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TECHNICAL MEMORANDUM #5

Lake County and City of Paisley Transportation System Plan Update

Alternatives Analysis

Date: October 27, 2015 Project #: 18547
To: Devin Hearing, ODOT
Rick DuMilieu, Lake County
From: Matt Kittelson, PE
cc: Project Advisory Committee

This memorandum provides a framework for the implementation of future transportation improvements.

FUNCTIONAL CLASSIFICATION

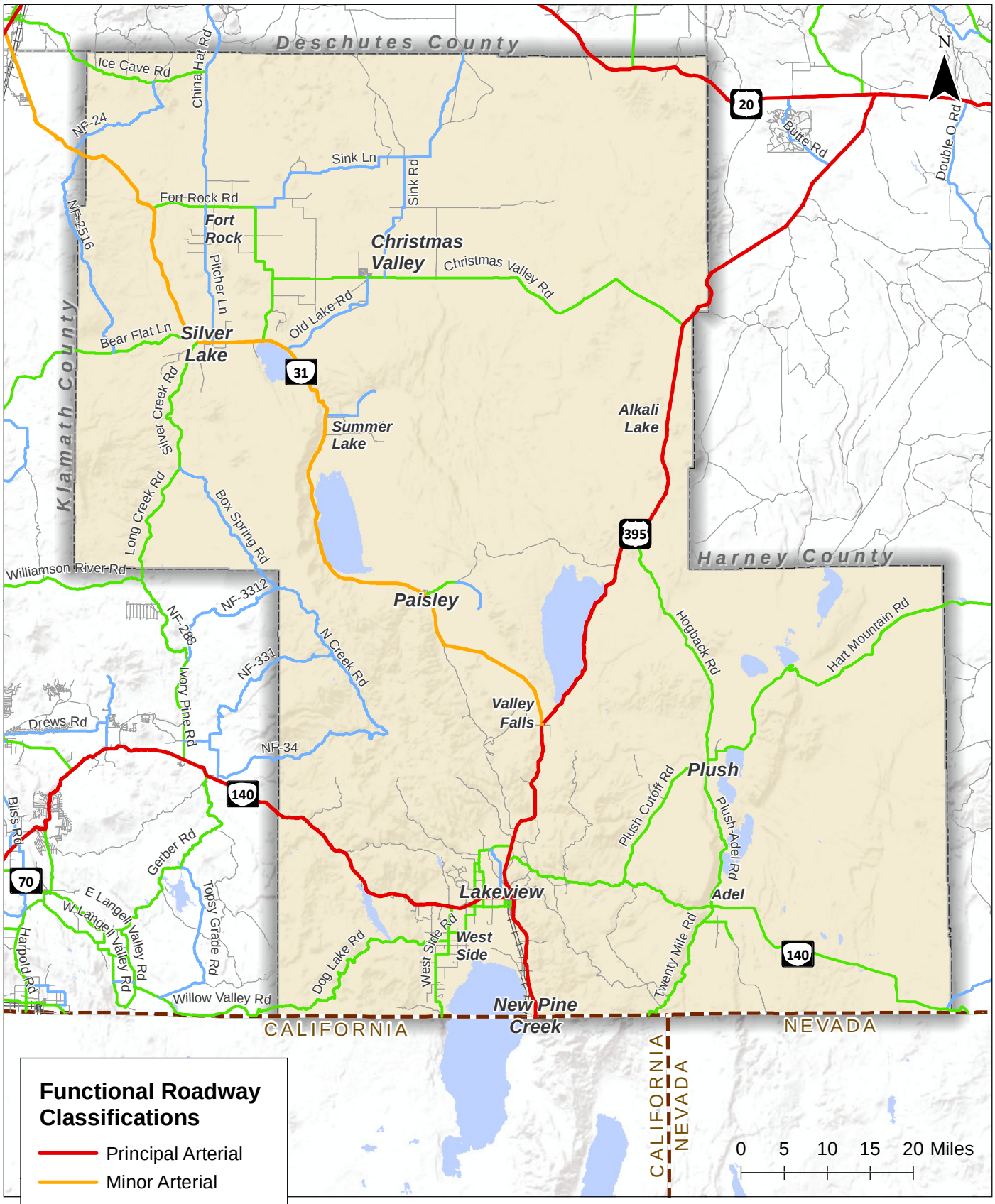
Functional classification of a roadway characterizes the intended purpose, amount and type of vehicular traffic it is expected to carry, provisions for non-auto travel, and the roadway's design standards. The classification considers the adjacent land uses and transportation modes that should be accommodated.

