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TECHNICAL MEMORANDUM #5

Gilliam County Transportation System Plan Update

Alternatives Analysis

Date: April 15, 2015 Project #: 17679
To: Michael Duncan, ODOT
Michelle Colby, Gilliam County
From: Casey Bergh, PE; Ashleigh Griffin; and Marc Butorac, PE, PTOE
cc: Project Advisory Committee

This memorandum provides a framework for the implementation of future transportation improvements. The framework includes an updated functional classification system for Gilliam County and roadway design standards that will guide future improvement projects. Specific improvement projects are summarized, which include projects to address all needs identified in Memorandum #4 (Future Needs) as identified by the public, the Project Advisory Committee, Gilliam County staff, and ODOT staff. The memorandum is organized in three main sections based on these elements; proposed functional classification, roadway design standards, and transportation alternatives.

FUNCTIONAL CLASSIFICATION

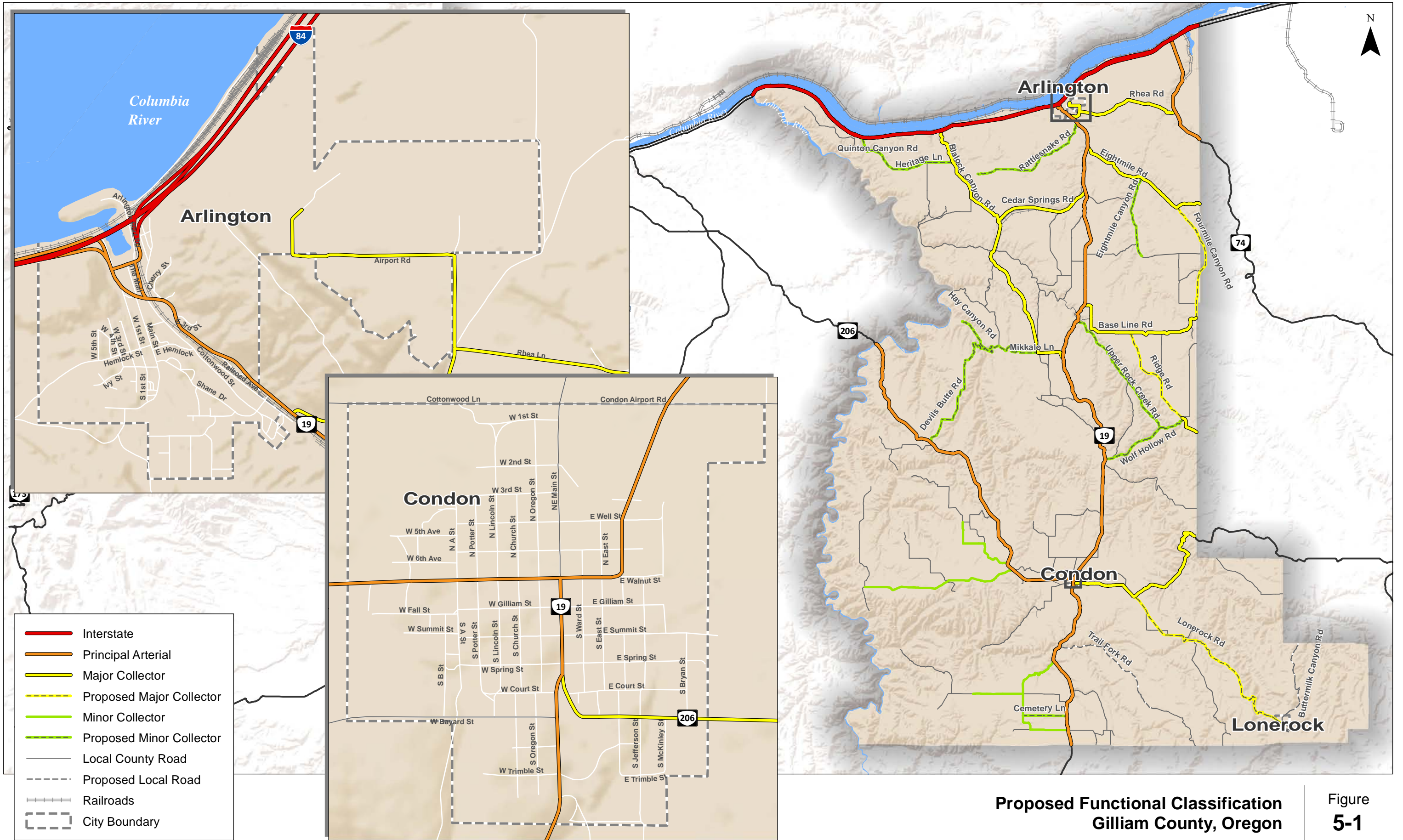
Functional classification of a roadway characterizes the intended purpose, amount and type of vehicular traffic it is expected to carry, provisions for non-auto travel, and the roadway's design standards. The classification considers the adjacent land uses and transportation modes that should be accommodated.

Proposed classifications identified for Gilliam County include: Interstate, Principal 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. The recommended functional classifications shown are based on the existing Federal Functional Classifications. The functional classifications apply in both urban and rural environments. The previous Technical Memorandum (Future Needs) documented the reason why roads were selected for upgrades from local County roads to Major or Minor Collectors. Generally, the reasons for these changes were an increase in traffic and heavy vehicles associated with industrial or agricultural land use and traffic patterns.

Table 5-1. Gilliam County Functional Classification Descriptions

Functional Classification	Description
Interstate	Primary function is mobility and to serve long-distance travel. These roadways are high-speed, divided roadways with limited access. Interstates link urban areas across the United States.
Principal Arterial	Primary function is to carry high levels of regional vehicular traffic at high speeds. These roads connect the collector road system to freeways, provide access to other cities and communities, and serve major traffic movements. Access is limited but can be accommodated with at-grade intersections.
Major Collector	<p>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.</p> <p>Major Collectors can be located in urban or rural environments. In rural environments, Collectors generally serve intra-county travel. In rural areas, traffic volumes and spacing may be the most significant designation factors between Major and Minor Collectors. In urban areas, these roads serve both access and traffic circulation in higher dense residential, commercial, and industrial areas. They typically have higher speeds and more signalized intersections.</p>
Minor Collector	Primary function is to serve traffic from local roads and connect traffic to arterials. These roads can be urban or rural. In urban areas, they serve both access and traffic circulation but in lower density areas than Major Collectors. They also penetrate neighborhoods, but often for a shorter distance than Major Collectors. They typically have lower speeds and fewer signalized intersections. In rural areas, 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



Proposed Functional Classification
Gilliam County, Oregon

Figure
5-1

K:\H_Perland\proj\17679 - Gilliam County TSP\gis\memo 515-1 Proposed Functional Classification.mxd - agriffin - 12:01 PM 4/6/2015

PROPOSED COUNTY ROADWAY DESIGN GUIDELINES

The proposed roadway design guidelines are based on discussions with County staff, former County and City guidelines, and guidance in the *American Association of State Highway Transportation Officials (AASHTO) Green Book*. The guidelines take into consideration roadway functional and operational characteristics, including traffic volume, capacity, operating speed, and safety. 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.

Separate design guidelines are presented for rural and urban roadways given the different purpose and function of each. Rural standards apply to roadways outside of City limits, and urban standards apply to facilities within City limits. The City of Lonerock has a rural character and has historically followed rural County guidelines.

Rural Roadway Design Guidelines

Exhibit 5-1 through Exhibit 5-3 summarize the proposed cross-sections for rural roadways. Table 5-2 presents the dimensions of the design guidelines. County arterial roadway surfaces should be paved, but other lower-order roadway surfaces could be gravel or paved, depending on the level of use of the roads and the ability of the local jurisdiction to maintain them. Major and minor collectors that serve industrial traffic should be paved when feasible.

