternatives that showed little or no improvement in the travel demand model d/c ratios on OR 62 as compared to the 2030 No Build Alternative were dismissed during the initial screen. The initial, wide range of alternatives are described in Section 2.3. Of the twelve alternatives that were initially developed it was determined that eight of them did not solve the transportation problem and therefore could not meet the project’s Purpose and Need. The remaining four alternatives were evaluated to see if they addressed the project’s Purpose and Need Statement which embodied the desirable characteristics of a proposed design solution.

### 2.2.2 Application of the Purpose and Need

**Four alternatives remained after the initial screen was completed:** the Existing Highway Build Alternative, the Texas Turnaround Alternative, the Bypass with a Split Diamond Interchange Alternative, and the Bypass with a Directional Interchange Alternative (also referred to as the “Plain Bypass”). ODOT engineers developed the designs for each of these four alternatives to the point where the alternative could be evaluated in greater detail than had been possible during the preliminary screen. Design refinements were informed by feedback received during targeted outreach with businesses and community groups, as described in greater detail in Section 7.4.2.

The preliminary travel demand analysis showed that each of these four proposed alternatives was successful in diverting at least 40 percent of the current and future trips onto the OR 62 Bypass. There were also two design options for the northern terminus of the project: the Existing Highway which was a widening of the existing Hwy 62 and the new Bypass to the West. The Existing Highway, Texas Turnaround, and north terminus “Existing Highway” design options were all dismissed because they failed to meet the Purpose and Need as described below.
With respect to the project’s Purpose and Need, these four alternatives were evaluated for whether they would accomplish the following goals.

- Simplify roadway connections along OR 62
- Comply with ODOT operational standards
- Improve deficient intersection operations
- Address safety concerns
- Maintain the regional economic role of commercial areas along OR 62
- Address transit and non-motorized transportation mode deficiencies

During the second screen, the four alternatives were subjected to a more detailed traffic analysis than was conducted for the first screen. This analysis developed a preliminary assessment as to whether key intersections for each alternative would comply with the applicable operational standards. The results of this evaluation helped to determine whether each alternative would address the mobility issues included in the Purpose and Need Statement and described below. This additional analysis is a more refined application of the d/c ratios to specific conditions.

**Address current and future highway capacity needs.** ODOT d/c ratio standards are designed to ensure that proposed transportation improvements are designed with sufficient highway capacity to serve the volume of traffic that is forecast within a 20-year planning horizon. As described in the methodology section below, the initial screen was based on an analysis of 2030 traffic volumes.

**Improve intersection operations.** The initial screen did not specifically evaluate intersection operations. Instead it looked at d/c ratios for midblock sections, because d/c ratios on roadway segments are related to the intersection operations at either end of those segments. Intersections are designed to accommodate the volumes of traffic that flow through them; if a roadway segment is shown to be well over capacity (i.e. the d/c ratio is greater than 1.0), the intersections at either end of that segment will be over capacity.

**Provide enhanced transportation safety.** Although there are multiple factors that influence safety, crash rates typically increase as congestion increases. Safety can also be compromised when there are a number of un-signalized local streets connecting directly to OR 62. When congestion occurs, the distance between vehicles decreases, giving drivers less time to react to changes in traffic speed and less space in which to merge or change lanes. As d/c ratios approach (or exceed) 1.0, the level of congestion is great enough to pose a potential safety problem.

**Preserve the local and regional economic importance of the businesses along OR 62.** An efficient transportation system is critical to the region’s economic health. Mobility issues can contribute to the economic decline of an area. Areas suffering from chronic, long term transportation and mobility problems will naturally decline as people seek out areas that do not have these problems. The ability to provide a safe and efficient movement of goods and services is critical to maintaining the health of manufacturing, commercial and retail activity centers. D/c ratios greater than 1.0 represent significant mobility deficiencies, including congestion, which can deter customers from patronizing businesses. Addressing the region's transportation demand and capacity needs, as well as other mobility issues, such as safety, can help to ensure the region's continued economic health and vitality.

The area along OR 62 between I-5 and White City is a business, retail and employment district considered critical to the Rogue Valley region. The area contains a mixture of commercial and industrial employment, regional and local retail sales. The area contains two large shopping centers, six big box stores, 16 retail buildings with more than 30,000 square feet of floor area, and many small or moderate-sized strip malls, shopping centers, motels, restaurants, retail stores, offices, and services businesses, all located along OR 62. In addition, there is a large area of employment in White City on Antelope Road, between OR 62 and
Table Rock Road. Employment in this area includes timber products, general manufacturing and state and local government employment. This business/employment district represents a significant proportion of the economic activity of the Medford region.

**Transit and non-motorized transportation mode deficiencies.** The wide range of alternatives that were subjected to the initial screen did not include multimodal enhancements such as bicycle lanes, sidewalks, or transit improvements. Because multimodal enhancements could have been added to any of the alternatives at a later stage in the project development, no alternative was dismissed for its lack of such improvements. This aspect of the Purpose and Need was applied during the second screen.

