DKS Associates
TRANSPORTATION SOLUTIONS

MEMORANDUM

DATE: June 25, 2012

TO: John McDonald, ODOT Region 3

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SUBJECT: **US 101 Corridor Plan**
Task 3.1 – Review Adopted Plans, Rules and Regulations P09042-024

The purpose of this memorandum is to summarize a review of existing plans, policies, standards, rules and regulations applicable to the US 101 Corridor Plan. As new strategies for addressing transportation needs are proposed, compliance and coordination with the plans, policies, and regulations described herein will be required.

State Plans, Policies, and Regulations

The following sections summarize state plans, policies, and regulations.

Oregon Statewide Planning Goals & Guidelines (OAR 660-015)

The State of Oregon established 19 statewide planning goals in 1973, which have been adopted as administrative rules and are implemented through local comprehensive planning. Goal 12 was established to provide and encourage a safe, convenient and economic transportation system. This goal has been addressed through the development of transportation studies and plans, which must be based upon an inventory of the local, regional and state needs. Corridor plans should conform to state and local land use plans and policies, identify impacts of proposed improvements, and provide a management program for implementation.

Transportation Planning Rule (OAR 660-012)

The *Transportation Planning Rule (TPR)*[1] implements Oregon Statewide Planning Goal 12, which supports transportation facilities and systems that are safe, efficient, and cost-effective and are designed to reduce reliance on single-occupancy vehicles. The objective of the TPR is to reduce air pollution, congestion, and other livability problems, and to maximize investments made in the transportation system. The following subsections of the TPR are relevant to the US 101 Corridor

[1] State of Oregon, Transportation Planning Rule, Oregon Administrative Rule 660.012, (2012).

Plan.

660-012-0050 – Transportation Project Development

Section 0050 requires that transportation projects be reviewed for compliance with local and regional plans and, when applicable, undergo a NEPA environmental review process.

660-012-0065 – Transportation Improvements on Rural Lands

Section 0065 identifies transportation facilities, services and improvements which may be permitted on rural lands consistent with Statewide Planning Goals 3, 4, 11, and 14 without a goal exception. Examples of transportation improvements consistent with these goals include roadway realignment, construction of continuous median turn lanes, and construction of bikeways.

660-012-0070 – Exceptions for Transportation Improvements on Rural Lands

Section 0070 states that transportation facilities, services and improvements which do not meet the requirements of OAR 660-012-0065 require an exception to be sited on rural lands. It describes the process to apply for an exception and the modifications that must be met for the exception petition to be accepted.

Oregon Transportation Plan

An update of the *Oregon Transportation Plan (OTP)*[2] was adopted by the Oregon Transportation Commission (OTC) in 2006. The OTP is a comprehensive plan that addresses the future transportation needs of the State of Oregon through the year 2030. It considers all modes of transportation, including airports, bicycle and pedestrian facilities, highways and roadways, pipelines, ports and waterway facilities, public transportation, and railroads.

The following seven goals and associated policies and strategies are provided in the plan to address the core challenges and opportunities facing transportation in Oregon:

- Goal 1 – Mobility and Accessibility
- Goal 2 – Management of the System
- Goal 3 – Economic Vitality
- Goal 4 – Sustainability
- Goal 5 – Safety and Security
- Goal 6 – Funding the Transportation System
- Goal 7 – Coordination, Communication and Cooperation

Six key initiatives are also identified reflecting the desired direction of the plan and framing the plan implementation. These initiatives are:

[2] Oregon Department of Transportation, Oregon Transportation Plan, (2006).

1. Maintain the existing transportation system to maximize the value of the assets. If funds are not available to maintain the system, develop a triage method for investing available funds.
2. Optimize system capacity and safety through information technology and other methods.
3. Integrate transportation, land use, economic development and the environment.
4. Integrate the transportation system across jurisdictions, ownerships and modes.
5. Create a sustainable funding plan for Oregon transportation.
6. Invest strategically in capacity enhancements.

This US 101 Corridor Plan will be developed to be consistent with the goals and policies of the OTP. It will emphasize maintaining and building upon existing investments and using system management, technology, and transportation options to maximize the existing state highway system.

Oregon Highway Plan

The *Oregon Highway Plan (OHP)* [3] was originally adopted in 1991 and a major update was completed in 1999. The 2006 version of the plan includes amendments from 1999 through 2006. It is a modal element of the 2006 OTP. In 2011, mobility standards, access management, and freight policies and maps were updated and adopted.

The OHP defines policies and investment strategies for Oregon's state highway system. The plan contains three elements: a vision element that describes the broad goal for how the highway system should look in 20 years, a policy element that contains goals, policies, and actions to be followed by state, regional, and local jurisdictions, and a system element that includes an analysis of needs, revenues, and performance measures.

The OHP addresses the following issues:

- Efficient management of the system to increase safety, preserve the system, and extend its capacity.
- Increased partnerships, particularly with regional and local governments.
- Links between land use and transportation.
- Access management.
- Links with other transportation modes.
- Environmental and scenic resources.

The policy element contains several policies and actions that are particularly relevant to the US 101 Corridor Plan, as described in the following subsections.

[3] Oregon Department of Transportation, Oregon Highway Plan, (1999, 2011).

Policy 1A (State Highway Classification System)

Action 1A.1 categorizes state highways for planning and management decisions. US 101 (Highway No. 9) is classified as a Statewide Highway, a National Highway System (NHS) highway, and a Scenic Byway from milepost 357.57 to 363.11.

According to OHP policy, Statewide Highways are intended to provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal. Inside Special Transportation Areas (STAs), local access may also be a priority.