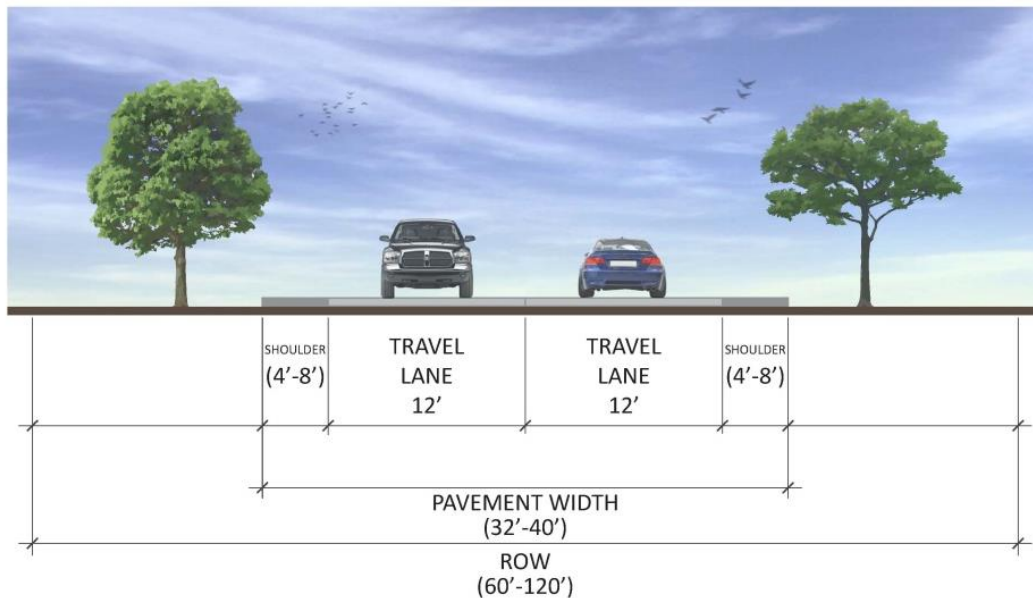


Exhibit 5-1. Proposed Rural Arterial Cross-Section

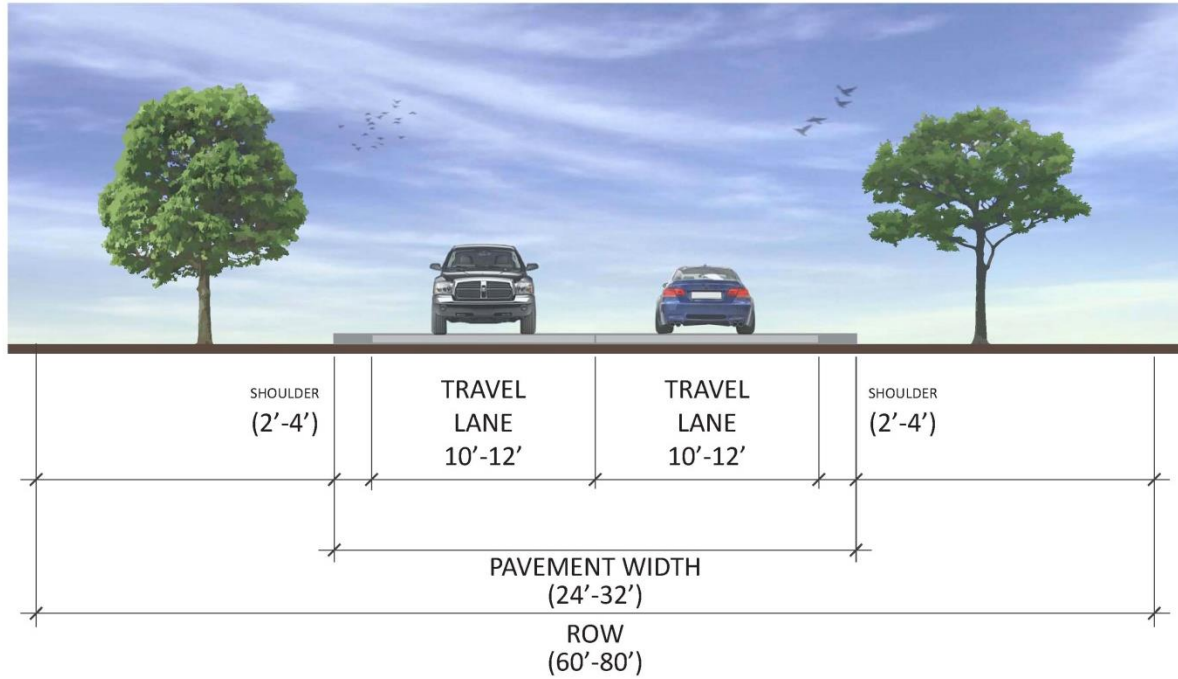


Exhibit 5-2. Proposed Rural Collector Cross-Section

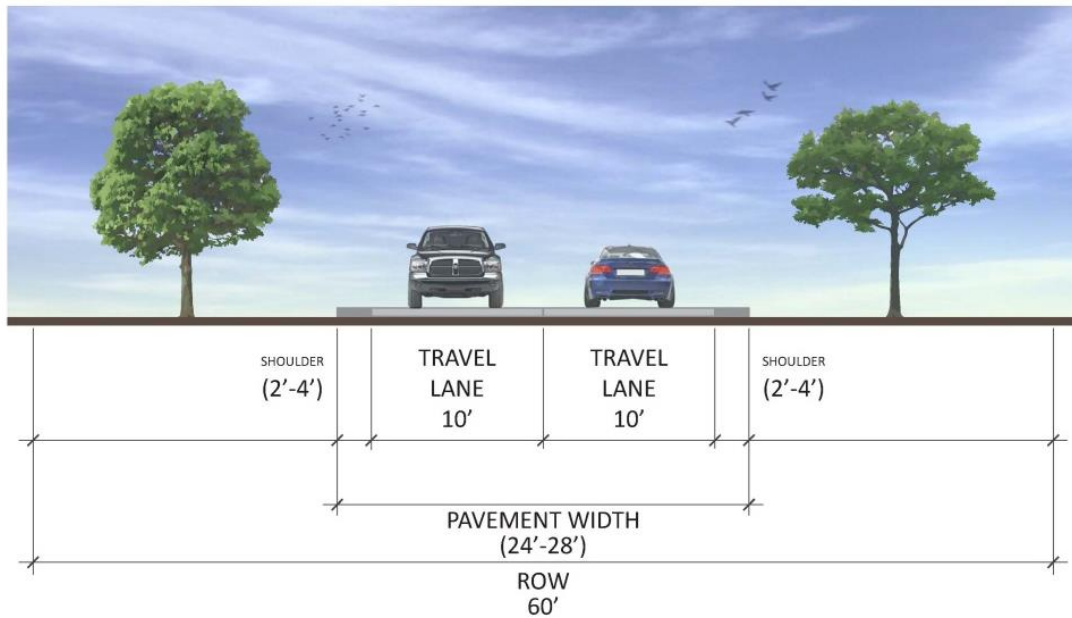


Exhibit 5-3. Recommended Rural Local Street Cross-Section

Table 5-2. Summary of Proposed Rural Design Guidelines by Functional Classification

Functional Classification	Right-of-Way Width (ft)	Roadway		Shoulder	
		Width (ft)	Surface	Width (ft)	Surface
Arterial Street	60-120	32-40	Paved	4-8	Paved
Major Collector Street	60-80	24-32	Paved/gravel	2-4	Paved/gravel
Minor Collector Street	60-80	24-32	Paved/gravel	2-4	Paved/gravel
Local Street	60	24-28	Paved/gravel	2-4	Paved/gravel
Radius for cul-de-sac turn-around	50	40	-	-	-

Urban Roadway Design Guidance

The cities of Condon and Arlington had individual street design guidelines in their respective 1999 TSPs. These guidelines were similar and have been consolidated to form one set of alternatives for urban design guidelines which will apply to all streets within City limits. Multiple cross-section options are presented for some urban roadway classifications. The options are intended to provide the County and Cities with flexibility to select roadway design guidelines that take into account environmental factors and the context of the roadways. A preferred alternative will be selected based on input from the public, County, and Cities.

Exhibit 5-4 through Exhibit 5-10 illustrate the alternatives for the proposed roadway design guidelines for urban areas. Table 5-3 summarizes the urban roadway design dimensions for the proposed alternatives.

Three alternatives are presented for urban arterial design guidelines. The first one, shown in Exhibit 5-4, includes two 12-foot travel lanes and bike lanes. The second option, shown in Exhibit 5-5, includes three travel lanes and bike lanes. The third option, shown in Exhibit 5-6, includes two travel lanes, bike lanes, and on-street parking. Based on the existing roadways in the Cities, the first option shown in Exhibit 5-4 appears to be the most appropriate.

The proposed design guidance for urban collector roadways is shown in Exhibit 5-7. Only one option for urban collectors is presented based on the previous design guidelines. The urban collector includes two travel lanes, each 10' in width, and on-street parking. Because these streets have lower speeds and lower volumes, it is assumed that bicycles will share the roadway.

The two alternatives for roadway design guidelines for urban local streets are shown in Exhibit 5-8 and Exhibit 5-9. The first one contains two 12' travel lanes, and the second option contains two travel lanes in addition to on-street parking. Based on the existing local streets in the cities of Arlington and Condon, option 2, shown in Exhibit 5-9, appears to be the most appropriate.

Exhibit 5-10 shows the proposed design guidelines for urban alleys. These guidelines are the same as those from the 1999 TSP and include a total width of 20' to be used for two-way traffic.

Although many of the existing local roads do not include connected sidewalks, adopting design guidelines that match the local vision for the area is a tool that will help the City achieve goals such as connected sidewalks in the future. Developers will have the option to obtain an exception in situations where sidewalks are not appropriate.

