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FINAL TECHNICAL MEMORANDUM #5

Lake County and City of Paisley Transportation System Plan Update

Alternatives Analysis

Date: January 6, 2016 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.

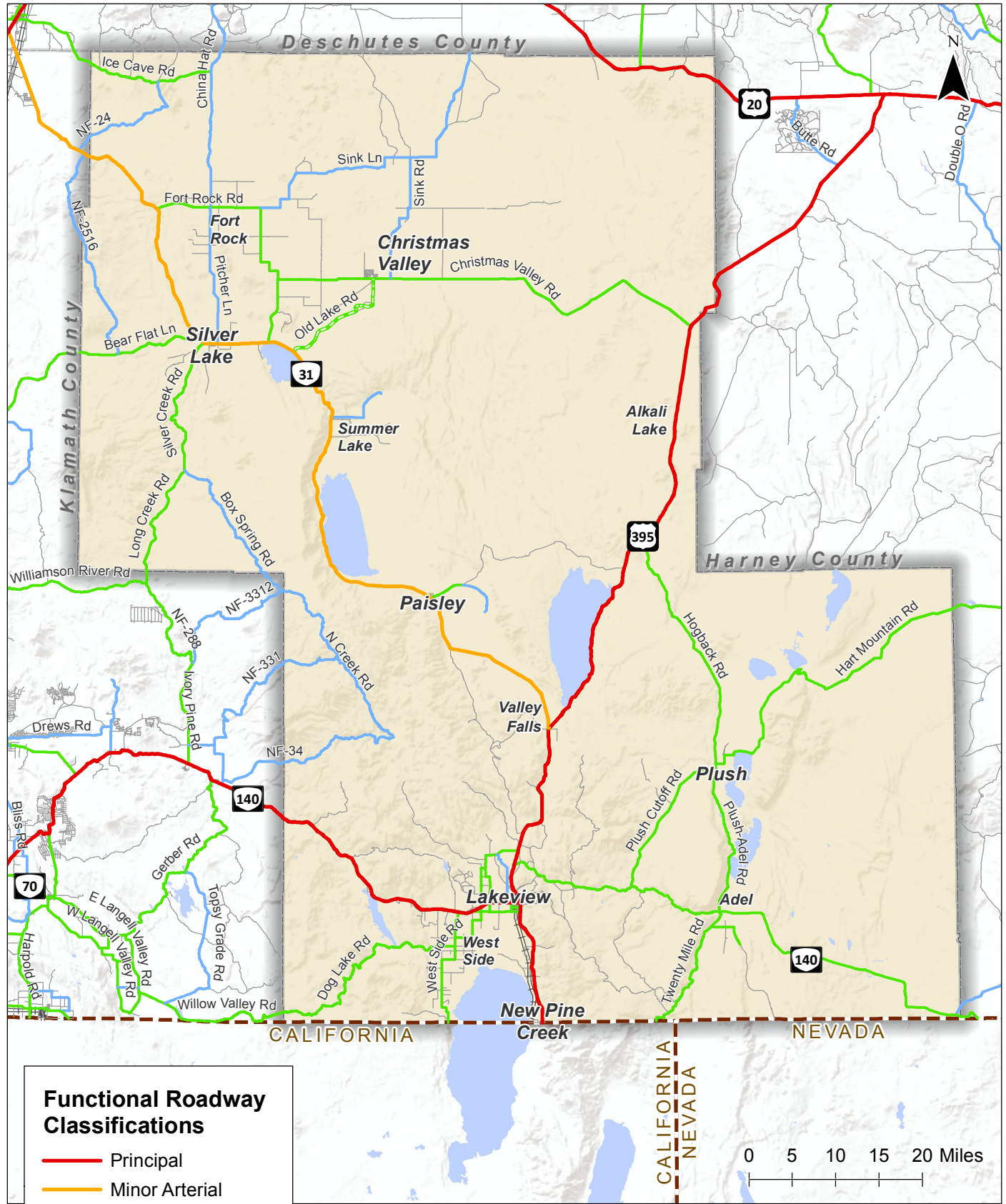
FUNCTIONAL CLASSIFICATION

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 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. US 97 and OR 140 west of Lakeview makeup this classification within Lake County.
Minor Arterial	Minor Arterials emphasize access over mobility slightly more than Principal Arterials. OR 31 is the only facility within Lake County representing this classification.
Major Collector	These facilities serve as access routes from population centers to Principal and Minor Arterials. Within Lake County these facilities are generally minor state highways and major county roads. They represent the most significant county-owned facilities.
