

I-70 EB Peak Period Shoulder Lane Project

Project Number: NHPP 0703-401

Project Code: 19474

Technical Team Meeting #10

February 24, 2014

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



AGENDA

1. INTRODUCTIONS AND OVERVIEW
 - Project Schedule
 - Other Project Efforts
2. RESPONSES TO TECHNICAL TEAM ISSUES
 - Procurement Options/ Construction Sequence
 - EA vs Cat Ex (Class of Action)
3. OUTCOMES FROM ISSUES TASK FORCE MEETINGS
 - Idaho Springs Workshop 2/4/14
4. OUTREACH SUMMARY
5. FOLLOW UP
 - Initial Environmental Findings
 - Signing
 - SH 103
 - Exit 241 (East Idaho Springs)
 - Greenway
 - Noise
6. REVIEW PROPOSED SOLUTIONS
 - Drainage
 - Rock Cut
7. OUTSTANDING ISSUES
8. DEVELOP CRITERIA FOR:
 - ??
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



➤ **ENVIRONMENTAL ANALYSIS**

- APRIL 2014 (Cat Ex)

➤ **FOR**

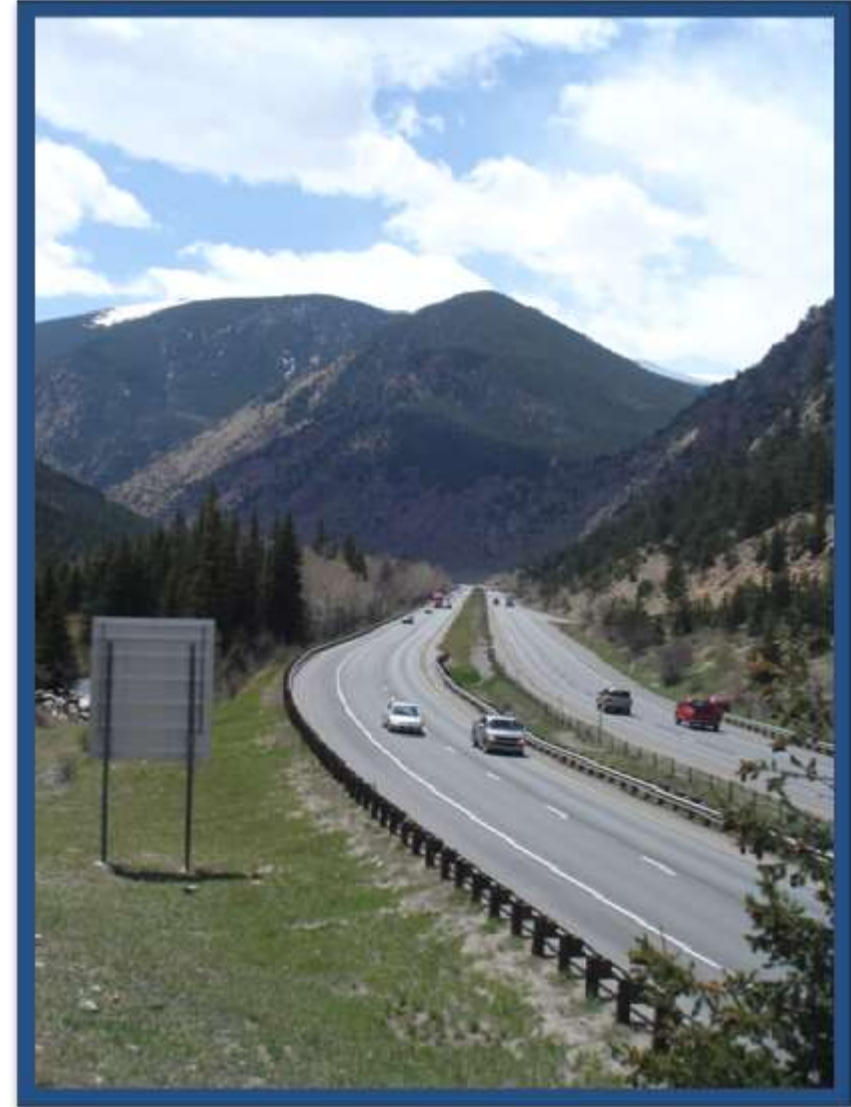
- SPRING 2014

➤ **OPEN TO TRAFFIC**

- FALL 2015



- **Traffic and Revenue**
- **Westbound Tunnel
Expansion**
- **AGS**
- **CCC Transportation
Visioning**



➤ PARKING LOT

- Procurement Options/ Construction Sequence
- EA versus Cat Ex (Class of Action)
- Snow removal
- Cooperative Agreements (revegetation, greenway, transportation, etc.)
- Enhancement opportunities along creek (revegetation etc.)