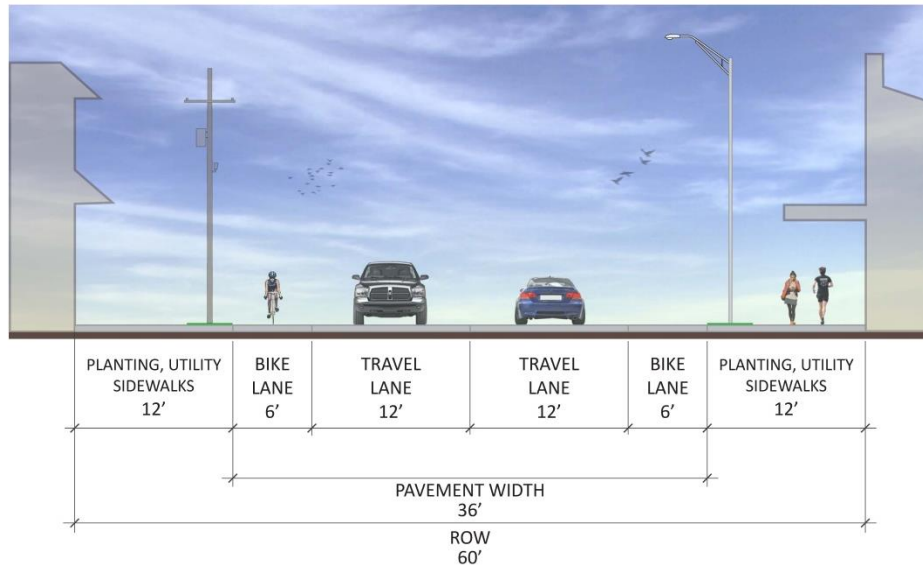


Exhibit 5-4. Urban Arterial Cross-Section – Option 1

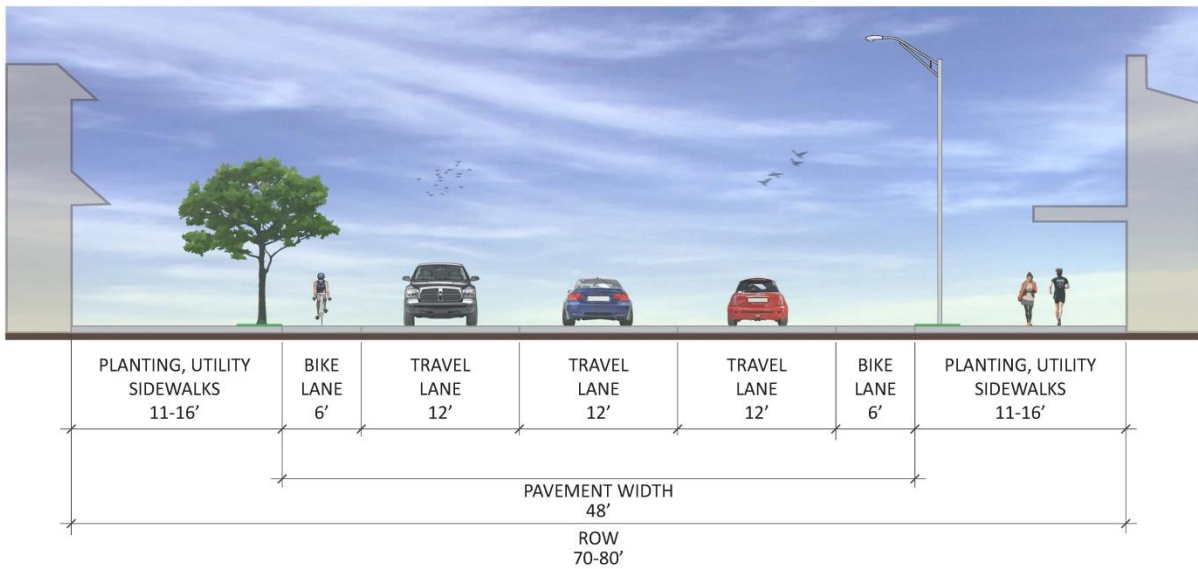


Exhibit 5-5. Urban Arterial Cross-Section – Option 2

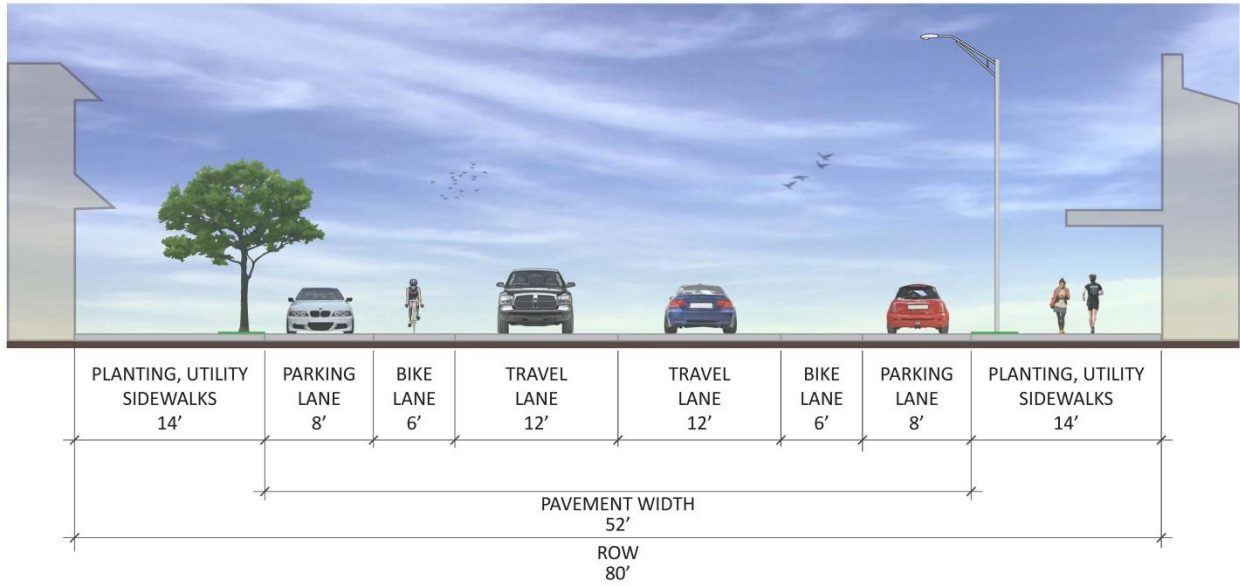


Exhibit 5-6. Urban Arterial Cross-Section – Option 3 (Downtown Arterial)