Minor Collector	These facilities are similar to Major Collectors, but generally provide less direct or secondary connections.
Local Road	Local roads primary function is to provide direct access to adjacent land uses. They are characterized by short roadway distances, slow speeds, and low volumes.



Functional Roadway Classifications

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

**Functional Roadway Classifications
Lake County, Oregon**

**Figure
5 -1**

K:\H_Portland\proj\file118547 - Lake County TSP\gis\6-1 Functional Roadway Classifications.mxd - agriffin - 2:30 PM 3/5/2016

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. The image shown is one possible configuration of a roadway that includes bicycle facilities. Based on design details, available right-of-way, or maintenance considerations, other layouts, including a multi-use path on one side, may be considered.

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

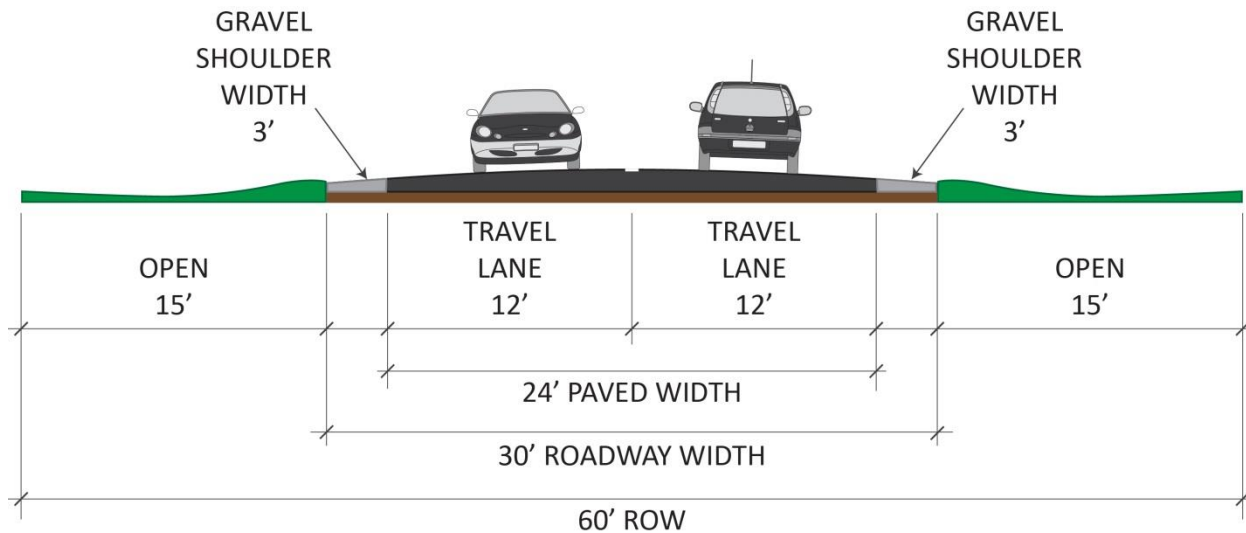


Exhibit 1: Paved County Roads (Collector or Local Streets)

