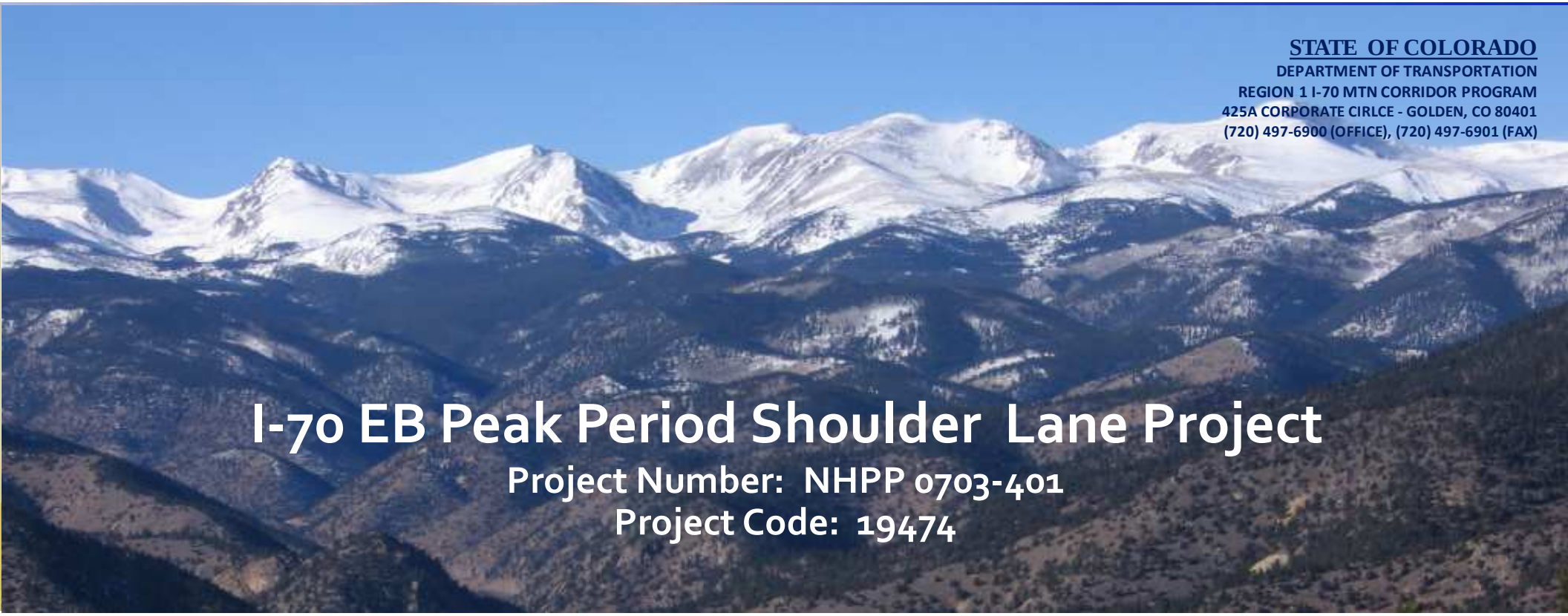
STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION
REGION 1 I-70 MTN CORRIDOR PROGRAM
425A CORPORATE CIRLCE - GOLDEN, CO 80401
(720) 497-6900 (OFFICE), (720) 497-6901 (FAX)



I-70 EB Peak Period Shoulder Lane Project

Project Number: NHPP 0703-401

Project Code: 19474

Technical Team Meeting #4

October 7, 2013

CDOT I-70 Mountain Corridor | HDR Engineering, Inc.

AGENDA

1. INTRODUCTIONS AND OVERVIEW
   - Project Schedule
   - Other Project Efforts
2. RESPONSES TO TECHNICAL TEAM ISSUES
   - Definition of Interim
   - Lane Width
   - Highway 103 Bridge
3. OUTCOMES FROM ISSUES TASK FORCE MEETINGS
   - ALIVE
4. ENVIRONMENTAL PROCESS UPDATE
5. ISSUES TIMELINE
6. FOLLOW UP
   - Roadway Width
   - Acceleration and Deceleration Lanes
7. REVIEW PROPOSED SOLUTIONS
   - Widening Median vs. Creek/ Retaining Walls
   - Emergency Response
8. DEVELOP CRITERIA FOR:
   - SH 103 Bridge
   - I-70 Bridges
9. NEXT STEPS

CORE VALUES

- SAFETY
- MOBILITY
- CONSTRUCTABILITY
- COMMUNITY
- ENVIRONMENT
- ENGINEERING CRITERIA AND AESTHETICS
- SUSTAINABILITY

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

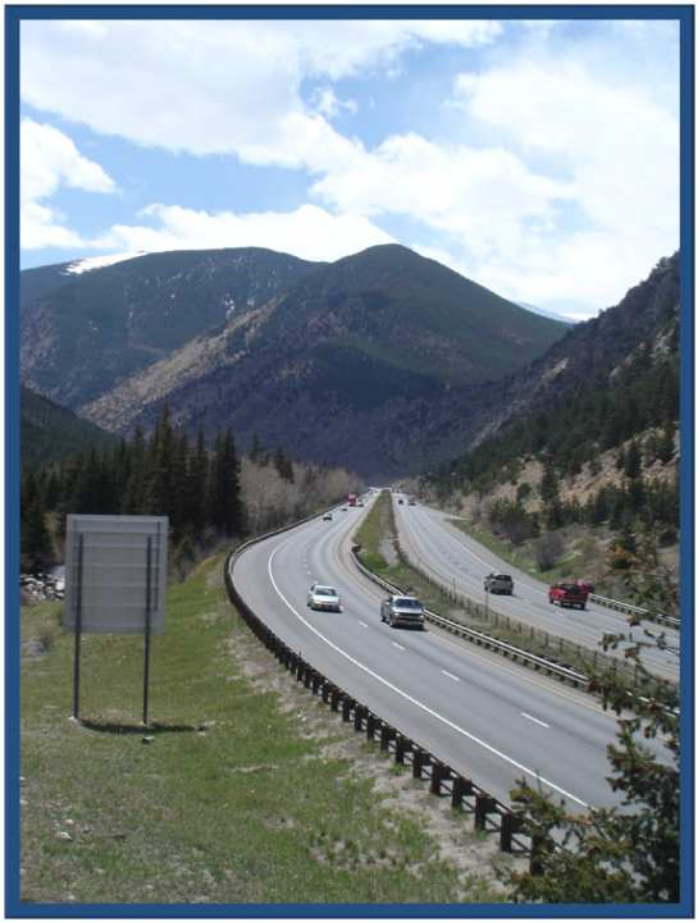
STEP 6
Finalize Documentation and Evaluation Process

PROJECT SCHEDULE

- **ENVIRONMENTAL BASELINE DATA**
  - EARLY OCTOBER 2013
- **CONCEPT OF OPERATIONS REPORT**
  - LATE FALL 2013
- **PRELIMINARY DESIGN MEETING**
  - NOVEMBER 2013
- **OPEN TO TRAFFIC**
  - JULY 2015

OTHER PROJECT EFFORTS

- RAMP Recommendations
- Traffic and Revenue
- Twin Tunnels
- AGS
- CCC Transportation Visioning



RESPONSES TO TECHNICAL TEAM ISSUES

➢ PARKING LOT

- Interim definition
- Lane width, what is the smallest lane width that is safe?
- Highway 103 bridge
- Supplement to Online Meeting
- ROD Compatibility
- EA versus Cat Ex
- Snow removal
- Whole transportation system Including local roads
- Enhancement opportunities along creek (revegetation etc.)
- Cooperative Agreements (revegetation, greenway, transportation, etc.)

OUTCOMES FROM ISSUE TASK FORCE MEETINGS

- **ALIVE Meeting - Held September 24**
  - **Retaining Wall and Median Removal Concerns**
  - **Animal Vehicle Collision Data**
  - **Wildlife Enhancements Culverts**

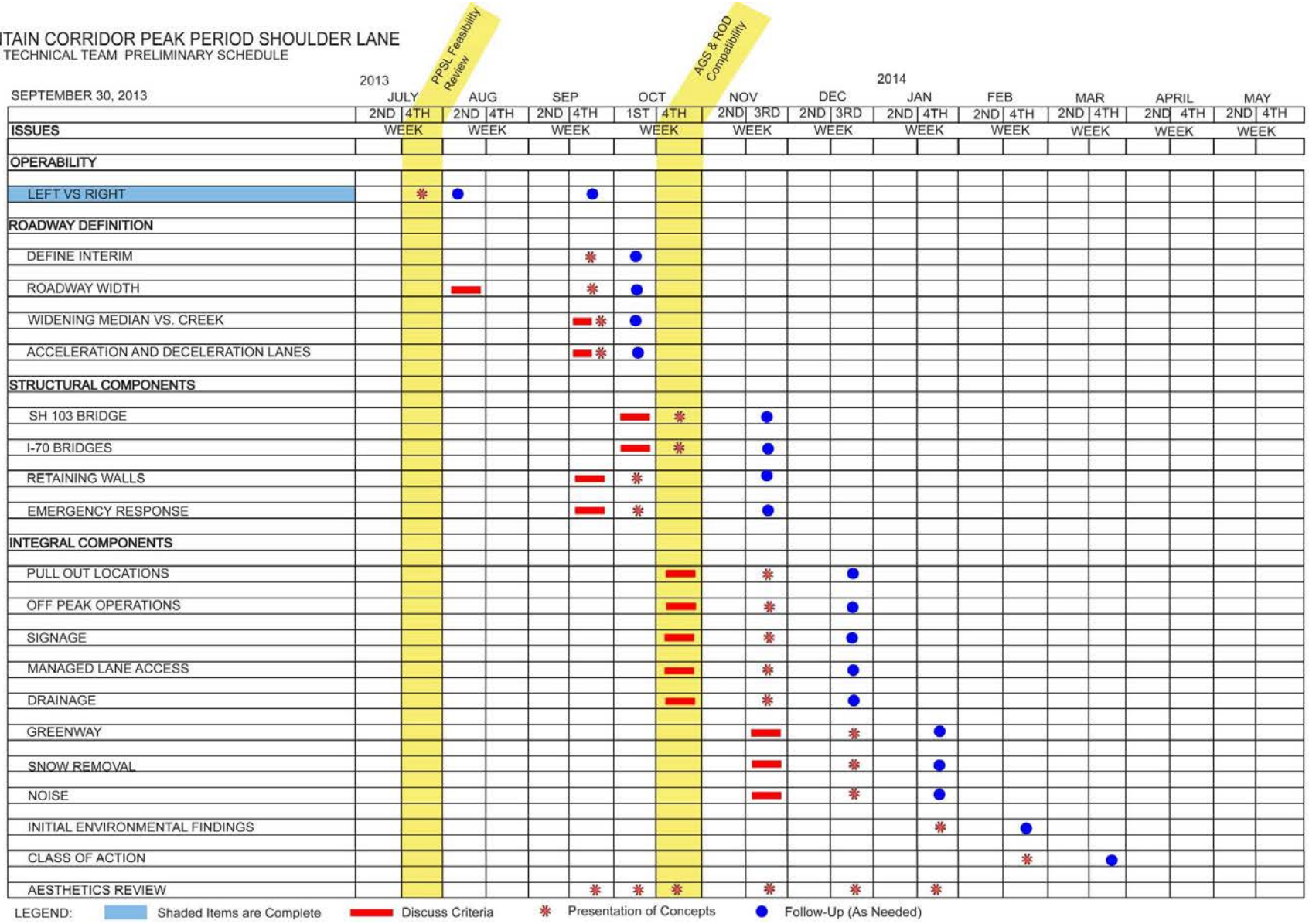
ENVIRONMENTAL PROCESS UPDATE

- Data collection mostly complete
- Initial areas of concern and results
- Floodplain and wetland impacts
- Visual Impacts
- Mine Waste
- Cultural Resources

CSS TRACKING SCHEDULE

I-70 MOUNTAIN CORRIDOR PEAK PERIOD SHOULDER LANE

ISSUES FOR TECHNICAL TEAM PRELIMINARY SCHEDULE



GLOSSARY OF TERMS

Acceleration Lane	**A lane adjacent to the primary travel lane that allows drivers to accelerate before merging into traffic on the main road**
Active Traffic Management	A method of increasing peak capacity and smoothing traffic flows on busy major highways. Techniques include variable speed limits, hard-shoulder running, ramp-metering and may be controlled by overhead variable message signs .
Auxiliary Lane	Along a highway an auxiliary lane connects entrance and exit ramps, with the entrance ramp or acceleration lane from one interchange leading to the exit ramp or deceleration lane of the next.
Breakdown Lane	A strip of ground with a hard surface beside a major road where vehicles can stop in an emergency.
Deceleration Lane	A lane adjacent to the primary travel lane that allows drivers to pull off the main road and decelerate safely in order to turn or exit without slowing the traffic behind.
Dynamic Toll	A toll per vehicle that increases or decreases depending on the level of congestion in order to maintain the smooth flow of traffic.
EOP	Edge of pavement.
General Purpose Lane	A traffic lane that does not have any restrictions, such as time of day or type of vehicle that may use the lane.
Interim Solution	A capacity improvement on a roadway that will not be a permanent solution.
Managed Lane	In this case, the managed lane operates during a peak period and traffic utilizing that lane will be required to pay a toll.
Median	The central area between divided highway lanes with traffic traveling in opposite directions.
Peak Period Shoulder Lane	This is a lane of traffic that may function either as a shoulder and a managed lane or a shoulder and a general purpose lane, depending on left versus right.
Rumble Strips	A series of raised strips across a road or along its edge that make a loud noise when a vehicle drives over them in order to warn the driver to go slower or that he or she is too close to the edge of the road
Traffic Management Operations	A coordinated approach to road traffic management where ITS traffic data is utilized to provide traffic information across various platforms to allow for more effective incident management and more efficient management of traffic. This could include continual monitoring of video feed from the corridor.

CSS PROCESS

Context Statement

The I-70 mountain corridor is Colorado's only east-west interstate and the primary access route from Denver to the mountains of western Colorado.