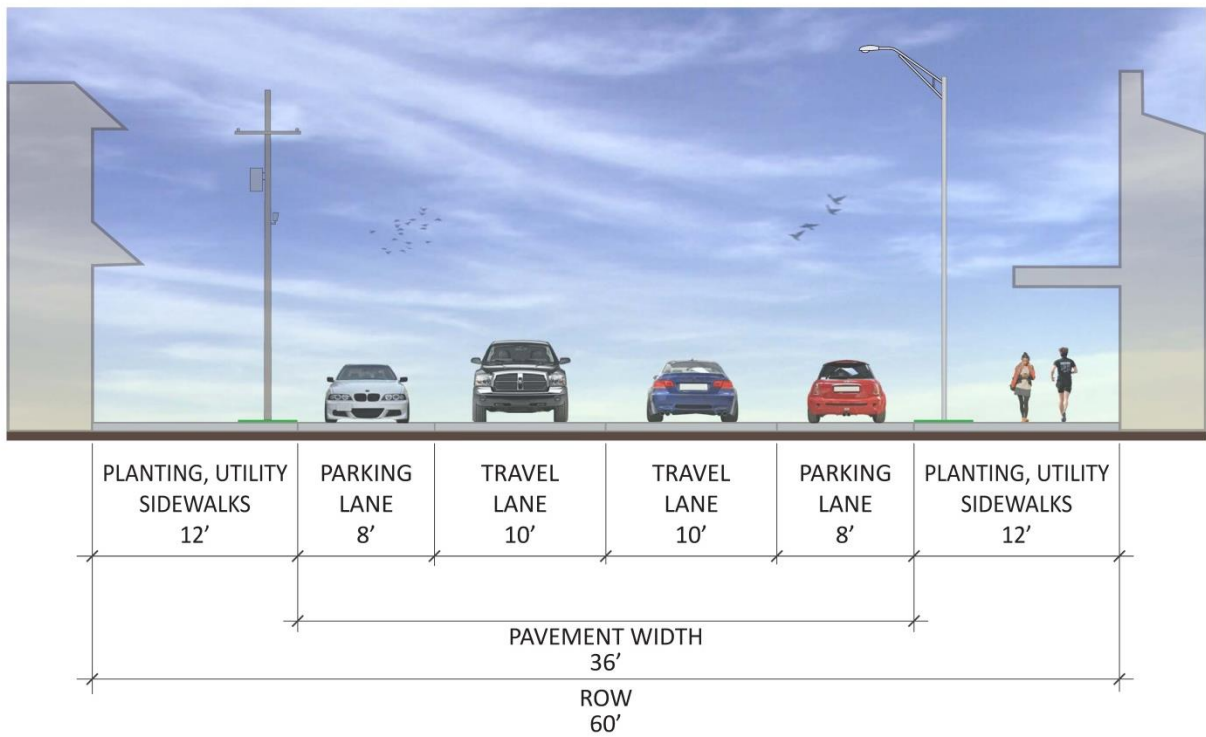


Exhibit 5-7. Urban Collector Cross-Section

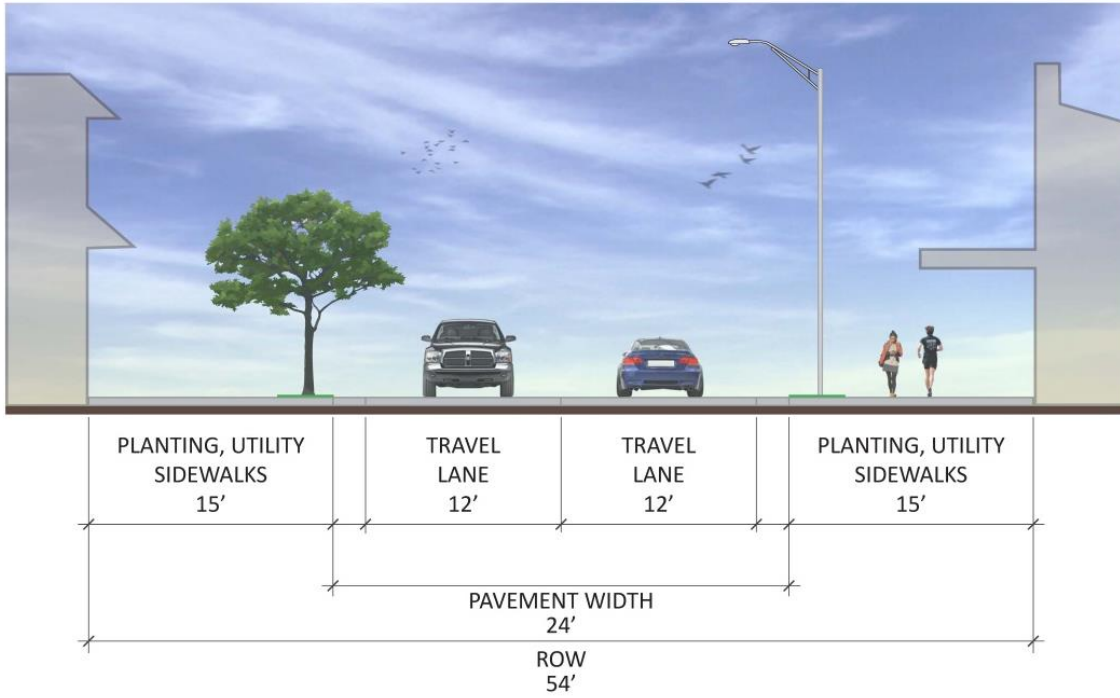


Exhibit 5-8. Urban Local Street Cross-Section - Option 1

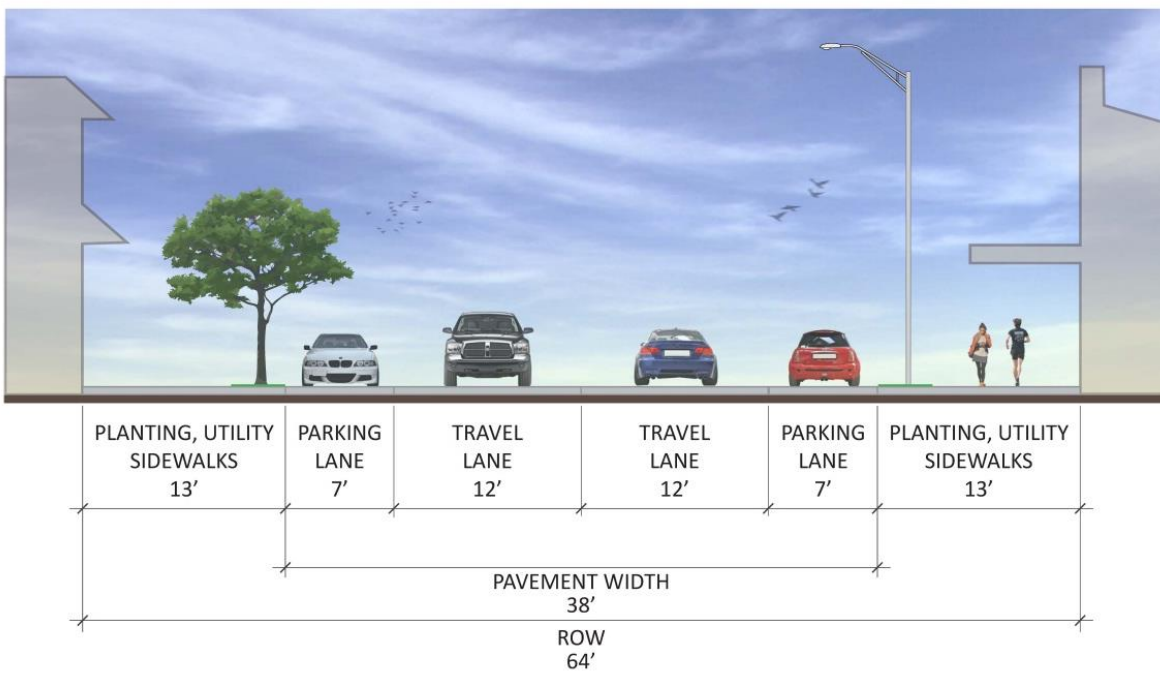


Exhibit 5-9. Urban Local Street Cross-Section - Option 2

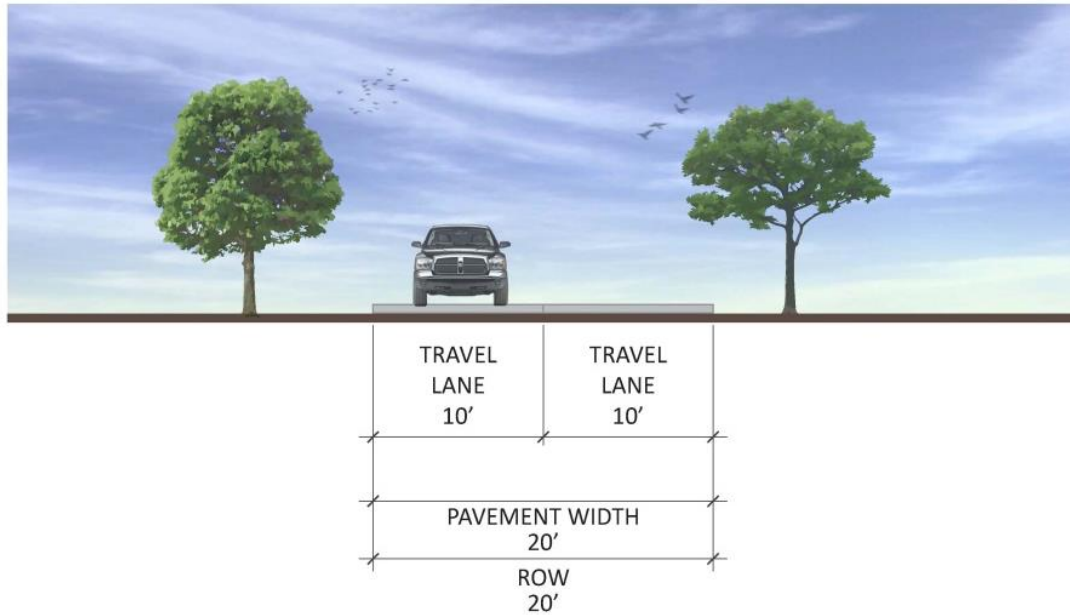


Exhibit 5-10. Urban Alley Cross-Section

Table 5-3. Sherman County Urban Design Guidelines

Classification	Pavement Width	Right-of-Way Width	Number/Width			Planting, Utility, Sidewalks
			Travel Lanes	Parking Lanes	Bike Lanes	
Urban Arterial – Option 1	36 ft	70 ft	2/12 ft	None	2/6 ft	12 ft
Urban Arterial – Option 2	48 ft	70-80 ft	3/12 ft	None	2/6 ft	11-16 ft
Downtown Arterial	52 ft	80 ft	2/12 ft	2/8 ft	2/6 ft	14 ft
Urban Major/Minor Collector	36 ft	60 ft	2/10 ft	2/8 ft	none	12 ft
Urban Local Street – Option 1	24 ft	54 ft	2/10 ft	None	none	15 ft
Urban Local Street – Option 2	38 ft	64 ft	2/12 ft	2/7 ft	none	13 ft
Urban Alley	20 ft	20 ft	2/10 ft	none	none	none

TRANSPORTATION ALTERNATIVES

Transportation alternatives for Gilliam County were developed and evaluated to address transportation needs based on the current and future forecast traffic conditions. The future transportation needs of the County were determined based on: comments received from the public, Gilliam County, ODOT, members of the Project Advisory Committee; a field review conducted by Kittelson and Associates, Inc. (KAI) in 2014; technical analysis of traffic operations; and, a review and analysis of crash history reports. Alternatives include a combination of projects, policies, programs,

pilot projects, and studies. Table 5-4 shows the financially unconstrained transportation alternatives identified to address the future transportation needs.

The *projects* identified in Table 5-4 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 that are serving higher traffic volumes than they were originally intended to serve. 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 Cities and between communities.

Table 5-4 includes an identification number for reference to the project locations shown Figure 5-2. The preliminary cost estimates in Table 5-4 include contingency and exclude right-of-way costs. Potential non-binding funding sources were also identified for each project.

In addition to the projects identified in the table, several policies, programs, projects, and studies were also identified and are included in the alternatives table to address transit, safety, and parking concerns. Some of these items include:

- Installing shoulder rumble strips on State and County roads, when possible, to help reduce single-vehicle, run-off-the-road crashes. These systemic projects should be included in roadway upgrade projects when possible. National research has found that shoulder rumble strips reduce roadway departure crashes on rural two-lane roads by approximately 26%, when adequate pavement is available on the shoulder.
- Additional transit funding is needed to pay salaries for drivers, training for drivers, vehicle maintenance, and carports for the vehicles.
- The County and Cities permitting requirements may be updated to require parking management plans for some special events to minimize parking overflow onto local and downtown streets during special events.

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

Appendix A summarizes the cost estimates and relevant assumptions used to develop costs shown in Table 5-4.

Table 5-4. Transportation Alternatives

ID	Category	Name	Description	Cost Estimate	Priority	Potential Funding Source			
						ODOT/ State	County	Cities	Private
S-1	Safety	I-84 Westbound On-Ramp in Arlington	Replace existing sign with larger sign and add pavement markings to indicate correct direction for drivers	\$3,000	Medium	X			
S-2	Safety	Railroad crossing of OR 19/Locust Street	Minimize times that the crossing is blocked by trains by working with WM to ensure additional power to move trains up hill and prevent trains from getting stuck.	Unknown	High				X
S-3	Safety	Railroad crossing of I-84 Ramps/Beech Street	Minimize times that the crossing is blocked by trains by working with WM to ensure additional power to move trains up hill and prevent trains from getting stuck.	Unknown	High				X
S-4, A	Safety	Main Street/Walnut Street Intersection Reconfiguration, Option A	Reconfigure intersection to two-way stop-controlled intersection	\$46,000	Low	X		X	
S-4, B	Safety	Main Street/Walnut Street Intersection Reconfiguration, Option B	Reconfigure intersection to all-way stop-controlled intersection with flashing warning signs on all approaches	\$25,000	High	X		X	
S-4, C	Safety	Main Street/Walnut Street Intersection Reconfiguration, Option C	Install additional "3-way stop" signage and pavement striping at intersection under its existing configuration.	\$5,000	High	X		X	

ID	Category	Name	Description	Cost Estimate	Priority	Potential Funding Source			
						ODOT/ State	County	Cities	Private
S-5	Safety	E Bayard Street/Main Street Intersection Reconfiguration	Reconfigure intersection to two-way stop-controlled intersection	\$106,000	Low	X		X	
S-6	Safety	Lonerock Road at OR 206, Option A	Reconfigure intersection to bring the westbound approach of OR 206 to a perpendicular stop with Lonerock Road.	\$104,000	Low	X	X		
S-6	Safety	Lonerock Road at OR 206, Option B	Install curve warning signs and intersection ahead signs to increase awareness of the intersection and promote speed reduction.	\$5,000	Medium	X	X		
S-7	Safety	I-84 throughout County	Evaluate effectiveness and feasibility of ITS treatments to provide warnings to drivers when roadway conditions are icy.	N/A	Low	X			
S-8	Safety	Systemic Safety Improvements	Install shoulder rumble strips on State and County roads when possible to help reduce single-vehicle, run-off the road crashes.	Included in upgrade projects.	High	X	X		
S-9	Safety	OR 206, Near MP 22	Evaluate snow drifts at this location to determine if treatments are feasible.	N/A	Low	X			
S-10	Safety	Cedar Springs Road/Blalock Canyon Road	Improve sight distance at intersection.	N/A	Low		X		

ID	Category	Name	Description	Cost Estimate	Priority	Potential Funding Source			
						ODOT/ State	County	Cities	Private
S-11	Safety	Travel Speeds in Arlington	Install posted speed limit sign on Beech Street for westbound traffic. Identify opportunities to slow traffic through environment changes in Arlington.	N/A	Low	X		X	
S-12	Safety	Barnett Road	Improve sight distance at blind corners on Barnett Road	N/A	Low		X		
S-13	Safety	Increased Sign Sizes	Install large signs when possible to improve visibility for aging driver population.	N/A	Low	X	X	X	
S-14	Safety	Driver Education	Identify funding for driver education programs in schools.	N/A	Low	X	X	X	X
A-1	Active Transportation	Cottonwood Street Sidewalks	Install sidewalks from Shane Drive to OR 19	\$508,000	Low			X	
A-2	Active Transportation	Shane Drive Sidewalks	Install sidewalks from Main Street to Cottonwood Street	\$414,000	Low			X	
A-3	Active Transportation	Ivy Street Sidewalks - Arlington	Install sidewalks from 3rd Street to Main Street in Arlington, connecting to the Columbia Hills Manor Independent Living Center	\$147,000	High			X	