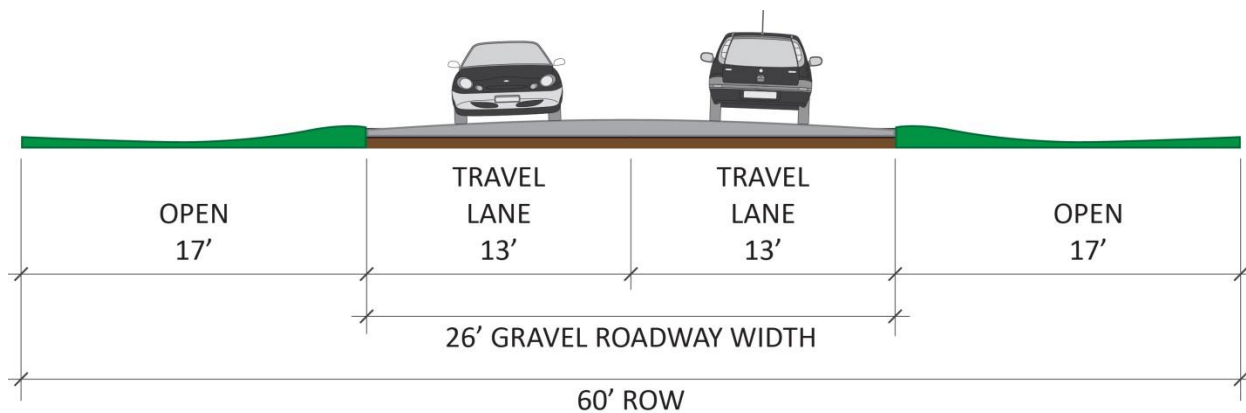


Exhibit 2: Gravel County Roads (Collector or Local Streets)

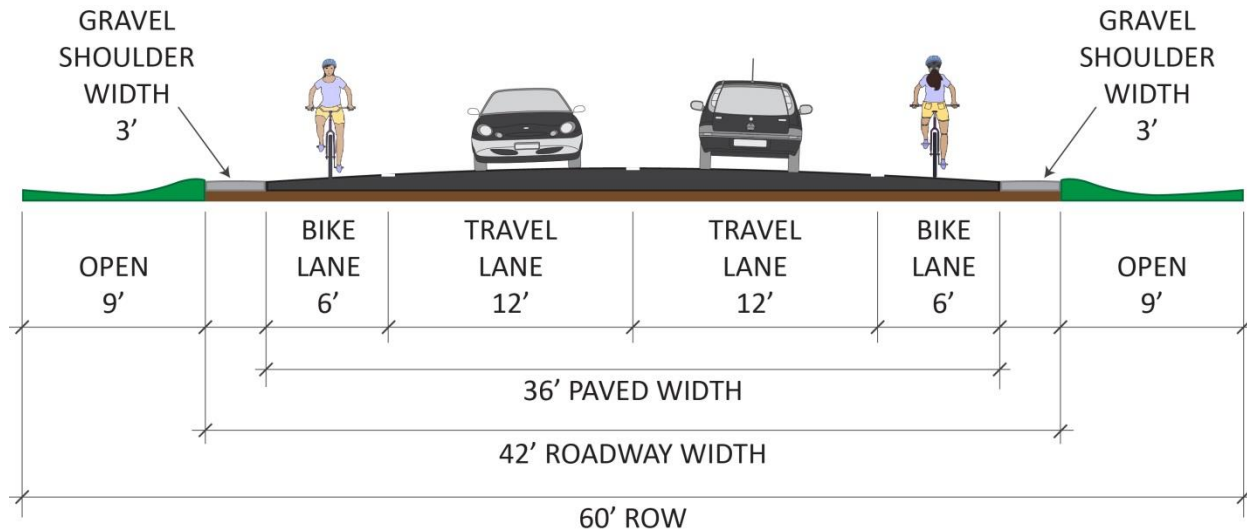


Exhibit 3: Paved County Roads with Bike Lanes (Collector or Local Streets)

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 5-2 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, and active transportation 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.
- **Other projects** include maintenance, bridge replacement, and railroad efforts.

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 have been 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 may not be addressed for 10 to 20 years.

Each project was 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.

