

MEMORANDUM #7

Date: March 4, 2024 Project #: 27003.004

To: Project Management Team

From: Jacki Smith, PE; Dan Bowers; and Matt Kittelson, PE; Kittelson & Associates, Inc.

Project: South Madras Concept Area Refinement Plan

Subject: Technical Memorandum #7 – Preferred Concept (Task 6.2)

This memorandum summarizes the project team’s recommended preferred alternative for the South Madras Refinement Plan. It includes a summary of the public engagement and feedback received during the development and publication of the three draft concepts, which were documented in Technical Memorandum #6 and reviewed by the Project Advisory Committee (PAC) and public at meetings hosted in October 2023. Based on feedback received, the project team made additional refinements to and evaluation of the US97 Mainline Enhancement and Grade Separated Interchange alternatives, which are documented herein. Based on this work, the project team has recommended a revised version of the US97 Mainline Enhancement alternative as the Preferred Concept.

The memorandum is organized into the following sections:

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CONCEPT EVALUATION OVERVIEW

Technical Memorandum #6 evaluated three concept alternatives for the South Madras Concept Area Refinement Plan. A brief description of each alternative is provided below:

▶ **Couplet Extension**

- Extends the north-south couplet of US97 from downtown Madras to the US97/US26/Colfax Lane intersection.
- Southbound US97 would follow the existing US97 alignment while the northbound would be aligned to connect to Adams Drive north of Hall Road.
- Two travel lanes in each direction, providing continuity with the existing couplet to the north.

▶ **Grade Separated Interchange**

- Constructs a grade-separated interchange at the intersection of US97/US26/Colfax Lane.
- Concept considered and evaluated two connections between the US97/US26/Colfax Lane interchange and Culver Highway:
 - Option 1 relied on existing Colfax Lane
 - Option 2 constructed a new roadway northwest of the existing Colfax Lane to provide more direct access to Culver Highway within City Limits.
- US97 mainline remains one travel lane in each direction with a median and turn restrictions.

▶ **US97 Mainline Enhancement**

- Widens US97 to two lanes in each direction with a continuous median along US97.
- Installs traffic control (assumed to be traffic signals for the purposes of this analysis) at critical intersections along US97 including Colfax Lane, Hall Road, Fairgrounds Road, and J Street.

FEEDBACK PROCESS

Feedback was collected from the Public Advisory Committee (PAC) and the public during meetings conducted in October 2023. A summary of each engagement is provided below.

PAC MEETING

The Project Advisory Committee (PAC) met for the second time on October 12, 2023, to discuss proposed concept alternatives. The project team presented the findings from Technical Memorandum #6 including the three alternatives followed by solicitation of

feedback. Additionally, the PAC collectively scored the alternatives using the evaluation criteria developed for this project. The committee provided numerous specific suggestions for refining the three system alternatives and offered additional feedback for the project team to consider in the overall evaluation process.

A PAC meeting summary is provided in Appendix A.

PUBLIC MEETING

The three concept alternatives presented in Technical Memorandum #6 were shared with the public at an open house on October 12, 2023, in Madras. The open house attracted approximately 35 members of the public. The event presented informational boards and roll plots of each alternative for public review and comment. Up to date project information was also available to the public via the ODOT hosted project website. No feedback was provided from online sources.

A public meeting summary is provided in Appendix B.

FEEDBACK SUMMARY AND COMMENTS

Aggregating the comments from the PAC and the public helped identify several recommended refinements to the concept alternatives. A summary of the primary suggestions and comments received is provided below:

► General Comments

- There is no funding for a 20-year fix that could take 18 years to complete.
- A bypass around US97 should be considered. It would solve traffic issues in Madras.
- Improve the aesthetic of US97 with beautification elements.
- Consider phasing or interim improvements for the ultimate solution.
- The existing skew at the intersection of Culver Highway and Colfax Lane makes it hard to turn and hard to see approaching vehicles.

► Couplet Extension Concept

- High impact to property owners and residential homes on Adams Drive.
- Does not support business activity in and around study area; would require out of direction travel for businesses.
- Does not address mobility serviceability for local and regional freight.

The couplet was removed as a potential alternative due to the concept evaluation criteria not aligning sufficiently with the project goals and objectives and feedback from the PAC and public.

► Grade Separated Interchange Concept

- Allows for a long-term solution for the US 97 corridor.
 - Allows for shorter crossing distance of US 97 for pedestrians due to a two-lane cross section and medians.
 - Challenges with routing and wayfinding, for out of direction movements (i.e., left out).
 - The concept is double the cost and therefore should have double the value compared to the other alternatives.
 - Look into options for a traffic signal at Hall Road to be accompanied by an interchange at Colfax Lane.
 - The length of the northbound on-ramp as presented is too long and will have access constraints on US97.
- **US97 Mainline Enhancement Concept**
- A mainline enhancement is the least disruptive to surrounding lands and does not divert traffic away from existing businesses.
 - Preference to not include a median down US97 – leave two-way center turn lane to reduce impacts to business access.
 - Addresses capacity of highway but creates longer crossings for multimodal users.
 - Would slow speeds through Madras but would also require freight to stop on the highway.

Based on the feedback from the PAC and the public, the **Grade Separated Interchange** (hereon referred to as the Interchange) and the **US97 Mainline Enhancement** alternatives were both advanced for further refinement and evaluation.

ALTERNATIVE REFINEMENTS

As part of this phase of the planning process, the two most promising alternatives (Interchange and US97 Mainline Enhancement) were refined from their initial concept designs based on geometric constraints and feedback from the public, PAC, and Project Management Team (PMT). Appendix C includes a summary of the comments from the PAC and public and reasoning for or against incorporating the comments into the updated concepts. The following refinements are listed below. Updated concepts are shown in Figures 1 and 2, respectively.

The US97/US26/Colfax Lane intersection is located immediately adjacent to the UGB and is surrounded by resource land and developed properties. The connections to US26 and Colfax Lane will require additional coordination with ODOT, Jefferson County, and nearby property

owners and will need to be refined during the design process. Notes are provided in both alternative concepts to reflect the need for additional design efforts.

INTERCHANGE

- ▶ Change the roadway alignment at Culver Highway/Colfax Lane to reduce the skew angle.
- ▶ Identify a conceptual extension of Lois Lane to Colfax Lane outside of City limits. The alignment of this roadway extension is uncertain and will require further refined as development occurs in the future. An amendment to the Jefferson County TSP would be required to implement improvements beyond the Urban Growth Boundary.
- ▶ Realign the connection of the proposed road from US26 to Adams Drive to minimize right-of-way impacts to existing structures. The alignment of the roadway will be further refined through future design efforts.
- ▶ Extend the median at the beginning of the northbound off-ramp gore point of the Colfax Lane interchange to the existing couplet at L Street to provide separation between northbound and southbound vehicles.
- ▶ Incorporate midblock crossings of US97 throughout the study area to provide and encourage multimodal connectivity. Midblock crossing locations informed by prior planning and design efforts as part of the US97: Earl St – Colfax Ln project and the ODOT crossing spacing requirements for a commercial corridor as defined in the Highway Design Manual.
- ▶ Update the future planned local street roadway network in the study area to reflect the TSP and incorporate comments received by City staff.
- ▶ Allow left-in turn movements at critical intersections including Hall Road and Fairgrounds Road.
- ▶ Increase assumed bicycle buffer stripe on US97 by 1-foot to provide the minimum horizontal clearance of 22-feet to accommodate all unannounced oversized loads.
- ▶ Increase the northbound left turn storage at US97/Hall Road to provide storage for two tractor trailers to queue to support existing and future freight activity.
- ▶ Replace the traditional northbound on-ramp at US97/Colfax Lane with a partial cloverleaf to maximize the distance between the ramp and Hall Road.

Interchange Option 2 - Alternative



Improvements within area show recommendations proposed within the Refinement Plan and are included in cost opinion. Other areas show improvements adopted within the Transportation System Plan.