The segment of the I-70 corridor that runs from Empire Junction to the Twin Tunnels at Idaho Springs has spectacular view sheds and is one of the most heavily populated areas of Clear Creek County. It also is one of the narrowest sections in the corridor, with the roadway located on the canyon floor adjacent to Clear Creek. This segment of interstate is an important link for the community, acting as a major arterial throughout the area and also providing multi-modal forms of transportation. Improvements to the interstate in this area directly impact established communities as well as unique environmental, historic and recreational resources.

This segment of the corridor experiences heavy flows of eastbound traffic causing severe congestion and traffic delays during peak periods, especially at the I-70/US 40 interchange at Empire Junction.

Short term operational strategies need to be explored until sufficient funding can be obtained to implement the corridor's ultimate vision.

Core Values	Critical Issues	Evaluation Criteria
Safety	• Emergency Response • Safety of Travelling Public • Local and Tourist Driver Expectancy • Incident Management	1. Address Safety During PPSL Operations? 2. Maintain Safety During non-peak times?
Mobility	• Reliability • Operations • Maintenance • Active Management • Roadway Connectivity/Network	3. Improves mobility and reliability during peak times for both I-70 and the local roadway network? 4. Minimize the effort required to maintain the option?
Constructability	• Fiscally Responsible Costs • Limit Throw Away Work • Adverse Impacts to Enviro/Community • Minimize Infrastructure Improvements • Keep to Operations Project • Adaptability	5. Enable the project team to achieve the goal of opening PPSL by July 1, 2015? 6. Create infrastructure investments that are reasonable to construct and provide the best value for their life cycle, function and purpose.
Community	• Recreation • Historical and Cultural Resources • Tourism and Economy • Local Access • Signing • Livability • Effects to low-income and minority populations	7. Allow for a process to engage and communicate with all the local, regional and national users of the I-70 Mountain Corridor? 8. Create opportunities to "correct past damage"? 9. Provides access and protects opportunities for enhancements to tourist destinations, community facilities, interstate commerce and also limits disproportionate effects to the community?
Environment	• Clear Creek • Wildlife Habitat and Movement • Mining and Metals • Water Quality • Sediment • Air Quality • Noise • Wetlands	10. Incorporate sustainability by using locally available materials and environmentally-friendly processes? 11. Protect or create unique features for the area as a gateway? 12. Protect wildlife needs? 13. Protect Clear Creek? 14. Protect the defining historical elements of Clear Creek County?
Engineering Criteria & Aesthetic Guidelines	• Balance Design Using CSS Guidance • Aesthetics Inspired By Surroundings • Adherance to ROD • Use of Most Recent Technology	15. Meet CDOT and industry standards? 16. Achieve the mountain mineral belt aesthetic guidelines? 17. Meet the I-70 Mountain Corridor design criteria?
Sustainability	• Blends with Future Possibilities (AGS, Transit, Greenway, etc.) • Definition of Interim • Idaho Springs Visioning	18. Preserve opportunities for the AGS and the ultimate preferred alternative? 19. Adaptable for future changes/projects (including Idaho Springs Visioning)?

ROADWAY WIDTH

ROADWAY WIDTH

PEAK PERIOD SHOULDER LANE CRITERIA

DRAFT

Roadway Width

ID	Criteria	Options Ranking (Fair / Better / Best)	
		Hybrid Width	**40' or greater width**
Evaluation Criteria			
1	Addresses safety during PPSL operations	•Narrower, less width for driver error	•Wider shoulder widths consistently
2	Maintains safety during non-peak times	•Narrower, less width for driver error	•Wider shoulder widths consistently
3	Improves mobility during peak times	•Narrower section causes generally slower speeds	•Wider section allows for generally faster speeds
4	Minimizes the effort required to maintain the option	•Less infrastructure, less maintenance	•Additional infrastructure, additional maintenance
5	Enables the project team to achieve the goal of opening PPSL by 1-Jul-15	•Narrower cross section could require less effort for NEPA, design, and construction.	•Wider cross section could require additional effort for NEPA, design, and construction.
6	Creates infrastructure investments that are reasonable to construct and provide the best value for their life cycle, function, and purpose.	•Less infrastructure is more consistent with an interim definition for the project.	•More infrastructure would be required (widening of all I-70 bridges, increase in wall areas)

ROADWAY WIDTH

Roadway Width

ID	Criteria	Options Ranking (Fair / Better / Best)	
		Hybrid Width	40' or greater width
Evaluation Criteria			
7	Allows for a process to engage and communicate with all the local, regions and national users of the I-70 Mountain Corridor	•Not a differentiator	
8	Creates opportunities to "correct past damage"	• Fewer Opportunites	• More Opportunites
9	Provides access and protects opportunities for enhancements to tourist destinations, community facilities, interstate commerce and also limits disproportionate effects to the community.	•Not a differentiator	
10	Incorporates sustainability by using locally available materials and environmentally-friendly processes	•Not a differentiator	
11	Protects or creates unique features for the area as a gateway	• Fewer Opportunites	• More Opportunites
12	Protects wildlife needs	•Less barrier effect impeding highway permeability	•More barrier effect impeding highway permeability
13	Protects Clear Creek	•Less potential for encroachment into creek •Less visual impact for walls •More space for WQ features to be added	•More potential for creek encroachment •More visual impact from walls •Less space for WQ features to be added
14	Protects the defining historical elements of Clear Creek County	•Less infrastructure, less visual impact	•More infrastructure, more visual impact, more potential encroachment into historic properties
15	Meets CDOT's and industry standards	•Rarely meets minimum standards	• More frequently meets minimum standards

ROADWAY WIDTH

Roadway Width

ID	Criteria	Options Ranking (Fair / Better / Best)	
		Hybrid Width	**40' or greater width**
Evaluation Criteria			
16	Achieves the mountain mineral belt aesthetic guidelines	• Less opportunities	• More opportunities
17	Meets the I-70 Mountain Corridor design criteria	•Not a differentiator	
18	Preserves opportunities for the AGS and the ultimate preferred alternative	•Not a differentiator	
19	Adaptable for future changes/projects	•Not a differentiator	
ID	**Criteria**	**Options Ranking** (Fair / Better / Best)	
		Hybrid Width	**40' or greater width**
Issue Specific Criteria			
1	Clear Creek County Preference	• Meets preference	• Less preferred
2	Impacts to compounding safety risk factors	• More safety risk factors	• Fewer safety risk factors
3	Meets definition of a PPSL project	• Optimizes existing infrastructure	• Increased infrastructure improvements
4			
Identification of Preferred Option: Summary		The Hybrid Width provides less infrastructure which is less costly, easier to meet the schedule and maintain, and is more consistent with an interim project. Although the 40 ft model was identified as better for meeting design standards, it was determined that the hybrid model will not negatively impact safety or mobility. The hybrid model also better protects environmental resources due to less infrastructure, encroachment, walls, and visual impacts. The hybrid model also better adheres to the CSS process with clear preference by CCC stakeholders. The analysis accounted for, but was not limited to, safety, widening requirements for mainline, and infrastructure needs.	

10/2/2013

ACCELERATION AND DECELERATION LANES

ACCELERATION AND DECELERATION LANES

DRAFT

Accleration and Deceleration Lanes

ID	Criteria	Options Ranking (Fair / Better / Best)	
		AASHTO Standard Acceleration and Deceleration Length for Interchange Ramps	Match Existing Acceleration and Deceleration Lengths for Interchange Ramps
Evaluation Criteria			
1	Addresses safety during PPSL operations	•Provides maximum safety benefit and meets current design standards	•Does not meet current standards and may decrease safety at acceleration and deceleration lanes
2	Maintains safety during non-peak times	•Provides maximum safety benefit and meets design standards	•Does not meet current standards and may decrease safety at acceleration and deceleration lanes
3	Improves mobility during peak times	•Longer ramps provide increased opportunities for merging and diverging increasing mobility	•Shorter ramps decrease opportunities for merging and diverging
4	Minimizes the effort required to maintain the option	•Not a differentiator	
5	Enables the project team to achieve the goal of opening PPSL by 1-Jul-15	•Increased Infrastructure increasing construction efforts and Project schedule.	•Less Infrastructure decreasing construction efforts and Project schedule.
6	Creates infrastructure investments that are reasonable to construct and provide the best value for their life cycle, function, and purpose.	•Additional Infrastructure investments provide less value for Project life cycle, function, and purpose.	•Maximizes use of existing infrastructure and provides best value for Project life cycle, function, and purpose

ACCELERATION AND DECELERATION LANES

ID	Criteria	Options Ranking (Fair / Better / Best)	
		AASHTO Standard Acceleration and Deceleration Length for Interchange Ramps	Match Existing Acceleration and Deceleration Lengths for Interchange Ramps
Evaluation Criteria			
7	Allows for a process to engage and communicate with all the local, regional and national users of the I-70 Mountain Corridor	•Not a differentiator	
8	Creates opportunities to "correct past damage"	•Not a differentiator	
9	Provides access and protects opportunities for enhancements to tourist destinations, community facilities, interstate commerce and also limits disproportionate effects to the community.	•Not a differentiator	
10	Incorporates sustainability by using locally available materials and environmentally-friendly processes	•Not a differentiator	
11	Protects or creates unique features for the area as a gateway	• Not a differentiator	
12	Protects wildlife needs	•Increased barrier effect impeding highway permeability	•Less barrier effect impeding highway permeability
13	Protects Clear Creek	•More potential for encroachment into creek •More visual impact for walls •Less space for WQ features to be added	•Less potential for encroachment into creek •Less visual impact for walls •More space for WQ features to be added
14	Protects the defining historical elements of Clear Creek County	•More infrastructure, more visual impact, more potential encroachment into historic properties	•Less infrastructure, less visual impact
15	Meets CDOT's and industry standards	•Meets design Standards	• Does not meet design standards
16	Achieves the mountain mineral belt aesthetic guidelines	•Not a differentiator	
17	Meets the I-70 Mountain Corridor design criteria	•Not a differentiator	
18	Preserves opportunities for the AGS and the ultimate preferred alternative	•Not a differentiator	
19	Adaptable for future changes/projects	•Not a differentiator	

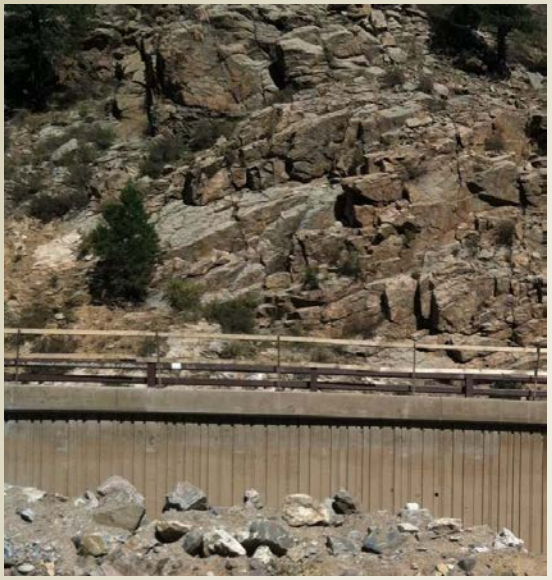
ACCELERATION AND DECELERATION LANES

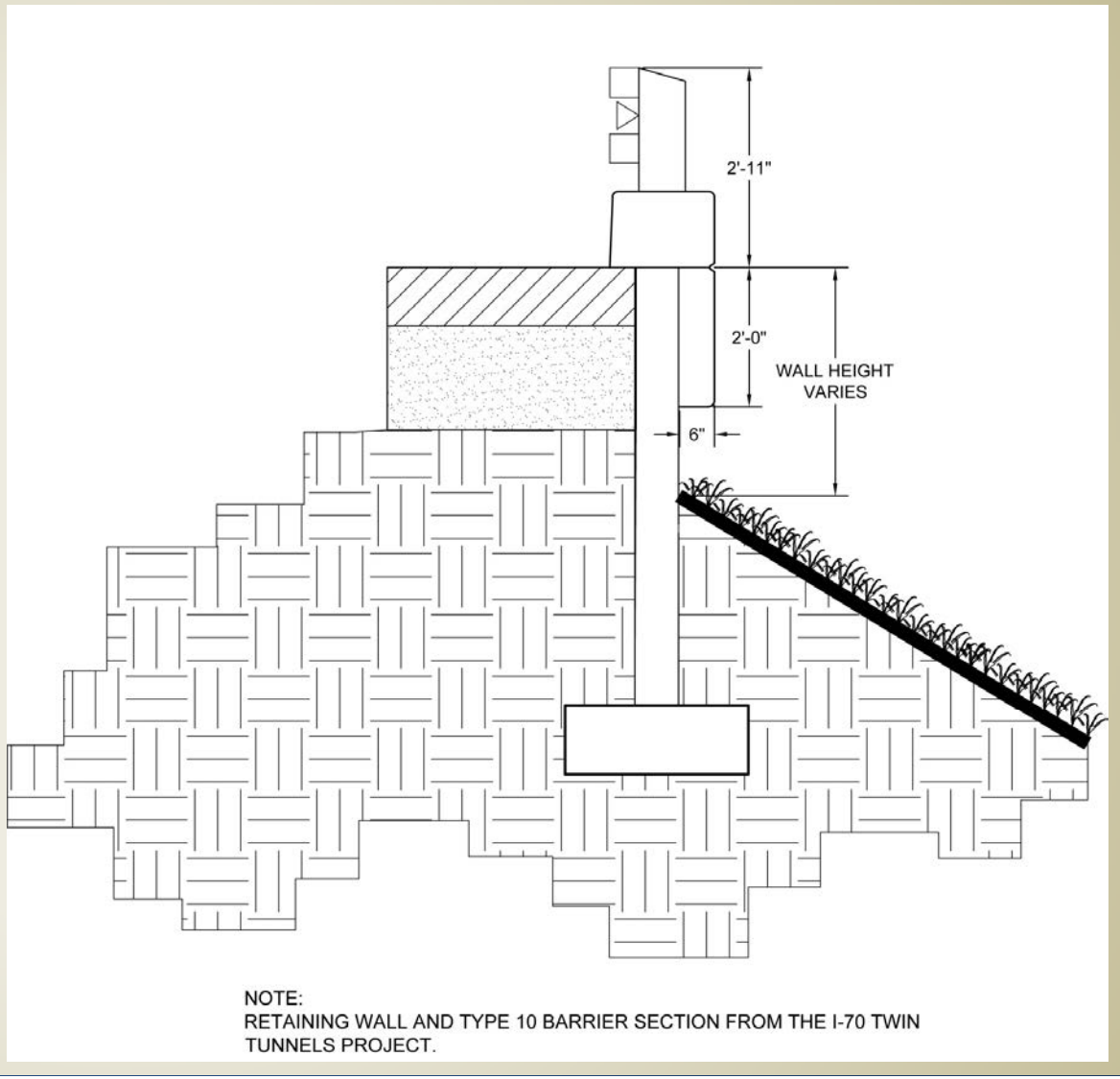
ID	Criteria	Options Ranking (Fair / Better / Best)	
		AASHTO Standard Acceleration and Deceleration Length for Interchange Ramps	Match Existing Accereration and Deceleration Lengths for Interchange Ramps
Issue Specific Criteria			
1	Clear Creek County Preference	• Less Preferred	• More Preferred
2	Impacts to compounding safety risk factors	• Less safety risk factors	• More safety risk factors
3	Meets definition of a PPSL project	• Increased infrastructure Improvements	• Optimizes existing infrastructure
4			
Identification of Preferred Option: Summary			The "Match Existing" option was identified as the preferred option. It provides less infrastructure which is less costly, easier to meet the schedule and to maintain, and is more consistent with an interim project. Although the AASHTO standard option was identified as providing the maximum safety benefit, the "Match Existing" option was determined to not compromise safety when compared to existing. This option protects environmental resources better due to less infrastructure, encroachment, walls, and visual impacts. It also adheres better to the CSS process with clear preference by CCC stakeholders. The analysis accounted for, but was not limited to, safety, widening requirements, and design standards.

