

# Twin Tunnels Design/Construction Technical Team Meeting #4

June 28, 2012  
9:00AM – 12:00PM  
Elks Lodge  
1600 Colorado Blvd.  
Idaho Springs, Colorado

# Agenda

1. **Introductions**
2. **Other Corridor Project Updates**
3. **Overview and Responses to Outstanding Issues**
4. **Review Proposed Solutions**
  - Bridge Aesthetics
  - I-70 Retaining Wall Aesthetics
  - Impacts to Recreational Users
5. **Develop Criteria**
  - Public Information
  - Landscaping
  - Tunnel Portal
  - Incident Management Plan
6. **Next Steps**
  - Any new items for enhancement list

**Step 1**  
Define Desired Outcomes  
and Actions

**Step 2**  
Endorse the Process

**Step 3**  
Establish Criteria

**Step 4**  
Develop Alternatives and Options

**Step 5**  
Evaluate, Select, and Refine  
Alternatives and Options

**Step 6**  
Finalize Documentation and  
Evaluation Process



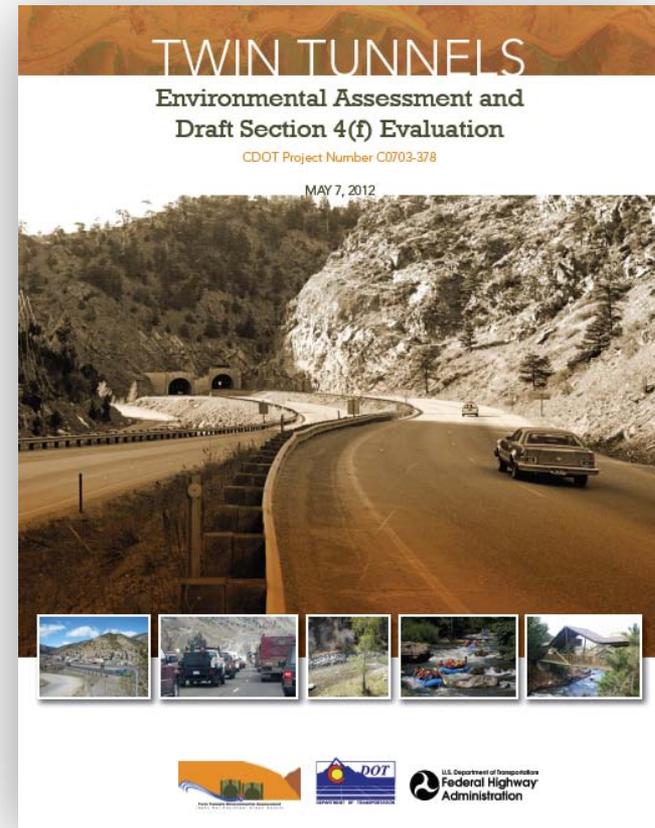
Twin Tunnels Design/Construction  
Idaho Springs/Clear Creek County



DEPARTMENT OF TRANSPORTATION

# Other Corridor Project Updates

- Frontage Road
- Twin Tunnels EA
- Westbound Tunnel Repairs
- Master I-70 Schedule
- Trailhead Improvements



# Core Values

- **Safety**
- **Mobility**
- **Gateway**
- **Wildlife**
- **The Creek**
- **Destination**
- **History**
- **Constructability**
- **Inclusivity**
- **Schedule**

AESTHETICS REVIEW  
Creek Walls, Railing, Landscape

AESTHETICS REVIEW  
Bridge Area, Landscape

AESTHETICS REVIEW  
Portal Area, Landscape

AESTHETICS REVIEW  
Noise Walls, Game Check, Landscape

**TWIN TUNNELS WIDENING**  
**ISSUES FOR TECHNICAL TEAM PRELIMINARY SCHEDULE**

ISSUES	2012														2013											
	MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		JAN		FEB		MAR		APRIL		MAY	
	2ND	4TH	2ND	4TH	2ND	4TH																				
	WEEK		WEEK		WEEK		WEEK		WEEK		WEEK		WEEK		WEEK		WEEK		WEEK		WEEK		WEEK		WEEK	
NOISE/ VIBRATION	---	*																								
TUNNEL LINING	---			*	●																					
RETAINING WALL RAILING	---	*																								
IMPACTS TO TRAFFIC	---	*	●		●		●		●																	
I-70 RETAINING WALL AESTHETICS		---	*	●	●																					
BRIDGE AESTHETICS		---		*	●	●																				
NEPA ANALYSIS OF CONSTRUCTION METHODS	---	*	●																							
ROCKFALL STRUCTURES		---	*	●																						
SIGNING			---				*	●																		
ADAPTIVE MITIGATION							*		●				●											●		
PUBLIC INFORMATION				---	*	●			●			●										●				
IMPACTS TO RECREATION USERS			---	*	●																	●				
INFRASTRUCTURE IN MEDIAN			---			*	●																			
COATINGS (COLOR)			---					*	●																	
LIGHTING			---				*	●																		
LANDSCAPING			---				*		*		*		*			●										
TUNNEL PORTAL AESTHETICS			---		*	●	●	●																		
INCIDENT MANAGEMENT PLAN			---			*	●																			
C.R. 314 FRONTAGE ROAD RETAINING WALL FASCIA				---				*	●	●	●															
TRAILHEAD IMPROVEMENTS					*	●		●		●			●		●								●			
ENHANCEMENT OPPORTUNITIES			---				*		*	●		*		●								*		●		

PACKAGE 1A      PACKAGE 1B      PACKAGE 2      PACKAGE 3

**LEGEND:**

- Shaded Items are Complete
- Discuss Criteria
- \* Presentation of Concepts
- Follow-up (As Needed)

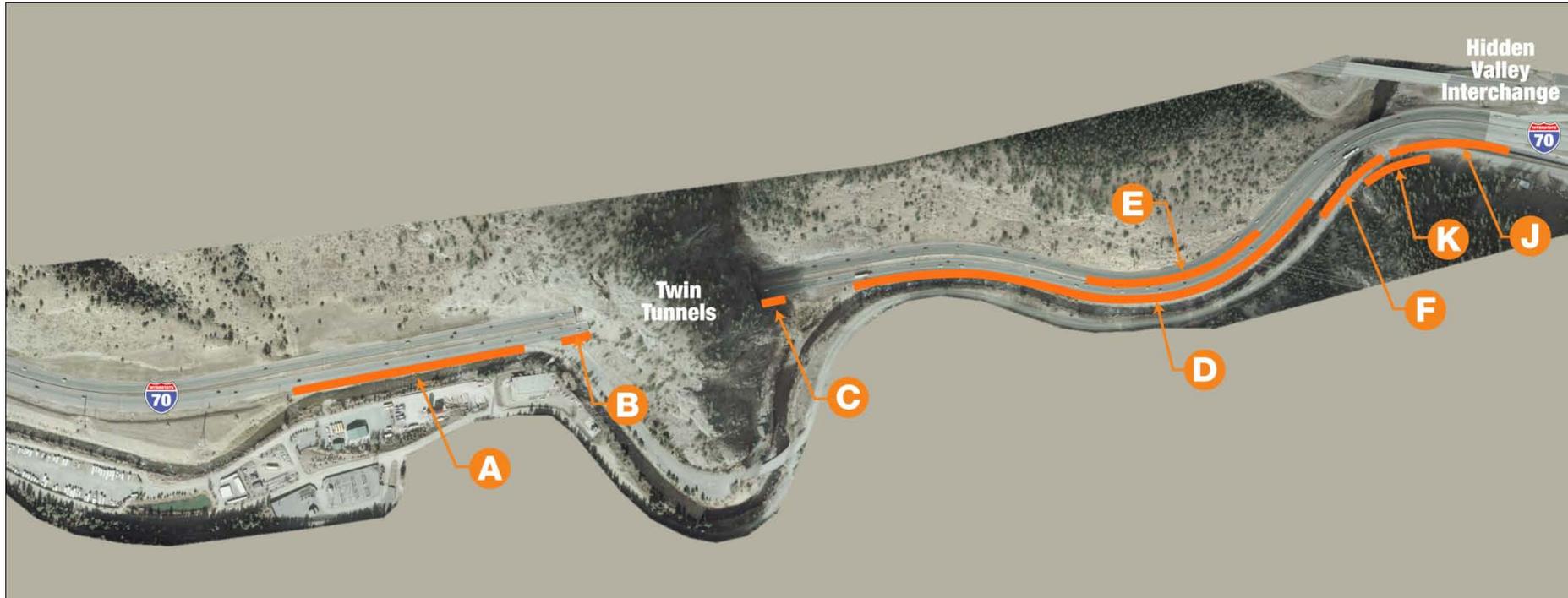
NOTE: FINAL DESIGN AND CONSTRUCTION WILL CONTINUE THROUGH MARCH 2014. AFTER FEBRUARY 2013, TECHNICAL TEAM MEETINGS WILL OCCUR ON AN AS NEEDED BASIS, LESS THAN ONCE A MONTH