### 2.2.3 Evaluation Measures

The Evaluation Measures were used to provide additional factual information and help inform the discussion that determined whether the proposed alternative met the Project’s Purpose and Need. Early in the Project planning, the PDT and CAC developed project Goals and Objectives to help guide the alternatives analysis process. The Goals and Objectives included relevant criteria with specific evaluation measures that provided a basis of comparison between the alternatives.³

Appendix A lists the goals, objectives, criteria, and evaluation measures. The table also includes quantitative or yes/no responses to the measures for each of the four alternatives as they existed at the time when the measures were applied.⁴

At the time when the evaluation measures were applied, the designs were preliminary and did not include enhancement and mitigation measures or specific information about materials and appearance. As a result, some of the evaluation measures such as “Number of enhancements for native fish and wildlife habitats” (Goal 2) and “Provides improvements that are visually pleasing” (Goal 6) could not be answered at that time because those aspects had not been designed. In such cases where an answer would have been speculative, the evaluation measures were not applied and a comment was included about the lack of design information. In other cases, some evaluation measures required a fairly extensive technical analysis, such as those that related to noise or travel times. In lieu of conducting technical analyses at that point, evaluation measures were assessed with estimates. All of the responses were based on the information that was available at the time, and on the designs that existed at the time. In the years since the evaluation measures were applied, the alternatives that are being analyzed in the EIS have been further refined and more extensive technical analyses have been conducted.

³ More recently during the project development, when the DEIS alternatives were identified, CETAS representatives requested that the Goals, Objectives, Evaluation Criteria, and Measures be refined. The refinements provide more precise means for evaluating the alternatives (the EIS alternatives are more alike than the four alternatives being described in this section, and therefore required a more fine-grained set of measures).

⁴ The impact calculations for the two Bypass Alternatives listed in Table 4-1 of the Alternatives Considered Technical Report may be slightly different than the impact calculations now included in the EIS because more refined designs are now available upon which to provide more detailed technical analysis.
Elements of Each Alternative Are Clearly Described

- NC: Mid-Currituck Bridge FEIS - Build Alternatives
- OR: OR 62 FEIS - Projects Included in No Build Alternative
2.0 Alternatives

This chapter describes the five DEIS detailed study alternatives and the Preferred Alternative considered. It also describes the No-Build Alternative, as well as other alternatives considered but not selected for detailed study. The reasons why the Preferred Alternative was selected also are discussed. This chapter is divided into the following sections:

- **Description of the detailed study alternatives**, beginning on page 2-2;
- Description of how the detailed study alternatives differ in their ability to meet the project’s purpose and need, beginning on page 2-44;
- Description of the cost of each alternative and how each would be financed, beginning on page 2-46;
- Description of when and how each alternative would be built, beginning on page 2-50;
- Description of other alternatives considered but not selected for detailed study and why they were not selected, beginning on page 2-52; and
- A presentation of the reasons why the Preferred Alternative was selected, beginning on page 2-54.

**Five detailed study alternatives were evaluated in the DEIS.** They are named:

- ER2;
- MCB2/C1 (MCB2 using bridge corridor C1);
- MCB2/C2 (MCB2 using bridge corridor C2);
- MCB4/C1 (MCB4 using bridge corridor C1); and
- MCB4/C2 (MCB4 using bridge corridor C2).

The Preferred Alternative identified in this FEIS is MCB4/C1 with refinements made to help avoid and minimize impacts.

The “ER” in ER2 stands for “Existing Roads.” A Mid-Currituck Bridge is not included in this alternative, but only widening existing US 158 and NC 12. The “MCB” stands for Mid-Currituck Bridge. MCB2 and MCB4 both include a Mid-Currituck Bridge and different amounts of improvements to existing US 158 and NC 12. The bridge components of MCB2 and MCB4 are evaluated with two bridge corridor alternatives (C1 and C2). The preferred bridge corridor, C1 as refined between the DEIS and FEIS to help avoid and minimize impacts, is included in the Preferred Alternative. The “C”
stands for “Central,” as opposed to other corridor possibilities further north (N) and south (S).

For all five DEIS alternatives, two hurricane evacuation options are considered. The preferred hurricane evacuation option is included in the Preferred Alternative. For the four MCB2 and MCB4 alternatives, two design options also are under consideration for the mainland approach to the bridge over Currituck Sound (between US 158 and Currituck Sound). The preferred design option is included in the Preferred Alternative.

The information included in this chapter is considered important to understanding the general characteristics of the detailed study alternatives and how they were selected. For readers desiring additional information on a particular topic, items contained on the compact disc (CD) that accompanies this FEIS, at public review locations listed in Appendix C, and on the NCTA web site at http://www.ncdot.gov/projects/midcurrituckbridge/ are referenced in the text.

### 2.1 Describe the alternatives considered.

#### 2.1.1 What alternatives are considered?

The five DEIS detailed study alternatives are considered in this FEIS. They are named ER2, MCB2/C1, MCB2/C2, MCB4/C1, and MCB4/C2. The No-Build Alternative also is considered. The DEIS detailed study alternatives are shown on Figure 2-1. The alternatives screening process used to determine these detailed study alternatives is described in the *Alternatives Screening Report* (Parsons Brinckerhoff, 2009).

For all five DEIS alternatives, two hurricane evacuation options are considered. For the four MCB2 and MCB4 alternatives, two design options (Option A and Option B) also are considered for the mainland approach to the bridge over Currituck Sound (between US 158 and Currituck Sound). When impacts differ between the mainland approach road design options (Option A and Option B), the names of the alternatives are augmented with an additional suffix. For example, MCB2 with mainland design Option B and the C1 corridor is referred to as MCB2/B/C1.