10/2/2013

WIDENING MEDIAN VS. CREEK/ RETAINING WALLS

WIDENING MEDIAN VS. CREEK/ RETAINING WALLS WALL SECTION





NOTE:
RETAINING WALL AND TYPE 10 BARRIER SECTION FROM THE I-70 TWIN TUNNELS PROJECT.

LAWSON RETAINING WALL
LOOKING EAST
- EXISTING CONDITION

LAWSON - LOOKING EAST

LAWSON RETAINING WALL
LOOKING EAST

LAWSON RETAINING WALL
LOOKING WEST
- EXISTING CONDITION

LAWSON - LOOKING WEST

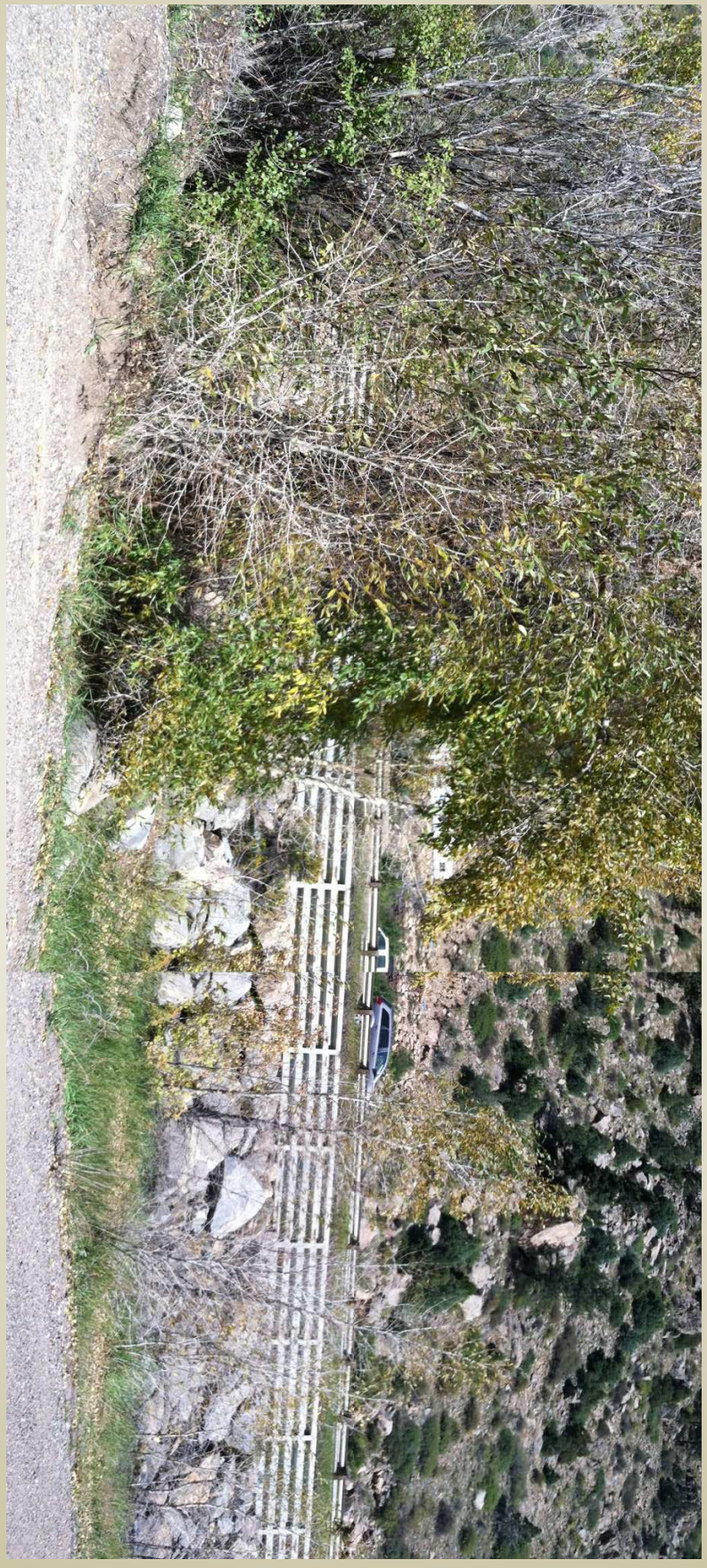
LAWSON RETAINING WALL
LOOKING WEST

Lawson - Looking West

EAST OF LAWSON RETAINING WALL- EXISTING CONDITION VIEW FROM ACROSS CREEK

EAST OF LAWSON RETAINING WALL- CREEKSIDE WIDENING VIEW FROM ACROSS CREEK

EAST OF LAWSON EXISTING RETAINING WALL



WIDENING MEDIAN VS. CREEK/ RETAINING WALLS

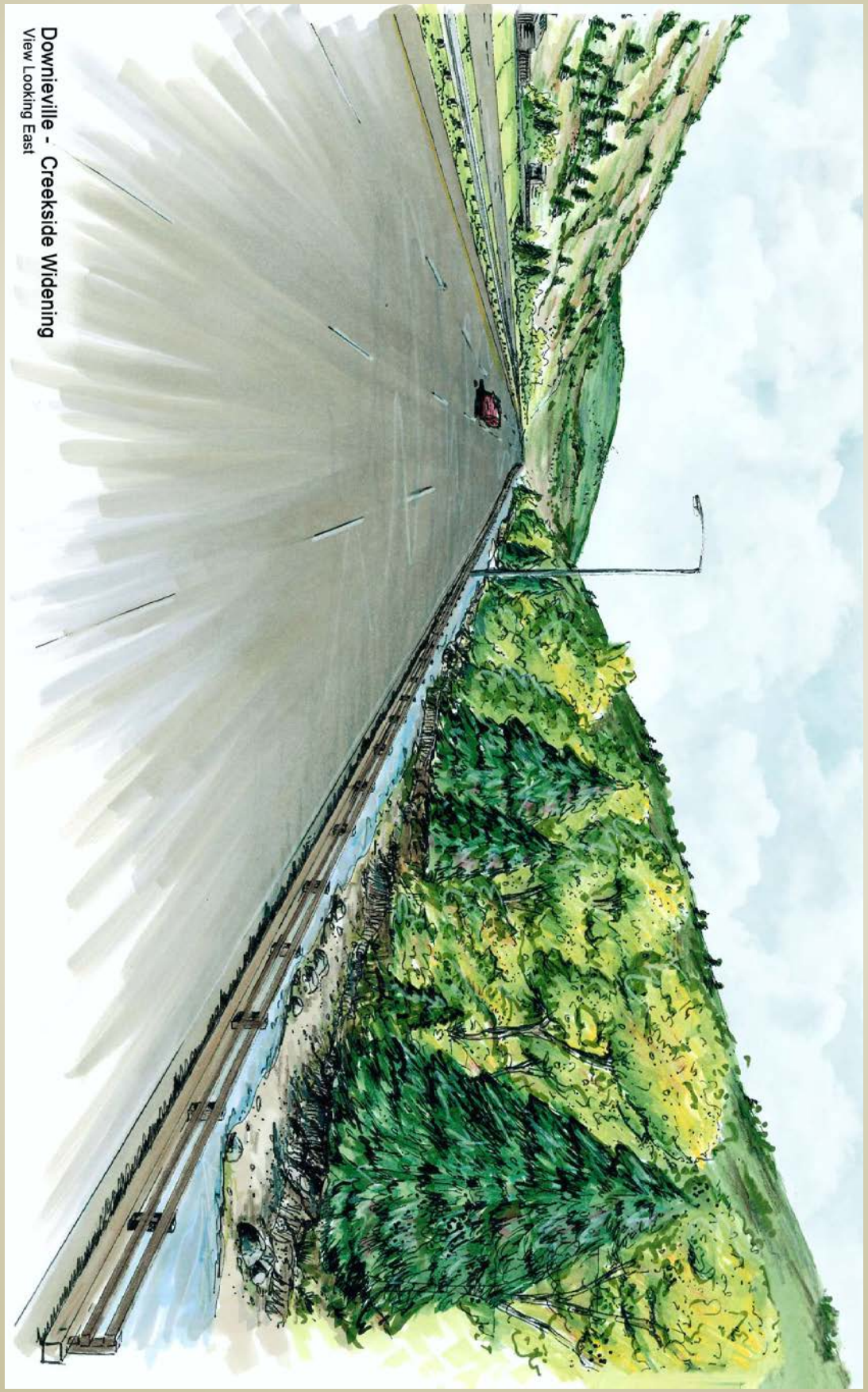
Lawson	
No. of Walls:	2
Wall Type:	Mainline
Wall Length:	750 ft & 350 ft
Max. Wall Height:	3.8 ft & 2.0 ft
Median Shift:	Not an option (no median available)