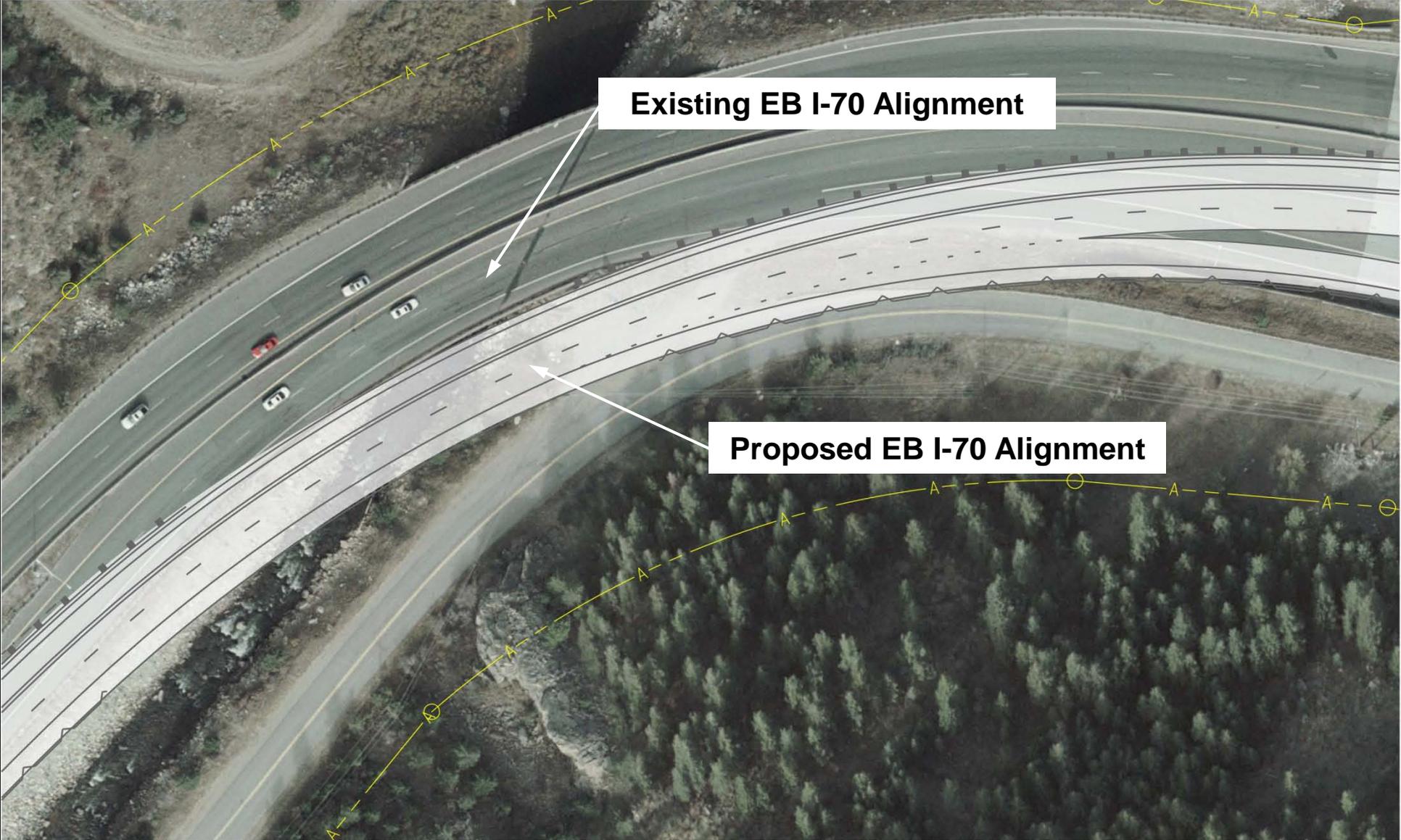
# Responses to Outstanding Issues

- » Local Traffic Task Force
- » Access Road tree removal
  - Conferred with CDOT landscape architects
  - Replacing trees over 2 inch caliper one for one
  - T4 site visit
- » Wall K location factors