Policy 1B (Land Use and Transportation)

Policy 1B recognizes the need for coordination between state and local jurisdictions in making decisions related to land use and transportation planning, design, and maintenance. US 101 must maintain mobility and safety, possible ways to achieve this are to work with local governments to develop an adequate local network to limit the use of the highway for local trips and to reduce access to the highway.

Policy 1C (State Highway Freight System)

Policy 1C addresses the need to balance the movement of goods and services with other roadway uses. In addition, Action 1C.4 states that the timeliness of freight movements should be considered when developing and implementing plans and projects on freight routes. US 101 is not classified as a freight or truck route from Brookings to the Oregon-California border, however the facility serves freight traffic.

Policy 1D (Scenic Byways)

Policy 1D addresses the need to preserve and enhance the scenic value of roadways while addressing safety and performance. US 101 is a Scenic Byway along the entire Oregon coast, therefore the scenic characteristics of the roadway must be considered in the plan recommendations. This must include possible plan elements such as turnouts, overlooks, signage and visual treatment of the highway infrastructure.

Policy 1E (Lifeline Routes)

Policy 1E assures that in the case of an earthquake, flooding, landslide, wild fire, or any other disaster, an emergency lifeline network will be available to support recovery. According to the *Lifeline Selection Summary Report,*[4] US 101 from Coos Bay to the California border is a Tier 2 Lifeline Route, meaning that it provides redundancy to the Tier 1 lifeline system, allows direct access to more locations, and increases the traffic volume capacity. US 101 is the only route out of Brookings, and connects to a Tier 1 facility in Coos Bay. Classification of a highway as a lifeline route, such as US 101, emphasizes its importance in the transportation network. The *Lifeline Selection Summary Report*

[4] Oregon Department of Transportation, Lifeline Selection Summary Report, (2012).

was developed to provide additional details related to Policy 1E and is expected to be adopted as a part of the OHP.

Policy 1F (Highway Mobility Standards)

Policy 1F sets mobility standards for ensuring a reliable and acceptable level of mobility on the highway system. Pursuant to Policy 1F, Table 1 for Statewide Highways in the Oregon Highway Plan is shown below.

Table 1: Applicable Mobility Standards for Statewide Highways

Criteria	Signalized Intersection (v/c ratio)	Unsignalized Intersection (v/c ratio)*
Inside UGB		
Non-MPO outside of STAs where non-freeway posted speed <= 35 mph, or a designated UBA	0.90	0.90/0.95
Non-MPO outside of STAs where non-freeway speed > 35 mph, but <45 mph	0.85	0.85/0.90
Non-MPO where non-freeway speed limit >= 45 mph	0.80	0.80/0.90
Outside UGB		
Unincorporated communities	0.75	0.75/0.80
Rural lands	0.70	0.70/0.75

Source: *Oregon Highway Plan*

* V/C ratios shown are for state highway/non-state highway approaches.

Policy 1G (Major Improvements)

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

Policy 2B (Off–System Improvements)

Policy 2B establishes ODOT's interest in improvements on local roads that maintain or improve safety and mobility performance on state roadways and supports local jurisdictions in adopting land use and access management policies. The plan will describe existing and future land use patterns, access management, and implementation measures within the study area.

Policy 2D (Public Involvement)

Public involvement in transportation and planning and project development will be a critical part of the plan. This policy calls for input from citizen, business, regional and local government, state agencies and tribal governments regarding proposed policies, plans, programs and improvement projects that affect the state highway system.

Policy 2E (Intelligent Transportation Systems)

Policy 2E allows for a broad range of intelligent transportation systems (ITSs) to be implemented to improve system efficiency and safety in a cost-effective manner. Action 2E.8 creates a toolbox of standardized ITS applications for application in small cities and rural areas. The emphasis of this toolbox is to enhance safety, traveler information, incident response, and congestion relief.

Policy 2F (Traffic Safety)

Policy 2F identifies the need for projects to improve safety for all users of the state highway system through engineering, education, enforcement, and emergency services. One component of the plan will identify existing crash patterns and rates and develop strategies to address safety issues. Proposed improvements will aim to reduce the vehicle crash potential and/or improve bicycle and pedestrian safety by providing upgraded, context-sensitive facilities.

Policy 3A (Classification and Spacing Standards)

Policy 3A sets access spacing standards for driveways and approaches to the state highway system. The CSP will catalog existing driveways and approaches along the corridor. The access management standards defined in the OHP for rural statewide highways are summarized below in Table 2.

Table 2: Access Management Spacing Standards for Rural Statewide Highways

Posted Speed	Rural (ft.)
≥55	1320
50	1100
40 & 45	990
30 & 35	770
≤25	550

Source: *Oregon Highway Plan*

Notes: (1) Measurement of the approach road spacing is from center to center on the same side of the roadway.
(2) For in-fill and redevelopment, see OAR 734-051.

Policy 3B (Medians)

Policy 3B describes the State of Oregon's policy for the planning and placement of medians on state highways to enhance the efficiency and safety of the highways.

Policy 4A (Efficiency of Freight Movement)

Policy 4A attempts to balance the transportation needs for freight and passenger travel on highway facilities in urban and rural areas. Since US 101 serves freight movements, this must be a consideration in the development of the plan.

Policy 4B (Alternative Passenger Modes)

Policy 4B promotes alternative passenger transportation services in highway corridors to help maintain or meet established performance standards and to reduce local trips on the highway. The plan will investigate ways to support and increase the use of alternative passenger modes, including improvements to bicycle and pedestrian facilities.