ID	Category	Name	Description	Cost Estimate	Priority	Potential Funding Source			
						ODOT/ State	County	Cities	Private
A-4	Active Transportation	Sidewalks on East Side of Main Street - Condon	Replace sidewalks on the east side of Main Street from 3rd Street to OR 206/Walnut Street	\$83,000	Medium			X	
A-5	Active Transportation	Sidewalks on E Spring Street	Install sidewalks from S East Street to S Jefferson Street	\$25,000	Medium			X	
A-6	Active Transportation	Inner Pedestrian Recreational Route West of Condon	Create recreational dirt walking path east of Condon for residents from W Bayard Street/Potter Street to OR 206	\$87,750	Low		X	X	
A-7	Active Transportation	Outer Pedestrian Recreational Route West of Condon	Create recreational dirt walking path east of Condon for residents from W Bayard Street to Cottonwood Street/Main Street	\$109,200	Low		X	X	
A-8	Active Transportation	W 1st Street	Install sidewalks from Cedar Street to Ivy Street	\$277,000	Low			X	
A-9	Active Transportation	OR 206 Cyclist Rest Areas	Evaluate feasibility and cost of providing bicyclist rest areas with water stations and bike tools at strategic locations along OR 206 in the County	N/A	Medium	X	X		
A-10	Active Transportation	Bicycle Parking	Add bicycle parking in downtown areas of Condon and Arlington	N/A	High			X	

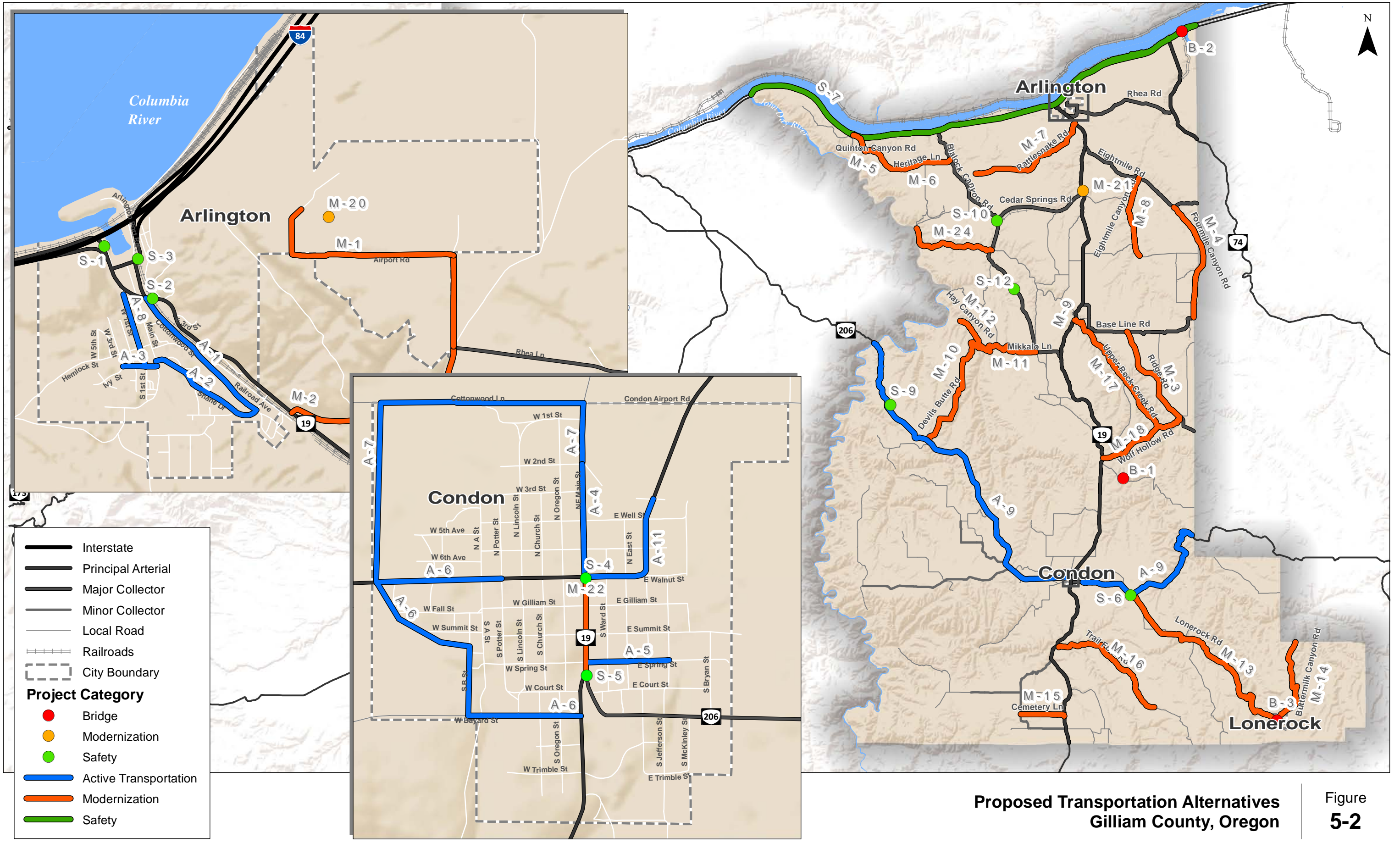
ID	Category	Name	Description	Cost Estimate	Priority	Potential Funding Source			
						ODOT/ State	County	Cities	Private
A-11	Active Transportation	OR 19 Sidewalks	Add sidewalks from Main Street to the Fairgrounds driveway in Condon.	N/A	Low	X		X	
B-1	Bridge	Cayuse Canyon Road Bridge	Replace bridge at MP 4 (Rock Creek)	\$2,000,000	Low		X		
B-2	Bridge	I-84 EB Bridge	Update bridge at MP 148.6 (Willow Creek)	\$160,000	Medium	X			
B-3, A	Bridge	Lonerock Road Bridge Replacement - Option A	Option A: Replace Lonerock Road bridge	\$2,000,000	Medium		X		
B-3, B	Bridge	Lonerock Road Bridge Repair - Option B	Option B: Repair Lonerock Road bridge	Waiting on Estimate for Repair	Medium		X		
M-1	Modernization	Airport Road	Reconstruct roadway from Rhea Road to the end of the road with rock base and minimum of 4' shoulders to accommodate industrial traffic associated with the industrial park	\$109,200	High	X	X	X	X

ID	Category	Name	Description	Cost Estimate	Priority	Potential Funding Source			
						ODOT/ State	County	Cities	Private
M-2	Modernization	Rhea Lane	Upgrade roadway to include 4' shoulders on both sides from OR 19 to Airport Road to serve industrial traffic associated with the Arlington Mesa Industrial Park.	\$837,330	High	X	X	X	X
M-3	Modernization	Ridge Road	Upgrade roadway to Major Collector standards (two 12' travel lanes and 2' shoulders on both sides) from Baseline/Ion Road to Flett Road.	\$1,177,735	High		X		
M-4	Modernization	Fourmile Canyon Road	Upgrade roadway to Major Collector standards (two 12' travel lanes and 2' shoulders on both sides) from Fairview Lane to the eastern County Limits.	\$1,015,820	Medium		X		
M-5	Modernization	Quinton Canyon Road	Upgrade roadway to Minor Collector standards (two 12' travel lanes and 2' shoulders on both sides) from Blalock Canyon Road to I-84 interchange.	\$95,550	Low		X		
M-6	Modernization	Heritage Lane	Upgrade roadway to Minor Collector standards (two 12' travel lanes and 2' shoulders on both sides) from Blalock Canyon Road to I-84 interchange.	\$95,550	Low		X		
M-7	Modernization	Rattlesnake Road	Reclassify roadway to Minor Collector. Road has already been upgraded to Minor Collector cross-section.	None	High		X		

ID	Category	Name	Description	Cost Estimate	Priority	Potential Funding Source			
						ODOT/ State	County	Cities	Private
M-8	Modernization	Eightmile Canyon Road	Upgrade roadway from 18' wide road to Minor Collector standards (two 12' travel lanes and 2' shoulders on both sides) from Old Tree Lane to Fourmile Canyon Road	\$1,015,846	Low		X		
M-9	Modernization	OR 19	Reconstruct roadway from MP 16 to 19 to straighten curves to allow long trucks carrying agriculture equipment or wind turbines access without using both lanes.	N/A	Low	X			
M-10	Modernization	Devils Butte Rd	Upgrade roadway from approximately 20' wide dirt road to a Minor Collector to serve State Park traffic from Hay Canyon Road to OR 206.	\$156,000	Low	X	X		X
M-11	Modernization	Mikkalo Ln	Upgrade roadway from approximately 20' wide dirt road to a Minor Collector to serve State Park traffic from Hay Canyon Road to OR 19.	\$61,100	Low	X	X		
M-12	Modernization	Hay Canyon Rd	Upgrade roadway from approximately 15' wide dirt road to a Minor Collector to serve State Park traffic from Devils Butte Road to the Cottonwood Canyon State Park.	\$2,752,422	Low	X	X		
M-13	Modernization	Lonerock Road	Upgrade from Minor Collector to Major Collector from OR 206 to City of Lonerock	\$500,000	Medium				