# Twin Tunnels West Wall Locations

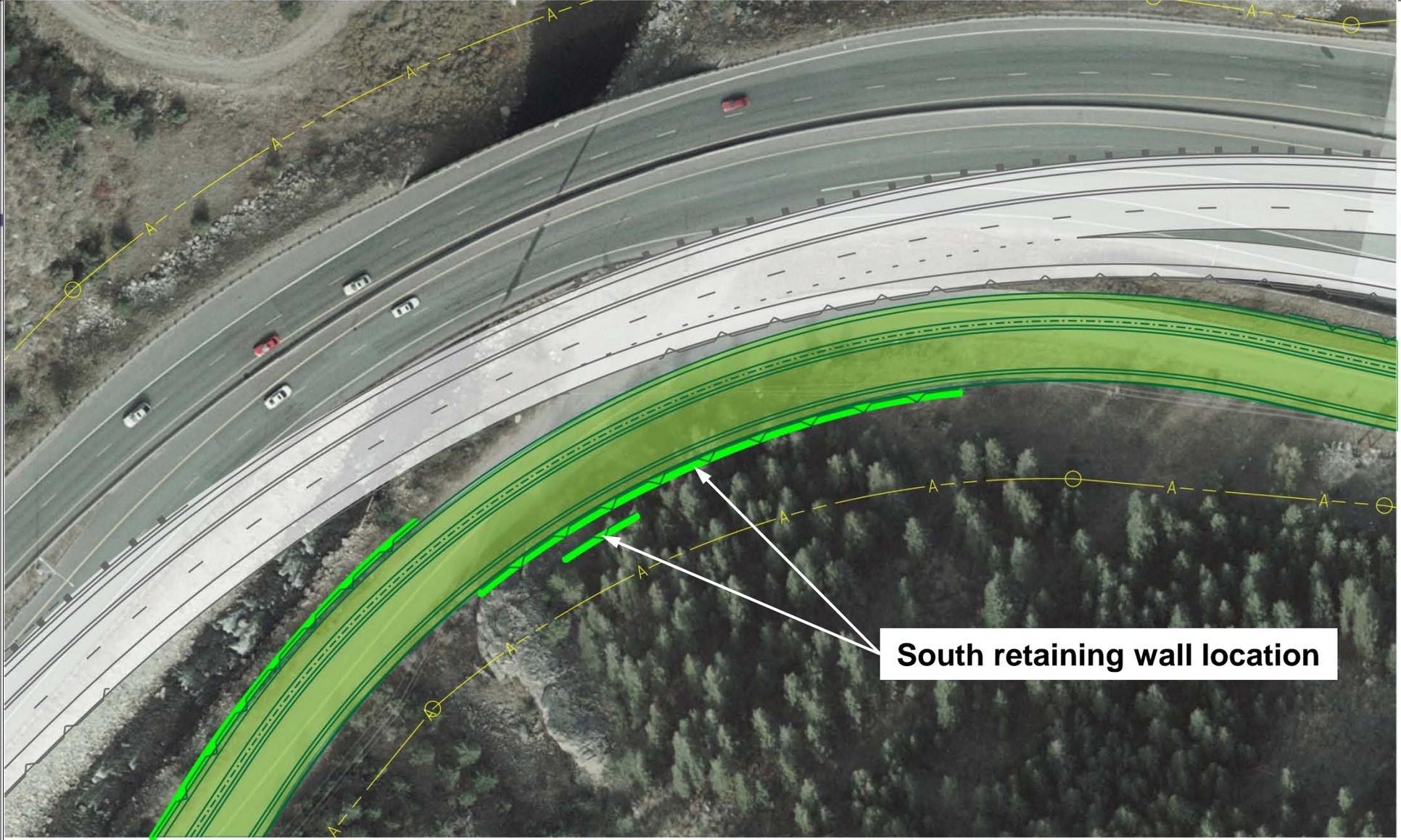




**Existing EB I-70 Alignment**

**Proposed EB I-70 Alignment**

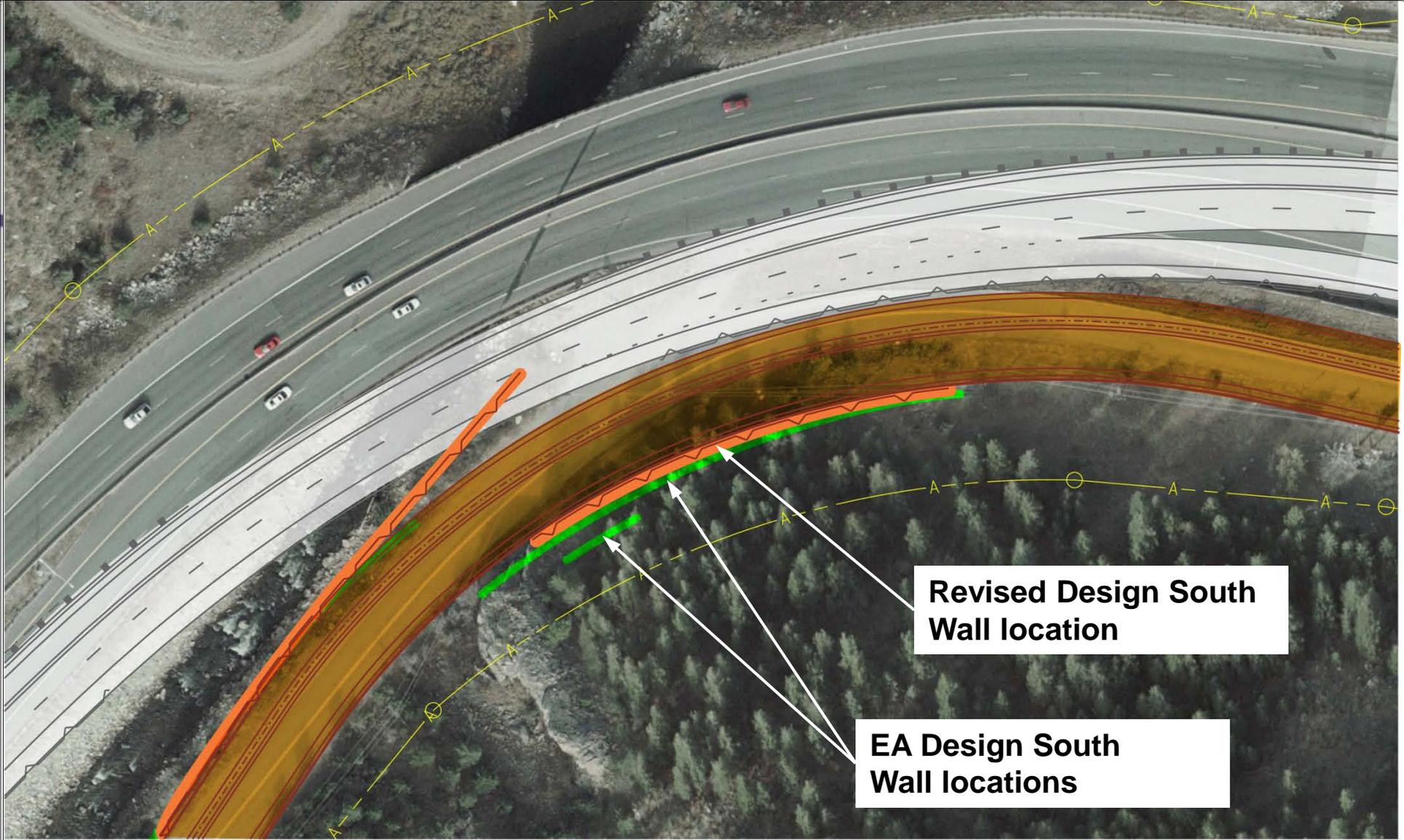
# EB I-70 Mainline Curve Realignment



**South retaining wall location**

**EA Design - CR 314 Ultimate  
(with attached shared use path)**



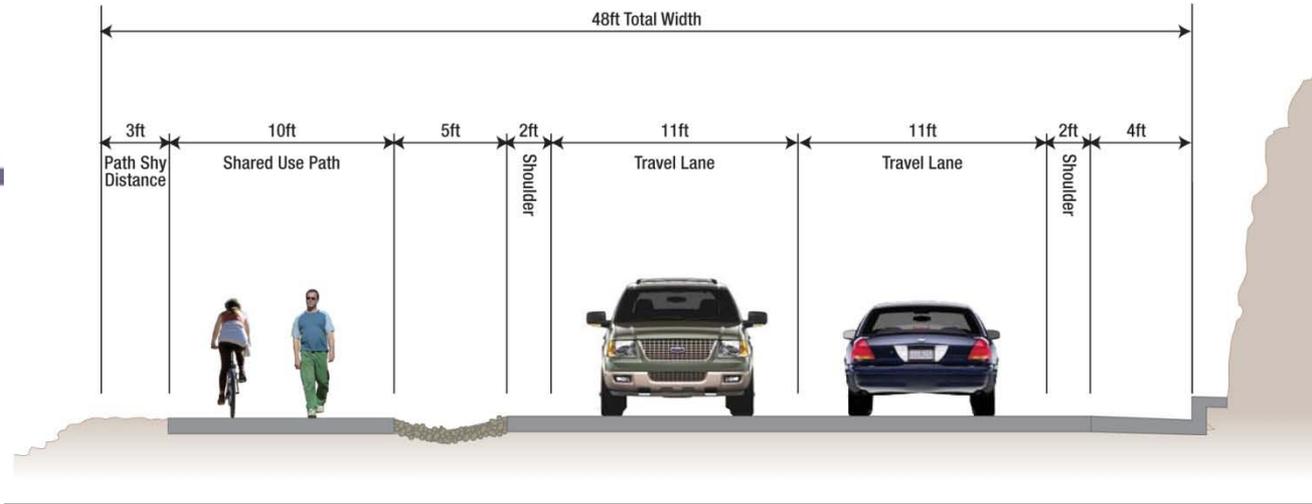


**Revised Design South Wall location**

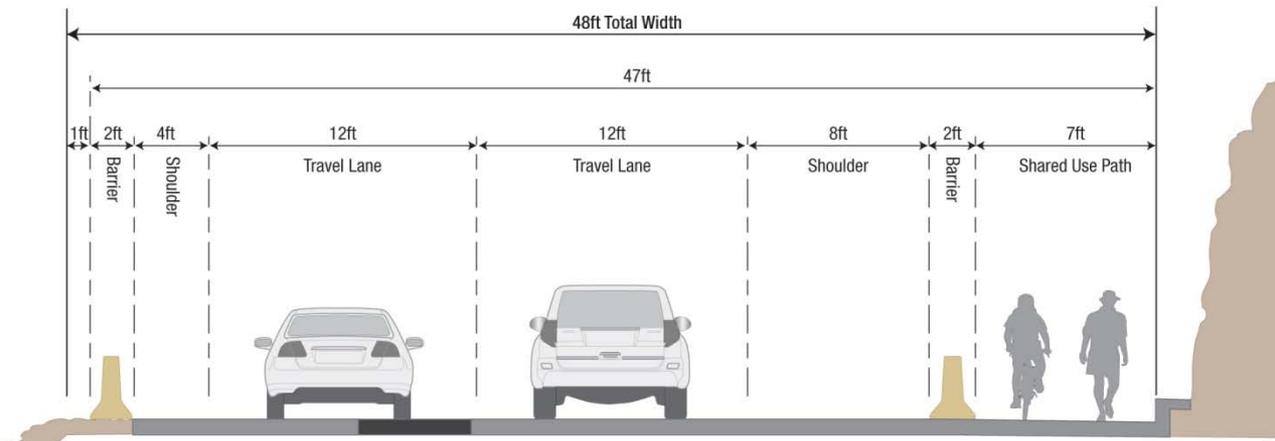
**EA Design South Wall locations**

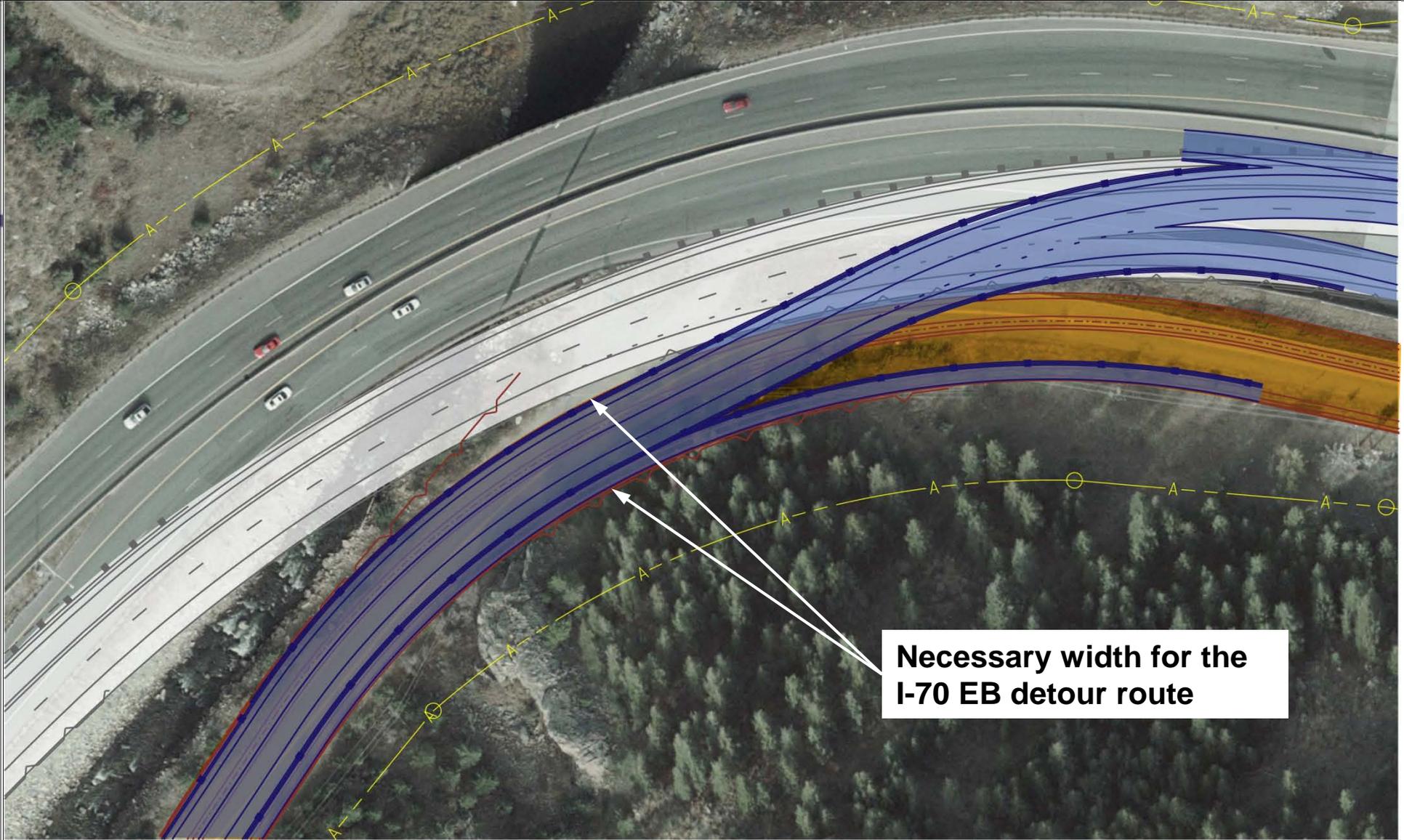
## **Revised Design - CR 314 Ultimate (with attached shared use path)**