Table 5-2. Transportation Alternatives

ID	Category	Name	Description of Need	Description of Alternative(s)	Priority
S-1	Safety	OR 31 from Klamath 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.	High
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.	Medium
S-3	Safety	Oil Dri Road (5-14G)	Main route to Christmas Valley from the south. Blowing dust and sand limits visibility.	Evaluate possible mitigation measures.	Low
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.	Construct transition treatments at the west and east City limits of Christmas Valley on Christmas Valley Road. This includes monuments announcing to vehicles that they are entering Christmas Valley and permanent speed feedback signs.	High
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. Long term, this road may require realignment and reconstruction.	Low

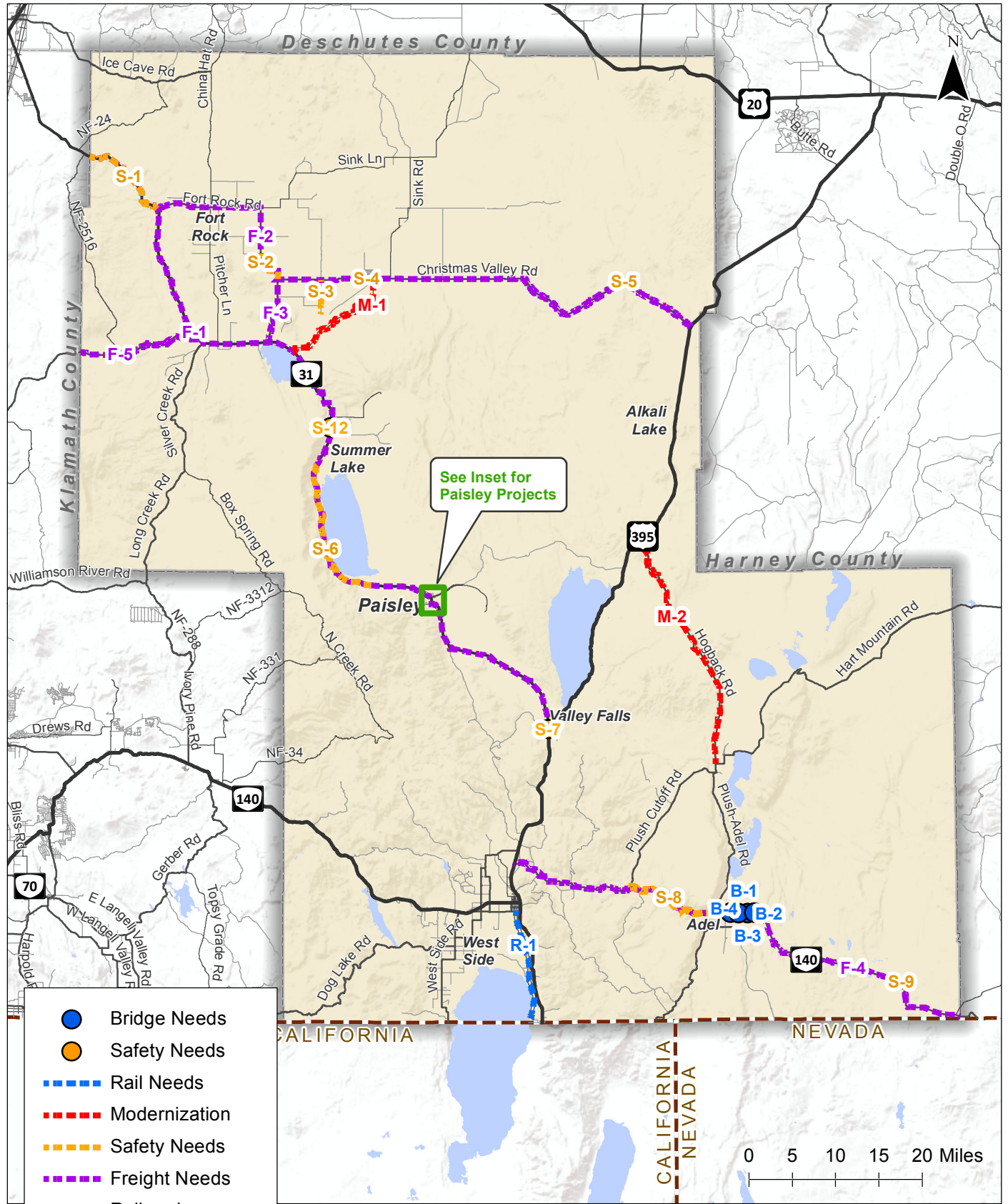
ID	Category	Name	Description of Need	Description of Alternative(s)	Priority
S-6	Safety	OR 31 along Summer Lake	High frequency of fixed-object crashes. Wind and speed are common contributing factor to crashes.	Conduct focused study on this section of highway to determine cause of crashes and possible mitigation measures. Study could be in the form of a roadway safety audit.	High
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.	Medium
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.	High
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.	Low
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).	High
S-11	Safety	Speed transition treatment – Paisley	Speeds on OR 31 transition from 55 mph to 35 mph within Paisley.	Construct transition treatments at the north and south City limits of Paisley on OR 31. This includes monuments announcing to vehicles that they are entering Paisley and permanent speed feedback signs.	High