Potential Pedestrian Crossing

Bard Lane

Existing Pedestrian Crossing

Fairgrounds Rd

Restrict lefts-out

Potential Pedestrian Crossing

Restrict lefts-out

Potential Pedestrian Crossing

Restrict lefts-out

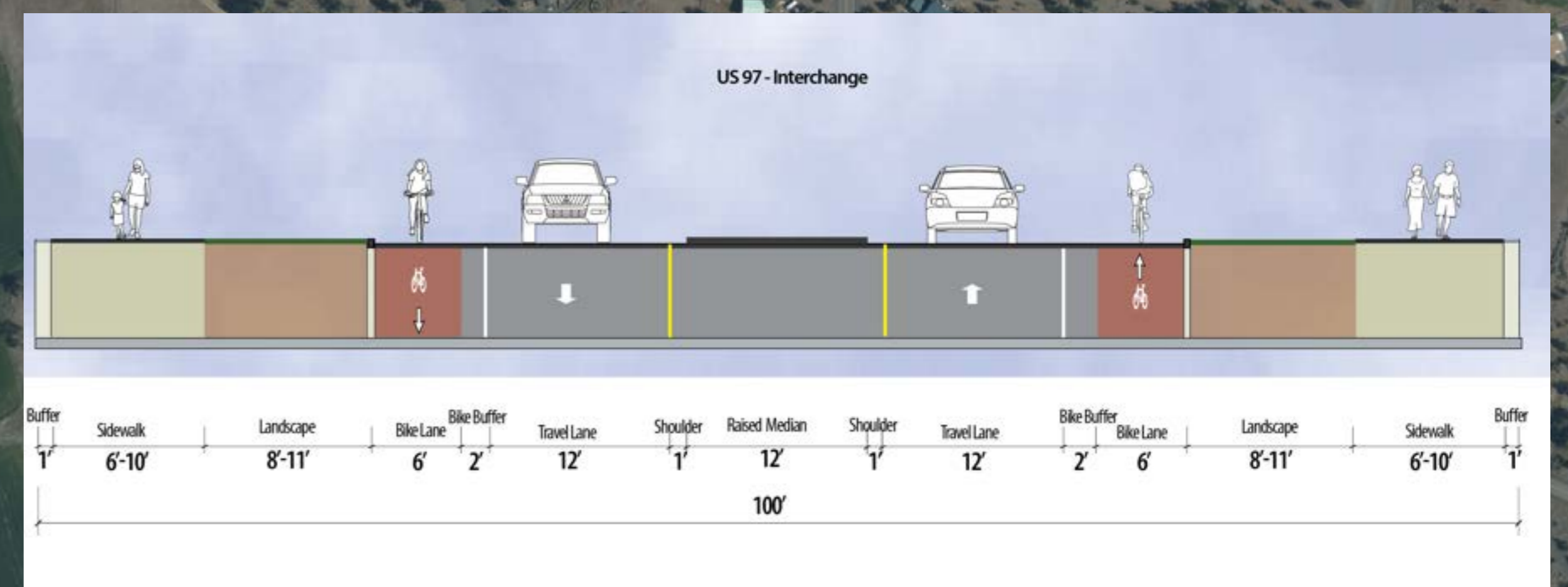
Intersection control to be refined in design process

Connection to Colfax Lane to be refined in design process

Connection to US97 to be refined in design process

Connection between the US97 ramp terminal and Colfax Lane to be refined in design process

Intersection control to be refined in design process



US97 MAINLINE ENHANCEMENTS

- ▶ Change the roadway alignment at Culver Highway/Colfax Lane to reduce the skew angle.
- ▶ Identify a conceptual extension of Lois Lane to Colfax Lane outside of City limits. The alignment of this roadway extension is uncertain and will require further refined as development occurs in the future. An amendment to the Jefferson County TSP would be required to implement improvements beyond the Urban Growth Boundary.
- ▶ Realign the connection of the proposed road from US26 to Adams Drive to minimize right-of-way impacts to existing structures. The alignment of the roadway will be further refined through future design efforts.
- ▶ Provide a median on US97 south of Colfax Lane to provide separation between northbound and southbound vehicles.
- ▶ Incorporate midblock crossings of US97 throughout the study area to provide and encourage multimodal connectivity. Midblock crossing locations informed by prior planning and design efforts as part of the US97: Earl St – Colfax Ln project and the ODOT crossing spacing requirements for a commercial corridor as defined in the Highway Design Manual.
- ▶ Reduce the landscape buffer to provide a 2-foot striping buffer between the on-street bike lane and the travel lane.
- ▶ Update the future planned local street roadway network in the study area to reflect the TSP and incorporate comments received by City staff.
- ▶ Add a new roadway connection between the US97/Colfax Lane intersection and Culver Highway similar to the alignment of the new road on the interchange concept. This connection supports local connectivity and route choices through the Madras community. Add a roundabout at the intersection of the new road and Culver Highway to support turning movements and intersection operations.
- ▶ *While traffic signals were analyzed for operational and capacity purposes, the appropriate intersection control at critical intersection locations should be reevaluated as part of the design process consistent with ODOT procedures.*

US 97 Mainline Enhancement Alternative



Improvements within area show recommendations proposed within the Refinement Plan and are included in cost opinion. Other areas show improvements adopted within the Transportation System Plan.

Potential Pedestrian Crossing

Evaluate location of existing pedestrian crossing as part of traffic signal installation

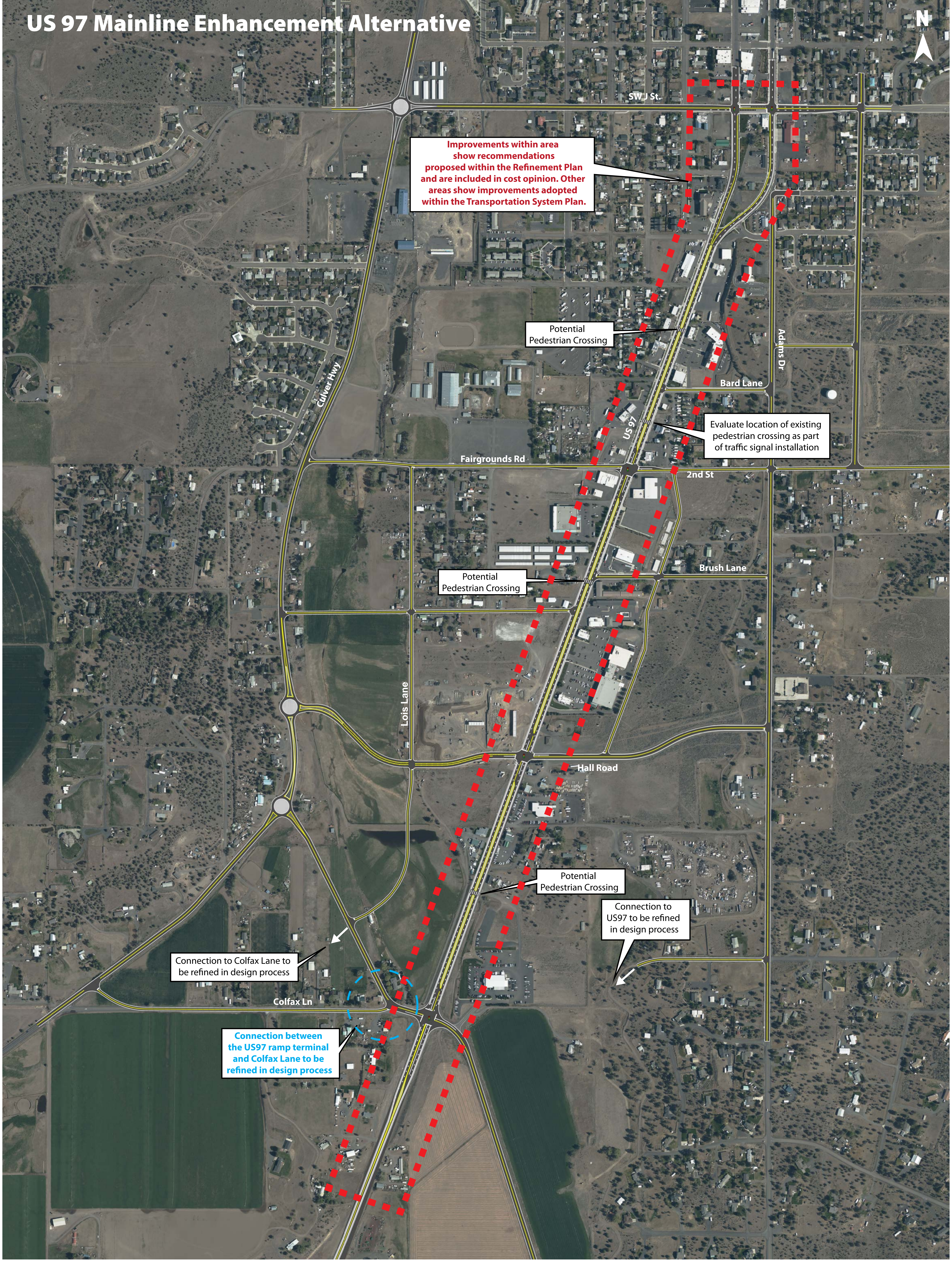
Potential Pedestrian Crossing

Potential Pedestrian Crossing

Connection to US97 to be refined in design process

Connection to Colfax Lane to be refined in design process

Connection between the US97 ramp terminal and Colfax Lane to be refined in design process



COST OPINION FOR PROMISING ALTERNATIVES

The project team developed refined cost opinions for Interchange and US97 Mainline Enhancement alternatives. Culver Highway and local road construction costs are not included in the estimate. Those improvements are included in the TSP or public-private partnership opportunities. The cost opinion reflects improvements along the US97 corridor between Colfax Lane and J Street and includes full depth reconstruction and cross section enhancements, midblock enhanced crossings, traffic signal equipment, structural infrastructure, stormwater, grading/earthwork, illumination, design, and construction management fees, and a 50% contingency. The conceptual cost opinion for the Interchange is \$85-90 million and \$50-55 million for the US97 Mainline Enhancement. Revised cost estimates are provided in Appendix E.

PREFERRED ALTERNATIVE SELECTION

Based on the revised concepts of the Interchange and the US97 Mainline Enhancement alternatives presented above, the project team evaluated the opportunities and challenges associated with each and which better aligns with the goals, objectives, and evaluation criteria developed for the project.

INTERCHANGE ALTERNATIVE

Opportunities and challenges for the interchange concept alternative are shown in Table 1 below:

Table 1. Interchange Alternative Opportunities and Challenges

Opportunities	Challenges
<ul style="list-style-type: none"> • Creates a more connected roadway network between US97 and both Adams Drive and Culver Highway • Provides a long-term capacity solution at the US97/US26/Colfax Lane intersection. • Similar to Yew Avenue in Redmond, an interchange Colfax Lane would serve as the gateway for northbound vehicles approaching Madras. • Does not stop mainline freight on US97. 	<ul style="list-style-type: none"> • Full access control would be required between Colfax and Hall Road due to the interchange at US97/Colfax Lane. A frontage road or alternative local system may be necessary to provide access to businesses that currently have access to US97 along this segment. • Interchange requires partial cloverleaf or other unique ramp design to maximize the distance between the northbound on-ramp and Hall Road to reduce weaving. • Implementing an interchange at US97/Colfax Lane would have more impact to adjacent properties than the US97 Mainline Enhancement Concept.