## Proposed Phase I Frontage Road Improvements (looking east)



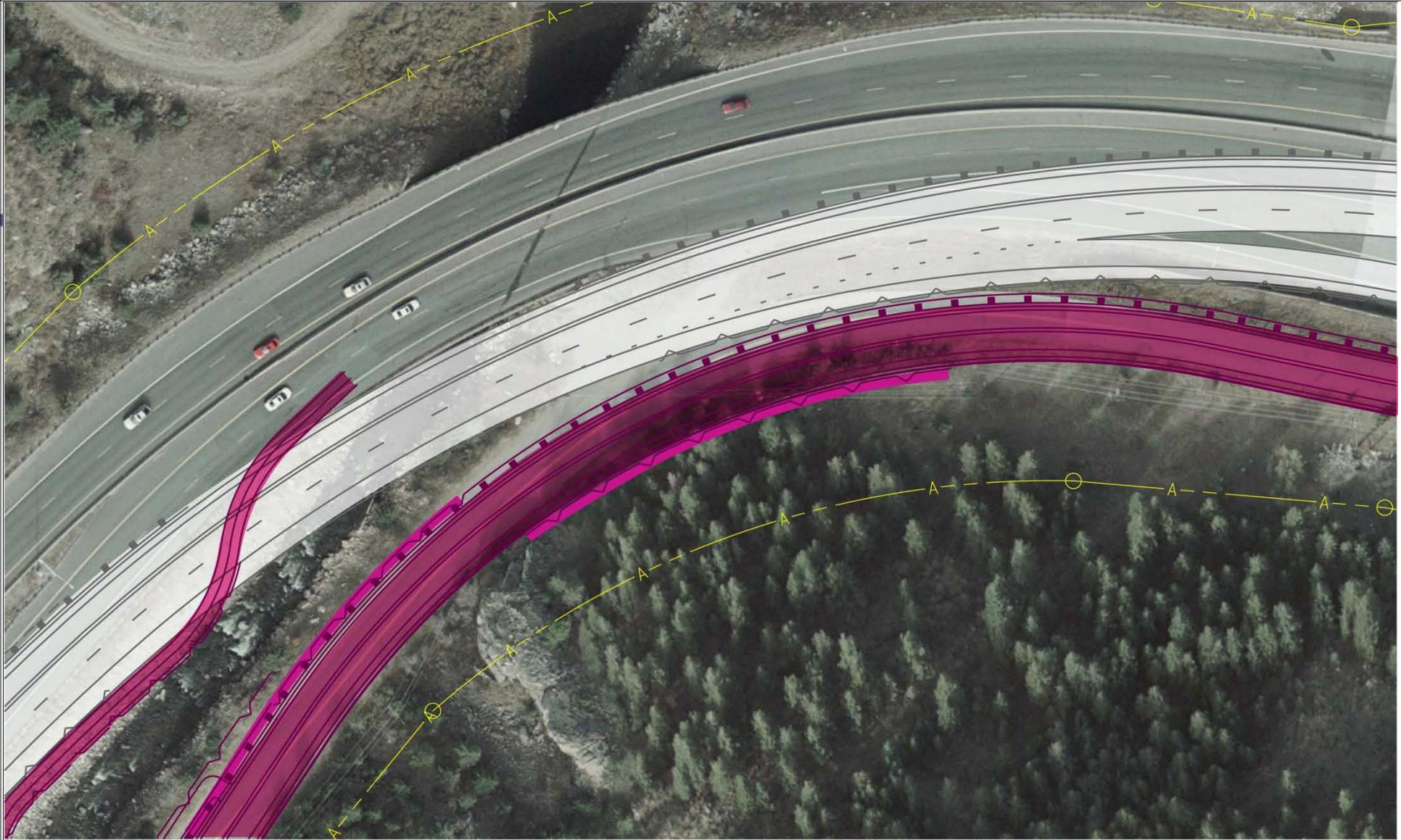
## I-70 Eastbound Detour on Frontage Road (with Multi-Use Path - looking east)





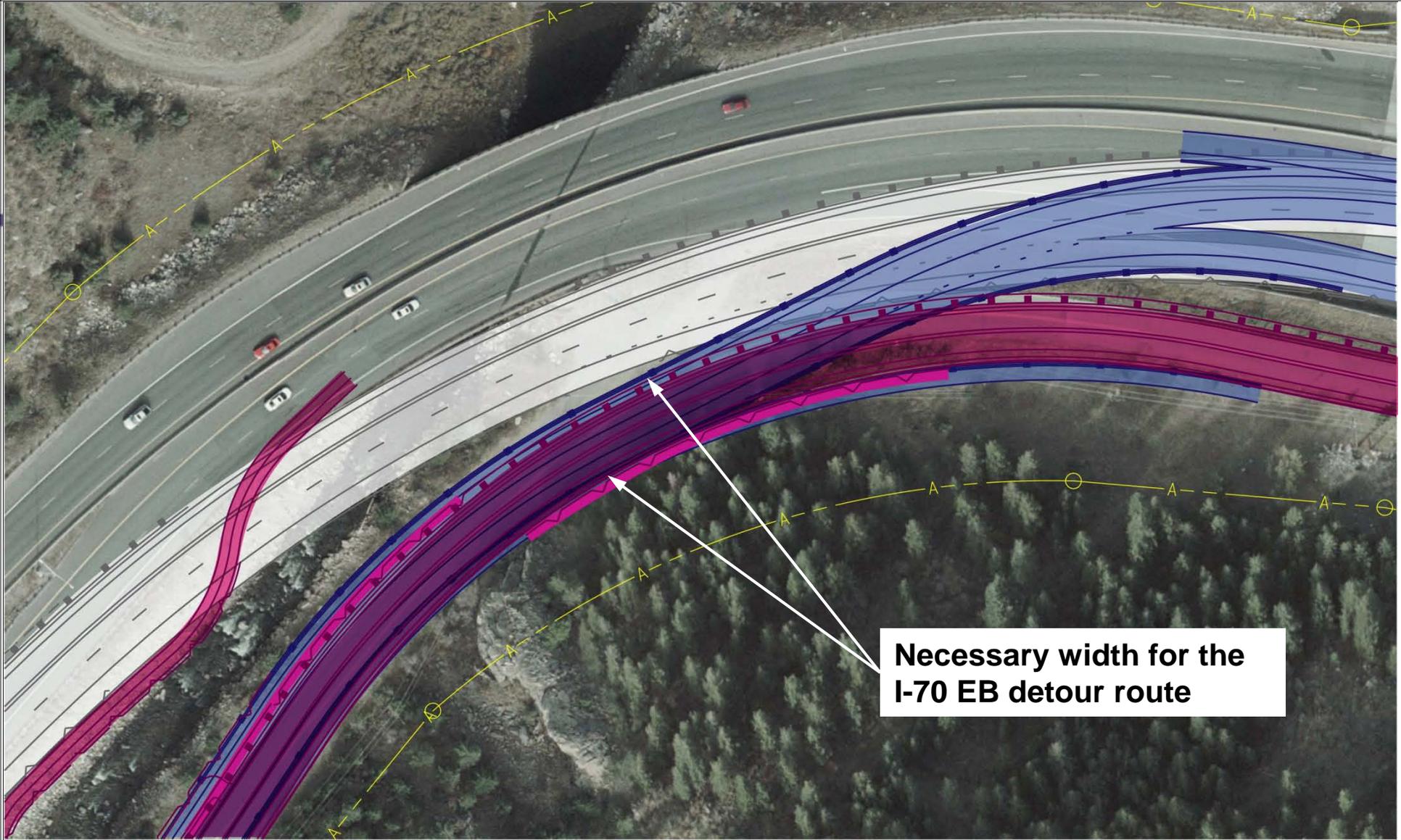
Necessary width for the I-70 EB detour route

# Revised Design - CR 314 Realignment (with EB I-70 detour route overlaid)



## Concept Design - CR 314 Realignment (without attached shared use path)





Necessary width for the I-70 EB detour route

## Concept Design - CR 314 Realignment (with EB I-70 detour route overlaid)

# Process and Measures for Applying Design Criteria

Fair / Better / Best Rating System

Fair	<b>Better</b>	Best
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1. Proposed by Project Team
2. Augmented by the Technical Team
3. Utilized by the Project Team to develop solutions
4. Results presented to Technical Team
5. Technical Team offers feedback
6. As necessary, Project Team incorporates refinements