The Preferred Alternative is MCB4/C1 with refinements made to help avoid and minimize impacts. The Preferred Alternative was selected based on cost and design considerations; travel benefits; community, natural resource, and other impacts; agency comments; and public involvement comments. The Preferred Alternative is illustrated in Figure 2-2. The features included in the Preferred Alternative to help avoid and minimize impacts in a cost-effective manner are described in Section 2.1.2.5.

#### 2.1.2 Where would the alternative transportation improvements occur and what would they include?

The location and key components of the five DEIS detailed study alternatives are shown on Figure 2-1. The following paragraphs describe these alternatives. The CD includes
the combined corridor/design public hearing maps for each of the five DEIS alternatives. These maps were displayed at the public hearings and on the NCTA web site at http://www.ncdot.gov/projects/midcurrituckbridge/. They present the design features of each DEIS detailed study alternative and were used to assess the impacts of the detailed study alternatives. A list of these maps is included in Appendix D.

2.1.2.1 ER2

ER2 was developed to achieve maximum transportation benefits using the existing roadways, while minimizing impacts to communities along those roads. The basic features of ER2 are:

- Adding for evacuation use only, a third outbound evacuation lane (Figure 2-3) on US 158 between NC 168 and the Wright Memorial Bridge as a hurricane evacuation improvement or using the existing center turn lane as a third outbound evacuation lane; in either case one inbound lane on the Wright Memorial Bridge and on the Knapp (Intracoastal Waterway) Bridge would be used as a third outbound evacuation lane;

- Widening US 158 to a six-lane super-street (Figure 2-4) between the Wright Memorial Bridge and Cypress Knee Trail that widens to eight lanes between Cypress Knee Trail and the Home Depot driveway (both locations indicated are just west of the existing US 158/NC 12 intersection);

- Constructing an interchange (Figure 2-4) at the current intersection of US 158, NC 12, and the Aycock Brown Welcome Center entrance, including six through lanes on US 158 starting at the Home Depot driveway and returning to four lanes just south of Grissom Street (which is just south of the existing US 158/NC 12 intersection); and

- Widening NC 12 to three lanes (two travel lanes and a center lane for left turns; Figure 2-5) between US 158 and a point just north of Hunt Club Drive in Currituck County (except for the existing three-lane section in Duck, which will be unchanged) and to four lanes with a median from just north of Hunt Club Drive to Albacore Street (Figure 2-6).

As illustrated on Figure 2-4, the unique characteristic of a super-street is the configuration of the intersections. Side-street traffic wishing to turn left or go straight must turn right onto the divided highway where it can make a U-turn through the median a short distance away from the intersection. After making the U-turn, drivers can then either go straight (having now accomplished the equivalent of an intended left turn) or make a right turn at their original intersection (having now accomplished the equivalent of an intention to drive straight through the intersection).

2.1.2.2 MCB2

MCB2 involves construction of a Mid-Currituck Bridge, as well as improvements to existing NC 12 and US 158. MCB2 was developed to examine the travel benefits of combining a Mid-Currituck Bridge with substantial NC 12 and US 158 improvements.
Thus, MCB2 includes the existing road improvements similar to ER2, plus a Mid-Currituck Bridge. The basic features of this alternative are:

- Constructing a 4.7- to 5.3-mile-long two-lane (see Figure 2-7) toll bridge across Currituck Sound, with approach roads, in Currituck County;

- Adding for evacuation use only, a third outbound evacuation lane on US 158 between NC 168 and the Mid-Currituck Bridge as a hurricane evacuation improvement (Figure 2-3) or using the existing center turn lane as a third outbound evacuation lane; in either case one inbound lane on the Knapp (Intracoastal Waterway) Bridge would be used as a third outbound evacuation lane;

- Widening US 158 to a six-lane super-street (Figure 2-4) between the Wright Memorial Bridge and Cypress Knee Trail and an eight-lane super-street between Cypress Knee Trail and the Home Depot driveway (both locations indicated are just west of the existing US 158/NC 12 intersection);

- Constructing an interchange (Figure 2-4) at the intersection of US 158, NC 12, and the Aycock Brown Welcome Center entrance, including six through lanes on US 158 starting at the Home Depot driveway and returning to four lanes just south of Grissom Street (which is just south of the existing US 158/NC 12 intersection); and

- Widening NC 12 to three lanes (two travel lanes and a center lane for left turns; Figure 2-5) between US 158 and a point just north of Hunt Club Drive in Currituck County (except for the existing three-lane section in Duck, which will be unchanged) and to four lanes with a median from just north of Hunt Club Drive to the NC 12 intersection with the Mid-Currituck Bridge (Figure 2-6).