<ul style="list-style-type: none"> • Provides shorter crossing distances for pedestrians with one travel lane in each direction. • Addresses crash history at US97/Colfax Lane with grade separation • When expanded to two travel lanes in each direction, the Interchange option would have more capacity on US97, and the highway would be free flow until reaching the downtown area (<i>Free flow may be briefly stopped at enhanced pedestrian crossing locations</i>) 	<ul style="list-style-type: none"> • Median access control would be necessary throughout the corridor and could necessitate U-turns and out of direction travel for businesses along US97. • Would require additional travel lane (2 total travel lanes each direction) on US97 (beyond 2045) to accommodate regional increase in travel. • Implementation of this alternative could be more difficult to phase compared to US97 Mainline Enhancement due to the high relative cost of an interchange at US 97/Colfax Lane.
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US97 MAINLINE ENHANCEMENT ALTERNATIVE

Opportunities and challenges for the US97 Mainline Enhancement concept alternative are shown in Table 2 below:

Table 2. US97 Mainline Enhancement Alternative Opportunities and Challenges

Opportunities	Challenges
<ul style="list-style-type: none"> • Concept may be more capable of being implemented in phases compared to the Interchange Alternative. • Provide full turning movements at US97 intersections at Hall Road, Fairgrounds Road, and Colfax Lane. • ODOT currently has right-of-way available on US97 within the study area that may be adequate to implement this alternative. • Alternative is forecast to accommodate future highway demand beyond 2045. • Creates a more connected roadway network between US97 and both Adams Drive and Culver Highway 	<ul style="list-style-type: none"> • Traffic signals, which may be installed along US97 under this alternative, may increase collisions. • Traffic control devices would be introduced for all US97 traffic, including freight, which would increase mainline travel delays along the highway. • Additional travel lane in each direction on US97 would increase crossing distance for pedestrians. • Median access control would be necessary throughout corridor and could necessitate U-turns and out

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| <ul style="list-style-type: none">• Two-stage crossing opportunity would be provided at midblock locations for pedestrians due to median installation. | of direction travel for businesses along US97 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|

Note: while traffic signals were analyzed for operational and capacity purposes for this concept alternative, the appropriate intersection control at critical intersection locations will be reevaluated as part of future project development and design effort consistent with applicable ODOT procedures.

EVALUATION CRITERIA MATRIX OF MOST PROMISING ALTERNATIVES

Table 3 provides a head-to-head comparison of how the Interchange and US97 Mainline Enhancement alternatives address the evaluation criteria. The scoring provides a green check mark for the alternative that better aligns with the evaluation criteria. A blue dash indicates that both alternatives similarly address the criteria.

Table 3. Draft Evaluation Criteria

Goal	Objective	Evaluation Criteria	Comparative Score		Notes
			Interchange	US97 Mainline Enhancements	
Mobility and Connectivity: Promote a transportation system that provides efficient connections for all users within Madras and meets existing and future mobility needs.	<ul style="list-style-type: none"> Identify the 20-year roadway system needs to accommodate developing or undeveloped areas without straining limited financial resources. Emphasis should be placed on maintenance, operations, management, and service improvements rather than large capital improvements. Promote a local road system that serves as access to commercial and residential areas. Preserve the function, operation, capacity, level of service, and safety of state highways and local roads in a manner consistent with adopted State of Oregon and local plans. Improve traffic circulation within the city while considering the local character of each area. Ensure that local connections are maintained or enhanced through redevelopment to minimize reliance on major street connections. Improve roadway connectivity and parallel routes on the local transportation network to redistribute local traffic volumes and reduce traffic demand on state facilities. 	Does the project alternative promote the use of the local road system?	■	■	Both alternatives create connections onto the local network via new roads to Culver Highway and Adams Drive.
		Does the project alternative improve traffic circulation within the study area?		✓	The US97 Mainline Enhancement alternatives provides more turning movements at critical intersections than the Interchange Alternative.
		Does the project alternative meet mobility targets through 2045?	■	■	Both alternatives meet mobility targets in 2045
		Does the project alternative represent an investment that works toward the long-term solution for the corridor?	■	■	Capacity can be served by both alternatives until 2045. The initial investment of the US97 Mainline Enhancement would have more capacity, however, when the Interchange is built out with two travel lanes in each direction US97 would have more capacity without traffic signals.
Economic Development: Provide a transportation system that supports existing industry and encourages economic development and job creation in Madras, especially within key development areas. Improve short- and long-term transportation infrastructure to support local and regional travel and livability.	<ul style="list-style-type: none"> Develop and promote a multimodal transportation network that supports existing industries and economic diversification in the future, especially in the downtown core. Prioritize improving and maintaining the key freight routes of US26, US97 and OR 361 through Madras. Support truck access to industrial sites, including turn and acceleration/deceleration lanes where appropriate. Promote and plan for future industrial, commercial, and residential growth areas. 	Does the project alternative at least maintain the carrying and dimensional capacity for statewide freight movement?	■	■	Both alternatives provide horizontal and vertical clearance for freight.
		Does the project alternative address mobility and serviceability for local and regional freight activity?	■	■	The US97 Mainline Enhancement provides left turn movements at critical intersections, however, the Interchange alternative would not stop the US97 mainline traffic due to the implementation of traffic control devices.
		Does the project alternative address existing gaps or deficiencies in the vehicular, transit, and/or pedestrian network?	■	■	Both alternatives improve deficiencies in the multimodal system with infill and crossing locations.
		Does the project alternative support business activity in and around the study area?		✓	The US97 Mainline Enhancement alternative provides turning movements at critical intersection and promotes circulation using the local system. Interchange alternative would impact access to businesses in the interchange influence area.

Goal	Objective	Evaluation Criteria	Comparative Score		Notes
			Interchange	US97 Mainline Enhancements	
Safety: Provide a transportation system that improves safety and multimodal accessibility throughout Madras, especially within the downtown core.	<ul style="list-style-type: none"> Promote a transportation system that facilitates safe multimodal corridors in Madras. Reduce incidence and severity of all crashes. 	Does the proposed alternative address an area with an identified crash history?	✓		Higher crash reduction with grade separated interchange versus a traffic signal at US97/Colfax Lane.
Multimodal Users: Provide a multimodal transportation system that permits the safe and efficient transport of people and goods through active modes.	<ul style="list-style-type: none"> Develop and promote an interconnected network of bicycle, pedestrian, and transit facilities within Madras. Examine the need for specific pedestrian crossing locations. 	Does the proposed project alternative provide enhanced crossing opportunities for multimodal users?	✓		Both alternatives include locations for crossings, however, the Interchange alternative minimizes the crossing distance for pedestrians.
Environmental: Provide a transportation system that balances transportation services with the need to protect the environment.	<ul style="list-style-type: none"> Develop a multimodal transportation system that avoids reliance upon one form of transportation and that minimizes energy consumption and air quality impacts. Develop and upgrade transportation facilities in a manner consistent with the adopted OTP, the OHP, and the TPR, and ensure that valuable soil, water, scenic, historic, and cultural resources are not damaged or impaired. 	Does the proposed project element reduce reliance on vehicular traffic?	▬	▬	Both alternatives improve the walking and biking infrastructure.
		Is the proposed project alternative consistent with adopted plans?	▬	▬	Both alternatives will require amendments to the City and County TSPs for the new roadway connection between US97 and Culver Highway and intersection improvement at US97/Colfax Lane.
Planning and Funding: Maintain the safety, physical integrity, and function of Madras' multimodal transportation network.	<ul style="list-style-type: none"> Maintain long-term funding stability for transportation maintenance projects. 	Could the proposed project alternative be considered for Federal Grant Funding?	▬	▬	Both alternatives would be candidates for federal funding.

PREFERRED ALTERNATIVE RECOMMENDATION

Based on the evaluation presented and feedback received from the PAC, the Project Management Team (PMT), and the public, **the project team recommends the US97 Mainline Enhancement move forward as the preferred alternative.**

The US97 Mainline Enhancement alternative addresses the community's desire for east-west connections across the highway, creates a connected network of local roads to reduce reliance on US97, increases through capacity on US97, provides capacity resiliency past year 2045, and provides phasing and implementation options to maximize public and private partnership opportunities to construct necessary infrastructure to support the system.

It should be noted that from a regional mobility and freight route perspective, the US97 Mainline Enhancement will introduce up to three additional traffic signals overtime on the US97 corridor that will create longer travel times and potential for collisions. The proposed five-lane segment in the preferred alternative will eventually experience conditions similar to those experienced today on the southern segment of the US97 corridor in Redmond and north segment of US 97 in Bend (which is being mitigated through the Bend North Corridor) project). Including mitigation elements that have been identified along these other corridor locations such as access management through continuous medians, mid-block pedestrian crossings, etc., align with planning efforts identified for other ODOT Region 4 projects.

The project team recognizes the funding realities and near-term development pressures in Madras drive the recommendation of the US97 Mainline Enhancement; however, the region and community should also recognize this improvement package will eventually lead to future generation challenges and expensive solutions similar to that of the Bend North Corridor project (e.g., retrofit, bypass, etc.).