Proposed classifications identified for Lake County include: Principal Arterial, Minor Arterial, Major Collector, Minor Collector, and Local Road. Table 5-1 provides a detailed description of each classification. Figure 5-1 presents the proposed functional classifications for all existing County roadways, based on the existing Federal Functional Classifications.

Table 5-1. Lake County Functional Classification Descriptions

Functional Classification	Description
Principal Arterial	Primary function is to carry high levels of regional vehicular traffic at high speeds. These roads provide access between cities and communities and serve major traffic movements. Access is limited but can be accommodated with at-grade intersections.
Minor Arterial	Minor Arterials provide service for trips of moderate length, serve geographic areas that are smaller than their higher Arterial counterparts and offer connectivity to the higher Arterial system.
Major Collector	Primary function is to serve traffic from local roads and move them to arterials. These roads provide some degree of access to adjacent properties, while maintaining circulation and mobility for all users. Major Collectors carry lower traffic volumes at slower speeds than arterials. Major Collectors are often longer in length and have lower driveway density, higher speed limits, higher traffic volumes, and may have more travel lanes than Minor Collectors.
Minor Collector	Similar to Major Collectors in that they serve to bring traffic from local roads to developed areas or connections to those areas. They provide service to smaller communities not served by a higher class facility and link locally important traffic generators with rural areas.
Local Road	Local roads account for the largest percentage of all roadways in terms of mileage. Their primary function is to provide direct access to adjacent land uses. They are characterized by short roadway distances, slow speeds, and low volumes. Local roads offer a high level of accessibility, serves passenger cars, pedestrians, and bicycles, but not through trucks.

Source: http://www.fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications/section03.cfm#Toc336872980



Functional Roadway Classifications

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

Functional Roadway Classifications
Lake County, Oregon

Figure **5-1**

H:\proj\el18547 - Lake County TSP\gis\5-1 Functional Roadway Classifications.mxd - jsommerville - 11:25 AM 10/26/2015

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Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl
Data Source: Oregon Department of Transportation,Sources: Esri, USGS, NOAA

PROPOSED COUNTY ROADWAY DESIGN GUIDELINES

The proposed roadway design guidelines are based on existing County standards and a strong preference of County officials to focus resources on roadway maintenance efforts. The guidelines take into consideration general roadway purpose and available county resources. As the County road system develops, the guidelines will support safe and efficient movement of people and goods while also accommodating the orderly development of adjacent lands.

In addition to existing standards, a roadway standard that includes bike lanes has been added. This standard could be used for roadways identified as recreational routes to promote regional recreation or tourism.

Roadways that are part of the state transportation system are subject to ODOT design standards.