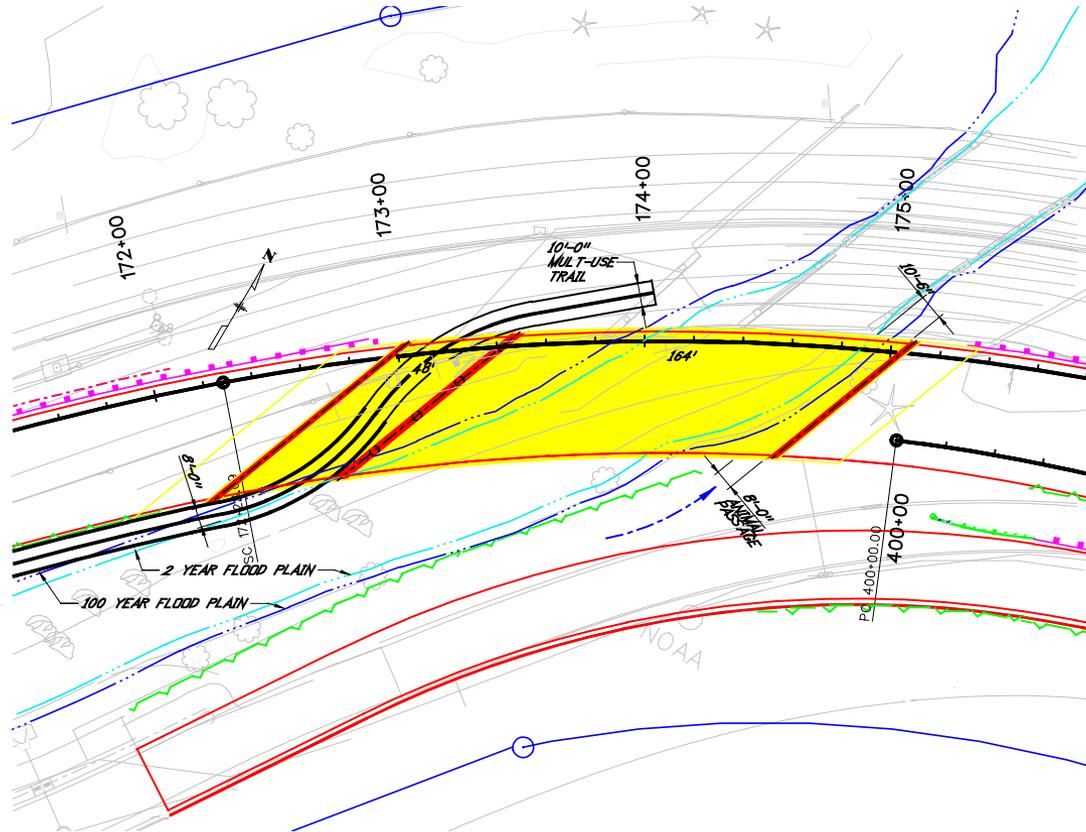
# Proposed Solutions: Bridge Aesthetics

## Criteria Summary: Key differentiators

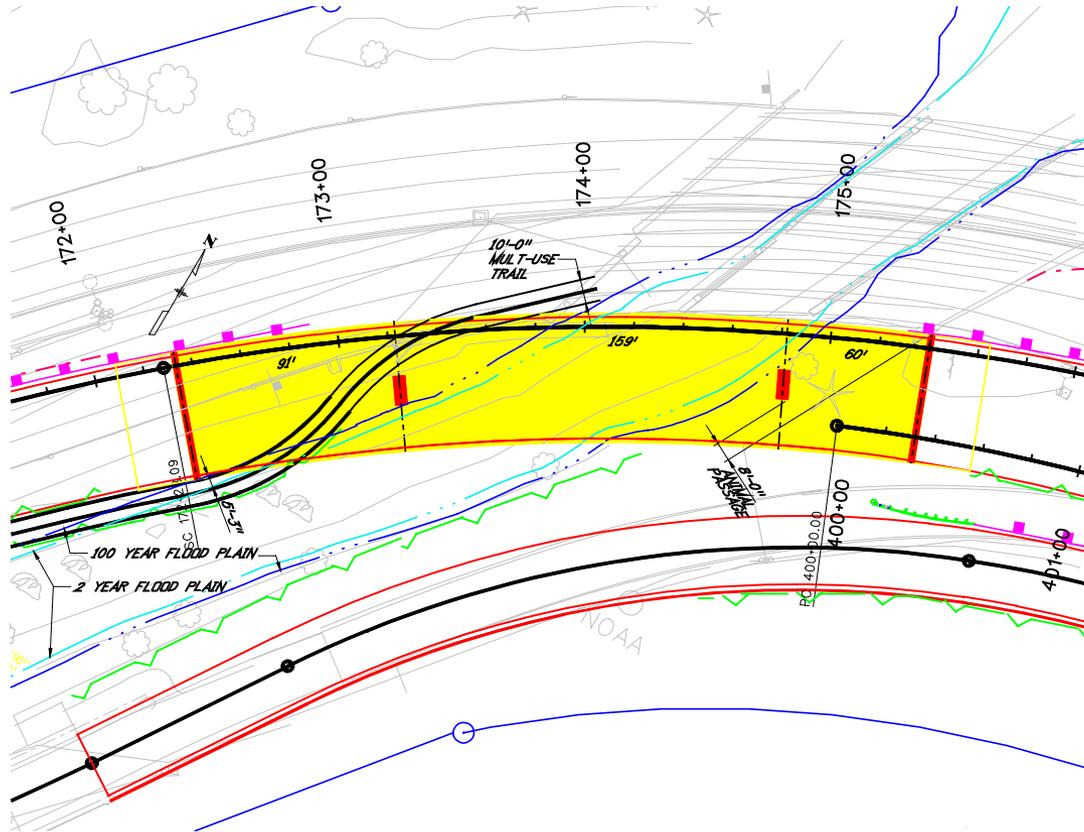
- Analyzed 5 options with straight or curved concrete girders, steel girders and concrete tub girders
- Recommendation: 3-span concrete girder with integral pier caps
- Primary benefits
  - » Most reasonable to construct
  - » Design achieves an open feel for recreationalists
  - » Best accommodates I-70 detour, wildlife crossing and trail
  - » Consistent with Mountain Mineral Belt Aesthetic Guidelines



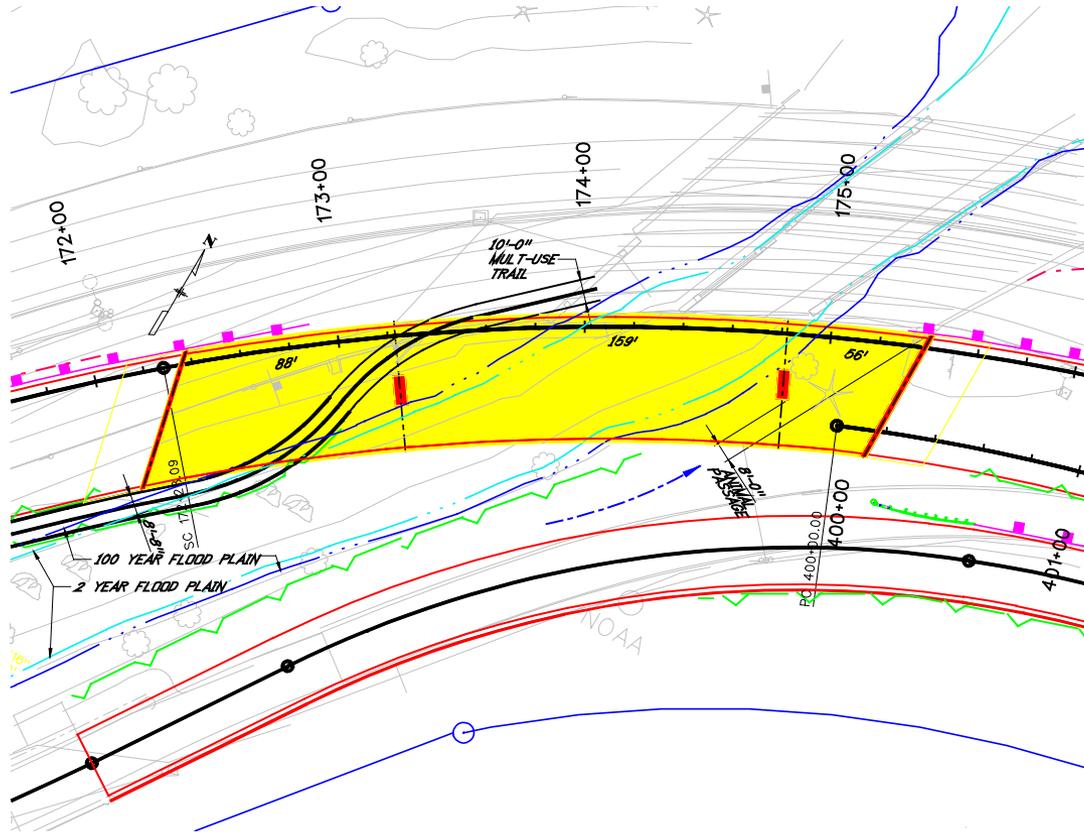
# Proposed Solutions: Bridge Aesthetics Option 1