Policy 5A (Environmental Resources)

Policy 5A requires environmental issues to be a part of the planning, design, construction, operation, and maintenance of the highway system. The plan will consider environmental impacts in identifying recommended improvements.

Policy 5B (Scenic Resources)

Policy 5B states that best management practices will be used to protect and enhance scenic resources in all phases of highway project planning, development, construction, and maintenance.

Oregon Freight Plan

The *Oregon Freight Plan (OFP)* [5] expresses a 25-year vision focused on improving freight connections to local, state, regional and global markets in an effort to increase trade-related jobs and income for Oregon workers and businesses. The OFP further defines and implements the OTP's goals, policies, strategies and investment scenarios. It covers freight movement along Oregon's highways, waterways and airways. US 101 is a part of the Western Corridor, which is identified in the OFP as one of four multimodal corridors in the state whose connectivity is vital to the state economy.

Motor Carrier Transportation Division (MCTD) Freight Mobility Map

US 101 is shown as an "Orange Route" on the *MCTD Freight Mobility Map.*[6] According to the map, Orange Routes have the following characteristics:

- Generally unrestricted to standard freight truck traffic and oversize/overweight loads.
- Most heavily used truck routes in state.
- Can be used with continuous over-dimension permits for loads up to 14' wide.
- Have extensive use for loads greater than 14' wide with single trip permits.
- May be a "High Route" for tallest over-height loads.
- Most viable route as an unrestricted detour.

Although US 101 is not considered a Statewide Freight Route, it serves freight traffic and is vital to freight movement. It is the only highway on the Oregon Coast that may be used for standard freight truck traffic.

Oregon Rail Plan

The *Oregon Rail Plan*[7] was adopted in 2001 to include both freight and passenger rail. The plan evaluated current systems and identified future improvements. Although freight movement by rail is prevalent in Southwestern Oregon, there are no rail lines within Curry County.

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[5] Oregon Department of Transportation, Oregon Freight Plan, (2011).
[6] Oregon Department of Transportation, Motor Carrier Transportation Division Freight Mobility Map, (2011).
[7] Oregon Department of Transportation, Oregon Rail Plan, (2001).

Oregon Public Transportation Plan

The *Oregon Public Transportation Plan (OPTP)*[8], adopted in 1997, prioritizes improvements for the public transportation system in Oregon over a 20-year period in order to provide a service to the public. Public transportation options available near the study area consist of a Dial-a-Ride program in Curry County and an intercity bus route between Brookings and North Bend/Coos Bay. There is no AMTRAK rail service. Policy 1A of the OPTP states that public transportation should provide access to rural areas and promote connections to other communities. This policy focuses on meeting mobility requirements in a convenient, economically viable, safe and secure manner. Additionally, Policy 2B of the OPTP states that for communities outside of the passenger rail corridors, passenger bus should provide feeder service to the rail lines and serve the bulk of intercity travel needs.

Oregon Bike and Pedestrian Plan

ODOT's *Bicycle and Pedestrian Design Guide*[9] provides standards and guidance to make facilities more easily accessible and safe for bicyclists and pedestrians. US 101 is a Statewide Bicycle Route where bicyclists share the roadway with motor vehicles.

The Oregon Bicycle and Pedestrian Plan recommends shoulders of at least a six-foot width on rural roads where there is a combination of bicycle demand, high motor vehicle volumes, and high speeds. This is consistent with ODOT's Highway Capacity Manual (HCM) recommendations of shoulder widths between six to eight feet for rural arterials.

If rumble strips are considered as an improvement to US 101, they would need to be bicycle friendly, where twelve foot gaps can be provided every forty to sixty feet, to allow the cyclist to make a left turn or avoid debris. The guidelines provided by the Oregon Bicycle and Pedestrian Plan will be incorporated in the recommended improvements in the corridor plan.

Oregon Statewide Transportation Improvement Program (STIP)

ODOT's *Statewide Transportation Improvement Program (STIP)*[10,11] identifies transportation projects as part of a four-year capital improvement program. The projects span regions, counties, and cities and are multimodal in nature. There are no STIP projects identified within the study corridor in the 2010-2013 or 2012-2015 plans.

ODOT Highway Design Manual

The *Highway Design Manual*[12] (HDM) was developed in 2003 by ODOT. Sections of the manual have been updated several times. It establishes the design standards for the construction of roadway,

[8] Oregon Department of Transportation, Oregon Public Transportation Plan, (1997).
[9] Oregon Department of Transportation, Bicycle and Pedestrian Design Guide, (2011).
[10] Oregon Department of Transportation, Final Statewide Transportation Improvement Program 2010-2013 STIP, (2010).
[11] Oregon Department of Transportation, Final Statewide Transportation Improvement Program 2012-2015 STIP, (2012).
[12] Oregon Department of Transportation, Highway Design Manual, (2010).

bicycle and pedestrian facilities within ODOT's right-of-way. Functional classification is used in the HDM for the purpose of determining design standards. US 101 is classified as a rural principal arterial within the study area. Table 3 shows the 4-R design standards for new/reconstruction projects for US 101.

Table 3: Two Lane Rural Arterial 4-R Design Standards

Terrain	Design Speed (mph)	Width of Traveled Way (ft.)	Shoulder Width (ft.)	Maximum Grade (%)	Maximum Curvature	Stopping Sight Distance (ft.)
Flat	70	24	8	3	3°15'	730

Source: *ODOT Highway Design Manual*

The 3-R (resurfacing, restoration, rehabilitation) standards for US 101 are shown in Table 4.