2.1.2.3 MCB4

MCB4 involves construction of a Mid-Currituck Bridge, as well as limited improvements to existing NC 12 and US 158. MCB4 was considered in order to identify the extent to which network congestion and travel time could be improved, as well as other associated benefits, if only a Mid-Currituck Bridge were built. Limited existing road improvements were added to MCB4 to ensure that southbound traffic stopped at traffic signals on NC 12 would not queue back onto the bridge on the summer weekend. The basic features of this alternative are:

- Constructing a 4.7- to 5.3-mile-long, two-lane toll bridge across Currituck Sound, with approach roads, in Currituck County;

- Adding for evacuation use only, a third outbound evacuation lane on US 158 between NC 168 and the Mid-Currituck Bridge as a hurricane evacuation improvement (Figure 2-3) or using the existing center turn lane as a third outbound evacuation lane; in either case one inbound lane on the Knapp (Intracoastal Waterway) Bridge would be used as a third outbound evacuation lane;
• Adding for evacuation use only, a third outbound evacuation lane on US 158 between the Wright Memorial Bridge and NC 12 as a hurricane evacuation improvement or using the existing center turn lane as a third outbound evacuation lane; in either case one inbound lane on the Wright Memorial Bridge would be used as a third outbound evacuation lane; and

• Widening NC 12 to four lanes with a median (Figure 2-6) from Seashell Lane to the NC 12 intersection with the Mid-Currituck Bridge.

2.1.2.4 MCB2 and MCB4 Corridor Alternatives and Design Options

For MCB2 and MCB4, two bridge corridors were evaluated in detail in the DEIS. The locations of the two Outer Banks termini, C1 and C2 (see Figure 2-1 and Figure 2-8), are:

• Corridor C1 on the mainland would be between Aydlett Road (SR 1140) and approximately 500 feet north of the power line that parallels Aydlett Road. On the Outer Banks, C1 would end at the southern end of Phase I of the Corolla Bay subdivision. C1 would connect with NC 12 at an intersection approximately 2 miles north of the Albacore Street retail area. The length of the proposed bridge over Currituck Sound would be approximately 4.7 miles with C1.

• Corridor C2 on the mainland would include the same area as C1 and on the Outer Banks would end near Albacore Street (SR 1402). C2 would connect with NC 12 approximately 0.5 mile south of the Albacore Street retail area. The length of the proposed bridge over Currituck Sound would be approximately 5.3 miles with C2.

For MCB2 and MCB4, two design options (Option A and Option B) also were evaluated in detail in the DEIS for the mainland approach to the bridge over Currituck Sound (between US 158 and Currituck Sound). The options are (see Figure 2-9):

• Option A would place a toll plaza within the US 158 interchange (see Figure 2-10). The mainland approach road to the bridge over Currituck Sound would include a bridge over Maple Swamp. Drivers traveling between US 158 and Aydlett would continue to use Aydlett Road. In Aydlett, the two-lane approach road would pass through Aydlett on fill (approximately 3 to 23 feet high) and bridge Narrow Shore Road.

• With Option B, the US 158 interchange would not include the toll plaza (see Figure 2-11). The approach to the bridge over Currituck Sound would be a road placed on fill within Maple Swamp. Wildlife passages would be incorporated into the fill. The preliminary design developed to assess impacts includes five wildlife passages: two bridges with 180-foot spans at the eastern and western sides of the swamp, a 12-foot by 8-foot box culvert at the center of the swamp, and two 43-inch by 68-inch pipes for passage of reptiles and amphibians. Exclusionary fencing along the road also is assumed.
Chapter 2 Content
2.1 Description of Alternatives
2.1.1 No Build Alternative
2.1.2 Build Alternatives
2.1.3 Transportation System Management, Transportation Demand Management, and Mass Transit Alternatives
2.1.4 JTA Phase
2.2 Screening Criteria and Evaluation Measures
2.3 Alternatives Considered but Eliminated from Further Consideration
2.4 Comparison of Alternatives
2.5 Identification of a Recommended Alternative and of the Preferred Alternative (SD Alternative with Design Option C)
2.5.1 Identification of the Recommended Alternative (SD Alternative with Design Option C)
2.5.2 Identification of the Preferred Alternative (SD Alternative with Design Option C)
2.5.3 Identification of the SD Alternative with Design Option C as the Environmentally Preferred Alternative
2.6 Permits and Approvals Needed

Alternatives

This chapter first describes the alternatives the DEIS analyzed. It then describes other alternatives considered but eliminated from further consideration and the basis for eliminating them. The end of the chapter identifies permits and approvals needed.

2.1 Description of Alternatives

The DEIS analyzed three alternatives: the No Build Alternative, the Split Diamond Interchange at I-5 (SD) Alternative, and the Bypass with a Directional Interchange at OR 62 (DI) Alternative. Also included is the Jobs and Transportation Act (JTA) Phase, an initial phase of the build alternatives. This section describes those alternatives.

2.1.1 No Build Alternative

The No Build Alternative would result in no improvements or modifications to existing OR 62. Highway facilities on OR 62 would remain as they are today. Reconstruction of the North Medford Interchange, the interchange between I-5 and OR 62, was completed in 2005. Figure 2-1 is a diagram of the interchange as it now exists. There would be no additional changes to the interchange under the No Build Alternative. Between I-5 in Medford and Dutton Road in White City, OR 62 varies in width and lane configuration. For much of its length, OR 62 is approximately 80 feet wide, consisting of four 12-foot travel lanes (two in each direction) with a 10-foot center turn lane and two 10-foot shoulders. Figure 2-2 is a typical cross-section of existing OR 62. Near the I-5 interchange and intersections with high-volume local streets, OR 62 is wider and includes dedicated turn lanes to accommodate traffic volumes. Businesses on OR 62 have driveway access to the highway, although some are restricted to right in/right out movements.