# Proposed Solutions: Bridge Aesthetics Option 2

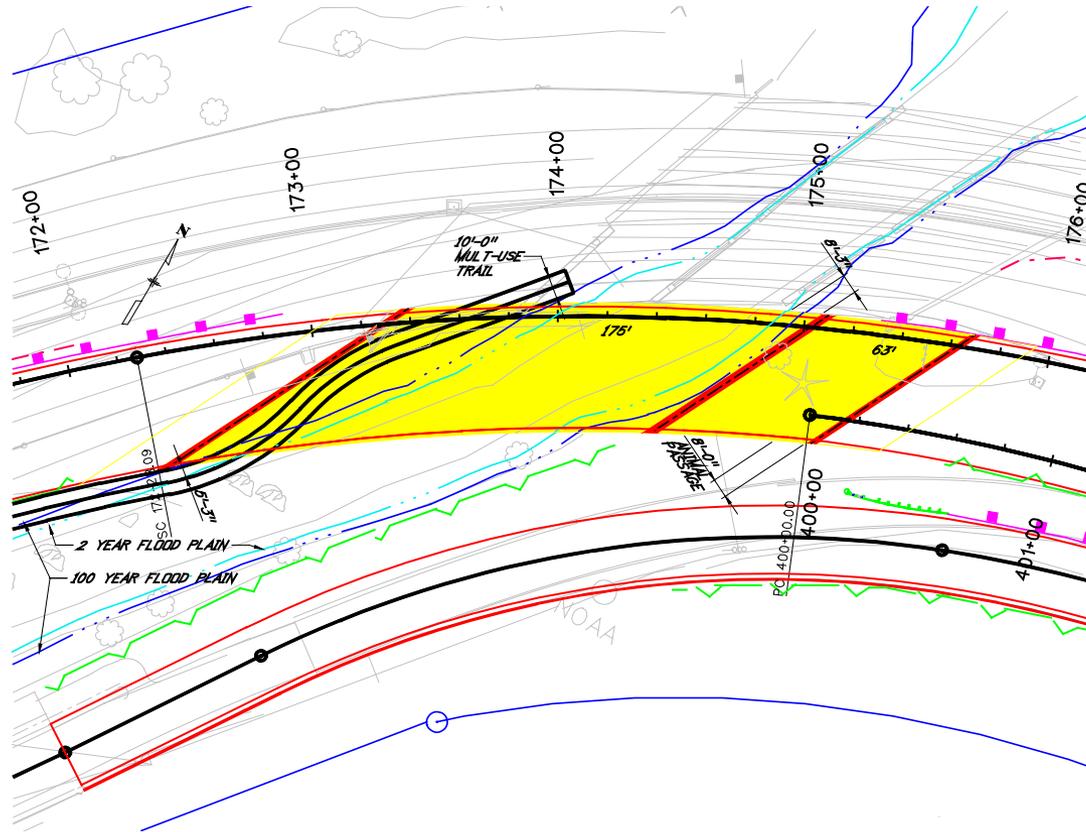


# Proposed Solutions: Bridge Aesthetics Option 2A

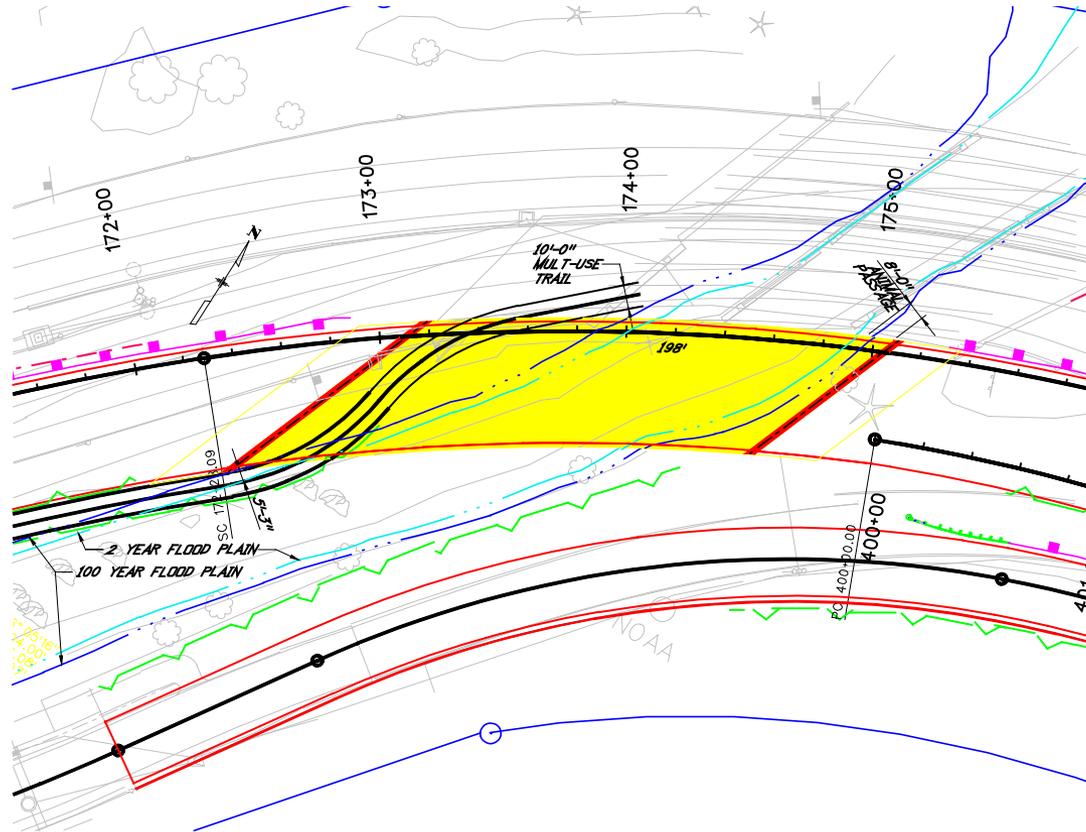


**Recommendation: 3-span concrete  
girder with integral pier caps**

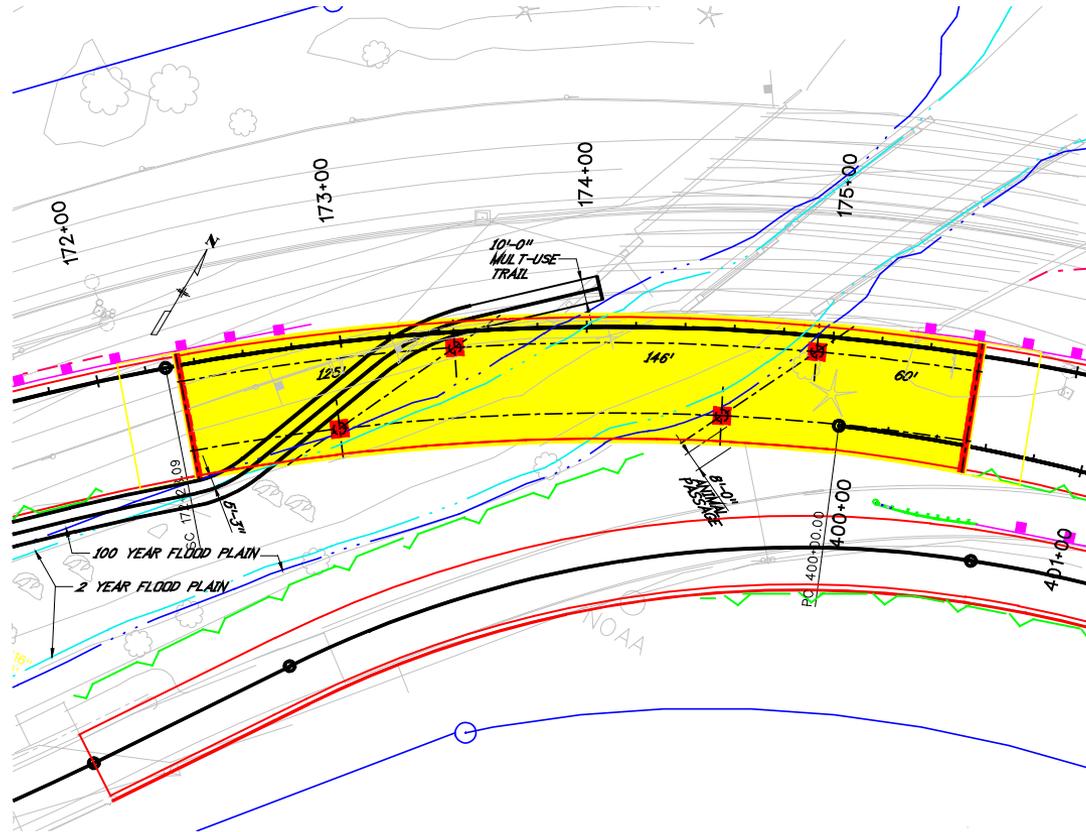
# Proposed Solutions: Bridge Aesthetics Option 3



# Proposed Solutions: Bridge Aesthetics Option 4



# Proposed Solutions: Bridge Aesthetics Option 5



# Recommendation: 3-span concrete girder with integral pier caps

- Recommendation is similar to Hidden Valley design, but without integral pier caps
- Aesthetic Guidance: *In areas of retrofit construction, utilize the Aesthetic Guidance and refer to the existing character of structures and facilities across the segment to achieve a consistent design aesthetic, rather than a series of disconnected and random structures.*