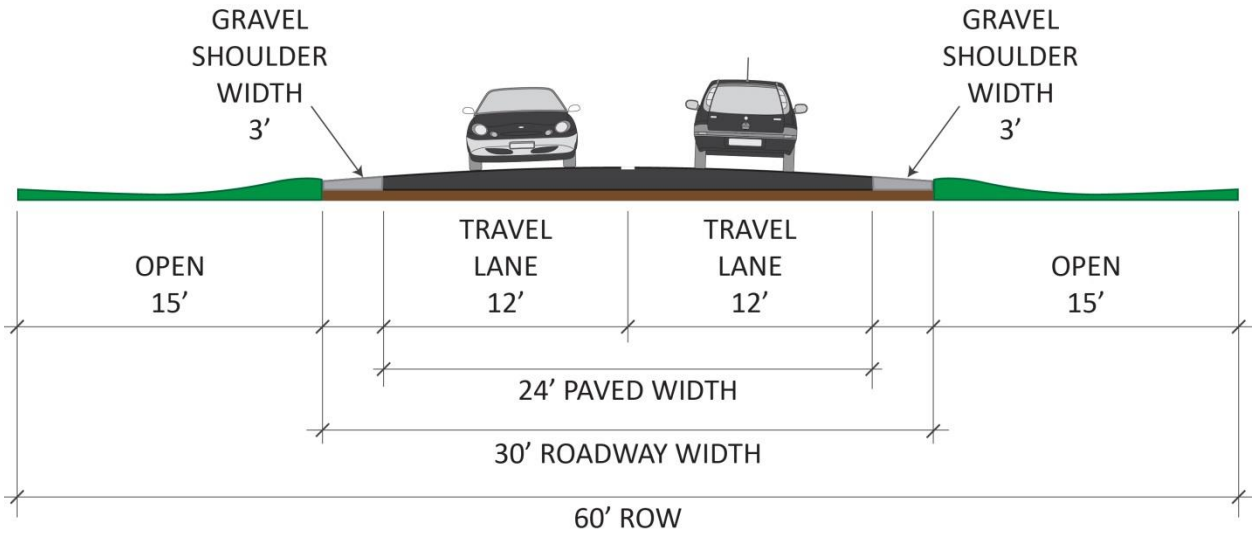


Exhibit 1: Paved County Roads (Collector or Local Streets)

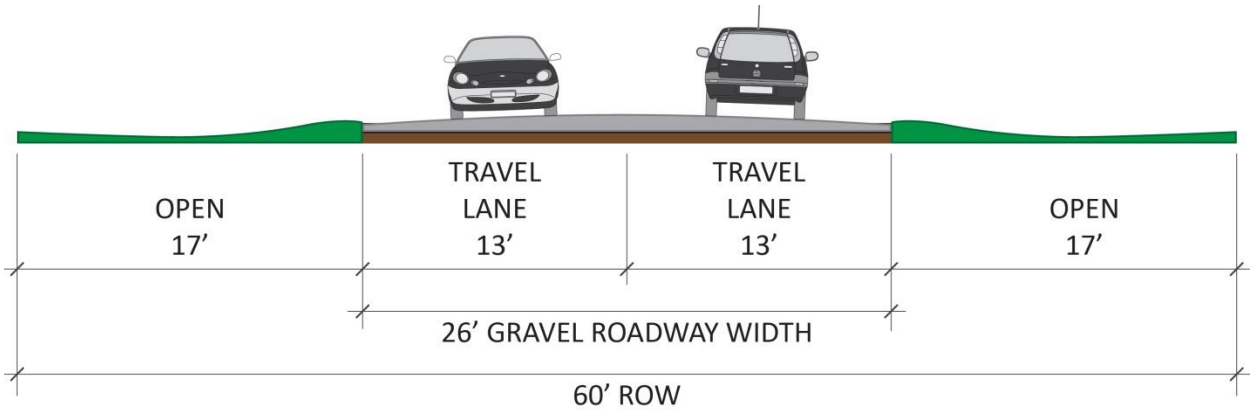


Exhibit 2: Gravel County Roads (Collector or Local Streets)