Improvements to other roadways in the project area would be built under the No Build Alternative. These future projects are identified in the fiscally constrained portion of the Rogue Valley Metropolitan Planning Organization (MPO) 2009-2034 Regional Transportation Plan (RTP) and listed in Table 2-1. Figure 2-3 shows the location of the projects. The Rogue Valley MPO is scheduled to adopt a new RTP in April 2013. There are no additional funded transportation projects within the vicinity of this project in any of the jurisdictions’ capital improvement programs.
The Rogue Valley MPO has added to the RTP two projects and expanded one project, as shown in Table 2-1. One added project is the realignment of Springbrook Road south of its intersection with Delta Waters Road. It is shown on Figure 2-3 FEIS as project 5007. The other added project is the addition of left-turn lanes from OR 140 westbound to OR 62 southbound. It is shown on Figure 2-3 FEIS as project 940. The expanded project is number 812, as shown in Figure 2-3 FEIS and Table 2-1. It is now called “Table Rock Road, Wilson Road to Elmhurst Street” and is described as widening to add a center turn lane, bike lanes, and sidewalks and aligning the Gregory Road intersection.

(Nota: in this EIS, the colored text indicates text that was added or modified in the FEIS.)

<table>
<thead>
<tr>
<th>Project</th>
<th>Location</th>
<th>Description</th>
<th>Timing*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Central Point</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>201</td>
<td>New Haven Road - Hamrick Road intersection</td>
<td>Add signal for pedestrian crossing</td>
<td>short</td>
</tr>
<tr>
<td>219</td>
<td>Table Rock Road and Vilas Road intersection</td>
<td>Widen to increase capacity</td>
<td>long</td>
</tr>
<tr>
<td><strong>Medford</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>502</td>
<td>Various locations in Medford</td>
<td>Construct sidewalks, storm drains, curbs</td>
<td>short</td>
</tr>
<tr>
<td>507</td>
<td>Columbus Avenue, McAndrews Road to Sage Road</td>
<td>Extend Columbus Avenue to Sage Road, with center turn lane, bike lanes, sidewalks</td>
<td>short</td>
</tr>
<tr>
<td>5007</td>
<td>Springbrook-Delta Waters Realignment</td>
<td>Realign intersection; add center-turn lane, bicycle lanes, sidewalks</td>
<td>short</td>
</tr>
<tr>
<td>558</td>
<td>Coker Butte Road, OR 62 to East of Crater Lake Avenue</td>
<td>Move Coker Butte Road north, re-align Crater Lake Avenue, add sign</td>
<td>medium</td>
</tr>
<tr>
<td>567</td>
<td>Owens Drive, Crater Lake Avenue to Foothill Road</td>
<td>Construct new three lane street with bike lanes and sidewalks</td>
<td>long</td>
</tr>
<tr>
<td>568</td>
<td>Lear Way, Coker Butte Road to Vilas Road</td>
<td>Construct new two lane street with bike lanes and sidewalks</td>
<td>long</td>
</tr>
<tr>
<td>569</td>
<td>Coker Butte Road, Lear Way to Haul Road</td>
<td>Construct new five lane street with bike lanes and sidewalks</td>
<td>long</td>
</tr>
<tr>
<td><strong>Jackson County</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>805</td>
<td>Avenue G - Kirtland Road, Pacific Avenue to Table Rock Road</td>
<td>Upgrade to Urban Industrial Collector: Straighten 90° curves</td>
<td>short</td>
</tr>
<tr>
<td>812</td>
<td>Table Rock Road: Wilson Road to Gregory Road</td>
<td>Widen to 5 lanes: curb, gutter, sidewalk, bike lanes</td>
<td>short</td>
</tr>
<tr>
<td></td>
<td>Table Rock Road: Wilson Road to Elmhurst Street</td>
<td>Widen to add center turn lane, bicycle lanes, sidewalks; align Gregory Road intersection</td>
<td></td>
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<tr>
<td>822</td>
<td>Table Rock Road at Wilson Road</td>
<td>New traffic signal</td>
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<tr>
<td>809</td>
<td>Foothill Road: Corey Road to Atlantic Street</td>
<td>New two lane rural major collector and signal</td>
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<tr>
<td>821</td>
<td>Table Rock Road: I-5 Crossing to Biddle Road</td>
<td>Widen to 3 and 5 lanes: curb, gutter, sidewalk, and bike lanes</td>
<td>long</td>
</tr>
<tr>
<td><strong>ODOT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>534, 558</td>
<td>OR 62: Owens Drive and Coker Butte Road</td>
<td>New 5-lane street from OR 62 to Springbrook Road, Realign Crater Lake Ave and Coker Butte Road, Signalization</td>
<td>short</td>
</tr>
<tr>
<td>904</td>
<td>OR 140 Freight Extension</td>
<td>Lane and shoulder widening for freight movements</td>
<td>short</td>
</tr>
<tr>
<td>940</td>
<td>OR 62 &amp; OR 140 Intersection Improvements</td>
<td>Relocate signal, modify lane configuration</td>
<td>short</td>
</tr>
<tr>
<td>938</td>
<td>OR 62: Access Management</td>
<td>Major approach relocation west of I-5</td>
<td>medium</td>
</tr>
</tbody>
</table>