CONSTRUCTION SEQUENCE

- Walls and Widening
- Signing and ITS
- 103 Interchange
- Water Wheel Park
- Exit 241 Interchange
- Final Signs and Paving



CSS TRACKING SCHEDULE

I-70 MOUNTAIN CORRIDOR PEAK PERIOD SHOULDER LANE ISSUES FOR TECHNICAL TEAM PRELIMINARY SCHEDULE

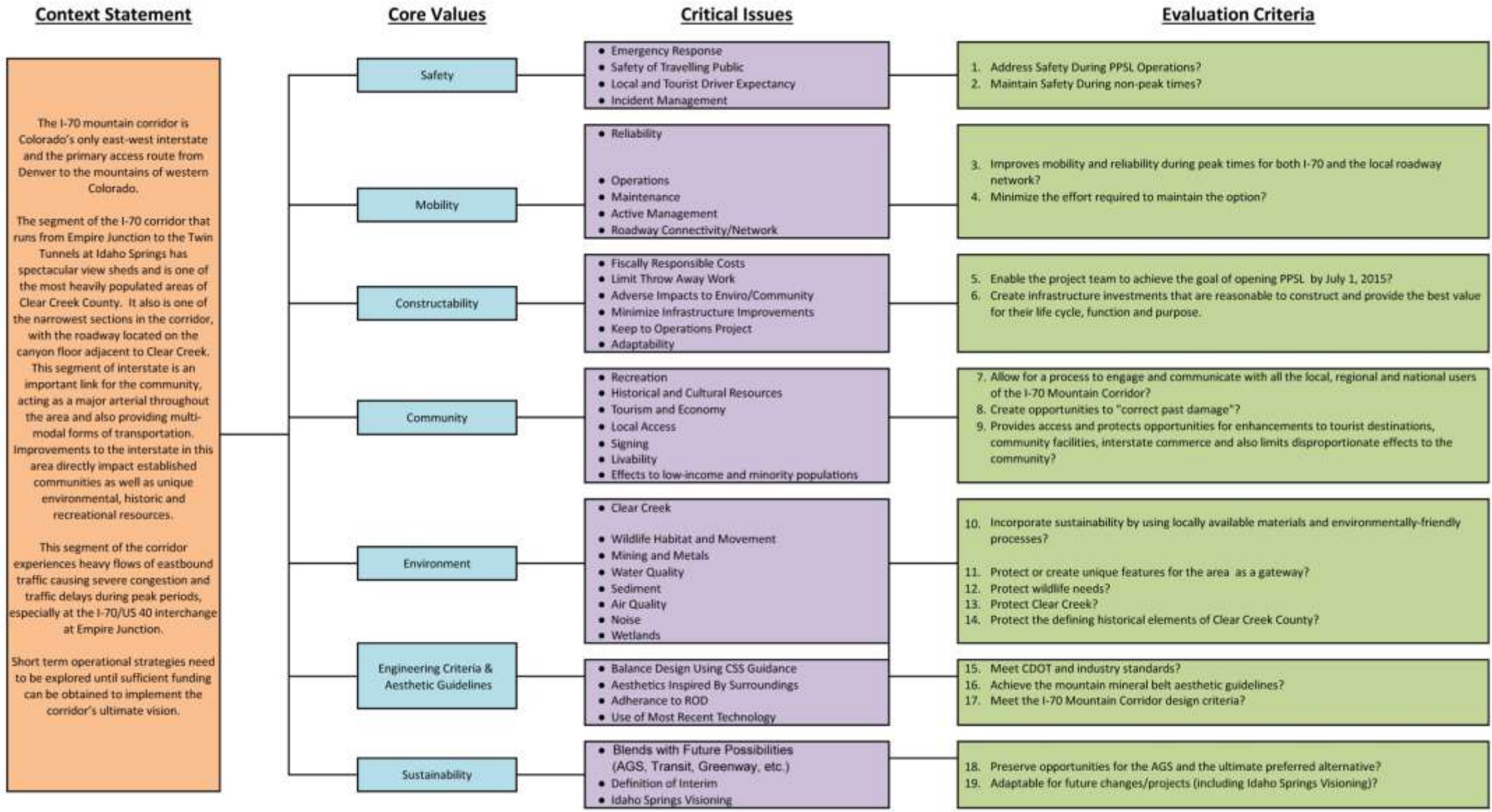
ISSUES	2013		2013		2013		2013		2013		2013		2014		2014		2014		2014						
	FEBRUARY 13, 2014		JULY		AUG		SEP		OCT		NOV		DEC		JAN		FEB		MAR		APRIL		MAY		
	2ND	4TH	2ND	4TH	2ND	4TH	1ST	4TH	2ND	3RD	2ND	3RD	2ND	4TH	2ND	4TH	2ND	4TH	2ND	4TH	2ND	4TH	2ND	4TH	
	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	WEEK	
OPERABILITY																									
LEFT VS RIGHT		*	•			•																			
ROADWAY DEFINITION																									
DEFINE INTERIM						*				•				•											
ROADWAY WIDTH			—			*	•																		
WIDENING MEDIAN VS. CREEK					—*	•																			
ACCELERATION AND DECELERATION LANES					—*	•																			
STRUCTURAL COMPONENTS																									
SH 103 INTERCHANGE							—*	•		•	•		•		•										
I-70 BRIDGES							—*	•		•															
EAST IDAHO SPRINGS										—	*	*	•												
RETAINING WALLS						—*	•																		
INTEGRAL COMPONENTS																									
PULL OUT LOCATIONS										—	*	•													
SIGNAGE								—		*	*	•	•												
ATM										*	•														
MANAGED LANE ACCESS								—		*	•														
EMERGENCY RESPONSE						—*	•																		
DRAINAGE											—						*	•							
ROCK CUTS																	*	•							
GREENWAY											—	*	•												
SNOW REMOVAL/ MAINTENANCE											—						*	•							
NOISE											—	*	•												
BARRIER/ GUARDRAIL																	*	•							
INITIAL ENVIRONMENTAL FINDINGS														*	•										
CLASS OF ACTION														*	•										
AESTHETICS REVIEW						*	*	*		*	*	*	*		*										
LOCAL ROADWAY NETWORK															•										