DOWNIEVILLE –ACCELERATION LANE EXISTING CONDITION LOOKING EAST ON I-70

DOWNIEVILLE – ACCELERATION LANE MEDIAN WIDENING OPTION

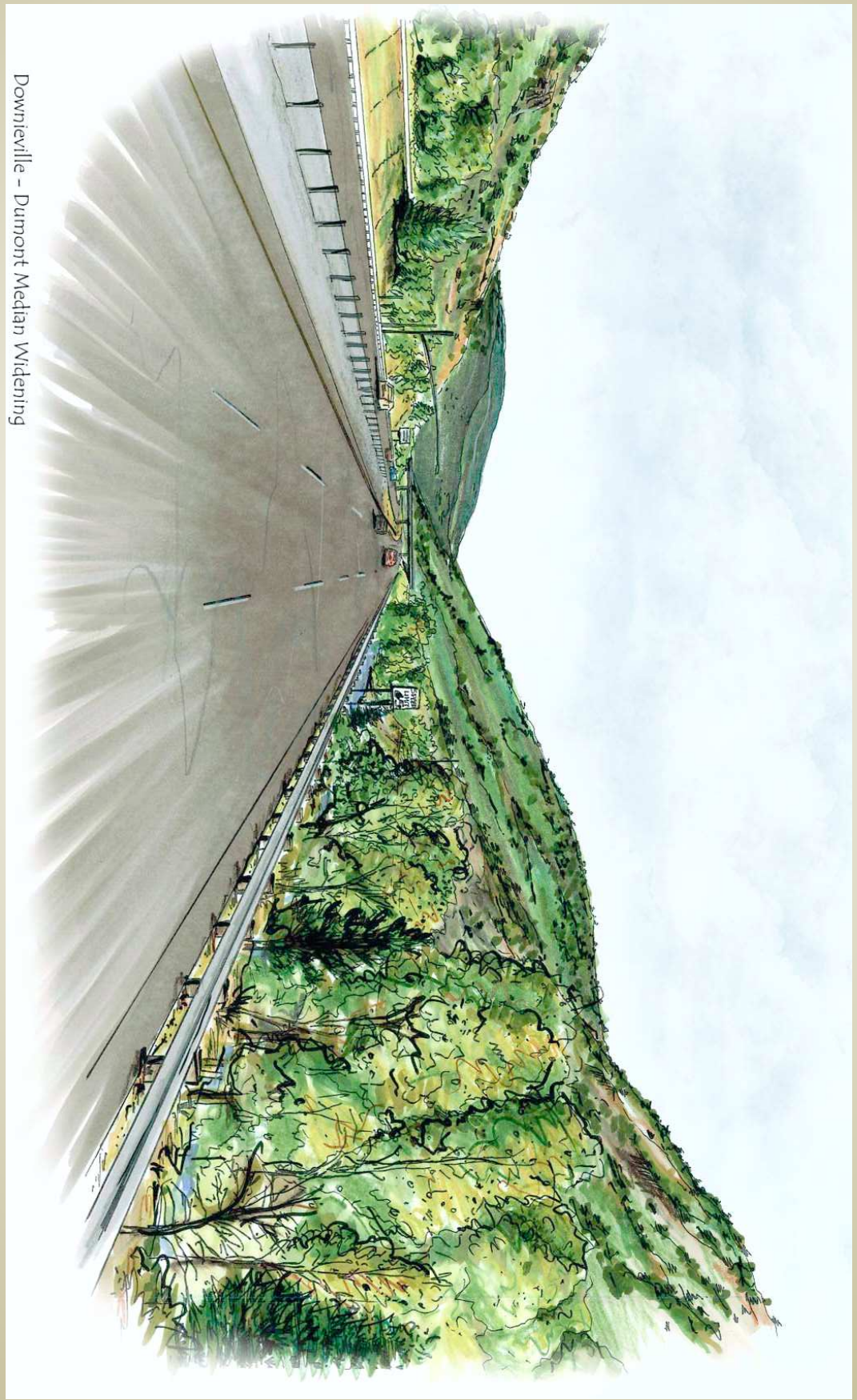
DOWNIEVILLE – ACCELERATION LANE EXISTING CONDITION LOOKING EAST ON I-70

DOWNIEVILLE – ACCELERATION LANE CREEKSIDE WIDENING OPTION



DOWNIEVILLE –DUMONT MAINLINE WIDENING EXISTING CONDITIONS

DOWNIEVILLE –DUMONT MAINLINE WIDENING MEDIAN WIDENING OPTION



Downieville - Dumont Median Widening

DOWNIEVILLE –DUMONT MAINLINE WIDENING EXISTING CONDITIONS

DOWNIEVILLE –DUMONT MAINLINE WIDENING CREEKSIDE WIDENING OPTION

Downieville - Dumont Creekside Widening

DOWNIEVILLE –DUMONT MAINLINE WIDENING- EXISTING CONDITIONS VIEW ACROSS CREEK

DOWNIEVILLE –DUMONT MAINLINE WIDENING- CREEKSIDE VIEW ACROSS CREEK

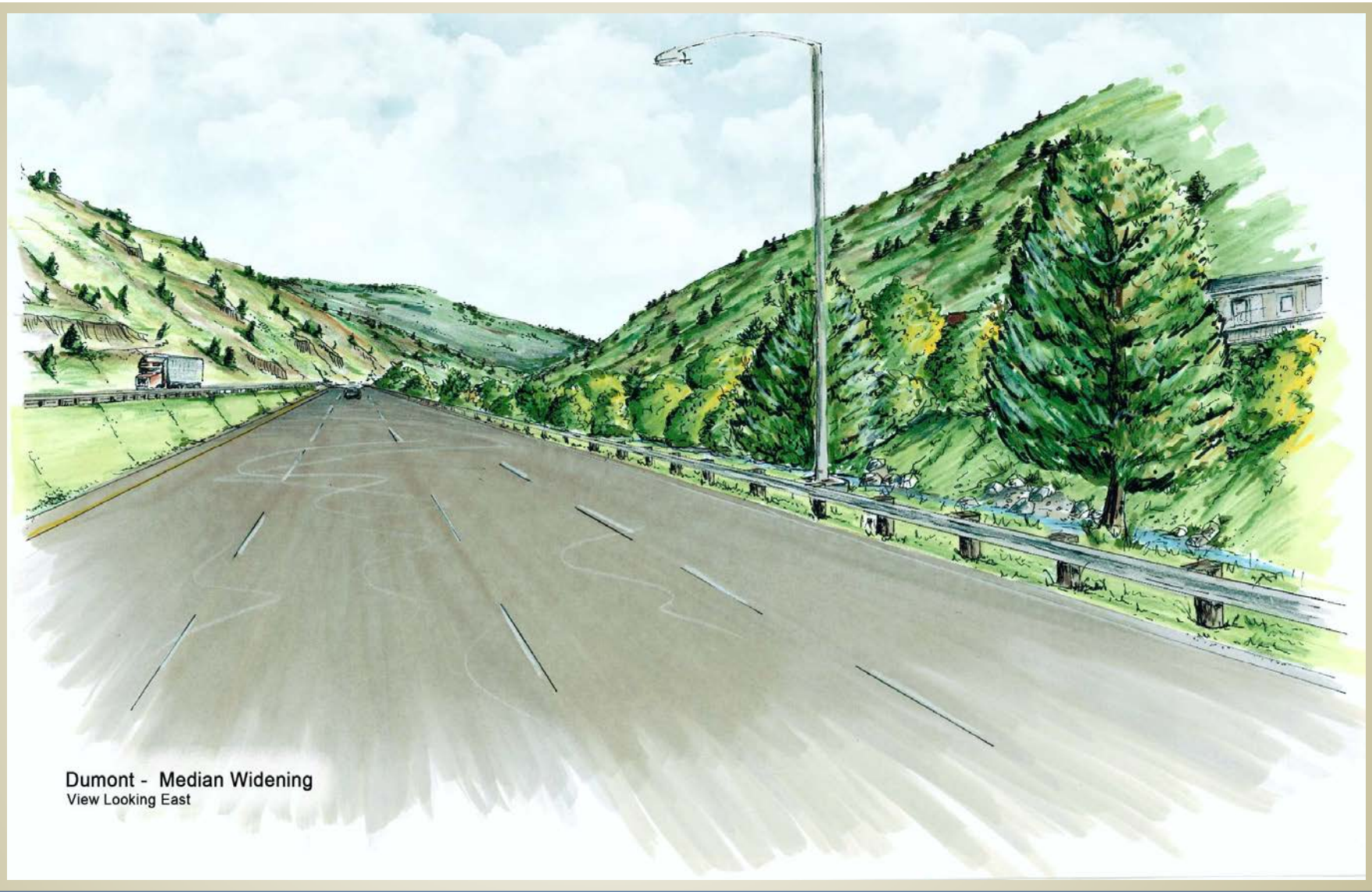
WIDENING MEDIAN VS. CREEK/ RETAINING WALLS

Downieville	
No. of Walls:	2
Wall Type:	Ramp & Mainline
Wall Length:	450 ft & 1850 ft
Max. Wall Height:	3.9 ft & 2.0 ft
Median Shift:	6 ft - Eliminates Both Walls

	Pros	Cons
Median	• Eliminates retaining walls • No riparian vegetation lost along creek • Less visual impacts to creek users • Existing median can be considered "sliver median"	• Does not meet corridor design criteria
Creek	• Meets corridor design criteria	• More visual impacts to creek users • Loss of riparian vegetation • Requires retaining walls • Costs 14 times more than median option
Preferred Option:	**Widen to Median**	

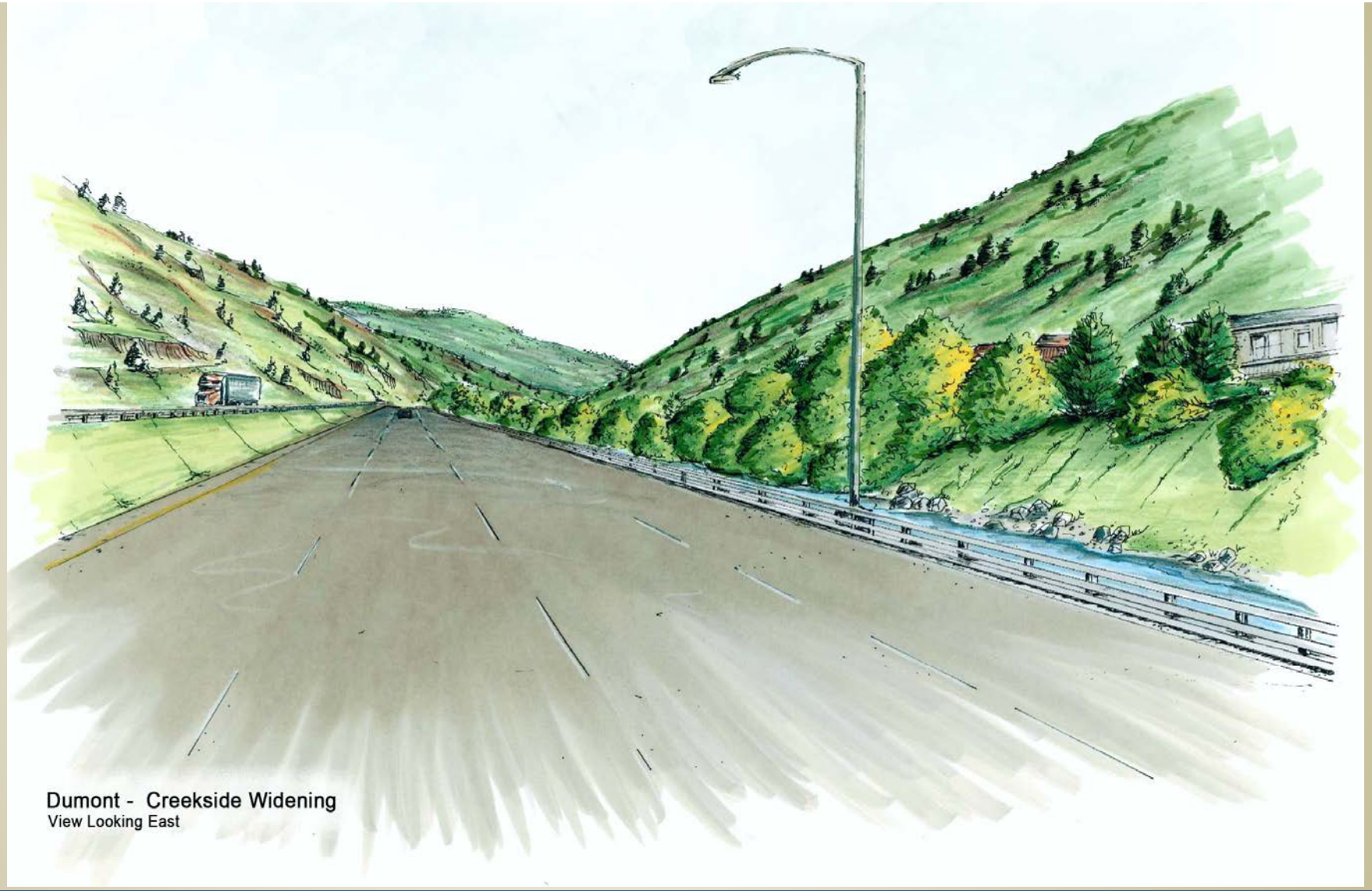
DUMONT – ACCELERATION LANE EXISTING CONDITION LOOKING EAST ON I-70

DUMONT – ACCELERATION LANE MEDIAN WIDENING OPTION



DUMONT – ACCELERATION LANE
EXISTING CONDITION LOOKING EAST ON I-70

DUMONT – ACCELERATION LANE CREEKSIDE WIDENING OPTION

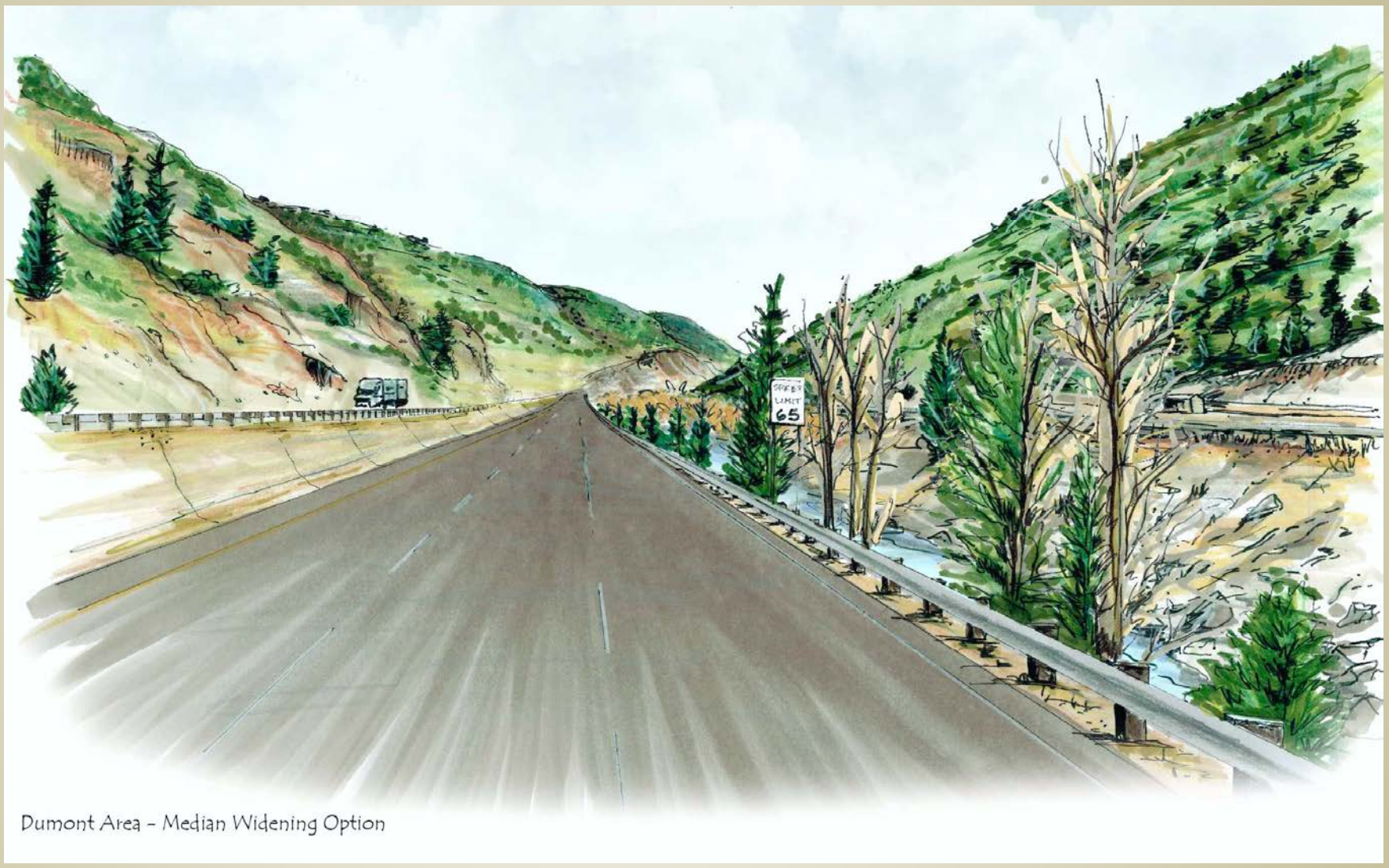


DUMONT – ACCELERATION LANE
EXISTING CONDITION LOOKING EAST
FROM SOUTH SIDE OF CREEK

DUMONT – ACCELERATION LANE CREEKSIDE WIDENING LOOKING EAST FROM SOUTH SIDE OF CREEK

DUMONT - MAINLINE WIDENING
EXISTING CONDITIONS

DUMONT - MAINLINE WIDENING
MEDIAN WIDENING OPTION



Dumont Area – Median Widening Option

DUMONT - MAINLINE WIDENING
EXISTING CONDITIONS

DUMONT - MAINLINE WIDENING
CREEKSIDE WIDENING OPTION

Dumont Area - Creekside Widening Option

DUMONT MAINLINE WIDENING
VIEW ACROSS CREEK
EXISTING CONDITIONS

DUMONT MAINLINE WIDENING
VIEW ACROSS CREEK

WIDENING MEDIAN VS. CREEK/ RETAINING WALLS

Dumont	
No. of Walls:	2
Wall Type:	Ramp & Mainline
Wall Length:	250 ft & 850 ft
Max. Wall Height:	2.3 ft & 2.3 ft
Median Shift:	3 ft - Eliminates Both Walls