Table 4: Two Lane Rural Arterial 3-R Design Standards

Design Yr. Volume (ADT)	Avg. Running Speed	Less Than 10% Trucks		More Than 10% Trucks	
		Lane Width	Shoulder Width	Lane Width	Shoulder Width
Over 4000	All Speeds	11'	6'	12'	6'

Source: Table 10-1, *ODOT Highway Design Manual*

ODOT Access Management Manual

The ODOT *Access Management Manual* (AMM) [13] provides documentation regarding access management, including a legal and policy overview, project directives regarding access management in ODOT projects, approach permitting, and development review guidelines. Access management is a key issue on US 101, contributing to safety concerns. The AMM provides guidance on driveway spacing, which will be used in the corridor plan.

Oregon Access Management Rule (OAR 734-051)

The purpose of Oregon's *Access Management Rule* [14] is to control the issuing of permits for access to state highways, state highway rights-of-way and other properties under the state's jurisdiction. In addition, the ability to close existing approaches, set spacing standards and establish a formal appeals process in relation to access issues is also identified.

These rules enable the state to set policy and direct the location and spacing of intersections and approaches on state highways, ensuring the integrity of the functional classification system and

[13] Oregon Department of Transportation, Access Management Manual, (2000).
[14] State of Oregon, Division 51 Highway Approaches, Access Control, Spacing Standards and Medians, Oregon Administrative Rule 734-051, (2012).

preserving the efficient operation of state routes.

Regulating access can:

- Protect resource lands
- Preserve highway capacity
- Ensure safety along segments of state routes with sharp curves, steep grades or obstructed sight distance.

The access management standards defined in OAR 734-051-0115 for rural statewide highways are the same as the OHP guidelines summarized in Table 2.

Statewide Planning Goals

The Oregon Statewide Planning Goals provide a foundation for implementing state policy on land use planning. Local comprehensive plans must be consistent with the 19 Statewide Planning Goals, as applicable.[15]

Goal 1 Citizen Involvement

Goal 1 was designed to ensure the opportunity for community members to be involved in all phases of the planning process. The US 101 Corridor Plan will be developed with technical and public input gathered through a series of Technical Advisory Committee, Citizen Advisory Committee, and Open House meetings.

Goal 2 Land Use Planning

The intent of Goal 2 is to establish a land use planning process and policy framework as a basis for decisions and actions related to the use of land and to assure adequate information for such decisions and actions. The goals and policies established in the City's and County's acknowledged comprehensive plans and the planning procedures set out in their respective development codes are consistent with this goal.

Goal 3 Agricultural Lands

Goal 3 was established to preserve and maintain agricultural lands. This goal is primarily implemented through the adoption of agricultural zoning, which is present in the US 101 Corridor Plan study area (EFU and AFD zoning districts). Proposed corridor improvements and strategies identified through the corridor planning process must be consistent with Goal 3.

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[15] Oregon Statewide Planning Goals can be viewed online at: http://www.lcd.state.or.us/LCD/Pages/goals.aspx.

Goal 4 Forest Lands

Similar to Goal 3, Goal 4 was established to conserve forest lands. This goal is implemented through the adoption of forest zoning, which is present in the US 101 Corridor Plan study area (FG zoning district). Proposed corridor improvements and strategies identified through the corridor planning process must be consistent with Goal 4.

Goal 5 Natural Resources, Scenic and Historic Areas and Open Spaces

The purpose of Goal 5 is to protect and conserve the resources named as part of the goal. The US 101 Corridor Plan process will coordinate with the City and County to comply with the protection and conservation of Goal 5 lands in the study area, if any are identified.

Goal 6 Air, Water and Land Resources Quality

Goal 6 is related to Goal 5 in terms of maintaining and improving environmental resources. Any special needs for lands in the study area regulated by the U.S. Environmental Protection Agency, Army Corps of Engineers, Oregon Department of Environmental Quality, Department of State Lands, local environmental quality agencies, and any other affected agencies will be identified through the US 101 Corridor Plan process.

Goal 7 Areas Subject to Natural Hazards

Goal 7 intends to protect people and property from natural hazards, such as fires, flooding, and landslides. Both the City and County address natural hazards in their Comprehensive Plans. The Curry County Zoning Ordinance includes a Natural Hazard Overlay Zone (NH) addressing areas of geologic hazards and dune stabilization, and the County adopted a flood damage prevention ordinance that was updated in 1992. Areas of natural hazards, particularly sloped lands, will be identified as part of the US 101 Corridor planning process.

Goal 8 Recreational Needs

The City of Brookings has recently gone through a planning process to update its Parks Master Plan as part of addressing Goal 8. The master plan identifies existing parks and open spaces in the US 101 Corridor study area as well as potential sites. No potential sites were identified in the study area but one site was identified adjacent to the northern border of the study area.

Goal 9 Economic Development

While the primary purpose of the US 101 Corridor Plan is to improve safety in the corridor, the plan ultimately should support healthy economic activity in the corridor as well. The recent EOA, reviewed earlier in this memorandum, found there was no significant need for additional employment land in Brookings and the Brookings urban growth area, other than adjustments to available site sizes. Nonetheless, the US 101 Corridor Plan must be developed to support economic activity and growth in the study area, balanced with improvements to safety and mobility.

Goal 10 Housing

As described earlier, land needed to accommodate projected housing needs was added to the City UGB and urban growth area. The US 101 Corridor Plan shall be developed to maintain and provide

access to existing and planned residential land.

Goal 11 Public Facilities and Services

Goal 11 was established to ensure the provision of timely, orderly and efficient public facilities and services to serve as a framework for urban and rural development. The Brookings-Harbor community recently completed a public facilities plan update, and described earlier.