Prospectus sheets describing location specific treatments for the US97 Mainline Enhancement are provided in Appendix D.

PLANNING REQUIREMENTS

Recommended improvements on the US97 and Culver Highway alignments are estimated to be within the existing right-of-way along both highways. However, new roadways and intersection upgrades, including those on US97 and Culver Highway, may require additional right-of-way. The need for additional right-of-way will be further explored through future planning efforts.

While the City of Madras Transportation System Plan (TSP) includes the majority of the new, local road projects shown in the US97 Mainline Enhancement alternative, it does not include a new road from US97 near Colfax Lane to Culver Highway. An amendment to the City TSP to include the roadway would be required. Additionally, the new roadway would traverse

through a designated wetland and would require additional environmental analysis to determine the ultimate roadway alignment and potential mitigation requirements.

Additionally, two project recommendations are located outside of the Madras Urban Growth Area: improving the skew angle at Culver Highway/Colfax Lane and the new roadway from US97/Colfax Lane east to Adams Drive. Neither project is currently in the Jefferson County TSP. Therefore, an amendment to the County TSP would be required.

IMPLEMENTATION AND FUNDING STRATEGY

Implementation

One of the primary benefits of the US97 Mainline Enhancement alternative is the ability to phase improvements over time. As documented within the future conditions analysis, development in the study area will create the need for improvements along US97 as side street demand increases. This creates opportunities for public/private partnerships for both funding and timing of improvements.

Capacity on the US97 mainline can be accommodated through 2045 as one-lane in each direction, however, intersection improvements at critical intersections need to be constructed with two travel lanes in each direction to support queuing and operational needs. Therefore, intersection improvements and widening could be constructed before widening the full US97 cross section between Colfax Lane and J Street. This provides flexibility for phasing and construction as location specific improvements could be implemented prior to funding being achieved for the entire project area.

In addition to intersection specific improvements, prioritizing east-west local roads between Culver Highway, US97, and Adams Drive provides alternate routes for users through the study area. Local traffic can divert from US97 and use the local system opposed to both regional and local traffic having to use US97 to circulate.

When widening at intersections or along segments occurs on US97, construction efforts should include installation of a median to support access management strategies. The median builds toward the longevity and safety of the US97 corridor.

Funding Opportunities

The total estimated cost opinion for the improvements for the US97 Mainline Enhancement alternative is \$50-55 million. There are currently no funding mechanisms to pay for any of the improvements identified in this study. Therefore, the City, Jefferson County, and ODOT will need to seek funding through a combination of federal, state, County, City and/or private sources. Table 4 below summarizes funding sources and programs that could support the implantation of improvements in South Madras.

Table 4. Funding Opportunities

Jurisdiction	Sources	Comments
Federal	Infrastructure Investment and Jobs Act (IIJA), Rebuilding American Infrastructure with Sustainability and Equity (RAISE), others	There are currently a variety of federal grant opportunities – particularly for improvements to multimodal infrastructure. The City, County, and ODOT could submit a joint application for federal funding.
State	Statewide Transportation Improvement Program (STIP), All Roads Transportation Safety (ARTS), Multimodal Active Transportation Fund, Statewide Transportation Improvement Fund (STIF), Transportation and Growth Management (TGM) Grants	ODOT has several programs to support infrastructure improvements. There are currently no projects in South Madras programmed into ODOTs most recent STIP cycle.
County	State Highway Fund, System Development Charges (SDCs), Motor Vehicle Revenue	For improvements outside of the UGB the County may support the plan by implementing portions of the Preferred Concept or leverage funding toward state or federal funding opportunities
City	Street Fund, SDCs, urban Renewal Plan	The City can use local funding sources to implement portions of the Preferred Concept or leverage funding toward state or federal funding opportunities.
Private	Developers, private/public partnerships	Economic development is the critical driver for improvement needs throughout the South Madras Area. Through the City's Community Development Department, developer contributions could be included in conditions of approval for developments.

NEXT STEPS

On the week of January 15th, the PAC will meet for the third time to discuss the preferred alternative. The PAC will provide a final recommendation to the PMT for development of the Draft Refinement Plan. This plan will be presented to the public at the final public meeting and will be presented to the City County and Board of Commissioners for adoption.

APPENDIX

- Appendix A – PAC #2 Summary
- Appendix B – Public Meeting #2 Summary
- Appendix C – Assessment of Feedback
- Appendix D – Prospectus Sheets
- Appendix E – Cost opinion for US97 Mainline Enhancement

Appendix A

SUMMARY OF OUTREACH EVENT

Event:	Project Advisory Committee Meeting #2	Project #: 27003.004
Date/Time:	October 12, 2023 1 p.m. – 4:00 p.m.	
Location:	Central Oregon Community College Madras Campus Community Room 1170 E Ashwood Rd, Madras, OR 97741	
Contact:	Camille Alexander, HDR and Andrew Johnson, HDR	
Staff Present:	2 KAI staff, 2 HDR staff	
Number of Attendees:	~18 Total (in-person & virtually)	

OVERVIEW

On October 12, 2023, the project team hosted the second project advisory committee (PAC) meeting in Madras, Oregon from 1 p.m. to 4 p.m., along with the second public meeting (summarized separately) from 5 p.m. to 7 p.m. Both events were held at Central Oregon Community College's Madras Campus.

The meeting's primary purpose was to gather feedback from the PAC about the three concepts presented in the technical memo sent before the meeting. Kittelson & Associates staff summarized the technical memo and solicited feedback from the attendees.

Displayed below are the slides and overview that were presented to the PAC attendees.



Needs Statement

- Based on existing and future condition analysis and feedback from the PAC and community the following needs have been identified:
 1. **Insufficient side street and long-term mainline US97 capacity**
 2. **Lack of East-West connectivity between J St and US26**
 3. **Incomplete pedestrian and bicycle network**



Planning Context Overview

- Concepts consistent with adopted TSP
- Roadway and Intersection projects included in the TSP were also included in the concept layouts
- **Why aren't we looking at a bypass?**
 - US97 is expected to have mainline capacity through 2045
 - Will require statewide goal exception for road outside the UGB
 - Previous TSP truck bypass route unfeasible due to development north of the study area
 - Cost prohibitive to construct bypass in 20-year horizon



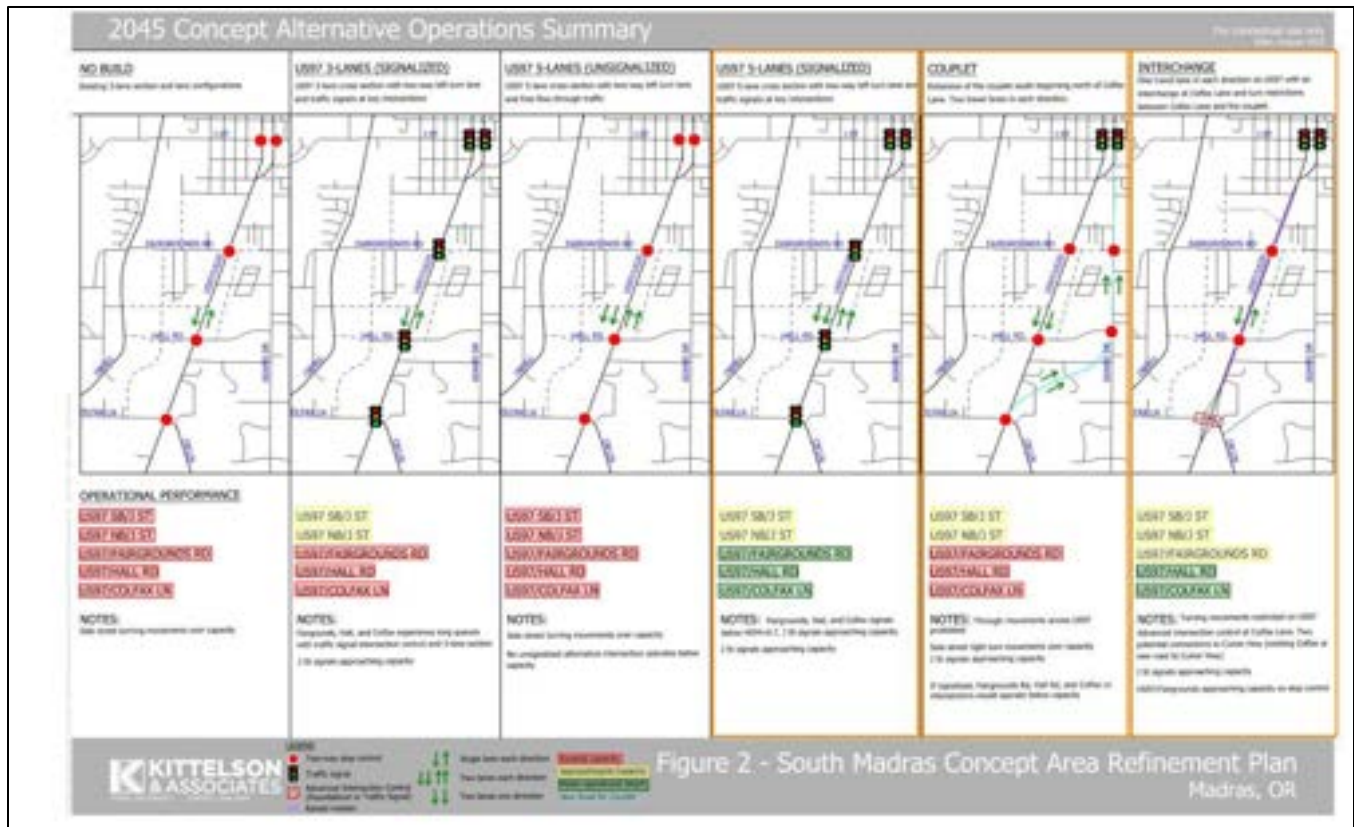


Figure 2 - South Madras Concept Area Refinement Plan
 Madras, OR

Mainline Enhancement Characteristics Concept #1

- **Constructability**
 - Within existing US97 100ft ROW
- **Operations**
 - Intersections below capacity
- **Safety**
 - Total crashes could increase at intersections
- **Multimodal**
 - Sidewalks/bike lanes
 - Signalized crossing phases for peds/bikes
 - Increased crossing distances on US97
- **Access Management**
 - Turn movement restrictions (median) along corridor
 - U-turns at key intersections permitted
- **Environmental**
 - No significant impacts anticipated
- **Cost Opinion**
 - \$20-25 million