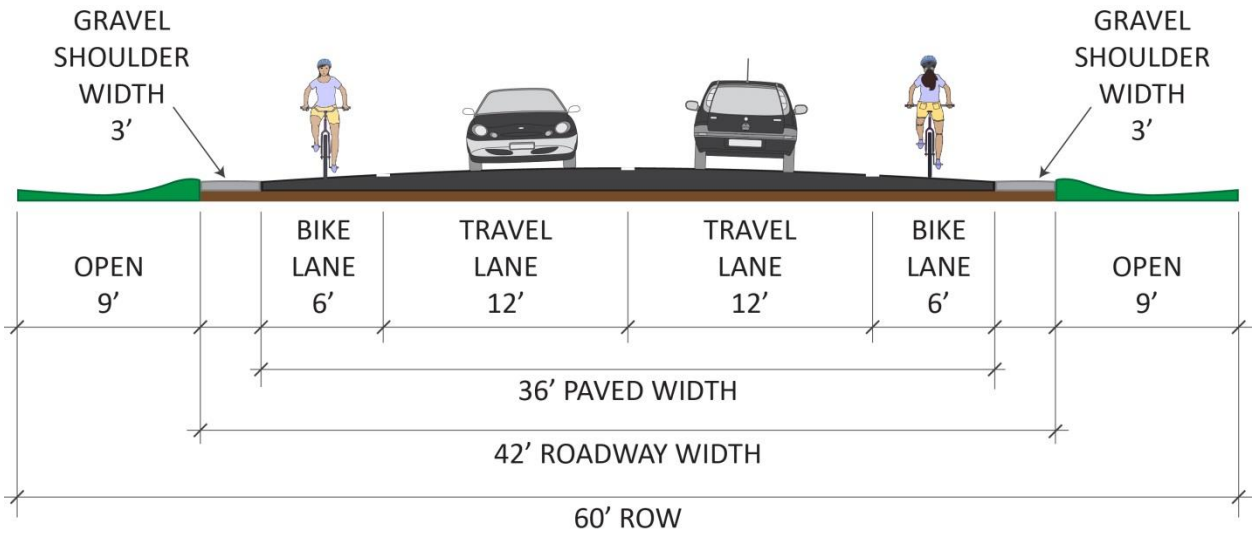


Exhibit 3: Paved County Roads with Bike Lanes (Collector or Local Streets

TRANSPORTATION ALTERNATIVES

Transportation alternatives for Lake County & City of Paisley were developed and evaluated to address transportation needs based on the current and future forecast traffic conditions. The future transportation needs of the County and city were determined based on: comments received from the public, Lake County, City of Paisley ODOT, members of the Project Advisory Committee; a field review conducted by Kittelson and Associates, Inc. (KAI) in 2015; technical analysis of traffic operations; and, a review and analysis of crash history reports. Alternatives include a combination of projects and studies. Table 5-22 shows the financially unconstrained transportation alternatives identified to address the future transportation needs.

The *projects* identified in Table 5-2 address various transportation issues, which generally include: modernization, safety issues, pedestrian/bicycle enhancements, and bridge replacement/ preservation needs. These issues are briefly described below:

- Modernization: These projects include upgrades to address operational issues or upgrades to roadways to expand roadway purposes, such upgrading to freight routes. These projects cannot be conducted as part of regular maintenance activities and may include activities such as shoulder widening or full reconstruction of a roadway.
- Safety: These projects consider opportunities to improve existing facilities to reduce probability and severity of crashes.
- Active Transportation: These projects improve existing facilities or create new facilities that provide greater connectivity and increase access to pedestrian and bicycle routes within communities and between communities.

Table 5-2 includes an identification number for reference to the project locations shown Figure 5-2.

The next Technical Memorandum will contain detailed prospectus sheets that summarize the details of individual projects, including cost estimates, the location and conceptual sketches of proposed cross-sections or intersection realignments.

PROJECT TIMING

The projects will be categorized into short-term and medium/long-term projects. Short-term projects include those that could be addressed within the next five years. Some medium/long-term projects may be addressed within the next five to ten years; others will be considered during planning projects, but will not likely be addressed for 10 to 20 years.