ID	Category	Name	Description	Cost Estimate	Priority	Potential Funding Source			
						ODOT/ State	County	Cities	Private
M-14	Modernization	Buttermilk Canyon Road	Downgrade from Minor Collector to Local Road from City of Lonerock to East County Limit	None	High				
M-15	Modernization	Cemetery Road	Upgrade Road to Minor Collector	\$100,000	Low				
M-16	Modernization	Trail Fork Road	Downgrade from Minor Collector to Local Road	None	High				
M-17	Modernization	Upper Rock Creek Road	Downgrade from Major Collector to Minor Collector from Wolf Hollow Road to OR 19	None	High				
M-18	Modernization	Wolf Hollow Road	Downgrade from Major Collector to Minor Collector from OR 19 to Ridge Road	None	High				
M-19	Parking/ Special Events	Parking Management Plans	Update permitting procedures to require parking management plans for special events to minimize parking overflow onto local and downtown streets during special events.	N/A	Low		X	X	
M-20	Modernization	Arlington Airport Runway	Pave the Arlington Airport runway, which is currently dirt.	N/A	Low	X			
M-21	Modernization	Shutler Station	Add rail crossovers	\$300,000	Medium	X			X
M-22	Modernization	On-Street Parking Spaces on Main Street	Upgrade parking spaces on Main Street in Condon to provide ADA spaces at key destinations.	\$3,000	High			X	

ID	Category	Name	Description	Cost Estimate	Priority	Potential Funding Source			
						ODOT/ State	County	Cities	Private
M-23	Transit	Transit Improvements	Obtain additional funding for additional drivers, training, vehicle maintenance, and carpools for the County's dial-a-ride system.	N/A	Medium	X	X		
M-24	Modernization	Lower Rock Creek Road	Improve roadway (widen, add shoulders, curve signage, etc.) due to high recreational traffic associated with river access.	N/A	Low		X		
M-25	Modernization	Condon State Airport	Improve airport (runway, facilities, access, etc.) to support development when water is provided to the airport.	N/A	Low	X	X	X	X



Proposed Transportation Alternatives
Gilliam County, Oregon

Figure
5-2

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PROJECT TIMING

The projects were 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 was categorized based on known transportation needs, forecast travel demand, crash history, and input from the County and ODOT staff. The amount of funding available per year is expected to have the greatest impact on the timing of these projects.

Table 5-5 summarizes the anticipated timeframe in which each project is classified.

Table 5-5. Anticipated Gilliam County Unconstrained Alternatives Timing

ID	Name	Description	Timing	
			Short	Medium/Long
S-1	I-84 Westbound On-Ramp in Arlington	Replace existing sign with larger sign and add pavement markings to indicate correct direction for drivers	X	
S-2	Railroad crossing of OR 19/Locust Street	Minimize times that the crossing is blocked by trains by working with WM to ensure additional power to move trains up hill and prevent trains from getting stuck.	X	
S-3	Railroad crossing of I-84 Ramps/Beech Street	Minimize times that the crossing is blocked by trains by working with WM to ensure additional power to move trains up hill and prevent trains from getting stuck.	X	
S-4, A	Main Street/Walnut Street Intersection Reconfiguration, Option A	Reconfigure intersection to two-way stop-controlled intersection		X
S-4, B	Main Street/Walnut Street Intersection Reconfiguration, Option B	Reconfigure intersection to all-way stop-controlled intersection with flashing warning signs on all approaches	X	
S-4, C	Main Street/Walnut Street Intersection Reconfiguration, Option C	Install additional "3-way stop" signage and pavement striping at intersection under its existing configuration.	X	
S-5	E Bayard Street/Main Street Intersection Reconfiguration	Reconfigure intersection to two-way stop-controlled intersection		X
S-6, A	Lonerock Road at OR 206, Option A	Install curve warning signs and intersection ahead signs to bring awareness to the intersection and slow vehicles.	X	
S-6, B	Lonerock Road at OR 206, Option B	Reconfigure intersection to bring the westbound approach of OR 206 to a perpendicular stop with Lonerock Road.		X
S-7	I-84 throughout County	Evaluate effectiveness and feasibility of ITS treatments to provide warnings to drivers when roadway conditions are icy.		X
S-8	Systemic Safety Improvements	Install shoulder rumble strips on State and County roads when possible to help reduce single-vehicle, run-off the road crashes.	X	

ID	Name	Description	Timing	
			Short	Medium/Long
S-9	OR 206, Near MP 22	Evaluate snow drifts at this location to determine if treatments are feasible.		X
S-10	Cedar Springs Road/Blalock Canyon Road	Improve sight distance at intersection.		X
S-11	Travel Speeds in Arlington	Install posted speed limit sign on Beech Street for westbound traffic. Identify opportunities to slow traffic through environment changes in Arlington.	X	
S-12	Barnett Road	Improve sight distance at blind corners on Barnett Road		X
S-13	Increased Sign Sizes	Install large signs when possible to improve visibility for aging driver population.		X
S-14	Driver Education	Identify funding for driver education programs in schools.		X
A-1	Cottonwood Street Sidewalks	Install sidewalks from Shane Drive to OR 19		X
A-2	Shane Drive Sidewalks	Install sidewalks from Main Street to Cottonwood Street		X
A-3	Ivy Street Sidewalks - Arlington	Install sidewalks from 3rd Street to Main Street in Arlington, connecting to the Columbia Hills Manor Independent Living Center	X	
A-4	Sidewalks on East Side of Main Street - Condon	Replace sidewalks on the east side of Main Street from 3rd Street to OR 206/Walnut Street	X	
A-5	Sidewalks on E Spring Street	Install sidewalks from S East Street to S Jefferson Street	X	
A-6	Inner Pedestrian Recreational Route West of Condon	Create recreational dirt walking path east of Condon for residents from W Bayard Street/Potter Street to OR 206		X
A-7	Outer Pedestrian Recreational Route West of Condon	Create recreational dirt walking path east of Condon for residents from W Bayard Street to Cottonwood Street/Main Street		X
A-8	W 1st Street	Install sidewalks from Cedar Street to Ivy Street		X
A-9	OR 206 Cyclist Rest Areas	Evaluate feasibility and cost of providing bicyclist rest areas with water stations and bike tools at strategic locations along OR 206 in the County	X	
A-10	Bicycle Parking	Add bicycle parking in downtown areas of Condon and Arlington	X	
A-11	OR 19 Sidewalks	Add sidewalks on OR 19 from Main Street to the Fairgrounds driveway in Condon.		X

ID	Name	Description	Timing	
			Short	Medium/Long
B-1	Cayuse Canyon Road Bridge	Replace bridge at MP 4 (Rock Creek)		X
B-2	I-84 EB Bridge	Update bridge at MP 148.6 (Willow Creek)	X	
B-3, A	Lonerock Road Bridge Replacement - Option A	Option A: Replace Lonerock Road bridge		X
B-3, B	Lonerock Road Bridge Repair - Option B	Option B: Repair Lonerock Road bridge		X
M-1	Airport Road	Reconstruct roadway from Rhea Road to the end of the road with rock base and minimum of 4' shoulders to accommodate industrial traffic associated with the industrial park	X	
M-2	Rhea Lane	Upgrade roadway to include 4' shoulders on both sides from OR 19 to Airport Road to serve industrial traffic associated with the Arlington Mesa Industrial Park.	X	
M-3	Ridge Road	Upgrade roadway to Major Collector standards (two 12' travel lanes and 2' shoulders on both sides) from Baseline/Ion Road to Flett Road.	X	
M-4	Fourmile Canyon Road	Upgrade roadway to Major Collector standards (two 12' travel lanes and 2' shoulders on both sides) from Fairview Lane to the eastern County Limits.	X	
M-5	Quinton Canyon Road	Upgrade roadway to Minor Collector standards (two 12' travel lanes and 2' shoulders on both sides) from Blalock Canyon Road to I-84 interchange.		X
M-6	Heritage Lane	Upgrade roadway to Minor Collector standards (two 12' travel lanes and 2' shoulders on both sides) from Blalock Canyon Road to I-84 interchange.		X
M-7	Rattlesnake Road	Reclassify roadway to Minor Collector. Road has already been upgraded to Minor Collector cross-section.		X
M-8	Eightmile Canyon Road	Upgrade roadway from 18' wide road to Minor Collector standards (two 12' travel lanes and 2' shoulders on both sides) from Old Tree Lane to Fourmile Canyon Road		X
M-9	OR 19	Reconstruct roadway from MP 16 to 19 to straighten curves to allow long trucks carrying agriculture equipment or wind turbines access without using both lanes.		X

ID	Name	Description	Timing	
			Short	Medium/Long
M-10	Devils Butte Rd	Upgrade roadway from approximately 20' wide dirt road to a Minor Collector to serve State Park traffic from Hay Canyon Road to OR 206.		X
M-11	Mikkalo Ln	Upgrade roadway from approximately 20' wide dirt road to a Minor Collector to serve State Park traffic from Hay Canyon Road to OR 19.		X
M-12	Hay Canyon Rd	Upgrade roadway from approximately 15' wide dirt road to a Minor Collector to serve State Park traffic from Devils Butte Road to the Cottonwood Canyon State Park.		X
M-13	Lonerock Road	Upgrade from Minor Collector to Major Collector from OR 206 to City of Lonerock		X
M-14	Buttermilk Canyon Road	Downgrade from Minor Collector to Local Road from City of Lonerock to East County Limit	X	
M-15	Cemetery Road	Upgrade Road to Minor Collector	X	
M-16	Trail Fork Road	Downgrade from Minor Collector to Local Road	X	
M-17	Upper Rock Creek Road	Downgrade from Major Collector to Minor Collector from Wolf Hollow Road to OR 19	X	
M-18	Wolf Hollow Road	Downgrade from Major Collector to Minor Collector from OR 19 to Ridge Road	X	
M-19	Parking Management Plans	Update permitting procedures to require parking management plans for special events to minimize parking overflow onto local and downtown streets during special events.	X	
M-20	Arlington Airport Runway	Pave the Arlington Airport runway, which is currently dirt.		X
M-21	Shutler Station	Add rail crossovers	X	
M-22	On-Street Parking Spaces on Main Street	Upgrade parking spaces on Main Street in Condon to provide ADA spaces at key destinations.	X	
M-23	Transit Improvements	Obtain additional funding for additional drivers, training, vehicle maintenance, and carpools for the County's dial-a-ride system.	X	
M-24	Lower Rock Creek Road	Improve Lower Rock Creek Road (widen, add shoulders, curve signage, etc.) due to high recreational traffic associated with river access.		X
M-25	Condon State Airport	Improve Condon State airport (runway, facilities, access, etc.) to support development when water is provided to the airport.		X

CONCLUSION

This memorandum summarizes future transportation projects proposed for Gilliam County. 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.