Source: Rogue Valley Metropolitan Planning Organization, Regional Transportation Plan, 2009-2034, Table 5.5.2, as amended September 7, 2010. Additions are from amendments adopted October 23, 2012.
Figure 2-3 FEIS

Projects Included in the No Build Alternative

April 2013

Map Features

- OR 62
- City Limits
- Urban Growth Boundary

RTP Project Timing

RTP Project Numbers Shown. See Table 2-1 for Project Descriptions

- Long-term
- Medium-term
- Short-term

Source: Jackson County GIS, RVMPO 2009 RTP

Techniques to note:
- Projects in the No Build alternative are clearly identified in text and figure.
(This page is intentionally left blank.)
Refinements to Alternatives Are Summarized

- NC: Mid-Currituck Bridge FEIS
- UT: West Davis Corridor DEIS
Techniques to note:
- FEIS summarizes refinements included in the Preferred Alternative, relative to the DEIS alternatives

2.1.2.5 Preferred Alternative

The Preferred Alternative is MCB4/C1 with Option A (see Figure 2-2) and primarily with reversing the center turn lane on US 158 between the Mid-Currituck Bridge interchange and NC 168 to reduce hurricane evacuation clearance times. The Preferred Alternative also includes several design refinements to help avoid and minimize impacts, in response to government agency and public input and comments. These refinements include:

- Provision of a median acceleration lane at Waterlily Road (see Figure 2-10). This safety feature would allow left turns to continue to be made at Waterlily Road and US 158. Bulb-outs for u-turning vehicles also would be provided at the re-aligned US 158/Aydlett Road intersection and the US 158/Worth Guard Road intersection to provide greater flexibility for local traffic in turning to and from existing side streets near the US 158/Mid-Currituck Bridge interchange.

- Reducing the amount of four-lane widening along NC 12 from that with MCB4/C1 from approximately 4 miles to approximately 2.1 miles, plus left turn lanes at two additional locations over approximately 0.5 mile. The 2.1 miles of NC 12 widening would be concentrated at three locations: the bridge terminus, the commercial area surrounding Albacore Street, and Currituck Clubhouse Drive.

- Constructing roundabouts on NC 12 instead of signalized intersections at the bridge terminus and Currituck Clubhouse Drive.

- Terminating the bridge in a roundabout at NC 12 also allowed the C1 bridge alignment to be adjusted to remove curves and thereby reduced its length across Currituck Sound by approximately 250 feet (from approximately 24,950 feet [4.7 miles] to 24,700 feet).

- Provision of marked pedestrian crossings along NC 12 where it would be widened. They would be placed at locations identified by Currituck County plans (Albacore Street, Orion’s Way, and Currituck Clubhouse Drive are under consideration for inclusion in the next Currituck County thoroughfare plan), as well as at North Harbor View Drive and the bridge terminus (one across NC 12 and one across the bridge approach road).

Hurricane evacuation clearance time reduction features include:

- On the mainland, reversing the center turn lane on US 158 between the US 158/Mid-Currituck Bridge interchange and NC 168.

- On the Outer Banks, adding approximately 1,600 feet of new third outbound lane to the west of the NC 12/US 158 intersection to provide additional road capacity during a hurricane evacuation. The additional lane would start at the US 158/Cypress Knee Trail/Market Place Shopping Center intersection and end approximately 450 feet west of the Duck Woods Drive intersection, a total distance of approximately 1,600
2.1.6 Refinement of the Alternatives Considered for Detailed Study in the EIS

This section describes how the alternatives advanced from the screening process to be considered for detailed study in the EIS were further refined. The main refinements included alignment shifts of Alternatives A and B, the inclusion of new and relocated trail facilities for both advanced alternatives, the addition of drainage facilities, accommodations for relocated utilities, the addition of park-and-ride lots, and other roadway considerations based on comments from stakeholders, the public, local government officials, and resource agencies.

2.1.6.1 Alignment Shifts

After the screening process, the alternatives considered for detailed study in the EIS were further refined based on existing environmental data as well as input from the public and resource agencies. The alignments were modified to minimize or avoid relocations or other development impacts and minimize or avoid impacts to Section 4(f) resources, cultural sites, wetlands, farmland, and wildlife habitat. These refinements were made between the fall of 2011 and the fall of 2012 and were posted to the project website for the public, agencies, and other stakeholders.

Because all of these changes reduced impacts to the natural and built environment, they did not change the results of the alternatives-screening process for any of the alternatives.

The following changes were made to the alignments between the fall of 2011 and the fall of 2012:

- Shift the Glovers Lane alignment north between Tippets Lane and 1325 West in Farmington. This change was made because the shifted Glovers Lane alignment would avoid one residential relocation and 6 acres of wetland impacts in this area.

- Shift the Glovers Lane alignment to the east by the Buffalo Ranch and Farmington Meadows subdivisions. This change was made because the shifted Glovers Lane alignment would avoid 3.1 acres of wetland impacts in this location.

- Refine and modify the Shepard Lane option interchange based on additional engineering work and comments from residents and from representatives of Oakridge Country Club. The refinements of the Shepard Lane option included a new slip ramp design for the Shepard Lane interchange. This change was made because the addition of a slip ramp replaced the U-turn design on Shepard Lane east of I-15. Replacing the U-turn with the slip ramp would minimize impacts to Oakridge County Club and neighborhoods on the east side of I-15 by Shepard Lane. The U-turn on Shepard Lane would have restricted access to the neighborhoods east of I-15 and Oakridge County Club and would have acquired property from the Oakridge Country Club parking facilities.