ID	Category	Name	Description of Need	Description of Alternative(s)	Priority
S-12	Safety	Speed transition treatment – Silver Lake	Speeds on OR 31 transition from 55 mph to 40 mph within Silver Lake.	Construct transition treatments at the west and east ends of the community on OR 31. This includes monuments announcing to vehicles that they are entering Silver Lake and permanent speed feedback signs.	High
M-1	Modernization	Upgrade Old Lake Road	Upgrade road from Minor Collector to Major Collector	Road provides connection from OR 31 to Christmas Valley.	High
M-2	Modernization	Pave Hogback Road	Hogback Road is currently a gravel road.	Pave Hogback Road. This improvement should be planned in conjunction with an appropriate amount of increased maintenance funding.	Low
A-1	Active Transportation	Sidewalks in Paisley	Limited sidewalks exist	Construct sidewalks in Paisley along OR 31 between Main Street and Green Street.	High
A-2	Active Transportation	Sidewalks in Paisley	Limited sidewalks exist	Construct sidewalks along Mill Street in Paisley between Willow Street and Paisley School.	High
A-3	Active Transportation	Sidewalks in Paisley	Limited sidewalks exist	Construct sidewalks in Paisley along Green Street between Cottonwood Street and Mill Street.	High
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.	High

ID	Category	Name	Description of Need	Description of Alternative(s)	Priority
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.	High
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.	Evaluate possible bike routes on: <ul style="list-style-type: none"> • OR 140 east of US 395 to Plush-Adel Road • Plush Cutoff Road • Plush-Adel Road • West of Paisley 	Medium
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.	Low
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.	High
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.	High
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.	High

ID	Category	Name	Description of Need	Description of Alternative(s)	Priority
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.	High
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.	High
MA-2	Maintenance	City system	The City of Paisley struggles to maintain roadways to acceptable standard. Ongoing maintenance funding is challenging.	Identify long-term maintenance funding strategies.	High
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 Klamath County, and Deschutes County on study to evaluate need/feasibility of upgrading OR 31 to a designated freight route.	Medium
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.	Medium
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.	Medium

ID	Category	Name	Description of Need	Description of Alternative(s)	Priority
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.	Medium
F-5	Roadway/Freight Route	Bear Flat Lane	Freight vehicles traveling from the west often use Bear Flat Lane	Designate Bear Flat Lane from Klamath County to OR 31 as a freight route. This should be done in coordinate with Klamath County.	Medium
R-1	Railroad	Lake County Railroad	The Lake County Railroad is a key economic engine for Lake County.	Improve rail crossings	High