Goal 12 Transportation

Goal 12 is described on page 1.

Goal 13 Energy Conservation

Transportation and land use planning have implications for energy use and conservation, in terms of providing opportunities to drive less or to make more efficient trips. The primary focus of the US 101 Corridor Plan is to improve safety; however, the planning process will consider opportunities to incorporate energy conservation measures.

Goal 14 Urbanization

As described earlier, the City and County have recently gone through a process to evaluate land needs and include needed land in the UGB and urban growth area in order to comply with Goal 14. The US 101 Corridor Plan will develop recommendations consistent with the existing designations of land in the city limits, UGB, and specific zoning districts.

Goal 16 Estuarine Resources, Goal 17 Coastal Shorelands, Goal 18 Beaches and Dunes, and Goal 19 Ocean Resources

This set of goals specialized is for areas of the state with these particular resources. The US 101 Corridor Plan Study area includes or is adjacent to these resource areas in the Brookings, Harbor, and south Curry County areas. The County Zoning Ordinance includes special zoning districts for Beaches and Dunes Conservation (CON), Estuary Resource (ER), Scenic Waterway Areas (SW), Shoreland Overlay (SO), and Riparian Corridor Buffer Overlay (RB). The US 101 Corridor Plan will must be consistent with regulations in these districts as they apply to the study area.

Local Plans, Policies, and Regulations

The following sections summarize local plans, policies, and regulations for the City of Brookings, Curry County, and Harbor Area.

City of Brookings Transportation System Plan

The *City of Brookings Transportation System Plan (TSP)*[16] was adopted in 2002. The TSP identifies US 101 as the only arterial within the City's Urban Growth Boundary (UGB). It is a draw for residential and commercial development and serves as the backbone for the rest of the transportation network.

[16] City of Brookings and the Oregon Department of Transportation, City of Brookings Transportation System Plan (2002).

The TSP identifies access as access is vital to tourism; however access management is an issue along US 101 because of the frequent, inadequately spaced driveways.

There is one bridge along US 101 within the City of Brookings, crossing the Chetco River at MP 357.96. Although it is structurally sound, this bridge has been classified as functionally obsolete by ODOT because of substandard horizontal underclearance.

The Port of Brookings-Harbor is accessible via Benham Lane and Lower Harbor Road off of US 101. The port is a tourism generator for the southern Oregon Coast, providing recreational boating, fishing, camping, RV parks and visitor facilities.

US 101 is identified as a statewide highway, meaning that inter regional mobility and maintenance of continuous flow are priorities. However, just north of the study area in the City of Brookings, there is a Special Transportation Area (STA) located between MP 357.08 to 357.57. Within an STA, local access instead of mobility takes precedence, and pedestrians, bicyclists and transit users are the primary focus. Although the STA is outside of the study area, it is an important consideration for the corridor plan.

The Brookings area has limited public transportation service. As of 2002, Greyhound was the only commercial bus service, providing two northbound and two southbound trips each day along US 101. The bus station is located outside the study area, within the City's downtown area. Curry County Transit provides inter-city service to the surrounding areas, including Gold Beach, Port Orford, and Bandon in Coos County. In addition, the Brookings area has a dial-a-ride paratransit service run by volunteers primarily for seniors and disabled people.

For the future (2017) scenario analyzed in the TSP, residential and commercial development to the east and west of Benham Lane is forecast to contribute to the failure of the US 101/Benham Lane intersection to meet mobility standards. Beyond future capacity concerns, safety has also been identified as an issue at this location because of the skewed intersection angle. Therefore, the TSP recommends making improvements to this intersection or creating a Harbor Hills Connection. There is a general concern in the future as well about the unsignalized intersections along US 101, where high delays will be experienced due to conflicting turning movements.

The TSP recommends that a traffic impact study should be performed to determine mitigation strategies for the US 101/Benham Lane intersection, in addition to examining the operation of unsignalized intersections along the corridor.

City of Brookings Comprehensive Plan

The *City of Brookings Comprehensive Plan*[17] is designed to guide city growth over a 20-year planning

[17] The City of Brookings Comprehensive Plan can be found online at: http://www.brookings.or.us/community%20development%20department/Comp%20Plan%202011%20for%20web%20page.pdf .

horizon. The plan was last updated in 2010 and includes a section on transportation (Goal 12). However, the City's TSP, updated most recently in 2011, supersedes this section and acts as the primary regulatory document for transportation planning in the City.

The relevant findings and policies in the Comprehensive Plan under Goal 12 (Transportation) and Goal 14 (Urbanization) that specifically address issues associated with US 101 and the US 101 Corridor Plan study area are presented below.[18]

Goal 12 Transportation

Goal 12 Findings:

1. U.S. Highway 101 links coastal communities and is the only through highway in Curry County. Access to commercial establishments and adjacent private property is direct from the highway.

2. The City has prepared and adopted a Transportation System Plan that addresses the interaction of city streets with the highway and with other city streets.

Goal 12 Policies:

1. On a regional level, the City of Brookings encourages reduction in the region's general isolation from the rest of Oregon, improvement of intra-regional transportation, construction of passing lanes and realignments on the entire length of Highway 101.

Goal 14 Urbanization

The US 101 Corridor Plan study area includes land in the Brookings urban growth area, i.e., land that is inside the City's Urban Growth Boundary (UGB) but outside the city limits. The *Urban Growth Area Joint Management Agreement (JMA)* has been adopted by the City of Brookings and Curry County to regulate this area. The southern city limit is formed by the Chetco River and corresponds to the northern boundary of the US 101 Corridor Plan study area.