	Pros	Cons
Median	• Eliminates retaining walls • Less visual impacts to creek users	• Does not meet corridor design criteria • Reduces grade-separated, vegetated median
Creek	• Meets corridor design criteria • Preserves grade-separated, vegetated median	• More visual impacts to creek users • Requires retaining walls • Costs 16 times more than median option
Preferred Option:	**TBD**	

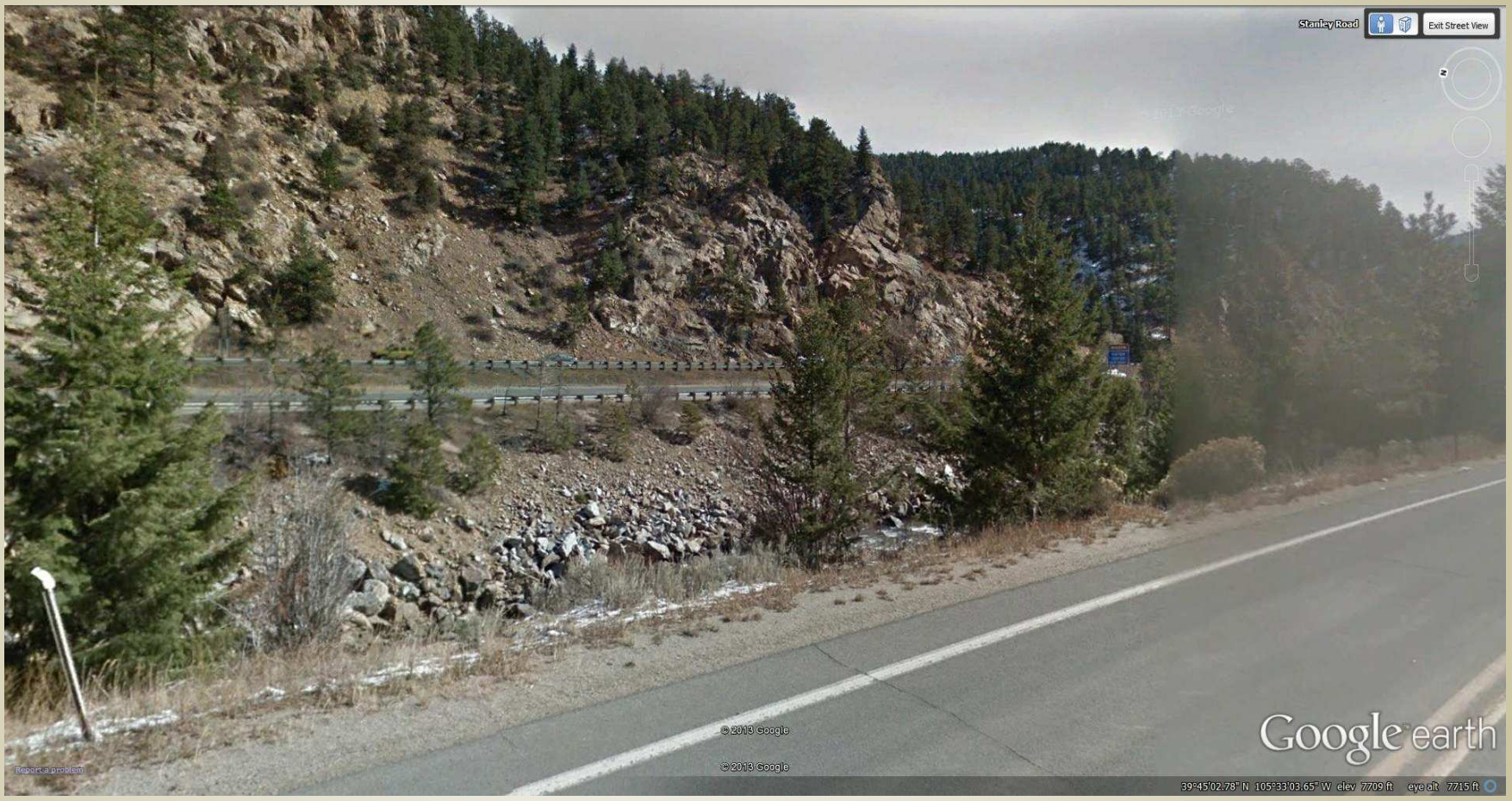
FALL RIVER – ACCELERATION LANE EXISTING CONDITION LOOKING EAST ON I-70

FALL RIVER – ACCELERATION LANE MEDIAN WIDENING OPTION

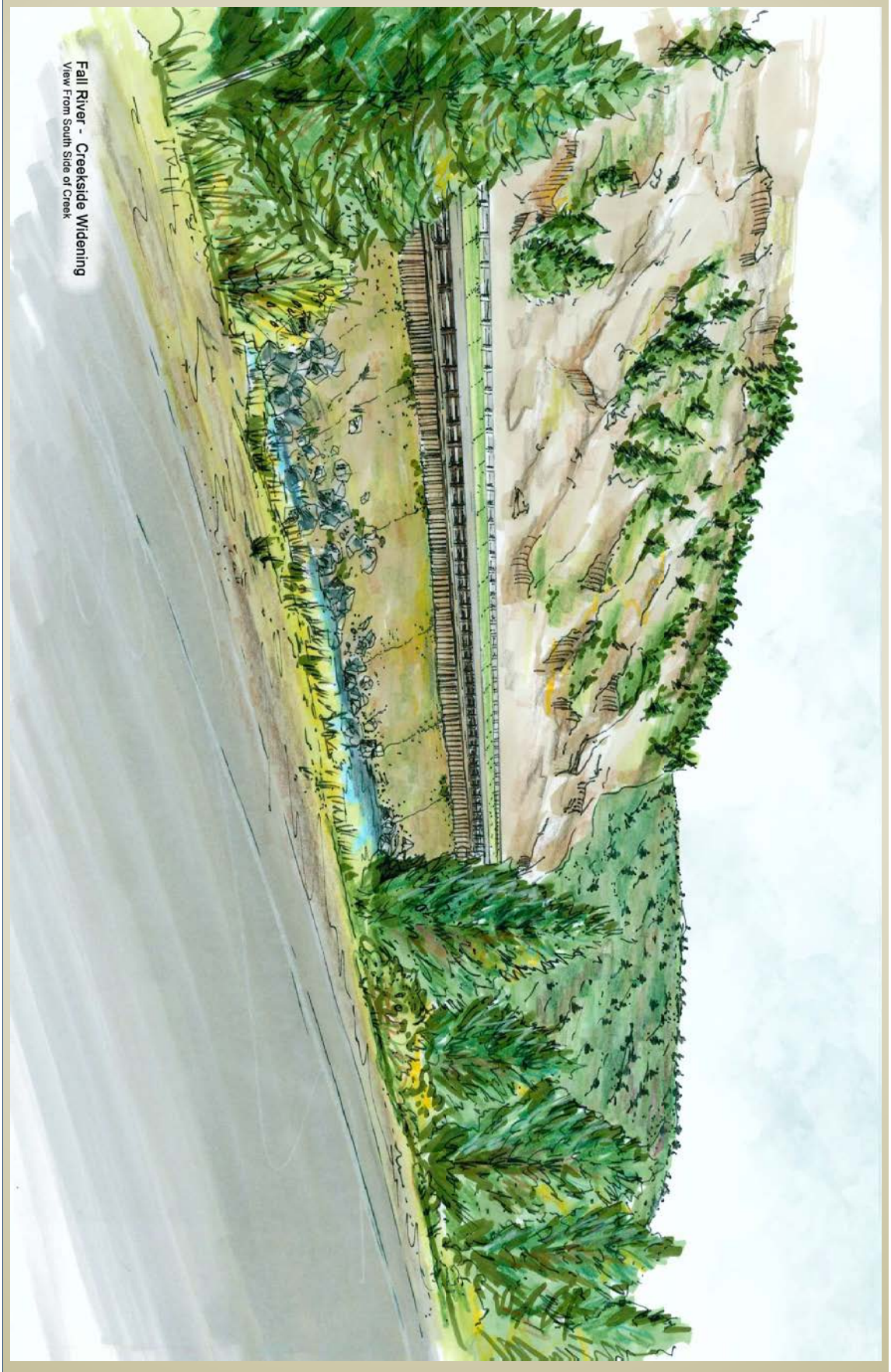
FALL RIVER – ACCELERATION LANE EXISTING CONDITION LOOKING EAST ON I-70

FALL RIVER –ACCELERATION LANE CREEKSIDE WIDENING OPTION

FALL RIVER – EXISTING CONDITION LOOKING EAST FROM SOUTH SIDE OF CREEK



FALL RIVER – CREEKSIDE WIDENING LOOKING EAST FROM SOUTH SIDE OF CREEK



WIDENING MEDIAN VS. CREEK/ RETAINING WALLS

Fall River	
No. of Walls:	2
Wall Type:	Ramp & Ramp
Wall Length:	300 ft & 300 ft
Max. Wall Height:	3.2 ft & 2.7 ft
Median Shift:	2 ft - Eliminates Both Walls

	Pros	Cons
Median	• Eliminates retaining walls • Less visual impacts to creek users	• Does not meet corridor design criteria • Reduces grade-separated, vegetated median
Creek	• Meets corridor design criteria • Preserves grade-separated, vegetated median	• More visual impacts to creek users • Requires retaining walls • Costs 32 times more than median option
Preferred Option:	TBD	

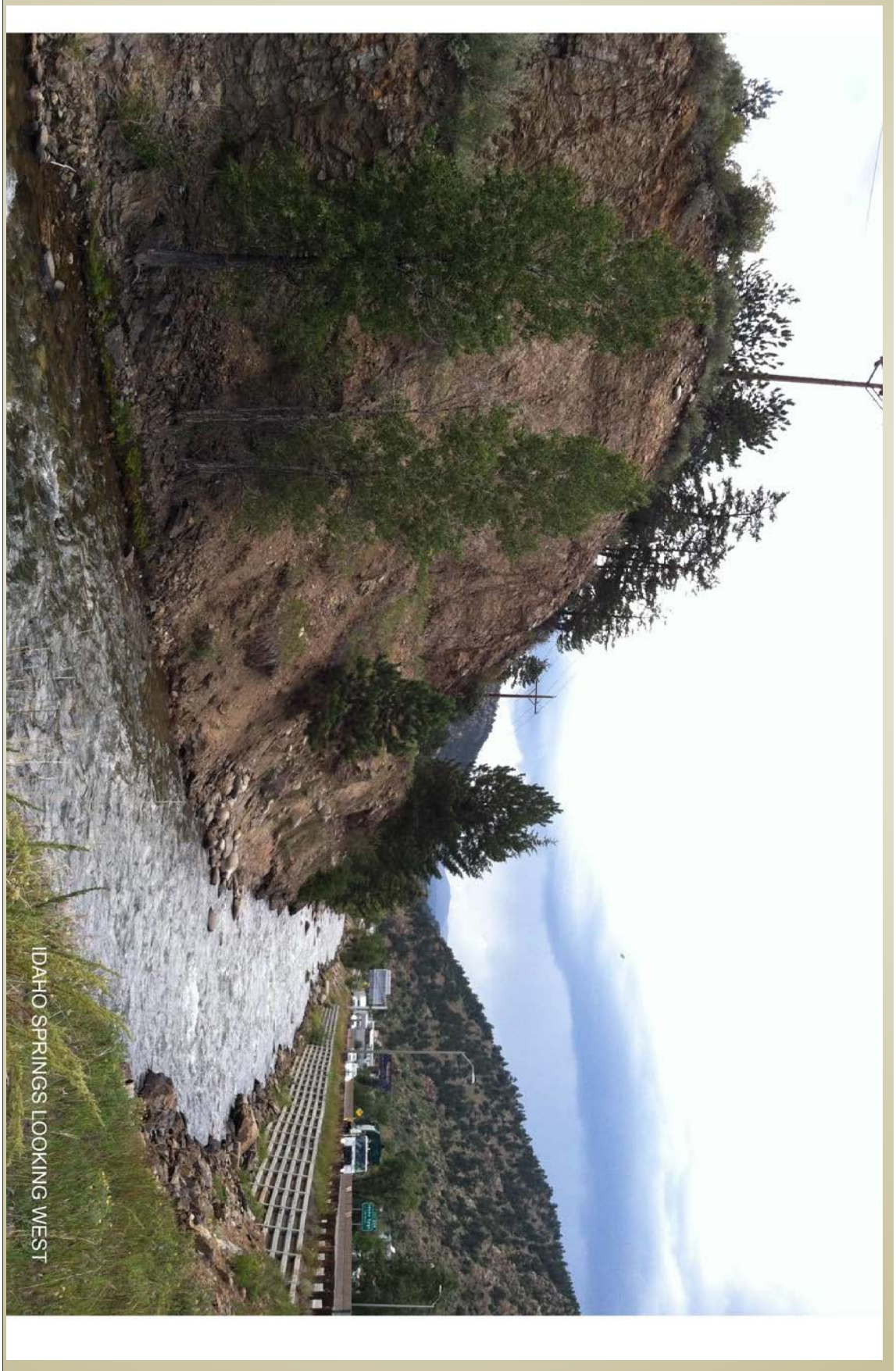
IDAHO SPRINGS – DECELERATION LANE WEST OF SH-103 MAINLINE WIDENING LOOKING NORTH – EXISTING COND.