Each project will categorized based on known transportation needs, crash history, and input from the public, and County, City, and ODOT staff. The amount of funding available per year is expected to have the greatest impact on the timing of these projects.

Project timing information will be added to the final version of this memorandum based on feedback received.

Table 5-2. Transportation Alternatives

ID	Category	Name	Description of Need	Description of Alternative(s)	Priority
S-1	Safety	OR 31 from Deschutes County to Fort Rock Road	High frequency of crashes, particularly animal and fixed object crashes. More passing lanes may be needed.	Conduct focused study on this section of highway to determine cause of crashes and possible mitigation measures. Study could be in the form of a roadway safety audit.	TBD
S-2	Safety	Fort Rock Road to Christmas Valley "S" turns.	County officials and residents believe these turns have a high potential for crashes.	Conduct focused study on this section of highway to determine cause of crashes and possible mitigation measures. Study could be in the form of a roadway safety audit.	TBD
S-3	Safety	Oil Dri Road (5-14G)	Main route to Christmas Valley from the south. Blowing dust and sand limits visibility.	Install rumble stripes to alert drive of centerline and roadway edge.	TBD
S-4	Safety	Traffic speed through Christmas Valley	Residents have concerns about high traffic speeds through Christmas Valley. Speed was a factor in 6 of 13 reported crashes.	Conduct speed study through Christmas Valley to determine current conditions. Conduct a roadway safety audit on facility.	TBD
S-5	Safety	Christmas Valley Road	Steep grade east of Christmas Valley. Currently posted at 8%.	Improve roadway signage warning drivers of grade. Consider installation of weather-based warning system to alert drivers when traction devices should be used.	TBD