The Goal 14 findings, based on 1993 data, indicate that roughly 1,560 additional residential dwelling units and 114 acres of residential land will be needed to the south of the Chetco River by 2015.[19] The UGB and urban growth area were expanded in 1995 to meet the housing unit and residential land needs.

Goal 14 Policies:

1. City shall work closely with Curry County on land use issues within the Urban Growth

[18] The City TSP includes goals and objectives but not policies, so Goal 12 transportation policies and findings relating to US 101 are presented here.

[19] These housing unit and land needs for the area south of the Chetco River were estimated according to overall housing need and available land found for the area south of Chetco River.

Boundary pursuant to the provisions of the City/ County Urban Growth Area Joint Management Agreement.

City of Brookings Public Facilities Plan (2011)

The *City of Brookings Public Facilities Plan* addresses water, sewer, and storm water planning in the City. The most recent update was adopted in January 2011. The Chetco River supplies all of the City's water needs through an intake collector located approximately 4 miles upstream from the US 101 bridge. The Chetco River also supplies the Harbor Water Peoples Utility District, which serves the community of Harbor.

Sewer planning in Brookings is addressed by the *Wastewater Facilities Master Plan* adopted in 2008, which is incorporated into the *Public Facilities Plan* by reference. The Harbor Sanitary District (HSD) has served the community of Harbor since 1976. The HSD collects wastewater and pipes it to the Brookings wastewater treatment plant .

The City of Brookings and Curry County adopted the *Storm and Surface Water Facilities Plan* for Brookings-Harbor Area in January 2009.

Brookings Parks Master Plan, Final Report (2011)

The 2011 *Brookings Parks Master Plan*[20] is an update of the City's first parks master plan prepared in 2002. The 2011 Parks Master Plan builds upon the previous plan and features more detailed, technical studies for decision-making. Extensive public outreach conducted for both the 2002 and 2011 found similar community needs, including better maintenance of facilities and trails for walking, jogging, and biking.

The parks inventoried in the Brookings-Harbor area include those owned and maintained by the City of Brookings, Port of Brookings-Harbor, the Brookings-Harbor School District, the State of Oregon, and private entities. The inventory is regional in scope and extends from the northern city limits to the Oregon/California border. Of the parks and recreation sites inventoried in the plan, the following sites are found in or adjacent to the US 101 Corridor Plan study area, from north to south.

- Sporthaven Beach
- Port of Brookings-Harbor
- McVay Rock State Recreation Site
- Winchuck State Recreation Site

[20] The Parks Master Plan and maps can be viewed online at: http://www.brookings.or.us/parks%20and%20recreation/2011PMP-%20FINAL.2.pdf and http://www.brookings.or.us/parks%20and%20recreation/2011PMP-%20MAPS.2.pdf.

- Oceanview Drive
- Chetco Valley Historical Society Museum
- Crissey Field State Recreation Site.

The City's plan does not target any of these sites for capital improvements. This may be because these sites are not in the city limits nor are they City-owned.

The plan does not propose potential parks or open space sites within the study area. One site is proposed adjacent to the northern border of the study area, below the Chetco Bridge. It is described in the plan as follows:

> "This large, 17 acre [commercial] property poses potential as a wetland, nature park for visitors and residents, not unlike that seen at Crissey Field State Recreation site. Given its close proximity to the mouth of the Chetco River, this park site has a high wildlife potential, and the City could work with the local Curry Watershed Council to determine the unique value of this site."

City of Brookings Economic Opportunities Analysis (2009)

An Economic Opportunity Analysis (EOA) for the City of Brookings and its urban growth area was completed and adopted in June 2009.[21] The EOA found that in 2008, the City of Brookings had 120 acres of buildable commercial and industrial land, as well as 291 buildable acres in master planned designations. This supply was determined to be generally sufficient to meet employment land needs for the next 20 years (2009-2029). The EOA also determined that the City had:

- A surplus of commercial and industrial sites of sizes less than one acre, two to five acres, and 10 to 20 acres;
- A deficit of 1-2 acre industrial and commercial sites and 5-10 acre commercial sites; and
- No need for sites larger than 20 acres.

The study concluded that the deficit can be accommodated through the surplus of smaller sites and strategies such as downtown redevelopment, parcel assembly, development of small industrial parks, and designating land within the master planned areas for commercial development.

Map 5 in the report shows 10 to 15 vacant parcels in the the US 101 Corridor Plan study area. However, most of these parcels are shown to be constrained by steep slopes (more than 15%).

One opportunity site that the plan identifies in the city adjacent to the northern border of the study area is called "vacant riverfront property", and is described as follows:

[21] The EOA can be viewed online at: http://www.brookings.or.us/community%20development%20department/Final%20EOA%20June%2024,%202009.pdf.

> "The site is located adjacent to Azalea State Park, between the Chetco River and North Bank Chetco River Road. The site is zoned for Tourism Commercial (C-4) and is about 15 acres in three tax lots. This site has existing commercial buildings and a manufactured home. The site is highly visible from Chetco Avenue (Highway 101). The best use for this site may be active recreation-related uses, such as river-related recreation (e.g., fishing or boating), a water park, or resort with overnight accommodations and amenities. Compatible employment uses would be retail related to recreation, such as a recreation equipment and apparel store."

This site is the same one identified in the 2011 Parks Master Plan as a potential parks and open space site.