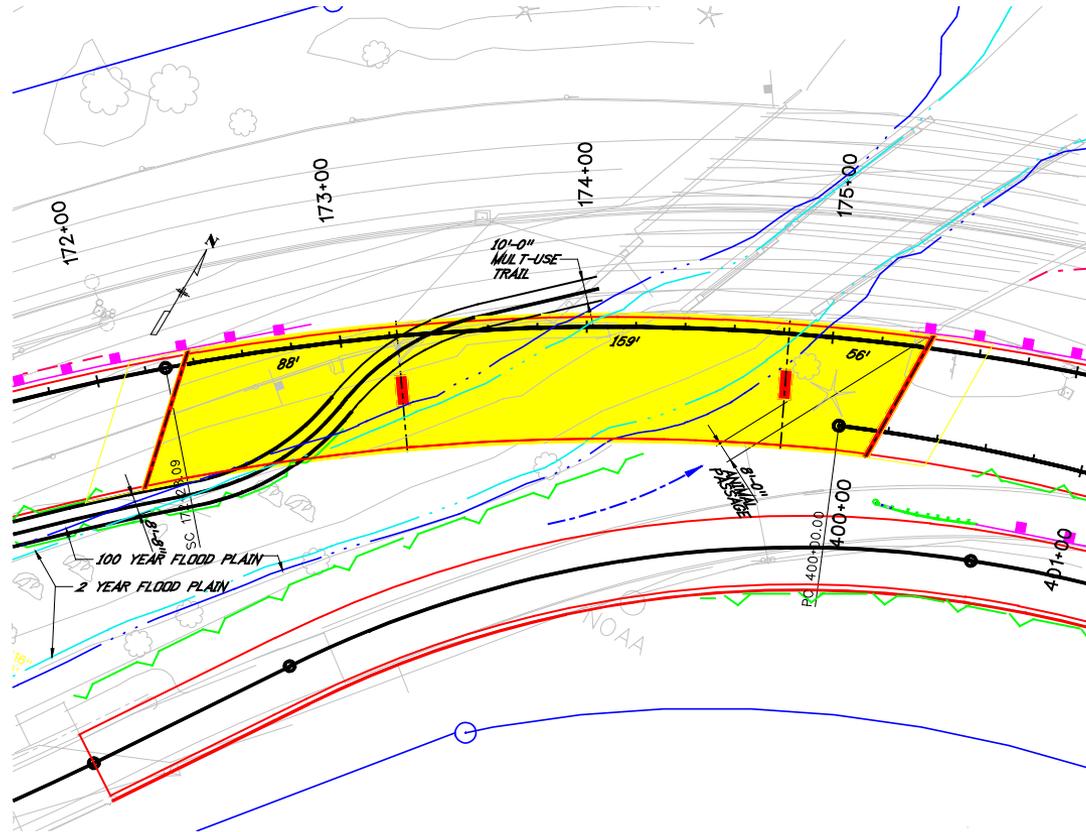


# Recommendation: 3-span concrete girder with integral pier caps

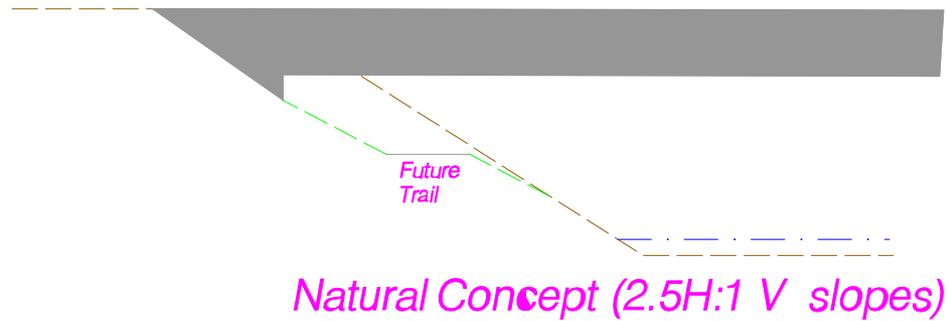
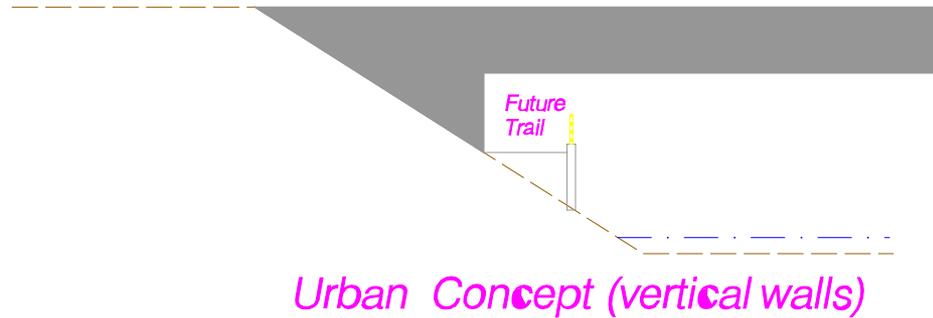
- Cleaner, streamlined look with integral pier caps
- Example from I-70 Viaduct adjacent to Washington Ave
- Built by Kraemer for CDOT



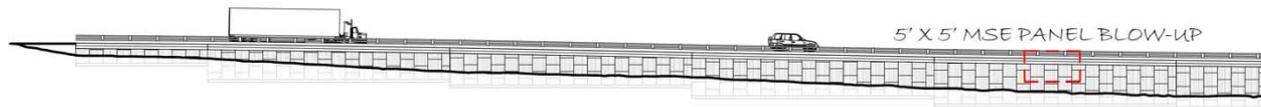
# Recommendation: 3-span concrete girder with integral pier caps