Couplet Characteristics Concept #2

- **Constructability**
 - Minimal impacts to existing US97
 - Significant grading/excavation for new road & upgrades to Adams Dr
- **Operations**
 - Intersections below capacity with traffic signals at US97 key intersections
- **Safety**
 - Total crashes could decrease at intersections and for peds/bikes
 - Reduces conflict points at intersections
- **Multimodal**
 - Sidewalks/bike lanes
 - Increases route choices
 - Reduces crossing distances
 - Signalized crossing phases for peds/bikes
- **Access Management**
 - Out of direction travel for users and deliveries
 - Potential wayfinding challenges
- **Environmental**
 - No anticipated impacts to sensitive areas
 - Requires environmental analysis of new road connection to Adams Dr
- **Cost Opinion**
 - \$20-25 million

Interchange Characteristics Concept #3

- **Constructability**
 - Impacts to adjacent property owners at US97/Coltax
 - Phasing challenges during construction
- **Operations**
 - Intersections below capacity with turn restrictions.
 - Right-in, right-out only or Right-in, right-out, left-in at key intersections
- **Safety**
 - Total crashes could decrease at intersections
 - Reduces conflict points at intersections with turn restrictions
- **Multimodal**
 - Sidewalks/bike lanes
 - Crossing distances reduced with medians on US97
- **Access Management**
 - Turn movement restrictions (median) along corridor
 - U-turns at key intersections may be necessary to support business access
- **Environmental**
 - New roadway in floodplain
 - Requires environmental analysis of interchange impact area
- **Cost Opinion**
 - \$50-55 million

Notable input received during the meeting included:

General/Overview

- Consider phasing or interim improvements as a part of the final plan.
- Consider improvements at Hall Road, such as signal or roundabout with any concept.
- Consider beautification – would the five-lane section remove trees and landscaping?
- This project could be eligible for funding sources. However, there is currently no specific funding that is currently available for this project.
- A light at J Street would break up traffic congestion and synchronizing the traffic lights would help.
- Roundabout at Hall Street might be a good idea. If roundabouts are properly designed, freight industry can navigate them.
- Interchange would be very expensive and widening US97 would be less costly. Consider looking at something in the interim. What is the most reasonable thing to solve the problem today?

Mainline Enhancements (Concept #1)

- Concern about the median cutting off access to many businesses for left-turning vehicles.
- Does not enhance crossing opportunities for multimodal users because it increases three lanes to five lanes.
- Does not reduce reliance on vehicles.
- Good from a capacity standpoint, but bad for safety since more lanes are being added.
- Since this is a high crash area, slower speeds would help. However, may have more rear-ends and sideswipes due to more lanes.
- This concept utilizes what is already there to make it work and is more cost effective.
- It is currently difficult to cross US97. This option makes it functional to cross US97 if more traffic lights are added.
- Freight deliveries will be harder/restricted due to median, but connections will be better due to enhanced crossings.
- Addresses existing gaps and deficiencies in vehicle, transit, and pedestrian networks.
- Businesses along the corridor would be more impacted by the median, which is not as supportive for the owners.
- If this concept was to move forward, there would need to be a break in the median at Loves truck stop in order to provide access for left-turning freight vehicles.
- Adding additional signals would slow down speeding traffic.
- When you have five lanes, it makes it hard to turn out of driveways. Project team should look at where left turns would be problematic.
- Could this concept have a multi-use path? A variation of a bike facility right next to two lanes is a concern. If this is to move forward, a multi-use path off of the roadway would be preferred.

Interchange (Concept #2)

- Promotes long-term solutions.
- The Interchange needs to address Love's Truck Stop access (northbound); perhaps this is a left turn lane in, with space to hold a few trucks.
- Improves gaps and deficiencies since the new local network is included.
- Allows more access for pedestrians to cross and improves multimodal crossing.
- This concept costs twice as much, so should have double the value.
- If trucks are driving onto Colfax Road, this might be disruptive to the residents in this area.
- Businesses along the corridor would be more impacted by the median, which is not as supportive for the owners.
- Connection at Colfax Road might work better as a roundabout. Option 1 would be less intrusive since it wouldn't be breaking up existing properties.
- An existing building named Tribal House would be difficult to purchase.

- If Option 1 were to move forward, do some alignment of local connections to improve/straddle property lines.
- All types of interchanges could be used for this concept, does not have to be a diamond interchange.
- If this concept moves forward, will need to look into spacing distance of the next signal to the location of the interchange.
- Routing and wayfinding signing would be an issue, especially with freight traffic.
- This option may need a goal exception from ODOT.

Couplet (Concept #3)

- For this concept, verify the geometry for the area at Hall Road.
- This concept addresses existing gaps and deficiencies in the bike/pedestrian network due to it being one lane.
- Does not improve traffic circulation within the overall network.
- Does not promote a long-term solution for the corridor.
- Does not address mobility serviceability for local and regional freight.
- Does not support business activity in and around the study area; there are a lot of unknowns around which businesses will be located on the east side. It would also disproportionately impact existing businesses on the east side.
- Does not address area with identified crash history. There will be a tight turn in order to make this concept work well. The intersection currently has a crash history, and this concept makes it more complicated.
- Does not provide enhanced crossing opportunities for multiuser. Do like the multi-use path; this type of path would be good to consider in other options.

The project team developed the following communication materials:

- **Website:** The ODOT-hosted project website was updated prior to the meeting. The website features a project overview, schedule, and a library of project documents.

Figure 1. Project Website



- **Presentation:** The meeting featured a PowerPoint presentation used to guide the discussion.

Figure 2. Project Advisory Committee Meeting #2 Presentation



- **Flyer:** The project flyer developed in October 2023, was distributed to attendees.

Figure 3. South Madras Concept Area Refinement Plan Flyer

South Madras Concept Area Refinement Plan
Creating a community-driven blueprint for safe, accessible and convenient travel

The City of Madras and The Oregon Department of Transportation (ODOT) are developing the South Madras Concept Area Refinement Plan.

The purpose of the South Madras Concept Area Refinement Plan is to address existing and future safety and operational challenges along US 97/US 26 in south Madras.

What will this plan do?

- Identify safety and operational issues along the corridor and propose solutions.
- Examine the corridor's land use patterns and their impact on traffic conditions.
- Support local and regional economic development objectives.

GET UPDATES:
www.southmadrasrefinement.com

You're invited to a public meeting!
October 12, 2023 at 3 p.m.
Community Room
1170 E Ashwood Road, Madras, OR 97741

Join the project team for a public meeting to learn more about the plan and review initial project concepts.

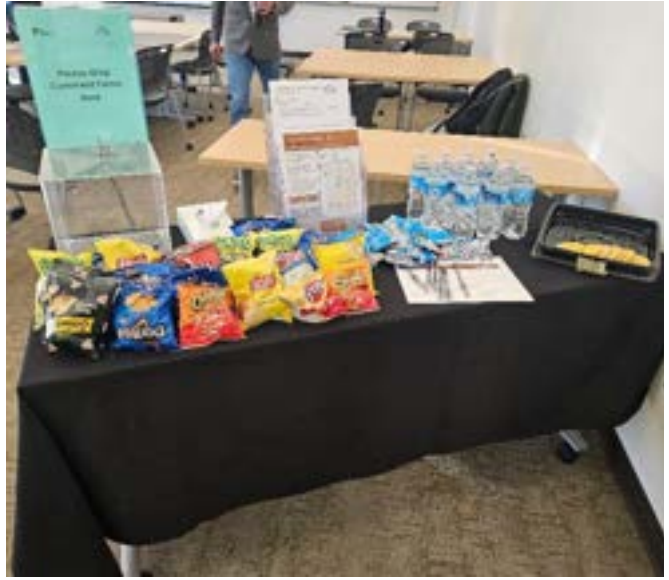
Study Area: Includes south Madras and the surrounding area bounded by J Street to the north, Culver Highway to the west, Colfax to the south, and Adams Drive to the east.

Contact:
Don Marshmore (he/him/his)
Senior Transportation Planner
ODOT Region 6
(541) 588-6562
donm@dot.state.or.us

You may qualify to receive payment for your participation in the plan through ODOT's Equalized Employment Compensation Program (EEO). If you do not already receive compensation from your employer for your involvement, contact donm@dot.state.or.us for more information.

For ADA (Americans with Disabilities Act) or Civil Rights Title VI accessibility concerns, translation/interpretation services, or more information, call 800-333-4138, (503) 800-7200 or Oregon Relay Service 1-800-455-6771.