Curry County Transportation System Plan

The *Curry County Transportation System Plan*[22] was adopted in 2005. The TSP identifies US 101 as the main route for commerce, industry, and tourism through Curry County, which includes Brookings, Gold Beach, and Port Orford. It does not include any recommendations to improve US 101 from Brookings to the Oregon/California border. However, it does include a recommendation for improving the sight distance at the intersection of Benham Lane/Ocean View Drive. Although this is an off-system improvement, it is identified here because of the proximity of this location to the US 101/Benham Lane intersection.

Curry County Comprehensive Plan (Updated through 2009)

The *Curry County Comprehensive Plan*[23] was developed to guide development and conservation of Curry County's land resources. The plan was originally adopted in 1982 and has been revised through 2011. It provides background information and analysis and establishes goals and policies for urban and rural land in the county, organized generally according to statewide planning goals.

The transportation element of the Comprehensive Plan (Chapter 12) presents transportation-related policies that were updated with policies from the 2005 Curry County TSP.

As described in chapter 18 (Implementation of the Plan), land use planning is implemented through the seventeen zoning districts established for the County. The County zoning districts that are designated in the US 101 corridor in the Brookings urban growth area include C-1 (Light Commercial), C-2 (Heavy Commercial), RR-5 (Rural Residential, 5 acres), RR-10 (Rural Residential, 10 acres), MPA (Master Planned Area), and PF (Public Facility). South of the urban growth area in the US 101 Corridor Plan study area, zoning designations include AFD (Agriculture), EFU (Exclusive Farm Use), and FG (Forestry/Grazing).

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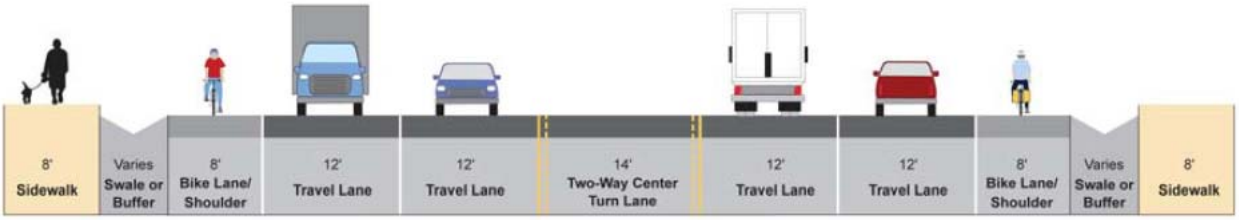
[22] Curry County and the Oregon Department of Transportation, Curry County Transportation System Plan, (2005).
[23] The Curry County Comprehensive Plan (Updated through 2009) can be viewed on line at: http://www.co.curry.or.us/publicservices/2009%20Updated%20Comp%20Plan%20.pdf.

Harbor Area Transportation System Refinement Plan

The *Harbor Area Transportation System Refinement Plan*[24] was adopted in 2009 as a joint effort between Curry County and the City of Brookings to specifically address unresolved transportation issues south of the Chetco River within the Brookings UGB. Several recommended improvements were identified based on the future year traffic analysis for 2029:

- Improve the intersection of US 101/Benham Lane by adding westbound and southbound right turn lanes, separating the eastbound left turn, through, and right turn movements, and realigning the Benham Lane approaches to intersect US 101 at a more perpendicular angle.
- Improve the intersection of US 101/Zimmerman Lane by adding a second eastbound right turn lane from Zimmerman Lane to US 101.
- Change the County's principal arterial (US 101) standards to include sidewalks and a center turn lane or median within the Brookings UGB south of the Chetco River, as shown in Figure 1.

Figure 1: Preferred US 101 Cross-Section (Source: Harbor Transportation System Refinement Plan)



Public Facilities Plan for Urban Growth Expansion: Brookings and Harbor Study Area

In August 2002, the Brookings City Council adopted the *Public Facilities Plan for Urban Growth Expansion: Brookings and Harbor Study Areas* (Ordinance No. 02-0-548), which amended the City's Comprehensive Plan. The *Storm and Surface Water Facilities Plan for the Brookings-Harbor Area*, completed in 2007 and adopted into the City Comprehensive Plan by reference in 2009, provided amendments to this plan.

The plan includes illustrations of basin areas, hydrologic/hydraulic analysis, policies, design and development standards, and proposed improvements to storm drainage facilities in the Brookings-Harbor area. The following policies are established in the plan:

- Low-impact development is preferred.
- Negative impacts to natural watercourses are to be avoided.
- Piping of a natural watercourse is to be avoided, where practicable.

[24] Curry County and City of Brookings, Harbor Area Transportation System Refinement Plan, (2009).

- Protection of ground water sources is critical.
- Proposed facilities should address water quality impacts and mitigation measures.
- Erosion and sediment must be controlled using the City, County, and Department of Environmental Quality requirements.
- Stormwater discharges shall be maintained at current levels.
- A public education program is recommended to disseminate information on the importance of preventing negative impacts from stormwater.

It identifies five strategies to avoid potential adverse impacts posed by development.

1. There should be no post-development net increase in storm drainage discharge downstream.
2. Low-impact development practices shall be implemented.
3. The capacity of the downstream drainage infrastructure should be improved to convey the increased flow. Usually this means constructing larger culverts and storm drains. Generally, the natural drainage channels should be improved, but because of the study area's proximity to the ocean and the steep rocky terrain, these channel improvements may not be necessary.
4. A regional detention facility should be constructed to capture the additional runoff and release the flow at a slower natural rate. A regional facility is normally associated with a single drainage way or creek.
5. An on-site detention facility should be constructed for each individual development. The goal for a regional or on-site detention facility is that the run-off from the post-development condition should be reduced to a flow equaling the pre-development condition.