APPENDICES

Appendix A: Project Alternative Cost Estimate Calculations

Appendix A Project Alternative Cost
Estimate Calculations

Gilliam County Transportation System T.E.C. Engineers Estimate

Project A-1: Cottonwood St. Sidewalks				
ITEM #	DESCRIPTION	U/M QTY	UNIT COST	TOTAL
1	MOBILIZATION, PROJ MGT, TEMP. FACILITIES, ETC.	LS 1	\$ 30,000.00	\$ 30,000.00
2	PROVIDE TRAFFIC CONTROL	LS 1	\$ 10,000.00	\$ 10,000.00
3	F&P EROSION CONTROL MEASURES	LS 1	\$ 2,000.00	\$ 2,000.00
4	PROVIDE CLEARING & SUBGRADE PREPERATION	LS 1	\$ 11,200.00	\$ 11,200.00
5	F&P CONCRETE CURBS	LF 7,424	\$ 16.00	\$ 118,784.00
6	F&P CONCRETE WALK	SQ FT 37,120	\$ 5.00	\$ 185,600.00
CONSTRUCTION QUOTE =			\$	357,584.00
7	ENGINEERING, SURVEYING, MANAGEMENT	LS 1	22%	\$ 78,668.48
8	CONTINGENCY	LS 1	20%	\$ 71,516.80
TOTAL QUOTE =			\$	507,769.28
Project A-1: Cottonwood St. Sidewalks				

Gilliam County Transportation System T.E.C. Engineers Estimate

Project A-2: Shane Dr. Sidewalks				
ITEM #	DESCRIPTION	U/M QTY	UNIT COST	TOTAL
1	MOBILIZATION, PROJ MGT, TEMP. FACILITIES, ETC.	LS 1	\$ 25,000.00	\$ 25,000.00
2	PROVIDE TRAFFIC CONTROL	LS 1	\$ 7,500.00	\$ 7,500.00
3	F&P EROSION CONTROL MEASURES	LS 1	\$ 2,000.00	\$ 2,000.00
4	PROVIDE CLEARING & SUBGRADE PREPERATION	LS 1	\$ 9,600.00	\$ 9,600.00
5	F&P CONCRETE CURBS	LF 5,752	\$ 18.00	\$ 103,536.00
6	F&P CONCRETE WALK	SQ FT 28,760	\$ 5.00	\$ 143,800.00
CONSTRUCTION QUOTE=				\$ 291,436.00
7	ENGINEERING, SURVEYING, MANAGEMENT	LS 1	22%	\$ 64,115.92
8	CONTINGENCY	LS 1	20%	\$ 58,287.20
TOTAL QUOTE=				\$ 413,839.12
Project A-2: Shane Dr. Sidewalks				

Gilliam County Transportation System T.E.C. Engineers Estimate

Project A-3: Ivy St. Sidewalks				
ITEM #	DESCRIPTION	U/M QTY	UNIT COST	TOTAL
1	MOBILIZATION, PROJ MGT, TEMP. FACILITIES, ETC.	LS 1	\$ 9,000.00	\$ 9,000.00
2	PROVIDE TRAFFIC CONTROL	LS 1	\$ 5,000.00	\$ 5,000.00
3	F&P EROSION CONTROL MEASURES	LS 1	\$ 1,000.00	\$ 1,000.00
4	PROVIDE CLEARING & SUBGRADE PREPERATION	LS 1	\$ 2,800.00	\$ 2,800.00
5	F&P CONCRETE CURBS	LF 1,614	\$ 23.00	\$ 37,122.00
6	F&P CONCRETE WALK	SQ FT 8,070	\$ 6.00	\$ 48,420.00
CONSTRUCTION QUOTE=				\$ 103,342.00
7	ENGINEERING, SURVEYING, MANAGEMENT	LS 1	22%	\$ 22,735.24
8	CONTINGENCY	LS 1	20%	\$ 20,668.40
TOTAL QUOTE=				\$ 146,745.64
Project A-3: Ivy St. Sidewalks				

Gilliam County Transportation System T.E.C. Engineers Estimate

Project A-4: Main St. Sidewalk				
ITEM #	DESCRIPTION	U/M QTY	UNIT COST	TOTAL
1	MOBILIZATION, PROJ MGT, TEMP. FACILITIES, ETC.	LS 1	\$ 4,000.00	\$ 4,000.00
2	PROVIDE TRAFFIC CONTROL	LS 1	\$ 2,500.00	\$ 2,500.00
3	F&P EROSION CONTROL MEASURES	LS 1	\$ 1,000.00	\$ 1,000.00
4	PROVIDE CLEARING & SUBGRADE PREPERATION	LS 1	\$ 4,000.00	\$ 4,000.00
5	PROVIDE DEMOLITION & PAVEMENT REMOVAL	SQ FT 6,415	\$ 1.50	\$ 9,622.50
5	F&P CONCRETE WALK	SQ FT 5,300	\$ 7.00	\$ 37,100.00
CONSTRUCTION QUOTE=				\$ 58,222.50
6	ENGINEERING, SURVEYING, MANAGEMENT	LS 1	22%	\$ 12,808.95
7	CONTINGENCY	LS 1	20%	\$ 11,644.50
TOTAL QUOTE=				\$ 82,675.95
Project A-4: Main St. Sidewalk				

Gilliam County Transportation System T.E.C. Engineers Estimate

Project A-5: Spring St. Sidewalks				
ITEM #	DESCRIPTION	U/M QTY	UNIT COST	TOTAL
1	MOBILIZATION, PROJ MGT, TEMP. FACILITIES, ETC.	LS 1	\$ 4,000.00	\$ 4,000.00
2	PROVIDE TRAFFIC CONTROL	LS 1	\$ 1,500.00	\$ 1,500.00
3	F&P EROSION CONTROL MEASURES	LS 1	\$ 1,000.00	\$ 1,000.00
4	PROVIDE CLEARING & SUBGRADE PREPERATION	LS 1	\$ 1,600.00	\$ 1,600.00
5	F&P CONCRETE WALK	SQ FT 1,042	\$ 9.00	\$ 9,378.00
			CONSTRUCTION QUOTE=	\$ 17,478.00
6	ENGINEERING, SURVEYING, MANAGEMENT	LS 1	22%	\$ 3,845.16
7	CONTINGENCY	LS 1	20%	\$ 3,495.60
			TOTAL QUOTE=	\$ 24,818.76
Project A-5: Spring St. Sidewalks				

Gilliam County Transportation System T.E.C. Engineers Estimate

Project A-8: W 1st Street Sidewalks				
ITEM #	DESCRIPTION	U/M QTY	UNIT COST	TOTAL
1	MOBILIZATION, PROJ MGT, TEMP. FACILITIES, ETC.	LS 1	\$ 9,000.00	\$ 9,000.00
2	PROVIDE TRAFFIC CONTROL	LS 1	\$ 5,000.00	\$ 5,000.00
3	F&P EROSION CONTROL MEASURES	LS 1	\$ 1,000.00	\$ 1,000.00
4	PROVIDE CLEARING & SUBGRADE PREPERATION	LS 1	\$ 2,800.00	\$ 2,800.00
5	F&P CONCRETE CURBS	LF 3,000	\$ 23.00	\$ 69,000.00
6	F&P CONCRETE WALK	SQ FT 18,000	\$ 6.00	\$ 108,000.00
CONSTRUCTION QUOTE=				\$ 194,800.00
7	ENGINEERING, SURVEYING, MANAGEMENT	LS 1	22%	\$ 42,856.00
8	CONTINGENCY	LS 1	20%	\$ 38,960.00
TOTAL QUOTE=				\$ 276,616.00
Project A-8: W 1st Street Sidewalks				

Gilliam County Transportation System T.E.C. Engineers Estimate

Project S-4, Option A: Walnut St. and Main St. Intersection All-Way Stop				
ITEM #	DESCRIPTION	U/M QTY	UNIT COST	TOTAL
1	MOBILIZATION, PROJ MGT, TEMP. FACILITIES, ETC.	LS 1	\$ 500.00	\$ 500.00
2	PROVIDE TRAFFIC CONTROL	LS 1	\$ 1,000.00	\$ 1,000.00
3	F&P PAINT STRIPING	LS 1	\$ 1,000.00	\$ 1,000.00
4	F&P ALL NECESSARY SIGNAGE	LS 1	\$ 1,000.00	\$ 1,000.00
			CONSTRUCTION QUOTE =	\$ 3,500.00
1	ENGINEERING, SURVEYING, MANAGEMENT	LS 1	22%	\$ 770.00
2	CONTINGENCY	LS 1	20%	\$ 700.00
			TOTAL QUOTE =	\$ 4,970.00
Project S-4, Option A: Walnut St. and Main St. Intersection All-Way Stop				

Plus \$5,000 per sign for flashing stop sign

Gilliam County Transportation System T.E.C. Engineers Estimate

Project S-4, Option B: Walnut St. and Main St. Intersection Modification

ITEM #	DESCRIPTION	U/M QTY	UNIT COST	TOTAL
1	MOBILIZATION, PROJ MGT, TEMP. FACILITIES, ETC.	LS 1	\$ 3,000.00	\$ 3,000.00
2	PROVIDE TRAFFIC CONTROL	LS 1	\$ 2,500.00	\$ 2,500.00
3	F&P EROSION CONTROL MEASURES	LS 1	\$ 500.00	\$ 500.00
4	PROVIDE DEMOLITION & PAVEMENT REMOVAL	SQ FT 2,000	\$ 2.00	\$ 4,000.00
5	PROVIDE SUBGRADE PREPARATION	LS 1	\$ 2,000.00	\$ 2,000.00
6	F&P 1-1/2" MINUS AGGREGATE BASE	TON 42	\$ 35.00	\$ 1,470.00
7	F&P 3/4" MINUS AGGREGATE BASE	TON 12	\$ 45.00	\$ 540.00
8	F&P 1/2" DENSE ODOT LEVEL 2 MHMAC PAVING	TON 20	\$ 110.00	\$ 2,200.00
9	F&P CONCRETE CURBS	LF 150	\$ 25.00	\$ 3,750.00
10	F&P CONCRETE WALK	SF 1,400	\$ 8.00	\$ 11,200.00
11	F&P PAINT STRIPING	LS 1	\$ 1,000.00	\$ 1,000.00
12	F&P ALL NECESSARY SIGNAGE	LS 1	\$ 500.00	\$ 500.00