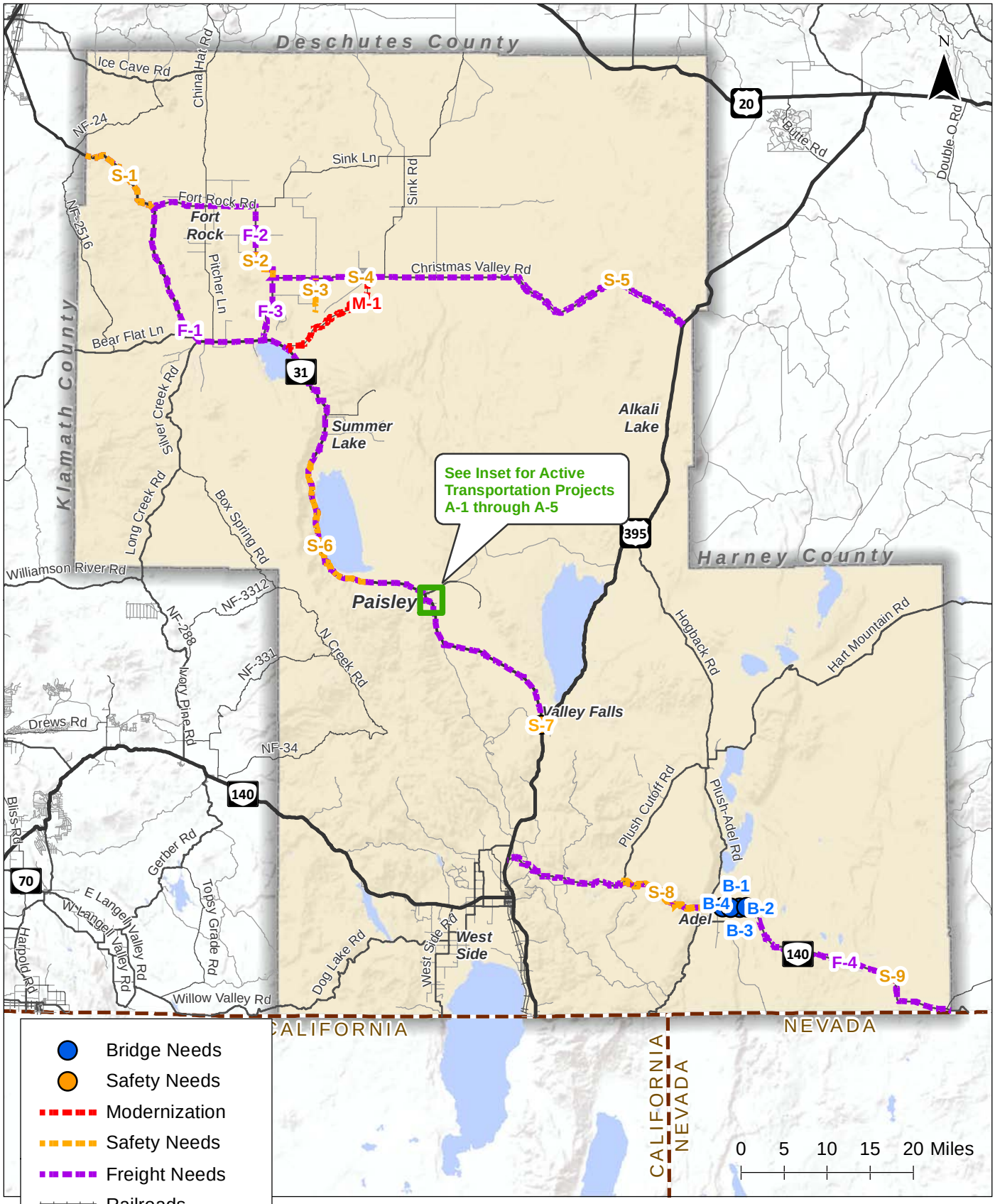
ID	Category	Name	Description of Need	Description of Alternative(s)	Priority
S-6	Safety	OR 31 along Summer Lake	High frequency of fixed-object crashes. Wind and speed are common contributing factor to crashes.	Conduct focused study on this section of highway to determine cause of crashes and possible mitigation measures. Study could be in the form of a roadway safety audit.	TBD
S-7	Safety	US 395 / OR 31	County officials and area residents believe a warning device may be needed to alert drivers to this intersection.	Conduct study to identify possible mitigation measure for highway intersection. Options could include warning devices, roadway reconfiguration, or modified intersection control.	TBD
S-8	Safety	OR 140 from Plush Cutoff Road to Plush-Adel Road	High frequency of crashes. 2 fatalities over 5 years of observed data. Road winds through canyon.	Conduct focused study on this section of highway to determine cause of crashes and possible mitigation measures. Study could be in the form of a roadway safety audit.	TBD
S-9	Safety	OR 140 ~10 miles west of Nevada border	Steep grade on the highway.	Improve roadway signage warning drivers of grade. Consider installation of weather-based warning system to alert drivers when traction devices should be used.	TBD
S-10	Safety	Fixed-object and non-collision crashes	High frequency of fixed-object and non-collision crashes. This includes collisions with animals.	Conduct a study to determine where wildlife crossings are needed on the major state highways. Estimate the cost of installing the crossings. County wide systemic safety projects for rural roads (rumble strips, shoulder widening).	TBD

ID	Category	Name	Description of Need	Description of Alternative(s)	Priority
M-1	Modernization	Upgrade Old Lake Road	Upgrade road from Minor Collector to Major Collector	Road provides connection from OR 31 to Christmas Valley.	TBD
A-1	Active Transportation	Sidewalks in Paisley	Limited sidewalks exist	Construct sidewalks in Paisley along OR 31 between Main Street and Green Street	TBD
A-2	Active Transportation	Sidewalks in Paisley	Limited sidewalks exist	Construct sidewalks along Mill Street in Paisley between OR 31 and Paisley School	TBD
A-3	Active Transportation	Sidewalks in Paisley	Limited sidewalks exist	Construct sidewalks in Paisley along Green Street between OR 31 and Mill Street?	TBD
A-4	Active Transportation	Improve crossing at OR 31/Main Street	School crossing	Construct an improved crosswalk in Paisley at OR 31 and Main Street.	TBD
A-5	Active Transportation	Improve crossing at OR 31/Green Street	School crossing	Construct an improved crosswalk in Paisley at OR 31 and Green Street.	TBD
A-6	Active Transportation	Recreational biking routes	Limited recreational biking routes exist. Potential locations may include county roads around Lakeview and the City of Paisley.	Install bicycle lanes on key recreational routes.	TBD