What is a relocation?

A relocation occurs when constructing an alternative would require purchasing an occupied structure, such as a home or business. The residents or business would need to relocate.
• Shift the Shepard Lane interchange connecting road from 50 East in Kaysville to Foxhunter Drive in Farmington to the west. This change was made because it would avoid one potential residential relocation on Foxhunter Drive and would minimize property impacts to other residential properties in the Hunters Creek subdivision.

• Shift the south side of the Kaysville 200 North interchange to the northeast to minimize impacts to properties owned by The Nature Conservancy.

• Shift the alignment of Alternatives A1, A2, A3, and A4 to the east between 1800 North (Davis County) and 5500 South (Weber County). This change was made because it would avoid two adverse impacts to historic properties [which are also Section 4(f) resources], would have 0.5 acre less of direct impacts to Agriculture Protection Areas, and would minimize indirect impacts to Agriculture Protection Areas.

• Shift the alignment of Alternatives B1 and B3 in West Point (4100 West option) to the east at 800 North in West Point. This change was made because it would avoid three residential relocations and one adverse impact to a historic property.

• Shift Alternatives B1, B2, B3, and B4 a small distance to the east of the Hooper Canal between 5900 South and 5500 South in Hooper. This change was made to minimize impacts to the Hooper Canal.

• Shift Alternatives A1, A2, A3, and A4 to the east of the Davis and Weber Canal property near 200 South in West Point. This change was made to minimize impacts to the Davis and Weber Canal properties and infrastructure.

• Shift Alternatives A2 and A4 to cross 5100 West farther south to avoid the new meetinghouse of the Church of Jesus Christ of Latter-day Saints at about 4950 South 5100 West in Hooper.
Side-by-Side Figures Used to Compare Alternatives

- WA: SR 520 FEIS
Techniques to note:
- figures are shown side-by-side to show similarities and differences among alternatives considered.

Exhibit 5.7-4. Noise Modeling Results for Receivers - Noise Walls (2030)

No Build Noise Levels
- Below the noise abatement criteria 49 - 65 (dB)
- Approach or exceed the noise abatement criteria 66 - 80 (dB)

Change - Noise levels are 49-65 (dB)
- -10 to -13 (dB)
- -7 to -9 (dB)
- -3 to -6 (dB)
- Noticeable increase
- No noticeable change

Change - Noise levels approach or exceed the NAC
- Noticeable decrease
- No noticeable change

Note: No noise walls were evaluated for the Laurelhurst neighborhood because noise levels from SR 520 would remain below the NAC for the 6-Lane Alternative with the design options.
Exhibit 5.4-7. Permanent Acquisition in Washington Park Arboretum (Options K and L)

**Option K**

- Grading for Foster Island land bridge
- Washington Park Arboretum
- Marsh Island
- Union Bay
- Lake Washington

**Option L**

- Existing Profile
- Foster Island Land Bridge
- Existing Ground
- Water Level

**Park Acquisition**

- Converted to right-of-way
- Proposed right-of-way
- Existing right-of-way
- Lid or landscape feature
- Existing trail/bicycle path
- Pavement
- Proposed bicycle/pedestrian path

Legend:

- Lid or landscape feature
- Existing trail/bicycle path
- Pavement
- Proposed bicycle/pedestrian path

Note: Vertical scale is exaggerated

Scale: 0 250 500 Feet

SR 520, I-5 TO MEDINA: BRIDGE REPLACEMENT AND HOV PROJECT | FINAL EIS AND FINAL SECTION 4(F) AND 6(F) EVALUATIONS
Chapter 2: Alternatives


New Alignment
Marsh Island
Foster Island
Washington Park Arboretum
Lake Washington
Proposed Mainline Profile

Preferred Alternative Profile

Option A Profile

Option K Profile

Option L Profile

Note: Vertical scale is exaggerated.
Documentation of Public and Agency Role in Developing Alts

- UT: West Davis Corridor DEIS
2.1.4.2 Public Involvement Activities

The following strategies were used to receive input on *Technical Memorandum 15: Alternatives Screening Report*:

- Notify stakeholder groups and the general public of the advanced alternatives.
- Hold three public open houses (February 8, 9, and 10, 2011).
- Develop two Resident Working Groups (meetings were held on June 21, 2011; September 12 and 13, 2011; December 6, 2011; and January 18, 2012).
- Give the resource agencies, stakeholders, and the public access to information about the development of alternatives.
- Provide feedback opportunities.
- Increase the public’s awareness of the project.

The main methods for informing the public about the Level 2 alternatives were posting project materials on the project website, holding public open houses in February 2011, holding Resident Working Group meetings, and holding other meetings with the public or stakeholders on request. The public was invited to leave comments in writing, mail them in, or submit them through the project website. Copies of the *Alternatives Screening Report* were also made available on the project website. See Chapter 30, Public and Agency Consultation and Coordination, for a complete description of the activities and tools used to support these public involvement strategies.