IDAHO SPRINGS - LOOKING NORTH

IDAHO SPRINGS – DECELERATION LANE DETERIORATION OF EXISTING RETAINING WALL

IDAHO SPRINGS – DECELERATION LANE WEST OF SH-103 MAINLINE WIDENING VIEW LOOKING NORTH

IDAHO SPRINGS – DECELERATION LANE WEST OF SH-103 MAINLINE WIDENING LOOKING WEST – EXISTING COND



IDAHO SPRINGS – DECELERATION LANE WEST OF SH-103 MAINLINE WIDENING VIEW LOOKING WEST

WIDENING MEDIAN VS. CREEK/ RETAINING WALLS

SH 103	
No. of Walls:	2
Wall Type:	Ramp & Ramp
Wall Length:	TBD
Max. Wall Height:	TBD
Median Shift:	Not an option (no median available)

WIDENING MEDIAN VS. CREEK/ RETAINING WALLS

Preliminary Wall Summary							
Wall ID	Wall Location Description	Mainline or Ramp Widening	Creek Widening Option		Median Widening Option		
			Length Wall (LF)	Maximum Exposed Wall Height (FT)	Maximum Width Shifted into Median (FT)	Length Wall (LF)	Maximum Exposed Wall Height (FT)
A	Lawson	Mainline	750	3.8	N/A	750	3.8
B	East of Lawson	Mainline	350	2.0	N/A	350	2.0
C	Downieville On-Ramp	Ramp	450	3.9	6	0	0.0
D	B/T Downieville and Dumont	Mainline	1850	2.0	2	0	0.0
E	Dumont On-Ramp	Ramp	250	2.3	3	0	0.0
F	B/T Dumont and Fall River	Mainline	850	2.3	2	0	0.0
G	Fall River On-Ramp Wall #1	Ramp	300	3.2	2	150	1.8
H	Fall River On-Ramp Wall #2	Ramp	300	2.7	2	0	0.0
			5100	**N/A**		**1250**	**N/A**

WIDENING MEDIAN VS. CREEK/ RETAINING WALLS

DRAFT

Widening Median vs. Creek

ID	Criteria	Options Ranking (Fair / Better / Best)	
		Widen to Creek	Widen to Median
Evaluation Criteria			
1	Addresses safety during PPSL operations	•Not a differentiator	
2	Maintains safety during non-peak times	•Not a differentiator	
3	Improves mobility during peak times	•Not a differentiator	
4	Minimizes the effort required to maintain the option	•More difficult to maintain taller walls along creek	•Easier to maintain shorter walls and access from roadway.
5	Enables the project team to achieve the goal of opening PPSL by 1-Jul-15	•More wall area to design & build increases schedule	•Less wall area to design & build reduces schedule
6	Creates infrastructure investments that are reasonable to construct and provide the best value for their life cycle, function, and purpose.	•More wall area has more impacts, is more expensive, and requires more maintenance	•Less wall area has less impacts, is less expensive, and requires less maintenance

WIDENING MEDIAN VS. CREEK/ RETAINING WALLS

Widening Median vs. Creek

ID	Criteria	Options Ranking (Fair / Better / Best)	
		Widen to Creek	**Widen to Median**
Evaluation Criteria			
7	Allows for a process to engage and communicate with all the local, regional and national users of the I-70 Mountain Corridor	•Not a differentiator	
8	Creates opportunities to "correct past damage"	•Not a differentiator	
9	Provides access and protects opportunities for enhancements to tourist destinations, community facilities, interstate commerce and also limits disproportionate effects to the community.	• More impacts to riparian vegetation affects river recreational experience	• More impacts to the median vegetation
10	Incorporates sustainability by using locally available materials and environmentally-friendly processes	•Not a differentiator	
11	Protects or creates unique features for the area as a gateway	•Not a differentiator	
12	Protects wildlife needs	•More barrier effect impeding highway permeability	•Less barrier effect impeding highway permeability
13	Protects Clear Creek	•More potential for creek encroachment •More visual impact from walls and tree removal •Less space for WQ features to be added • Degrades recreational experience	•Less potential for encroachment into creek •Less visual impact for walls and tree removal •More space for WQ features to be added
14	Protects the defining historical elements of Clear Creek County	•More infrastructure, more visual impact	•Less infrastructure, less visual impact

WIDENING MEDIAN VS. CREEK/ RETAINING WALLS

Widening Median vs. Creek

ID	Criteria	Options Ranking (Fair / Better / Best)	
		Widen to Creek	**Widen to Median**
Evaluation Criteria			
15	Meets CDOT's and industry standards	•Not a differentiator	
16	Achieves the mountain mineral belt aesthetic guidelines	• More impacts to riparian vegetation	• Minimizes the area of walls
17	Meets the I-70 Mountain Corridor design criteria	• Meets the corridor design criteria by not decreasing median width	• Narrows the median
18	Preserves opportunities for the AGS and the ultimate preferred alternative	•Not a differentiator	
19	Adaptable for future changes/projects	• More infrastructure to remove in future	• Less infrastructure to remove in future
ID	**Criteria**	**Options Ranking** (Fair / Better / Best)	
		Widen to Creek	**Widen to Median**
Issue Specific Criteria			
1	Impacts to creek users	• More visual impacts to creek users	• No visual impacts to creek users
2	Allows access to the north side of the creek from I-70.	Requires a retaining wall with guard rail that impedes access.	Requires a guard rail but no wall, providing easier access.
3			
4			
Identification of Preferred Option: Summary			

EMERGENCY RESPONSE

Emergency Response – ITF

- I-70 is primary response route
- Safety of Emergency Responders
  - Access to scene
  - Ability to secure scene
  - Traffic management during incident
  - Perception of safety
- Currently Shoulder Accommodates Access during congestion
- During Peak Period require clear lane on I-70 for Emergency Access
- Access to north side of creek for Emergency Responders
- How incidents are reported
- Port of Entry Considerations

EMERGENCY RESPONSE

Emergency Response Strategies

- **Staged Assets**
  - Light duty vehicles
  - Courtesy patrol
- **Manned Traffic Management Operations**
  - Continuous camera coverage
  - Traffic monitoring
  - Facilitation of dispatch
  - Dedicated staff to Corridor
- **ATM – active traffic management**
  - Ability to close lane through technology
    - Cameras
    - Signs
    - Person

EVALUATION CRITERIA

1. Addresses safety during PPSL operations
2. Maintains safety during non-peak times
3. Improves mobility and reliability during peak times for both I-70 and the local roadway network
4. Minimizes the effort required to maintain the operation
5. Enable the project team to achieve the goal of opening the PPSL
6. Creates infrastructure investments that are reasonable to construct and provide the best value for their life cycle, function and purpose.
7. Allows for a process to engage and communicate with all the local, regions and national users of the I-70 Mountain Corridor
8. Creates opportunities to "correct past damage"
9. Provides access and protects opportunities for enhancements to tourist destinations, community facilities, interstate commerce and also limits disproportionate effects to the community.

EVALUATION CRITERIA

10. Incorporates sustainability by using locally available materials and environmentally- friendly process
11. Protects or creates unique features for the areas as a gateway
12. Protects wildlife needs
13. Protects Clear Creek
14. Protects the defining historical elements of Clear Creek County
15. Meets CDOT's and industry standards
16. Achieves the Mountain Mineral Belt aesthetic guidelines
17. Meets the I-70 Mountain Corridor design criteria
18. Preserves opportunities for the AGS and the ultimate preferred alternative
19. Adaptable for future changes/projects (including Idaho Springs Visioning)

ISSUE SPECIFIC CRITERIA

- SH 103 Bridge
  - ?
  - ?
- I-70 Bridges
  - ?
  - ?

NEXT STEPS

- **Public Involvement**
  - Online public meeting
  - Schedule
  - Website
- **Next Section 106 Meeting**
  - October 8, 2013
- **Next PLT Meeting**
  - October 7, 2013
- **SH 103 Issue Taskforce Meeting**

  Tentative Dates
  - October 11, 2013
  - October 24, 2013

FUTURE MEETINGS

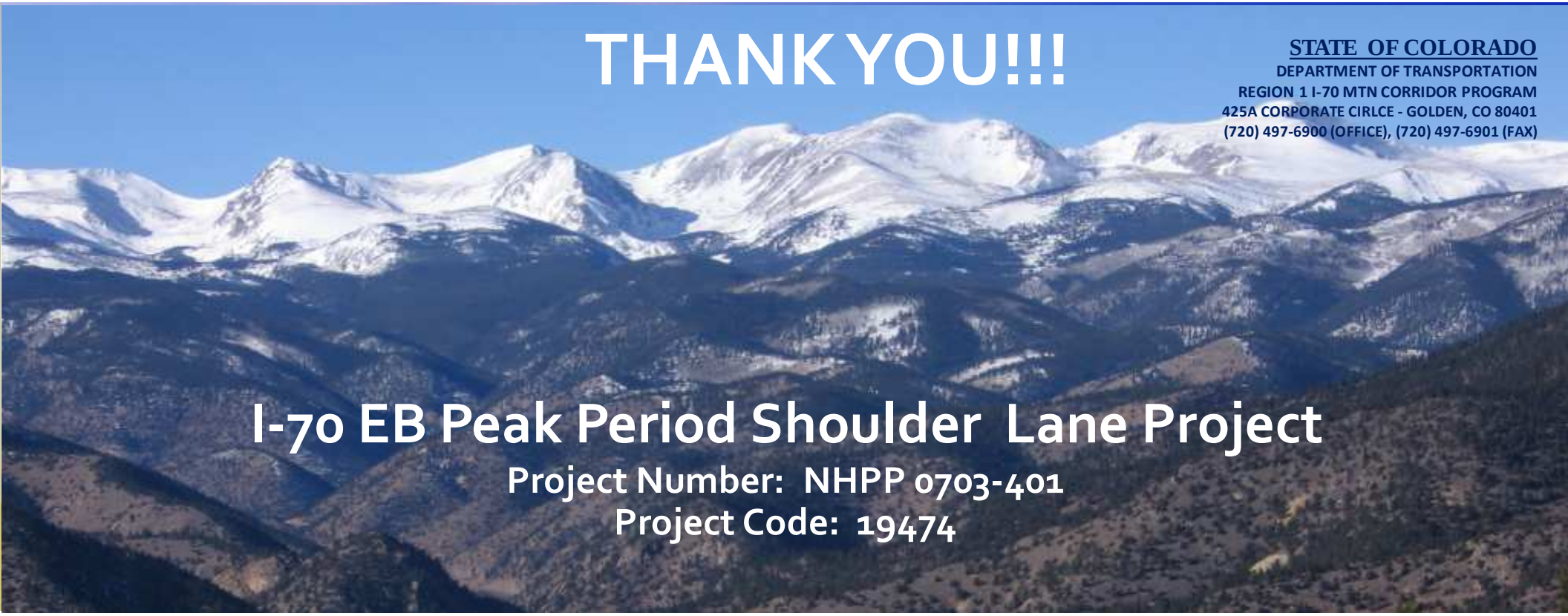
FUTURE TECH TEAM MEETINGS

- DATES

  10/28 8:30 – 2:30pm at CDOT

  11/18 8:30 – 2:30pm at Idaho Springs

  12/16 8:30 – 2:30pm at CDOT



THANK YOU!!!

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION
REGION 1 I-70 MTN CORRIDOR PROGRAM
425A CORPORATE CIRLCE - GOLDEN, CO 80401
(720) 497-6900 (OFFICE), (720) 497-6901 (FAX)

I-70 EB Peak Period Shoulder Lane Project

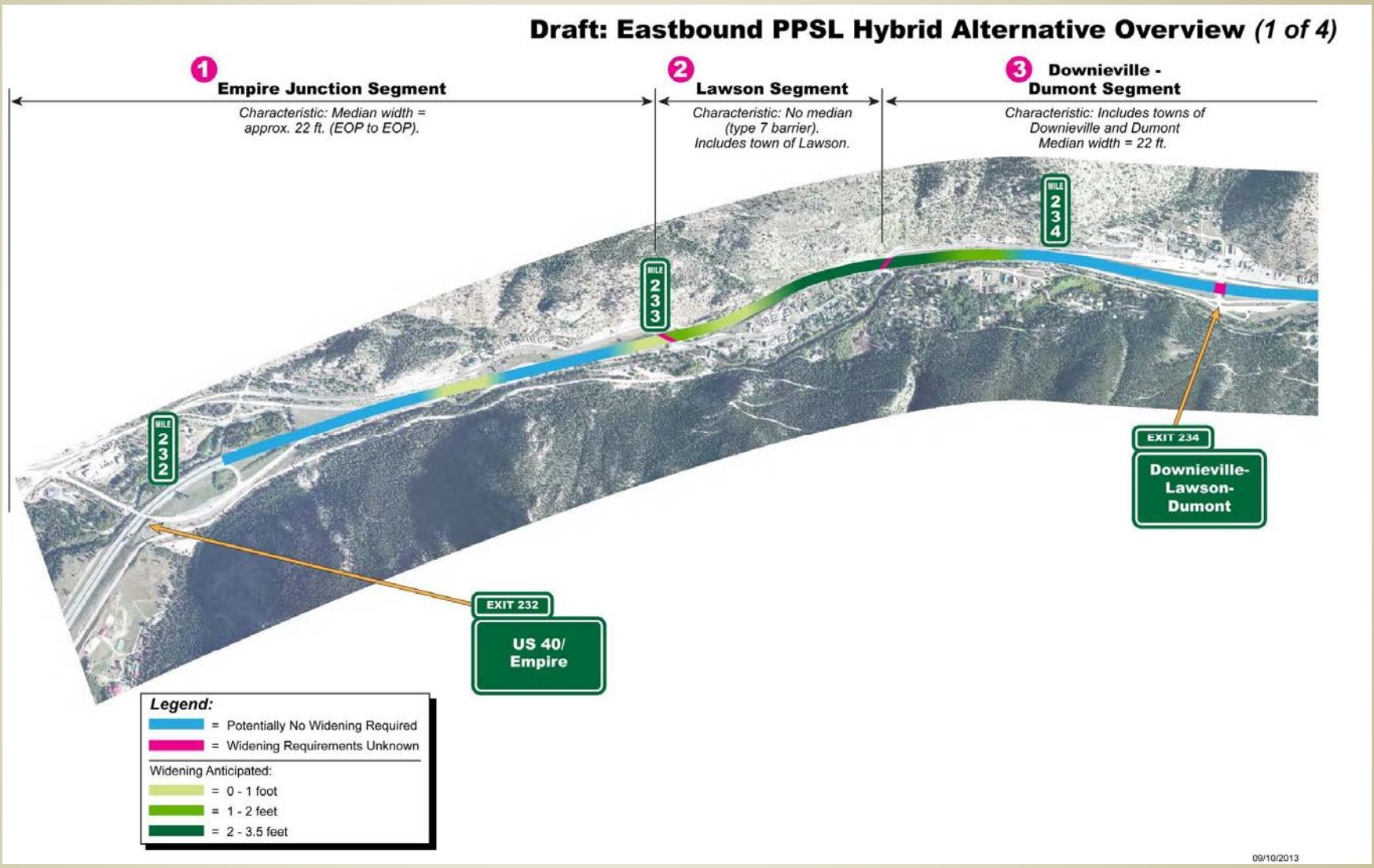
Project Number: NHPP 0703-401
Project Code: 19474

Technical Team Meeting #4

October 7, 2013

CDOT I-70 Mountain Corridor | HDR Engineering, Inc.