ID	Category	Name	Description of Need	Description of Alternative(s)	Priority
A-7	Active Transportation	Signage	The county should prioritize signage to recreational areas to boost economic opportunities that could result from tourism, etc.	Install and/or enhance wayfinding to key recreational areas.	TBD
B-1	Bridge	Highway 431 (OR 140), Bridge 08848A	Bridge has low sufficiency rating	Evaluate structure integrity of the existing bridge and establish cost estimates for required improvements.	TBD
B-2	Bridge	Highway 431 (OR 140) at Milepoint 30.67, Bridge 08850	Bridge has low sufficiency rating	Evaluate structure integrity of the existing bridge and establish cost estimates for required improvements.	TBD
B-3	Bridge	Highway 431 (OR 140) at Milepoint 31.40, Bridge 08849	Bridge has low sufficiency rating	Evaluate structure integrity of the existing bridge and establish cost estimates for required improvements.	TBD
B-4	Bridge	Highway 431 (OR 140), Bridge 09538	Bridge has low sufficiency rating	Evaluate structure integrity of the existing bridge and establish cost estimates for required improvements.	TBD
MA-1	Maintenance	County system	Lake County struggles to maintain roadways to acceptable standard. Ongoing maintenance funding is challenging.	Identify long-term maintenance funding strategies.	TBD
F-1	Roadway/Freight Route	OR 31	OR 31 is not currently designated as a truck route. Designating this road as such may increase economic opportunities for the County.	Coordinate with ODOT and Deschutes County on study to evaluate need/feasibility of upgrading OR 31 to a designated freight route.	TBD

ID	Category	Name	Description of Need	Description of Alternative(s)	Priority
F-2	Roadway/Freight Route	Fort Rock Road to Christmas Valley Road	Fort Rock Road to Christmas Valley Road between OR 31 and US 395 are not currently designated as a freight route, but often used by freight vehicles.	Upgrade facility to better accommodate freight vehicles.	TBD
F-3	Roadway/Freight Route	Arrow Gap Road	Arrow Gap Road between OR 31 and Christmas Valley Road is not currently designated as a freight route, but often used by freight vehicles.	Upgrade facility to better accommodate freight vehicles.	TBD
F-4	Roadway/Freight Route	OR 140 east of Lakeview	OR 140 currently has length restrictions that limit freight movement on this route. Removing this length restriction is a priority for the County.	Coordinate with ODOT on study to evaluate need/feasibility of upgrading 140 in this section to a designated freight route.	TBD

Should this project be included in the TSP? If no, why?