EVENT IMAGES



SIGN-IN SHEET

Upon entering, guests were greeted at a sign-in table and encouraged to visit the project website.

Name	Organization/ Affiliation (optional)
Matt Powlison	Jefferson County PW
GARY WALKER	City Counselor
Bob Sanders	Creations Northwest
Margo Clinton	SUS DEVELOPMENT
LUCY ANTONSEN	"
Mark Barrett	ODOT
Chris Cheng	ODOT
Fatima Taha	City of Madras
michele Quinn	City of Madras
Lamar Yoder	City of Madras
Dave Hirsch	ODOT



South Madras Concept Area Refinement Plan
Public Meeting #2 – October 12, 2023



Name	Organization/ Affiliation (optional)
Kyan Van Dyke	Lava Travel stops
Don Morehouse	ODOT
Nick Sneed	City of Madras
David Amton	ODOT
Carmie Alexander	HDR

COMMENTS/FEEDBACK

Table 1. PAC Comment Log

Date	Name	Email	Comment
10/12/2023	Zack Quinn	zquinn@ci.madras.or.us	<p>After viewing the proposed maps of the changes for the roads I had a few suggestions, I really like the route changes for HWY 361 with the roundabouts at J and Hall. I do not think re routing north bound traffic down South Adams will really fix the issue of backing things up through town especially as we continue to expand. I really like the original plan from years back by creating a bypass option at the North Y to catch all truck traffic and pass through traffic and route them out to hwy 361 and on out. I think it would be better option to keep things from backing up but I would imagine this option would call for the need of a stop light at Colfax and Hall Rd and even possibly J street to create plenty of breaks in traffic. It seemed like the local businesses were against the idea years back but that was before the Redmond bypass happened so maybe if its still an option to present it again I think more people would be willing to agree. Thank you for allowing me to write in this suggestion.</p>

10/12/2023	Lamar Yoder	lyoder@cityofmadras.us	<p>My opinion: I prefer the Interchange Option 1 or 2 Alternative. However I would like to see an overpass built at the 26, 97, Colfax junction. The semi-trucks could go north or south or access 26 from this overpass. I believe this would be the safest and easiest if done in a couple of stages. This would allow traffic to pass smoothly through the south part of madras and reduce risk.</p> <p>If pedestrians need to cross the highway, crossing can be installed instead of traffic lights at Hall and Brush. If traffic is busy on either side of the highway, traffic can always access the highway via the overpass. I Know the overpass would be a great expense, but we could build it without the overpass first, then add at a later date. I believe an overpass would allow better traffic flow for the growth that is expected, past that 25 year mark and remove accident risk, by not installing traffic lights at Hall and Brush and Colfax.</p>
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Appendix B

SUMMARY OF OUTREACH EVENT

Event:	South Madras Public Meeting #2	Project #: 27003.004
Date/Time:	October 12, 2023 Public Meeting: 5 p.m. - 7 p.m.	
Location:	Central Oregon Community College Madras Campus Community Room 1170 E Ashwood Rd, Madras, OR 97741	
Contact:	Camille Alexander, HDR and Andrew Johnson, HDR	
Staff Present:	2 KAI staff, 2 HDR staff	
Number of Attendees:	~35 Total	

OVERVIEW

On October 12, 2023, the project team held Public Meeting #2 from 5 p.m. to 7 p.m. in Madras, Oregon. This meeting was the second opportunity for the public to provide input on the South Madras Concept Area Refinement Plan. The event was intended to gather feedback from the community about the three concepts presented, and some of the key issues facing the study area relative to the US97/US26 corridor. The event attracted approximately 35 attendees and was busiest from 5 p.m. to 6 p.m. The meeting was an open house where people arrived at their leisure and learned about the project by visiting eight different topic-specific stations supported by mounted displays.

Visitors interacted with project representatives from the City of Madras, Oregon Department of Transportation, Kittelson & Associates, and HDR. Upon entering, guests were greeted at a sign-in table and encouraged to visit the project website. Discussions between attendees and project team members were generally positive, but some attendees were skeptical of how the project would be implemented. People supported the study's goals, recognized the need to enhance safety along the corridor for all users, and a few attendees were aware of the project website.

The eight topic stations were:

1. Project Overview
2. Study Area
3. Project Schedule
4. Needs Statement
5. Goals
6. Opportunities to Stay Involved
7. Concepts Operations Summary
8. Three Detailed Concept Boards: Couplet, Interchange, Mainline Enhancements

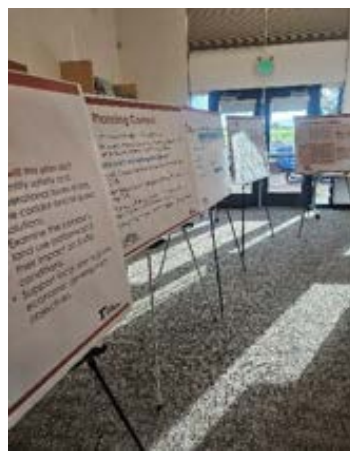
Six written comments were received, along with seven completed surveys; information about these responses is included below.

Based on the unedited written comments from attendees, key themes included:

- Numerous examples of unsafe intersections that would benefit from signals, design changes and/or restriping.
- The relationship between traffic volume, speed, and safety.
- The benefits and challenges associated with a bypass.

- A common response the team heard from the public was: the Couplet was least liked and the Mainline Enhancement and Interchange concepts would be more preferred.

EVENT IMAGES



SIGN-IN SHEET



South Madras Concept Area Refinement Plan Public Meeting #2 - October 12, 2023



Name	Organization/ Affiliation (optional)
Maribela Hall	
David Hall	
LARRY MITCHELL	
Guy Chittenden	
Gloria Morton	
David & Cathy Chapman	
Jim Rabi	
Dennis Hardman	
Mona Hardman	
Clifford Reynolds	Trails West
Sara Weiss	Grocery Outlet of Madras



South Madras Concept Area Refinement Plan
Public Meeting #2 – October 12, 2023



Name	Organization/ Affiliation (optional)
Pat L. Kuis	Madras Pines
Andrew Mars	
Trevor Beaves	
Trudy & Kevin Haugen	
Steve Nitschelm	Cascade East Vet Clinic 1689 SW Hwy 97, Madras
Sam Wilkins	
Gray L. Harz	FRANKS
JAYROLD POLLOCK	TRUCK DRIVER - HIGHWAY PAVING
David & Cathy Chagnon (Chagga Auto Parts)	Chagga Auto Parts

PUBLIC SURVEY RESPONSES

Participants were provided survey questions to complete throughout the duration of the public meeting. Below is the list of questions asked, recorded responses are included in Table 1.

1. Which concept do you prefer for the plan? Couplet, Interchange, Mainline Enhancement
2. What do you like about your preferred concept?
3. Which concept gives you the most concern? Couplet, Interchange, Mainline Enhancement
4. What would you change about this concept?
5. What are your overall concerns when traveling along US97/US26 in the South Madras study area?

Table 1. Public Survey Responses

Date	Name	Email	Comment
10/12/2023	Dennis Prince	Dennisprince429@gmail.com	<p>Question 1: Prefer Mainline Enhancement</p> <p>Question 3: Concerned that we are planning for a 20 year fix that will take 18 years to complete</p> <p>Question 4: Would prefer to work toward a long term solution like a real bypass to get through traffic around town.</p> <p>Question 5: that we haven't asked for input from the people that are impacted until you have your options. The local people know the problem better then someone out of the area relying on statistics.</p>
10/12/2023	Jon Weiss	Jonweiss0@gmail.com	<p>Question 1: Prefer Mainline Enhancement – 5 lane with signals</p> <p>Question 2: This concept is less disruptive, doesn't divert traffic away from existing businesses, allows for traffic breaks</p> <p>Question 3: Do not prefer the Couplet</p> <p>Question 4: Does not like that the Couplet diverts traffic</p> <p>Question 5: I own Grocery Outlet, and many customers have concerns getting in/out of parking lot. Signals at Hall and Fairgrounds would break up traffic.</p>

10/12/2023	Moua Hardman	Mouahardmandh3mh@outlook.com	<p>Question 1: Prefers Couplet</p> <p>Question 2: It reduces traffic. Traffic can flow more easily when there are designated streets for separation of some vehicles.</p> <p>Question 3: Does not like the Interchange. The roads going through Madras already bear a tremendous burden from tourist traffic heading North and South. Freight vehicles are placed in precarious positions due to other vehicles overcrowding the roadways.</p> <p>Question 4: Put light for ease of access and egress from the main roadway. Especially for business traffic.</p> <p>Question 5: Vehicles being able to turn onto Prineville-Madras Highway safely while traveling south. Ability for freight vehicles to get onto Hwy 97 from Loves Truck Stop. Especially going Northbound. It is extremely difficult to correct the volume of vehicles using 97/26 when an alternate bypass is not proposed.</p>
10/12/2023	David and Mariseia Hall	-	<p>Question 1: Prefers Mainline Enhancement or Interchange Option #2</p>
10/12/2023	Len Parsons	Lenpar59@gmail.com	<p>Question 1: Prefers Interchange – Option #2</p> <p>Question 2: I live out 26 south of town and do not have problem getting onto 97 Northbound. Interchange would help if Southbound only. People living west of 97 could avoid Colfax easily.</p> <p>Question 3: Does not like the Couplet – too many residential impacts</p> <p>Question 5: Rush hour traffic, bottlenecks, holiday/weekend backup</p>
10/12/2023	Lance Mitchell	1971ssnova@gmail.com	<p>Question 1: Prefers Interchange or Mainline Enhancement</p> <p>Question 3: Does not like the Couplet</p> <p>Question 5: I live at the east end of Hall Street and have for over 30 years. We need at least one stop light at the south end of Madras. One at Hall Street and one at Colfax Lane.</p>