Additionally, the Harbor Hills Master Plan Area in the Brookings urban growth area is required to prepare a comprehensive surface water management plan prior to any land use approvals. The plan requirements and the review and approval process are described in the 2010 City/County JMA

California Plans

The following sections summarize studies in northern California related to the US 101 Corridor Plan.

Del Norte County Regional Transportation System Plan

The *Del Norte Regional Transportation Plan*[25] was adopted in 2011. Del Norte County has only one incorporated city, Crescent City, along with various communities and tribal entities. The state highways serving the county are US 101, US 199, State Route (SR) 197 and SR 169. Unlike the other state highways, US 101 is designated as a Terminal Access route for freight movement, meaning that Surface Transportation Assistance Act (STAA) vehicles are allowed to use the facility.

In addition to freight use, US 101 from the Oregon/California border to Crescent City is designated as the Pacific Coast Bike Route. The corridor is also used by various public transportation agencies, including the Redwood Coast Transit Authority, Curry Public Transit, and Dial-A-Ride. The Redwood Coast Transit Authority provides intercity public transportation to most of the region and Curry Public Transit provides service to Crescent City. Dial-A-Ride is a paratransit service used mostly by elderly and disabled people.

None of the top priority regional transportation projects in the plan are along US 101. There is, however, a tribal transportation improvement project along US 101 in which the Smith River Rancheria plans to implement traffic calming improvements such as turn pockets, raised delineators, warning signs, fog lines around curb returns, and skip lines from Lake Earl Drive to the Oregon border.

US 101 Del Norte County Roadside Safety Audit (RSA)

The *US 101 Del Norte County Roadside Safety Audit (RSA)*[26], published in March 2011, evaluated road safety issues along US 101 south of the study area, from the Oregon border to Lake Earl Drive in Smith River, California. The *Del Norte RSA* corridor segment and the US 101 Corridor Plan study area have similar roadway features, seasonal demand, and intersection characteristics.

This RSA was initiated due to the high number of fatalities along the US 101 corridor between 2006 and 2009. Six fatal collisions within three years put the corridor in the 97th percentile statewide for fatal crashes.

The RSA team identified nine general safety issues, grouped into three priority categories. The top priority safety issues including general short term and long term recommended improvements are shown in Table 5.

[25] Del Norte County, Del Norte Regional Transportation Plan, (2011).
[26] Del Norte County, Final [Joint] Roadside Safety Audit D-1 US 101 Smith River Corridor Improvements, Del Norte County PM 35.90-46.49 (2011).

Table 5: US 101 Del Norte County RSA – Top Priority Safety Issues

Safety Issue	Description	Recommended Improvement	
		Short-Term	Long-Term
Intersection issues	Location/design of side streets and driveways	Improve line of sight by trimming vegetation	Realignment of intersections
	Access management along US 101	Promote access management (alternative routes and combining access points)	Right-in-right-out driveways and locations for U-turns Close accesses along US 101 and provide a frontage road
	Inconsistent intersection lighting	Improve signing and marking of intersection	Improve intersection lighting
	Alignment of pavement markings on side street	None	Restriping stop bars and centerline
	Pavement edge drops along turning radius	Address pavement edge drops annually	Use safety edge or two-foot shoulders
	Alignment and configuration of stop signs and stop bars	Restriping and signing	None
Turning maneuvers from mainline	Vehicles stopped in through lane to make turns	Signing and/or provide left turn lane	Provide consistent cross-section with two-way center turn lane or left-turn lanes at selected intersections
	Passing on shoulder	Install delineators to discourage passing	Provide consistent cross-section with two-way center turn lane or left-turn lanes at selected intersections
Pedestrian issues	• Wide cross-section • Pedestrians walking along US 101 with traffic • Lack of motorist expectation of pedestrians	Install pedestrian warning signs	Pedestrian treatments

Source: *US 101 Road Safety Audit*

The second and third ranked safety issues are as follows:

- Second Priority
    - Signing and pavement marking issues: lack of uniform fog line at intersections, lack of sign retroreflectivity, inconsistent use of advance signing, confusion of two-way left-turn lane markings at intersections, ineffective use of pedestrian warning signs, and size of lettering on street name signs.
    - Behavioral issues: driving too closely, lack of use of headlights during fog (daytime), driving too fast for conditions, failure to obey stop paddles on buses, and use of two-way left-turn lane for passing.
- Third Priority
    - Cross-section issues: locations with limited paved shoulders and narrow bridge widths
    - Roadside hazards: objects within clear zone and non-recoverable embankments within clear zone
    - Vehicle mix: wide range of road users
    - Weather/environmental conditions: fog, rain, standing water and sun glare

While an RSA has not been completed for the US 101 study corridor in Oregon, this RSA can provide valuable insight into the types of potential safety concerns on US 101. Some of the same general safety concerns have already been identified for the study corridor in local plans, such as access management along US 101, the location of side streets and driveways, and turning maneuvers from US 101.

US 101 Caltrans Route Concept Report (RCR)

The *Caltrans US 101 Route Concept Report (RCR)*[27] published in October 2002 describes recommended improvements along US 101 from the Oregon/California border south approximately 285 miles to Mendocino County, including Del Norte, Humboldt, and Mendocino Counties. The segment from the border to Crescent City operated at a level-of-service (LOS) C in 2000 and is expected to operate at LOS D in 2020. The existing and future conditions are within the Caltrans level-of-service mobility standard of "D" for a two-lane rural segment.

The route concept for the segment between the Washington Blvd. interchange in Crescent City and the border was a four-lane freeway/expressway; however, it was recognized that this may not be necessary within the next 20 year period.

[27] Caltrans, US 101 Route Concept Report (2002).