Transportation Needs Lake County, Oregon

Figure **5-2**

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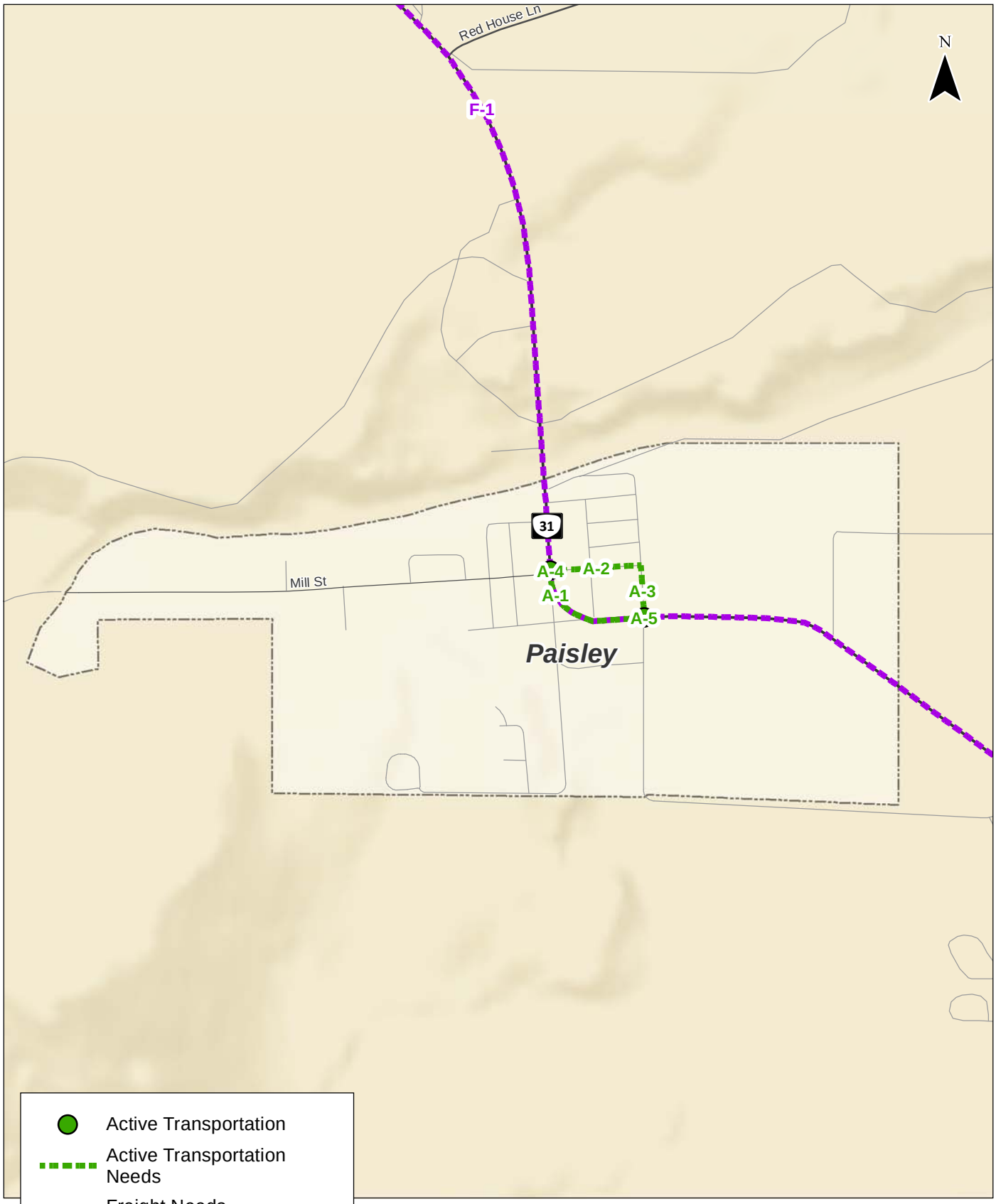

Transportation Needs
Paisley, Oregon

Figure
5-2 Inset

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Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl
Data Source: Oregon Department of Transportation,Sources: Esri, USGS, NOAA

CONCLUSION

This memorandum summarizes future transportation projects proposed for Lake County and the City of Paisley. The projects were developed and evaluated to address current and future transportation needs based on the current and 20-year project forecasts. The projects do not take into consideration available or potential future revenue sources to implement the projects.

The Project Advisory Committee will review these projects and the project prioritization. The next step will be to develop a financially-constrained list of projects based on future potential revenue sources for the projects. Technical Memorandum #6 will summarize the financially-constrained project list.