10/12/2023	Trevor Beaver	Trevorr.z.beaver@gmail.com	<p>Question 1: Prefers Mainline Enhancement</p> <p>Question 2: I believe a five lane with lights at each section except Hall Rd in front of Loves, which a roundabout in front of Loves would be easier on the traffic. Or the interchange alternative 2 at Colfax/US26.</p> <p>However, if it were a five lane I would like to see the ability to turn left at the cross section.</p> <p>Question 3: Does not like the Couplet</p> <p>Question 5: I find it difficult entering the highway from Fairgrounds road.</p>
10/13/2023	Clifford Reynolds		<p>I wanted to speak to you last night in regards to some of the concepts of the south Y. My question is in regards to fairgrounds being extended to the west towards Adams and then extending the couplet. If this is a more or likely option to occur I would like to know because it would change what I would want to develop on my property which is the 6 acres fairgrounds would have to pass through to reach Adams from 97</p>

Appendix C

MEMORANDUM #7 – APPENDIX C


This appendix provides an assessment of the feedback provided by the Public Advisory Committee (PAC) and public during the October 12th PAC and Public meetings. The table below summarizes the feedback received and documents reasoning for or against incorporating comments into the updated concepts. Comments related to the couplet are not included in the table as the couplet was removed from consideration.


Comment	Incorporated?	Reasoning
General		
There is no funding for the project. We are planning for a 20-year fix that could take 18 years to complete.	N/A	While funding is not guaranteed, the scope of the Refinement Plan evaluates a 20-year horizon for improvements to the system.
A bypass around US97 should be considered. It would solve traffic issues in Madras.	No	Discussed in Technical Memorandum #6, a bypass is not being considered through this project. A bypass is prohibitively expensive to implement in a 20-year horizon, would require a goal exception for a roadway outside of the UGB, and requires a robust public process outside the scope of this project. A bypass will not be included as a preferred alternative for this project but will be further evaluated during the next TSP Update.
Improve the aesthetic of US97 with beautification elements.	Yes	Proposed cross sections for both alternatives include landscaping buffers between the roadway and the sidewalk. Detailed landscaping plans and preferences will be further addressed in the design process.
Consider phasing or interim improvements for the ultimate solution.	Yes	Phasing and implementation strategies are a critical criteria component of this project and are further discussed the Implementation and Funding Strategy section in this memorandum.
The existing skew at the intersection of Culver Highway and Colfax Lane makes it hard to turn and	Yes	All concepts have been modified to remove the intersection skew. This change will improve sight distance and functionality at Culver Highway/Colfax Lane.

hard to see approaching vehicles.		
Grade Separated Interchange		
Promotes a long-term solution for the US 97 corridor.	N/A	Comment does not necessitate alterations to concept.
Allows for shorter crossing distance of US 97 for pedestrians due to a two-lane cross section and medians.	N/A	Comment does not necessitate alterations to concept.
Challenges with routing and wayfinding, for out of direction movements (i.e. left out).	N/A	Comment acknowledged. Freight and passenger vehicles would need to use the local system for left turn movements onto US97.
The concept is double the cost and therefore should have double the value compared to the other alternatives.	N/A	Comment does not necessitate alterations to concept.
Look into options for a traffic signal at Hall Road to be accompanied by an interchange at Colfax Lane.	No	The project team met with David Warick, the ODOT Interchange Manager, to discuss the feasibility of an interchange in South Madras. According to the Oregon Highway Plan, when installing an interchange the next nearest traffic signal must be 1 mile away. This would preclude any traffic signal from being installed on US97 north of Colfax Lane until J Street.
The length of the northbound on-ramp as presented is too long and will have access constraints on US97.	Yes	The interchange design would require further refinement as part of an Interchange Management Area Plan (IAMP), however, updates to the northbound on-ramp will be made to minimize the impact of the ramp to access along US97 and maximize the distance to Hall Road to reduce weaving maneuvers.
US97 Mainline Enhancement		

<p>A mainline enhancement is the least disruptive to surrounding lands and does not divert traffic away from existing businesses.</p>	<p>N/A</p>	<p>Comment does not necessitate alterations to concept.</p>
<p>Preference to not include a median down US97 – leave two-way center turn lane to reduce impacts to business access.</p>	<p>No</p>	<p>A median on US97 accompanied by turn lanes at critical locations reduces conflict points and reduces the likelihood of crashes along the corridor – particularly high severity crashes such as angle or turning movement crashes that can occur from crossing multiple travel lanes at an uncontrolled intersections or driveways. Open access on a high-volume highway with multiple travel lanes in each direction is a condition similar to South Redmond approximately 25 miles south of Madras.</p> <p>To address the crash history, access management, economic viability, and operations of US97, ODOT will be constructing a median along US97 in Redmond with U-turns in critical locations, similar to the recommendation for the mainline enhancement. Medians are a critical component to the viability and safety on the corridor and are recommended as part of the mainline enhancement concept.</p>
<p>Addresses capacity of highway but creates longer crossings for multimodal users.</p>	<p>Yes</p>	<p>Use of medians and midblock crossings to reduce distance between crossings will provide refuge areas for people walking and biking. Updated concepts will include midblock crossing locations to reduce the pedestrian crossing spacing.</p>
<p>Would slow speeds through Madras but would also require freight to stop on the highway.</p>	<p>N/A</p>	<p>Comment does not necessitate alterations to concept.</p>

Appendix D

<p>Project Element: Culver Highway intersection improvements between Fairgrounds Road and Colfax Lane</p>	
<p>Project Element Limits: Culver Highway and critical side streets including Fairgrounds Road, Hall Road extension, and the New Road from US97/Colfax Lane to Culver Highway</p>	
<p>Purpose: Roadway and intersection improvements at Culver Highway/Fairgrounds Road.</p> <p>Construction of the Hall Road extension and a new roundabout at US97/Hall Road to address intersection operations/capacity and safety.</p> <p>Construction of a new road from US97/Colfax to Culver Highway and a new roundabout at US97/New Road to support traffic operations and safety.</p> <p>The Hall Road extension and the New Road support the project goals of improving local network connectivity and providing alternate north-south access through Madras by means of Culver Highway.</p>	
<p>Improvement Description:</p> <ul style="list-style-type: none"> Proposed single lane roundabouts at Hall Road and the New Road on Culver Highway Maintain a side street stop control intersection configuration at Culver Highway/Fairgrounds Road 	
<p>Considerations:</p> <ul style="list-style-type: none"> Right of way impacts to adjacent properties should be minimized in roundabout design. The next proposed roundabout at Culver & Hall will be under 1000 feet away and would likely include a continuous median between the roundabouts. Access management for the properties in between this intersection and the Hall Road extension on the west side Through the design efforts the design team would need to coordinate with ODOT, the City, and the freight community to accommodate necessary design vehicle movements through the roundabouts. Speed control approaching the roundabouts will be critical as this section of Culver Highway is located on a curve and known to have high speeds. 	
<p>Cost Estimate: Cost of improvements included in City TSP. Specific intersection and segment improvement not included in the overall cost estimate</p>	
<p>Potential Phasing:</p> <ul style="list-style-type: none"> The Hall Road extension and New Road could be constructed as development occurs. An interim side street stop controlled intersection design could be implemented prior to constructing the roundabouts if a roundabout is not needed from a capacity perspective. 	

<p>Project Element: Proposed Traffic Signals at US 97 couplet / J Street</p>	
<p>Project Element Limits: US 97 NB (5th Street)/ J Street and US 97 SB (4th Street)/ J Street intersections and the influence area near the intersections for turn lane/ queue development</p>	
<p>Purpose: Improve capacity, safety, and sight distance challenges at these intersections by upgrading side street two-way stop controls into traffic signals.</p> <p>The traffic signals also provide phasing for side street turning movements on a critical east-west connection facilities in the core downtown area for local circulation.</p>	
<p>Improvement Description: This improvement includes the upgrade of the two intersections from side street stop controls to traffic signals. The existing lane configurations and movements are maintained.</p>	
<p>Considerations:</p> <ul style="list-style-type: none"> • These intersections are less than 250 feet apart; proper signal timing design and coordination will be critical to avoiding queue spill back onto the other side of the couplet • There are three commercial driveways within 100 feet upstream of the US 97 SB (4th Street)/ J Street intersection. Preliminary access management strategies developed in the US97 :Earl St to Colfax Ln project show recommend closing the two adjacent accesses on the northeast corner of the intersection. • One of two fire station driveways is within 125 feet upstream of the US 97 NB (5th Street)/ J Street intersection (the other being onto J Street) • There is a large utility pole and limited right of way on the SW corner of US 97 NB (5th Street)/ J Street that currently limits sight distance. 	
<p>Cost Estimate: Approximately \$500,000-\$750,000 per traffic signal. Includes traffic signal system only.</p>	
<p>Potential Phasing:</p> <ul style="list-style-type: none"> • The US 97 SB (4th Street)/J Street intersection does not meet operational standards in the existing condition. Both intersections exceed operations standards in the year 2045. There may be phasing opportunities to construct the southbound signal first if funding is limited, however, for coordination driver expectancy, and queue spill back control, both signals should be constructed simultaneously. 	