PPSL HEAT TEMP DIAGRAMS



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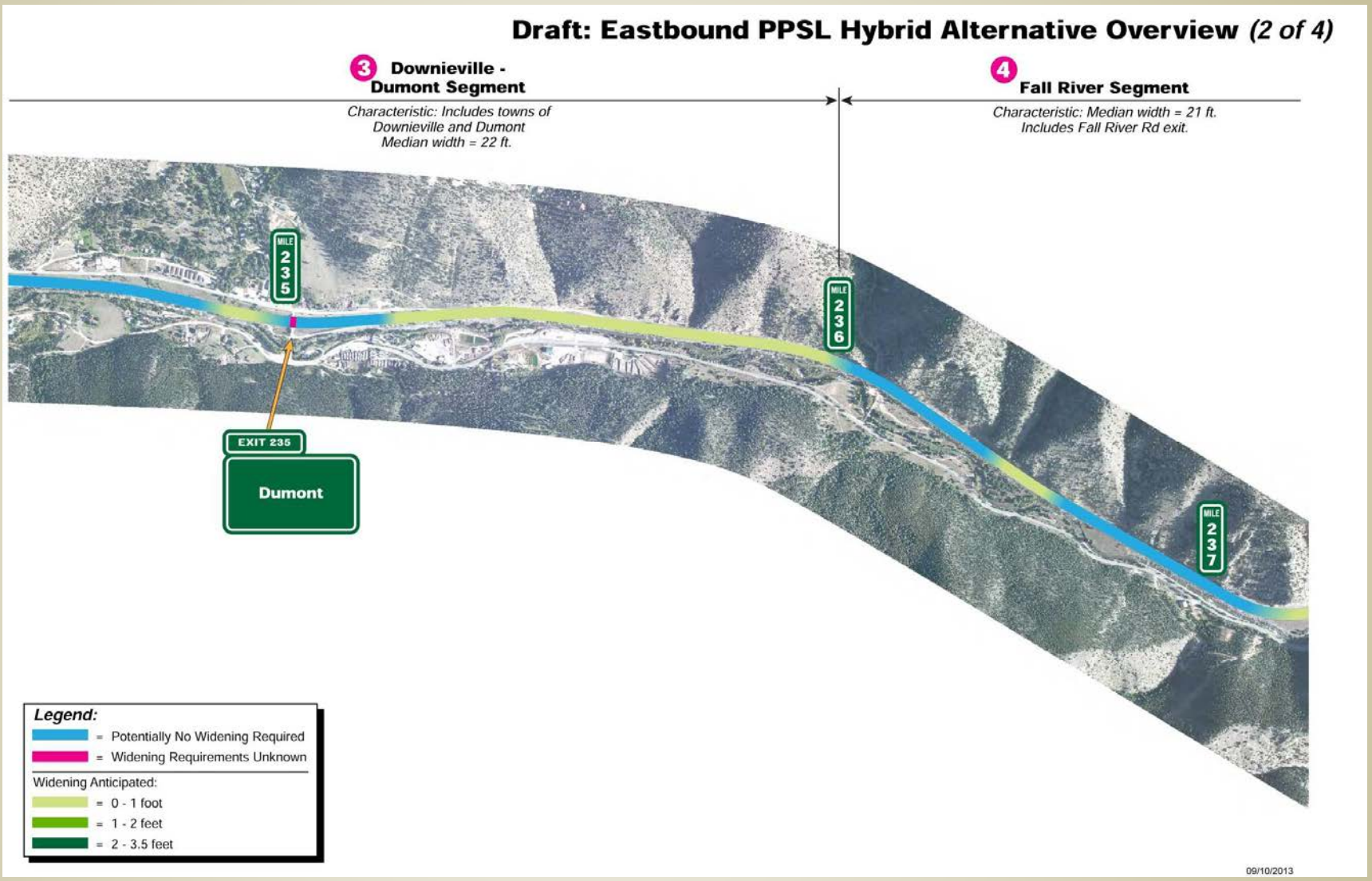

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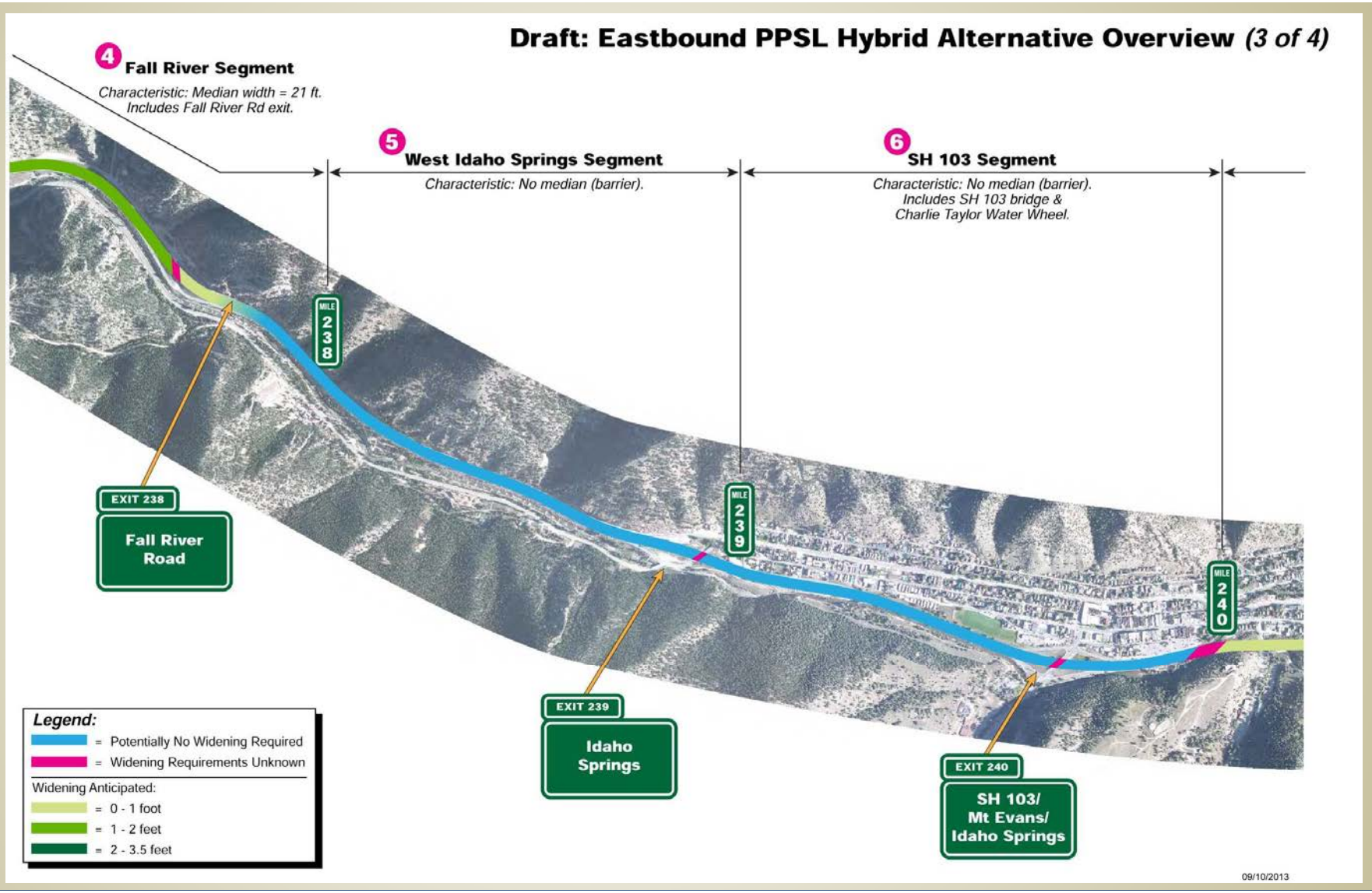

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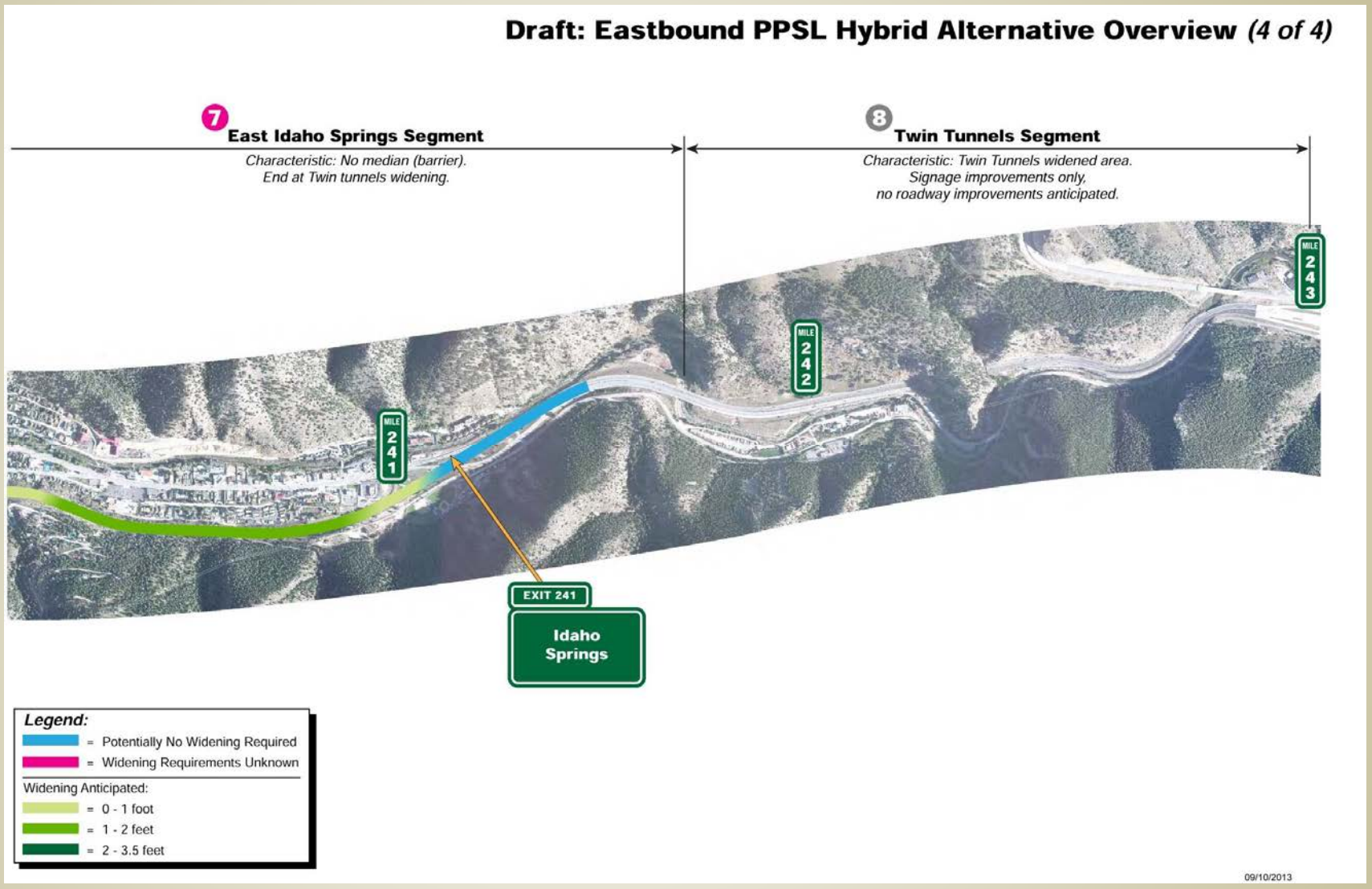
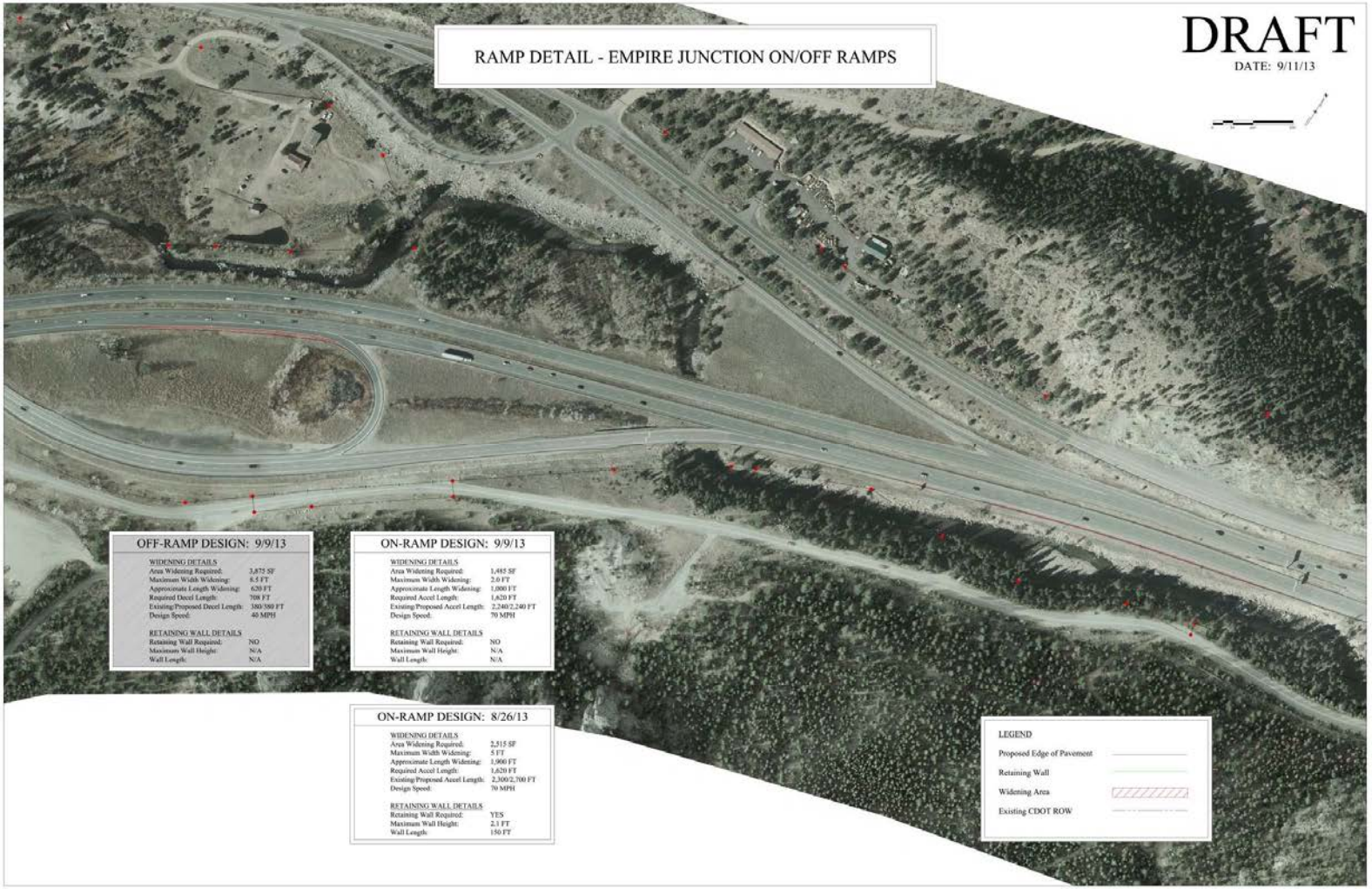