CONSTRUCTION QUOTE = \$ 32,660.00

1	ENGINEERING, SURVEYING, MANAGEMENT	LS 1	22%	\$ 7,185.20
2	CONTINGENCY	LS 1	20%	\$ 6,532.00

TOTAL QUOTE = \$ 46,377.20

Project S-4, Option B: Walnut St. and Main St. Intersection Modification

Gilliam County Transportation System T.E.C. Engineers Estimate

Project S-5: E. Bayard St. and Main St. Intersection Realignment				
ITEM #	DESCRIPTION	U/M QTY	UNIT COST	TOTAL
1	MOBILIZATION, PROJ MGT, TEMP. FACILITIES, ETC.	LS 1	\$ 6,700.00	\$ 6,700.00
2	PROVIDE TRAFFIC CONTROL	LS 1	\$ 10,000.00	\$ 10,000.00
3	F&P EROSION CONTROL MEASURES	LS 1	\$ 2,000.00	\$ 2,000.00
4	PROVIDE DEMOLITION & PAVEMENT REMOVAL	SQ FT 3,400	\$ 2.00	\$ 6,800.00
5	F&P STORM CATCH BASIN	EA 2	\$ 1,500.00	\$ 3,000.00
6	F&P STORM SEWER	LF 200	\$ 40.00	\$ 8,000.00
7	PROVIDE SUBGRADE PREPARATION	LS 1	\$ 2,000.00	\$ 2,000.00
8	F&P 1-1/2" MINUS AGGREGATE BASE	TON 63	\$ 35.00	\$ 2,205.00
9	F&P 3/4" MINUS AGGREGATE BASE	TON 18	\$ 45.00	\$ 810.00
10	F&P 1/2" DENSE ODOT LEVEL 2 MHMAC PAVING	TON 15	\$ 110.00	\$ 1,650.00
11	F&P CONCRETE CURBS	LF 290	\$ 25.00	\$ 7,250.00
12	F&P CONCRETE WALK	SF 1,450	\$ 8.00	\$ 11,600.00
13	F&P PAINT STRIPING	LS 1	\$ 7,500.00	\$ 7,500.00
14	F&P ALL NECESSARY SIGNAGE	LS 1	\$ 5,000.00	\$ 5,000.00
			CONSTRUCTION QUOTE = \$	74,515.00
1	ENGINEERING, SURVEYING, MANAGEMENT	LS 1	22%	\$ 16,393.30
2	CONTINGENCY	LS 1	20%	\$ 14,903.00
			TOTAL QUOTE = \$	105,811.30
Project S-5: E. Bayard St. and Main St. Intersection Realignment				

Gilliam County Transportation System T.E.C. Engineers Estimate

Project S-6: OR 206 and Lonerock Road Intersection Reconstruction				
ITEM #	DESCRIPTION	U/M QTY	UNIT COST	TOTAL
1	MOBILIZATION, PROJ MGT, TEMP. FACILITIES, ETC.	LS 1	\$ 8,000.00	\$ 8,000.00
2	PROVIDE TRAFFIC CONTROL	LS 1	\$ 7,500.00	\$ 7,500.00
3	F&P EROSION CONTROL MEASURES	LS 1	\$ 1,500.00	\$ 1,500.00
4	PROVIDE DEMOLITION & PAVEMENT REMOVAL	SQ FT 6,300	\$ 2.00	\$ 12,600.00
5	PROVIDE SUBGRADE PREPARATION	LS 1	\$ 5,000.00	\$ 5,000.00
6	F&P 1-1/2" MINUS AGGREGATE BASE	TON 290	\$ 35.00	\$ 10,150.00
7	F&P 3/4" MINUS AGGREGATE BASE	TON 85	\$ 45.00	\$ 3,825.00
8	F&P 1/2" DENSE ODOT LEVEL 2 MHMAC PAVING	TON 150	\$ 110.00	\$ 16,500.00
9	F&P PAINT STRIPING	LS 1	\$ 5,000.00	\$ 5,000.00
10	F&P ALL NECESSARY SIGNAGE	LS 1	\$ 3,000.00	\$ 3,000.00
CONSTRUCTION QUOTE =			\$	73,075.00
1	ENGINEERING, SURVEYING, MANAGEMENT	LS 1	22%	\$ 16,076.50
2	CONTINGENCY	LS 1	20%	\$ 14,615.00
TOTAL QUOTE =			\$	103,766.50
Project S-6: OR 206 and Lonerock Road Intersection Reconstruction				

Highway Analysis Report

PAVE SHOULDERS TO MATCH 24' ROAD

WIDEN TO 24'

REBUILD SHOULDERS TO MATCH NEW PAVEMENT

400' SHOULDER PAV @ 45%	18,000
800' SHOULDER PAV @ 45%	36,000
800' SHOULDER RECON @ 2%	7,040

GRASS	1800
SMALL TREES	1000
BROOM	1200
TRUCKS SHOULDERS	5000
TRUCKS PAVE	2000
PAVER	5000
WED ROUGH	1000
TRAVEL	1000

125,000

ESTIMATE PAVER

PAVE FROM 4 MILE INTERSECTION TO LEMON BRIDGE
WITH 18" C.P. CONCRETE

6 MILS	12,900 cu yds @ 45.00 = PAVE	580,500
REINFORCING		90,000
PAVER		45,000
TRUCKS		2,500
MATERIALS		2,000
FORMS		2,500
TRAVEL		5,000

SHOULDER 2400 cu yds @ 8.80 21,120

DUMP TRUCKS 20,000

GRADER W/ SHOULDER MACHINE 7,200

LOADER 5,600

781,420

FOUR MILE CANYON

SALES AS 8 miles

PAVE FROM STATION LINE TO CORNER LINE AND PAVE

TO CORNER LINE 90 FEET WITH GRINDINGS FROM I 84

@ 40' 20' 100'

1/6 mile @ 22'

201420'

RHEA ROAD

5 miles @ 24' 11,800 cu yds GRASSPALS @ 45¢ \$5,31,000

BEULCH DUMPS 50,000

PAVER 22,500

ROLLER 1,000

WATER TANK 2,000

GRADER w/ SHOULDER MACHINE 6,000

DUMP TRUCKS 12,000

LABOR 2,000

SHOULDER ROCK 2000 cu yds @ 8.80 17,600

\$544,100

MANHOLE FLAT
WHEELS 2000
3.4 MISSES

7500 cu yds mix from DYER STOCK PILE

GRADER	1200
ROLLER	800
WATER TANK	2700

PUB MILL

LOADER

MIX & FREIGHT

487500

PAVER

ROLLER

1500 cu yds SHOULDER ROCK

12,000

BROOM

3200

GRADER W/ SHOULDER TRACTOR

4800

4-DUMP TRUCKS

11500

LOADER

1550

525250

RIDGE ROAD

IMPROVE SHOULDERS AND OPENING TO (W) BANK PAVE FROM (W) TO POINTY LINE

SHOULDER ROCK	2000 cu yds @ 8 ⁰⁰	17,600
GRAVEL		3,500
SMALL SOWS	REIN	9,000
NEW DRAIN		8,000
BANKS		12,500
WATER TROUGH		3,600
LOADER		3,800
TRUCKS		1,000

50,750

4000 cu yds	2" OVERLAY	260,000
2650 cu yds	5" PAVE GRAVEL	562,250
SHOULDER ROCK	1000 cu yds	8,800
EQUIPMENT		24,150

70700

905,950

QUINSON CANYON GRADE

REPAVE

WINDMILL PROJECT

HERITAGE LANE

REMOVE 5 CURBS

PAVE

SPREADER		4500
SEALER		6000
ROLLER		2700
BULK DUMPS		35,000
GRADER		4500
LOADER		3000
DISPATCHER		4000

ROAD RICE	3600 cu yds	21,600
ROAD RICE	1200 cu yds	10,560
PAVE RICE	1200 cu yds	54,000

TRAVEL 10,000

146,860
250,000

DEVELOPMENTS
GRADE AND HIGHWAY

LEADEN GRADE WORKS NEEDED	\$25,000
EXTEND CURBS	15,000
IMPROVE LINE OF SIGHT	25,000
IMPROVE ROAD SURFACE 3000 SQ YD	40,000
SIGNAGE & SIGN POSTS	15,000

TOTAL \$120,000

HAY CANYON ROAD

OREGON STATE PARK

1.95 MILES 10,296 FT

95,000 cu yds EXCAVATION	
615 SCRAPER @ 185 ⁰⁰ /HR	125,000 ⁰⁰
Db @ 135 ⁰⁰ /HR	108,000 ⁰⁰
2 - GRADERS @ 86 ⁰⁰ /HR	185,000 ⁰⁰
LOADER @ 94 ⁰⁰ /HR	160,480 ⁰⁰
2 - DUMP TRUCKS @ 90 ⁰⁰ /HR	244,000 ⁰⁰
EXCAVATOR @ 165 ⁰⁰ /HR	62,800 ⁰⁰
WATER TRUCK @ 90 ⁰⁰	48,800 ⁰⁰
WATER PUMP @ 15 ⁰⁰	4,800 ⁰⁰
ROLLER @ 90 ⁰⁰	28,800 ⁰⁰
2 ISILEY DUMPS @ 100 ⁰⁰	180,000 ⁰⁰
12,000 cu yds BASE ROCK @ 6 ⁰⁰	72,000 ⁰⁰
5,000 cu yds ROAD ROCK @ 8 ⁰⁰	40,000 ⁰⁰
HAIL TRUCK	
MOB	16,000 ⁰⁰
TRAVEL	150,000 ⁰⁰
HAIL TRUCK	
EXCAVATOR	1,015,680
	101568

40 DAYS
2 BELLEVILLE
2 TRUCK DUMPS

\$2,117,248⁰⁰

MJ

MILKALO LANE
WEST GRADE INTO HAY CANYON

IMPROVE LINE OF SIGHT	12,000
ROAD SURFACE 1000' @ 15¢/YD	15,000
STORAGE & STAKE	10,000
OTHER	0
TOTAL	47,000