2.1.4.3 Summary of Public Comments

The WDC Project received over 4,500 comments from the public, local government officials, and resource agencies after the draft *Alternatives Screening Report* was released in February 2011. Some of these comments addressed the range of preliminary project alternatives, options to consider during Level 1 and Level 2 screening, and resources to consider as part of the Level 2 screening criteria. *Technical Memorandum 15: Alternatives Screening Report*, Appendix A, Spring 2011 Public Involvement Summary, provides a summary of the comments received during this period.

After the release of the November 14, 2011, *Alternatives Screening Report*, the WDC team received comments from about 200 people. These comments included suggestions for new or modified alternatives, comments on the screening process and Level 2 screening criteria, and comments in support of or in opposition to WDC alternatives.

The suggestions for new or modified alternatives were primarily focused on the alignments in the Syracuse area and the Equestrian Estates area in Kaysville. Members of the public provided the WDC team with different interchange concepts to consider on Antelope Drive. Some comments requested that the WDC team reconsider mass transit alternatives instead of roadway alternatives.
Some comments on the screening process and Level 2 screening criteria requested that some resources (for example, community impacts or wetland impacts) be weighted more heavily than other resources. Many comments expressed concern about the WDC alternatives' impacts to residences, communities, farmland, air quality, noise, property values, wetlands, safety, and local streets. Many other comments expressed appreciation to the WDC team for providing information and meeting with interested or affected stakeholders. The WDC team also received many comments from farmers stating their opposition to alternatives that would affect farmland.

The majority of the comments the WDC team received in favor of, or in opposition to, an alignment were about the Shepard Lane option, the Glovers Lane option, or the WDC alignments in Syracuse.

The WDC team reviewed all public comment information for consideration in the alternatives-refinement process. The WDC team also attended numerous meetings with stakeholders between September 2011 and March 2012. The public comments and information provided by stakeholders in meetings resulted in the WDC team revising the alternatives during the alternatives-refinement process and guided the resource analyses in the EIS.

### 2.1.4.4 Summary of Agency Comments

In March 2011, the U.S. Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers (USACE), and the U.S. Fish and Wildlife Service (USFWS) all provided comments on the February 2011 *Alternatives Screening Report*. The comments included requests for additional information, a new alternative from USFWS (see Section 3.5.2, Input from the Cooperating and Participating Agencies during the Level 1 Screening Process, in the *Alternatives Screening Report*), questions about how practicability was considered per the Clean Water Act 404(b)(1) guidelines, questions about the wetlands data used in Level 2 screening, and questions about the assumptions used for evaluating impacts during Level 2 screening.

In addition to providing formal responses to the comments, the WDC team had ongoing coordination with the resource agencies listed above about the *Alternatives Screening Report* comments and the Clean Water Act practicability of WDC alternatives during the alternatives-screening process. The WDC team prepared a separate *Section 404(b)(1) Practicability Analysis* (West Davis Corridor Team 2012c) for the resource agencies and had many meetings with resource agency staff to address questions and comments about the Section 404(b)(1) process. The *Section 404(b)(1) Practicability Analysis* is summarized in Section 2.1.5, Consideration of Clean Water Act Section 404(b)(1) during Alternatives Development.
2.1.4.5 Comment Consideration

Comments received from resource agencies, city staff members, and the general public after Level 2 screening contributed to the further refinement of the eight Level 2 alternatives. Agencies helped identify wetlands that should be avoided as well as other natural resources and historic structures. Alternative alignments were adjusted to minimize impacts to resources identified by the resource agencies, the public, and local government officials.

The WDC team held many meetings with city staff members to identify interchange locations, drainage facilities, and other design elements for use in the conceptual design of the alternatives. Individual meetings with city staff were held as needed to resolve interchange functionality, prioritization of historic structures and public spaces [Section 4(f) properties], and treatment of cross streets. The design team addressed local plans and desires in the conceptual design where possible.

Public comments also played a role in developing and refining the alternatives. A number of comments suggested that the team take another look at an alignment on the 2001 North Legacy Transportation Corridor Study corridor in Syracuse and West Point. In response to these comments, the WDC team reconsidered different alignments on or near the 2001 North Legacy Transportation Corridor Study alignment in Syracuse. For more details, see Section 2.1.6.1, Alignment Shifts.

2.1.5 Consideration of Clean Water Act Section 404(b)(1) during Alternatives Development

The Clean Water Act Section 404(b)(1) guidelines state that “no discharge of dredged or fill material [to Section 404–regulated waters] shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences” [Section 230.10(a)]. The guidelines also state that, for actions subject to NEPA for which USACE is the permitting agency, the analysis of alternatives required under NEPA will in most cases provide the information for the evaluation of alternatives considered under the Clean Water Act 404(b)(1) process.

Although USACE makes official determinations under the Clean Water Act, the WDC team considered the requirements of the Clean Water Act during the alternatives-development process. The WDC team produced an additional technical memorandum, *Section 404(b)(1) Practicability Analysis*, that provides more details about the practicability analysis that was conducted to address the Clean Water Act Section 404(b)(1) guidelines. Between October 2011 and November 2012, the WDC team coordinated extensively with the resource agencies on this evaluation as part of the screening process. Following a review of the *Section 404(b)(1) Practicability Analysis*, USACE and EPA concurred with the WDC team that no less environmentally damaging practicable alternatives were eliminated during the Level 2 screening process (see Appendix 2A, Alternatives Correspondence).