Project Element: Traffic Control at US 97/US 26/Colfax Lane

Project Element Limits: US 97/US 26/Colfax Lane intersection and the influence area near the intersection for turn lane/ queue development

Purpose: Improve capacity, safety, and side street turning movement challenges at the intersection by upgrading side street two-way stop with a traffic control device. A traffic signal has been assumed for the purposes of this Refinement Plan. Specific intersection control would need to be determined through applicable ODOT procedures at the time of project development.

This intersection is included in the Jefferson County Transportation System Plan and a safety priority intersection. The TSP documents the need to reduce speeds, improve turning radii for both passenger and oversized vehicles, improve awareness and illumination of the intersection, and reduce crossing distances.



Improvement Description: This improvement includes upgrading the intersection from side street stop control with a traffic control device. The intersection includes dedicated left turn lanes on all approaches and increases the cross section on US97 to two travel lanes in each direction. The improvements also introduce a median south of the intersection to bring awareness to the intersection and to separate northbound and southbound traffic. The signal would be equipped with illumination and advance intersection warning signs.

Considerations:

- The connection between Colfax Lane and the New Road (west leg) and US26 and a new road to Adams Drive will need to be further defined in the design process to consider existing properties, impacts to resource lands, available right-of-way, right-of-way acquisition, and access control.
- Improvements to increase awareness of the intersection – particularly for northbound vehicles entering Madras from a high-speed, rural environment.
- Limiting or avoiding impacts to adjacent farms and resource lands.

Cost Estimate: Approximately \$500,000-\$750,000. Based on traffic signal system only.

Potential Phasing:

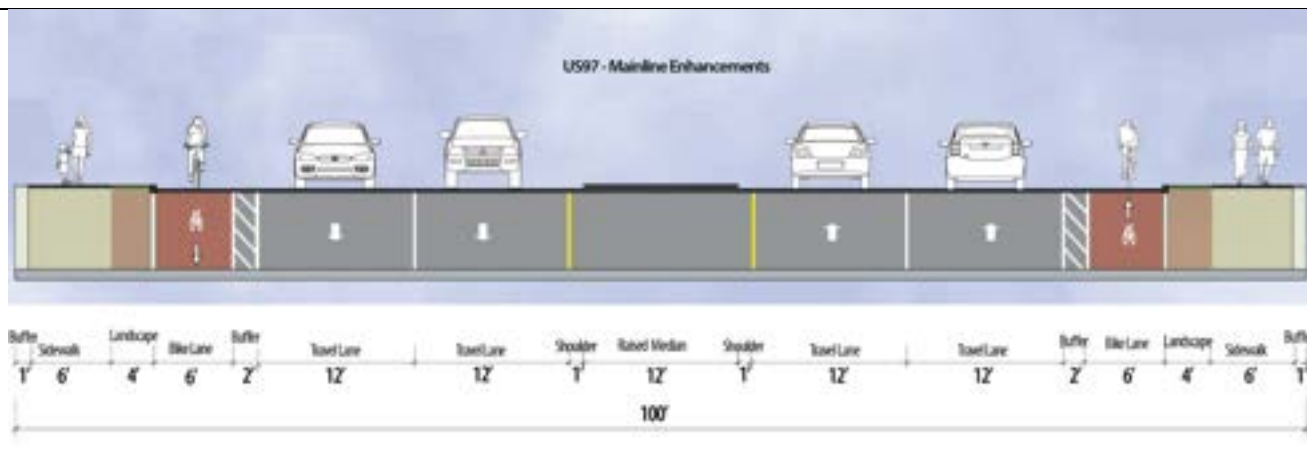
- Until such time as the new US road to the northwest is required, Colfax Lane could be the connecting west leg of the intersection.
- The traffic control device, such as a traffic signal, can be installed as growth opportunities increase side street volumes and funding is available. Depending on timing and location of economic development, other improvements along the corridor could supersede the construction of the traffic control device at this location.
- A traffic control device can be built out to the full cross section prior to the entire roadway being upgraded.



Project Element: US 97 Cross Section

Project Element Limits: Segment between Colfax Lane and J Street

Purpose: Provide vehicular, bicycle, and pedestrian facilities on US97 through south Madras. This segment of US97 serves heavy through volumes and freight traffic and also serves as a commercial center for Madras.



Improvement Description: The long-term cross section of the US 97 corridor with 100' of total ROW is as follows:

- Two 12' travel lane in each direction
- One 12' two-way raised median with 1' striped buffer
- 2' bicycle buffer on both side
- 6' bicycle lane on both sides
- 4' shoulder on both sides
- 6' sidewalk on both sides
- 1' buffer to the back of right-of-way on both sides

Considerations:

- There are several locations along the corridor with notable grade differentials between the existing roadway to the extents of the right-of-way
- Access management challenges with grades and existing driveway throat widths may require frontage road system or driveway consolidation.

Cost Estimate: \$40-50 million for widening of US97. Includes stormwater, grading, full depth reconstruction from Colfax Lane to L Street. Does not include right-of-way

Potential Phasing:

- Intersections can be constructed first to the full cross section and can tie back into existing. Segment capacity on US97 available until 2045. Therefore, the mainline can be constructed as growth occurs and funding becomes available
- Access management can be addressed as segments of the highway are reconstructed



Project Element: Traffic Control at US 97/Fairgrounds Road

Project Element Limits: US 97/Fairgrounds Road intersection and the influence area near the intersection for turn lane/ queue development

Purpose: Improve capacity, safety, and side street turning movement challenges at the intersection by upgrading side street two-way stop with a traffic control device. A traffic signal has been assumed for the purposes of this Refinement Plan. Specific intersection control would need to be determined through applicable ODOT procedures at the time of project development.



Improvement Description: This improvement includes upgrading the intersection from side street stop control with a traffic control device. The intersection includes dedicated left turn lanes on all approaches and increases the cross section on US97 to two travel lanes in each direction. The improvements also include median barriers north and south of the intersection to provide access control onto US97.

The concept shows the location of the existing Rectangular Rapid Flashing Beacon (RRFB) approximately 300 feet north of the intersection. This crossing will need to be modified as the cross section is expanded to two travel lanes in each direction.

Considerations:

- Maximizing green time on US97 to reduce queuing on the highway that require large trucks to stop and block nearby access driveways.

Cost Estimate: Approximately \$500,000-\$750,000. Based on traffic signal system only.

Potential Phasing:

- The traffic control device, such as a traffic signal, can be installed as growth opportunities increase side street volumes and funding is available. Depending on timing and location of economic development, other improvements along the corridor could supersede the construction of the traffic control device at this location.
- A traffic control device can be built out to the full cross section prior to the entire roadway being upgraded.

<p>Project Element: Traffic Control at US 97/Hall Road</p>	
<p>Project Element Limits: US 97/Hall Road intersection and the influence area near the intersection for turn lane/ queue development</p>	
<p>Purpose: Improve capacity, safety, and side street turning movement challenges at the intersection by upgrading side street two-way stop with a traffic control device. A traffic signal has been assumed for the purposes of this Refinement Plan. Specific intersection control would need to be determined through applicable ODOT procedures at the time of project development.</p> <p>This intersection supports nearby economic development including an existing truck stop on the northwest corner of the intersection.</p>	
<p>Improvement Description: This improvement includes upgrading the intersection from side street stop control with a traffic control device. The intersection includes dedicated left turn lanes on all approaches and increases the cross section on US97 to two travel lanes in each direction. The improvements also include median barriers north and south of the intersection to provide access control onto US97.</p>	
<p>Considerations:</p> <ul style="list-style-type: none"> • Accommodating large vehicles to and from the truck stop on the northwest corner. • Maximizing green time on US97 to reduce queuing on the highway that require large trucks to stop and block nearby access driveways. 	
<p>Cost Estimate: Approximately \$500,000-\$750,000. Based on traffic signal system only.</p>	
<p>Potential Phasing:</p> <ul style="list-style-type: none"> • The traffic control device, such as a traffic signal, can be installed as growth opportunities increase side street volumes and funding is available. Depending on timing and location of economic development, other improvements along the corridor could supersede the construction of the traffic control device at this location. • A traffic control device can be built out to the full cross section prior to the entire roadway being upgraded. 	

Appendix E

Construction Item		
	Interchange	US97 Mainline Enhancements
US 97 Road Construction	\$2,700,000	\$8,500,000
US 97 Interchange Construction	\$18,600,000	-
Access Road Construction	-	-
Pedestrian Facilities	\$1,700,000	\$1,260,000
Raised Medians	\$ 1,120,000	\$1,120,000
Traffic Signal System	\$2,000,000	\$2,500,000
Earthwork	-	\$1,000,000
Drainage	\$5,000,000	\$5,000,000
Mobilization	\$3,113,000	\$1,940,000
Erosion Control	\$623,000	\$387,000
Construction Survey Work	\$623,000	\$387,000
Landscaping	\$1,600,000	\$970,000
Temporary Traffic Control	\$3,112,000	\$1,940,000
Illumination System	\$3,112,000	\$1,940,000
Permanent Striping/Signing	\$1,555,000	\$970,000
Design	\$8,964,000	\$5,582,000
Construction Engineering	\$8,964,000	\$5,582,000
50% Contingency	\$22,410,000	\$13,950,000
Total	85,000,000-90,000,000	\$50,000,000 – 55,000,000