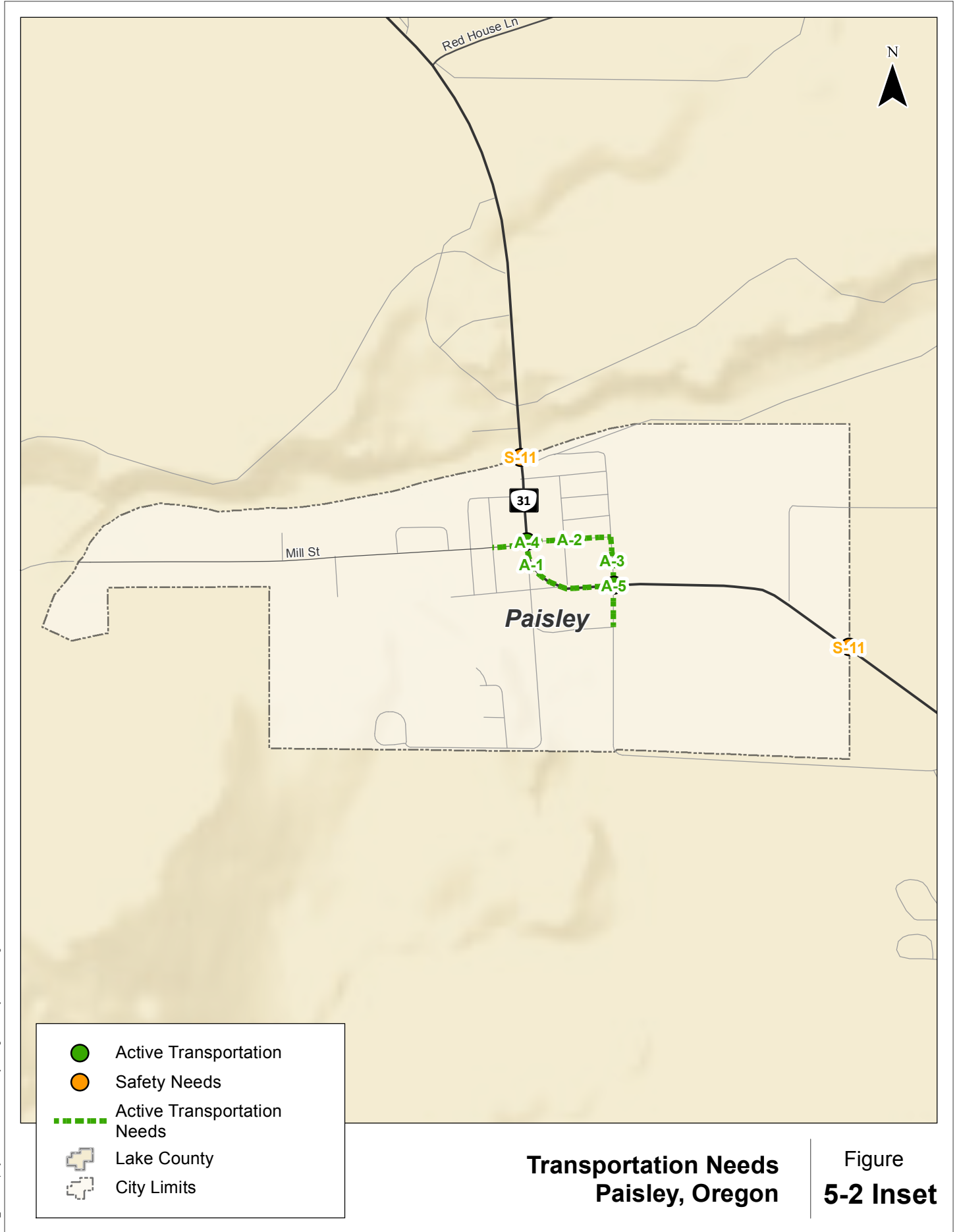


- Bridge Needs
- Safety Needs
- ▬▬▬▬ Rail Needs
- ▬▬▬▬ Modernization
- ▬▬▬▬ Safety Needs
- ▬▬▬▬ Freight Needs
- Railroads
- Lake County
- State Boundaries

**Transportation Needs
Lake County, Oregon**

**Figure
5-2**

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**Transportation Needs
Paisley, Oregon**

**Figure
5-2 Inset**

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 next step is 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.