ACCELERATION AND DECELERATION LANES



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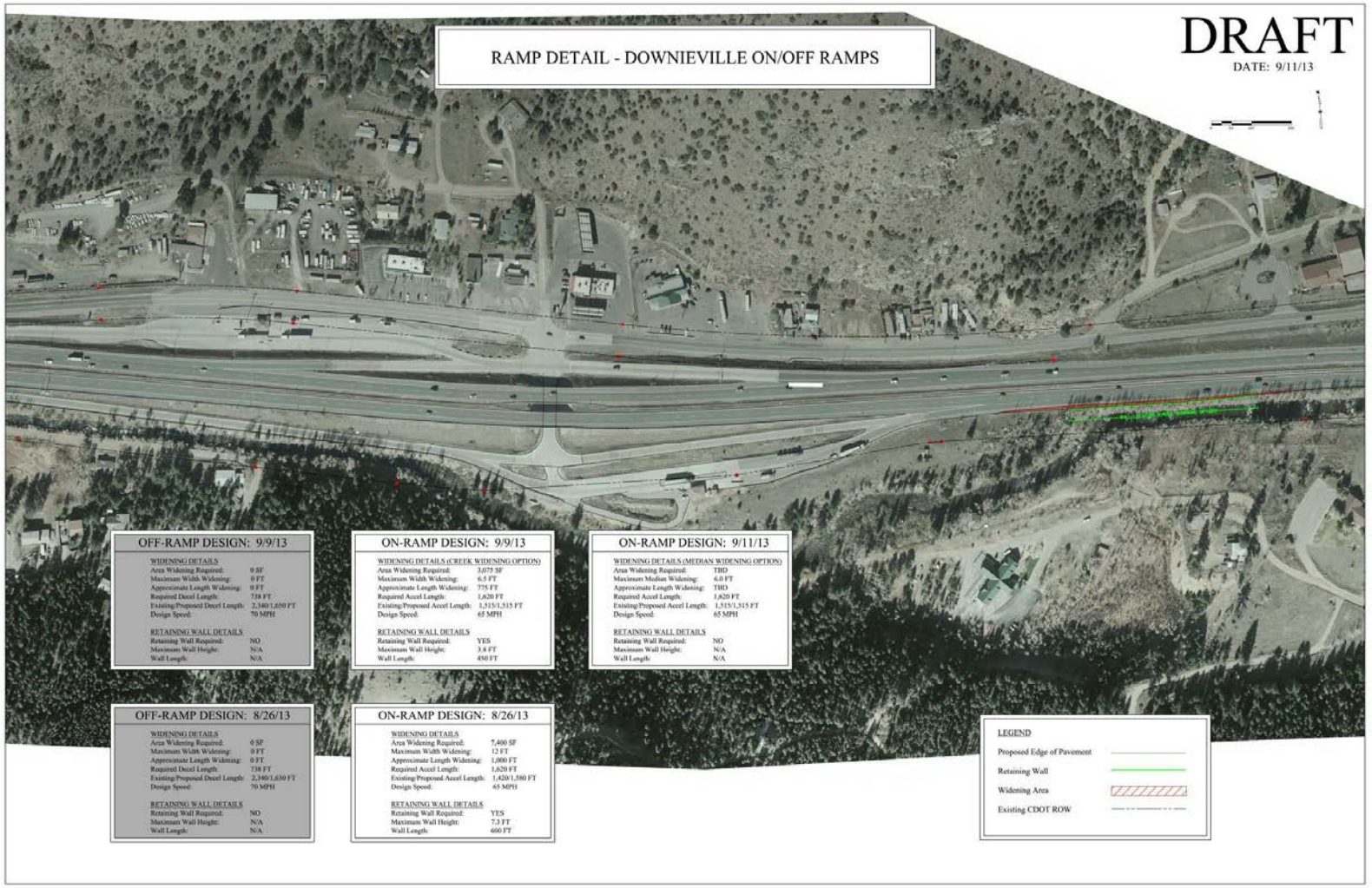

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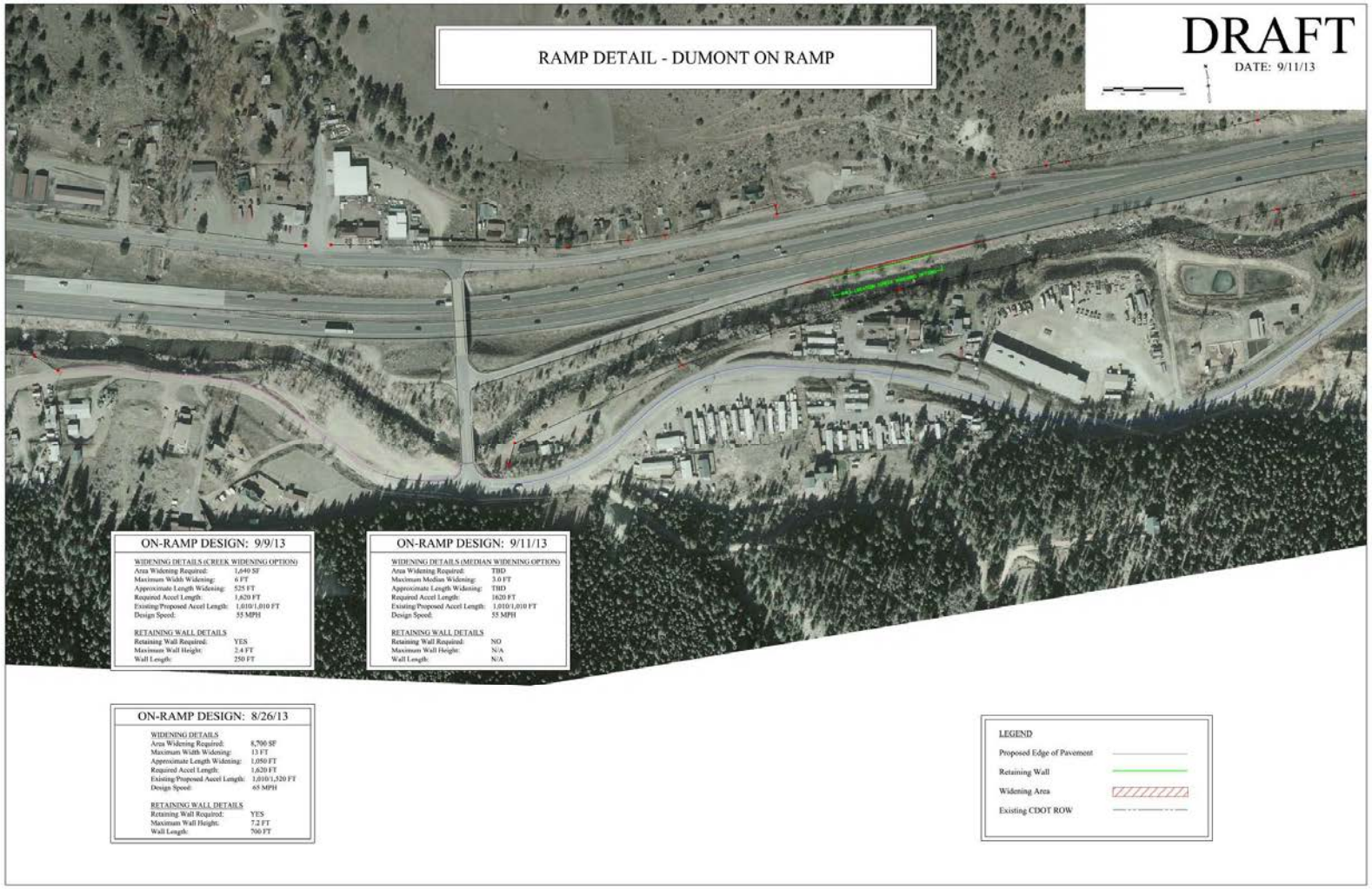

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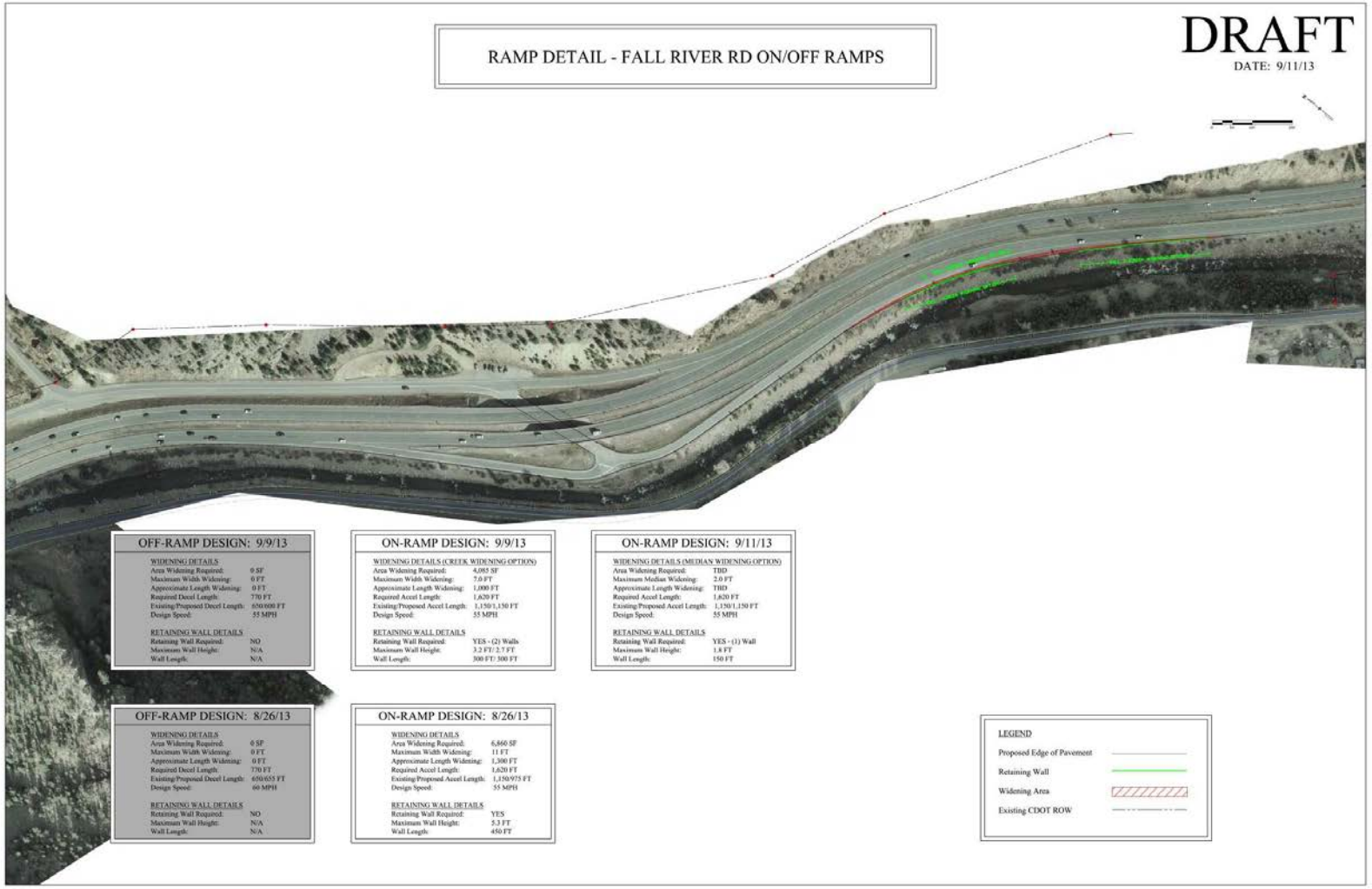

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