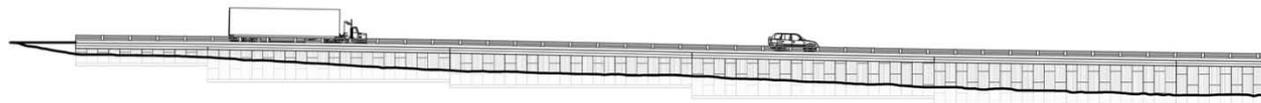
# Proposed Solutions: Bridge Aesthetics



# Proposed Solutions: Creek Wall Elevations



5' X 5' MSE PANEL WALL ELEVATION



4' X 8' MSE PANEL WALL ELEVATION



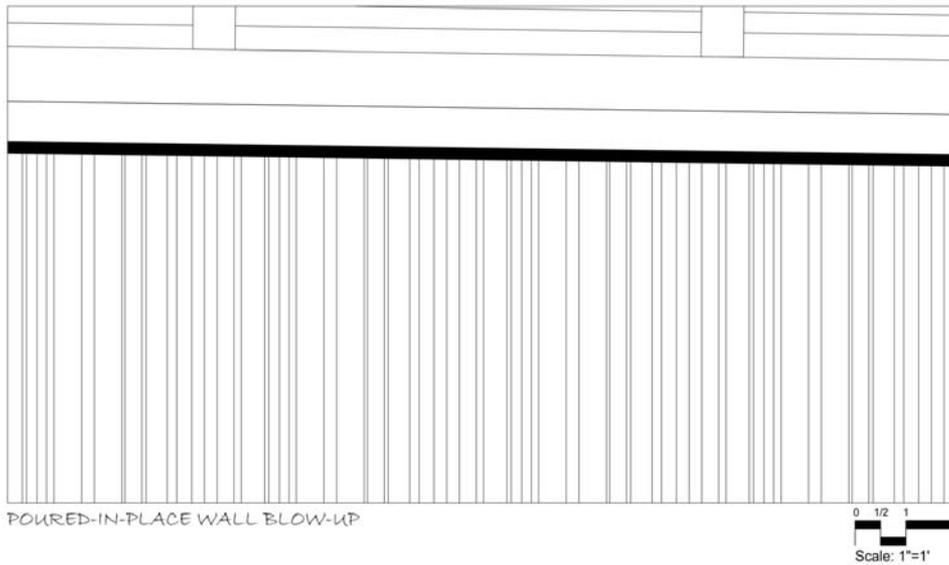
POURED-IN-PLACE WALL ELEVATION

# RECOMMENDATION: Creek Wall Elevations

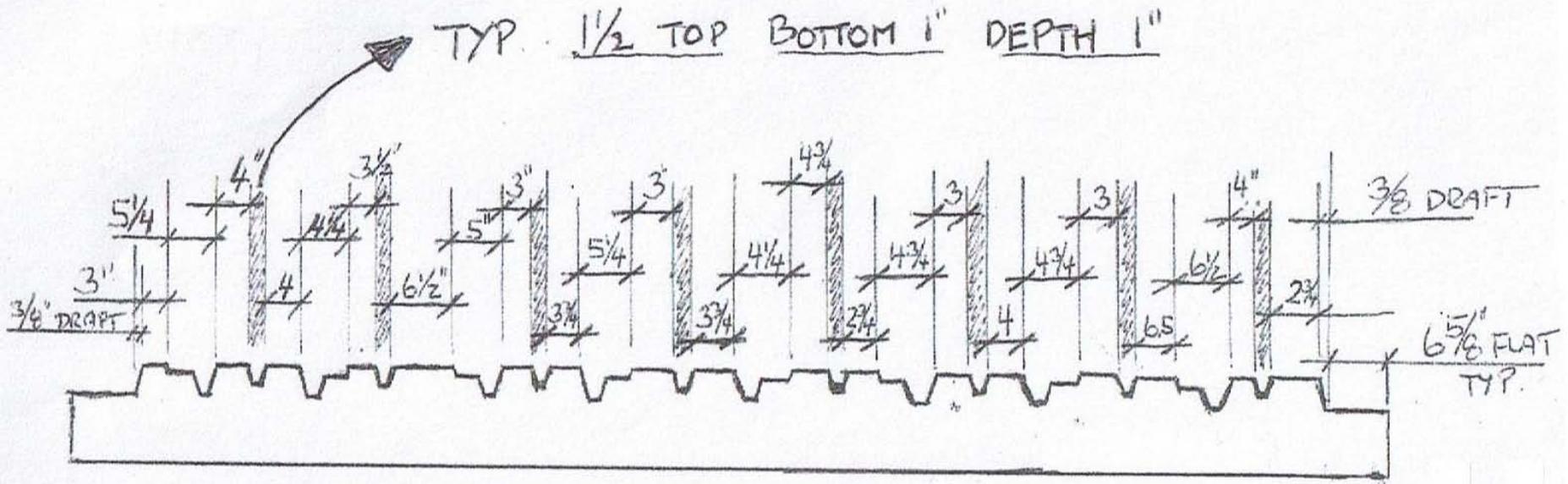
## Criteria Summary: Key differentiators

- Analyzed cast in place, precast “L”, MES and Micropile walls
- Recommendation is cast in place
- Primary benefits
  - » Most reasonable to construct
  - » Minimizes maintenance
  - » Most consistent with Mountain Mineral Belt Aesthetic Guidelines
  - » Minimal impacts to the environment

# RECOMMENDATION: Creek Wall Elevations



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# Proposed Solutions: Recreational Users

## Communications Strategy Goals

- Proactively inform stakeholders about blasting
- Provide a safe area for recreational users to wait during the blasting periods
- Communicate three primary messages:
  - » Plan ahead for your trip to Clear Creek
  - » Proceed to a safe zone during blasting periods
  - » Understand the goals of the project



# Proposed Solutions: Recreational Users

- **Audiences**

- » Media
- » Private boaters (kayakers, rafters and others), Commercial boating companies and customers
- » Hikers, Anglers, Cyclists

- **Schedule**

- » Advance notice outreach begins in Feb. – Mar. 2013
- » Ongoing outreach tools Mar. 31 – Oct. 31, 2013



# Criteria: Public Information

## Additional Criteria:

- How well are impacts to traveling public minimized?
- How well is the duration of impacts to traveling public minimized?
- How well can mountain corridor destinations be accessed?
- How accessible is the project construction information?

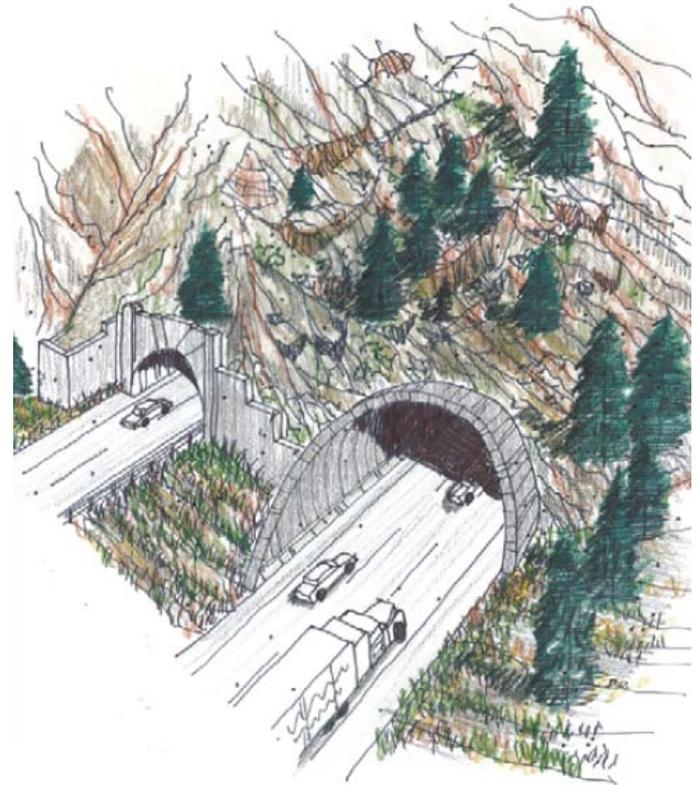


# Criteria: Tunnel Portal Aesthetics

## Considerations related to criteria 3 and 7

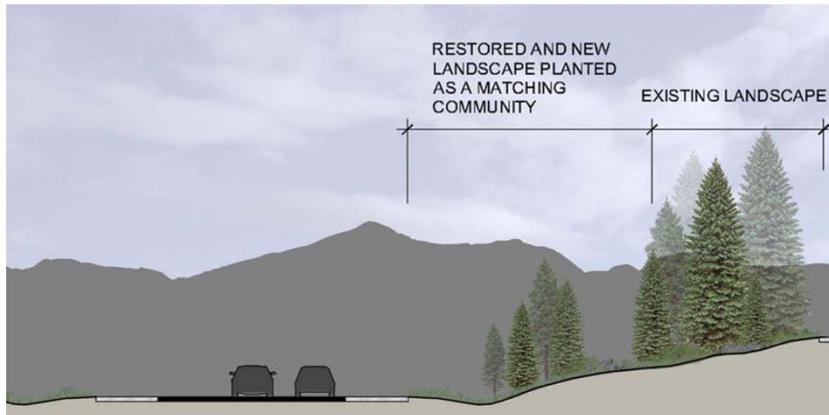
### Considerations from the EA and Section 106 Process

1. Consider design options of the new tunnel portal that pay homage to the Twin Tunnels Art Deco style
2. Salvage portions of the portal for use in interpretive displays or for another purpose
3. Use the old game check area for an interpretive display after the detour is complete
4. Identify and interpret locally important resources
5. Develop an interpretive plan, either County- or Corridor-wide
6. Provide access to historic sites during construction



# Criteria: Landscaping

- How well does the landscape restore the natural appearance of land and the visual conditions of the corridor?
- How well does the plan provide for successful, long-term revegetation?



# Criteria: Incident Management Plan

- Insure emergency response for the public and the safety of the construction team?
- Accommodate the potential needs for detouring traffic during unplanned events?



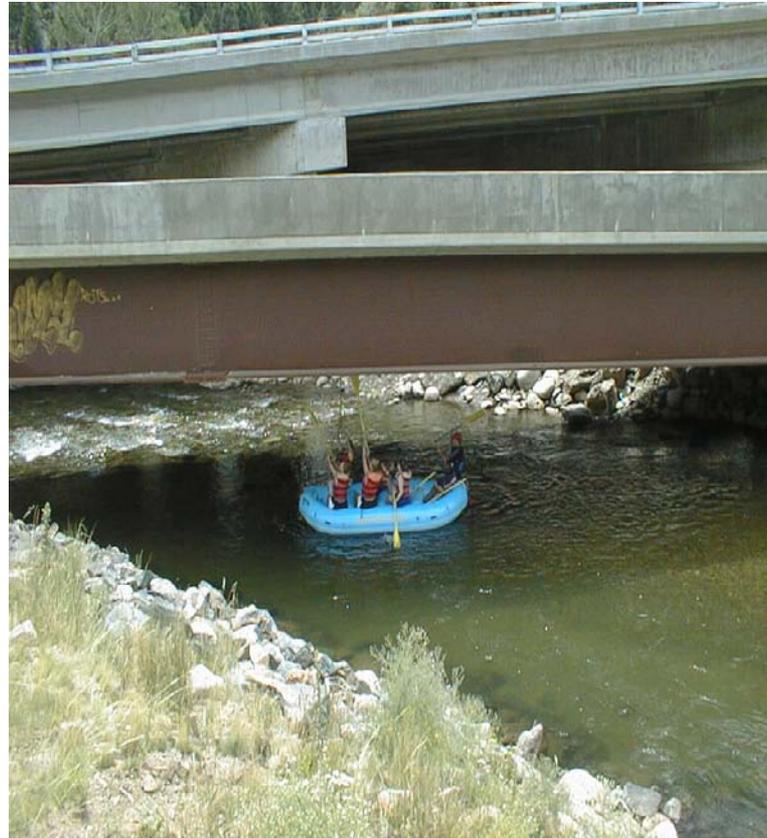
# Next Steps

## Agenda for July 12<sup>th</sup> Technical Team Meeting in Golden

- Develop initial performance measures for:
  - » CR 314 Frontage Road Wall Fascia
- Present proposed solutions that meet criteria for:
  - » Tunnel Lining
  - » Bridge Aesthetics
  - » Public Information
- Follow-up on previous solutions that meet criteria:
  - » I-70 Retaining Wall Aesthetics
  - » Tunnel Lining
  - » Impacts to Traffic
  - » Impacts to Recreation Users



# END OF PRESENTATION



# Proposed Solutions: Tunnel Lining

Summary of the differentiating criteria