LEGEND: Shaded Items are Complete — Discuss Criteria * Presentation of Concepts • Follow-Up (As Needed)

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.





- **Idaho Springs Workshop 2/4/14**



DETERMINATION OF CLASS OF ACTION

1.	Does the project consist of highway restoration, operational improvements, and bridge replacement?	Yes
2.	Does the project have significant environmental impacts?	No
3.	Does the project include substantial controversy on environmental grounds?	No
4.	Is there significant impact on properties protected by Section 4(f) or Section 106?	No
5.	Are there inconsistencies with any federal, state, or local law?	No

23 CFR 771.117 (b) and (d)(1), (2), and (3)





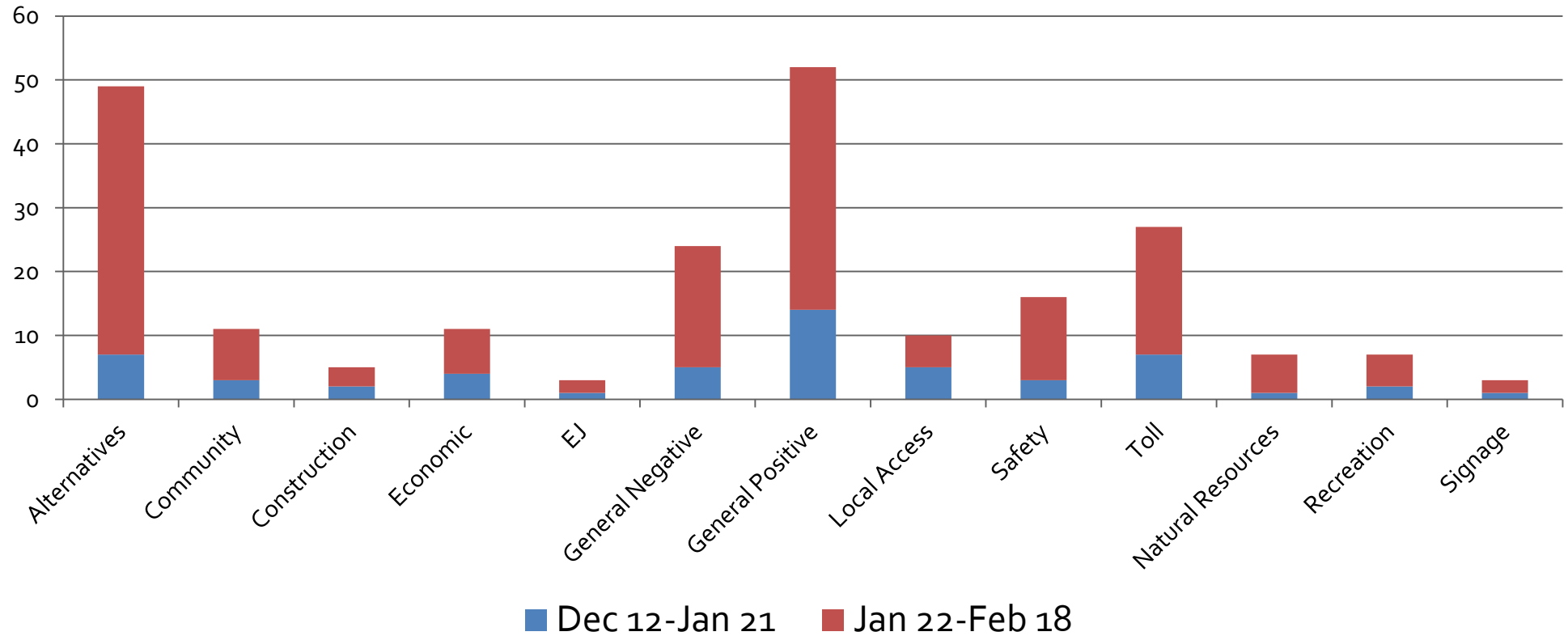
OUTREACH SUMMARY

Fast Facts

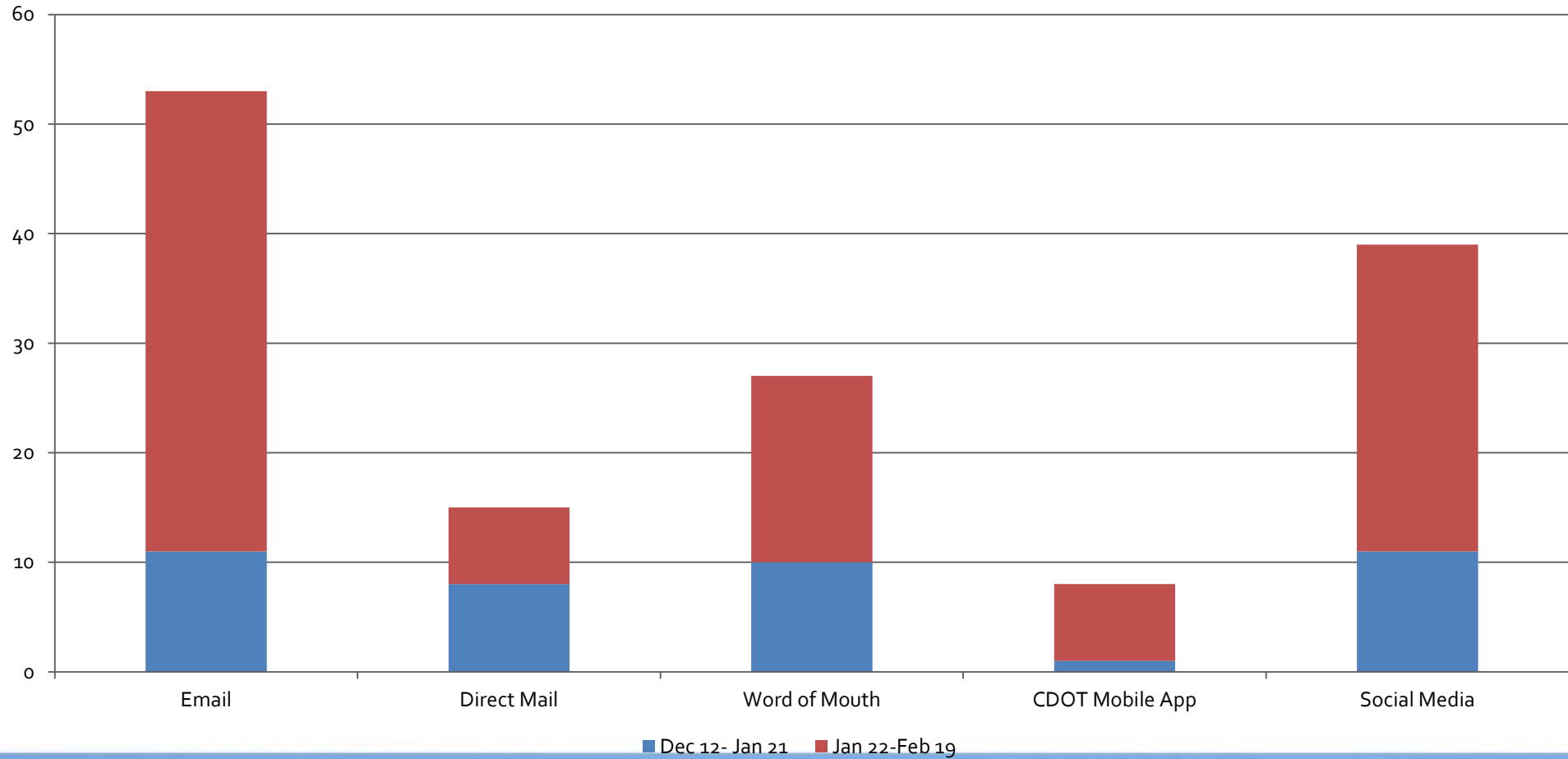
- **Web Site Peaks:**
 - December 16 – 130 Hits
 - February 13 – 70 Hits
- **166 Total Comments**
- **113 Commenters**
- **176 Comment Issues**
 - Alternatives: 42
 - General Positive: 38
 - Toll: 20
- **130+ Individuals Participated in the Polls**
 - Social Media and Email are best promotion tools
 - Safety is the most important issue: 43



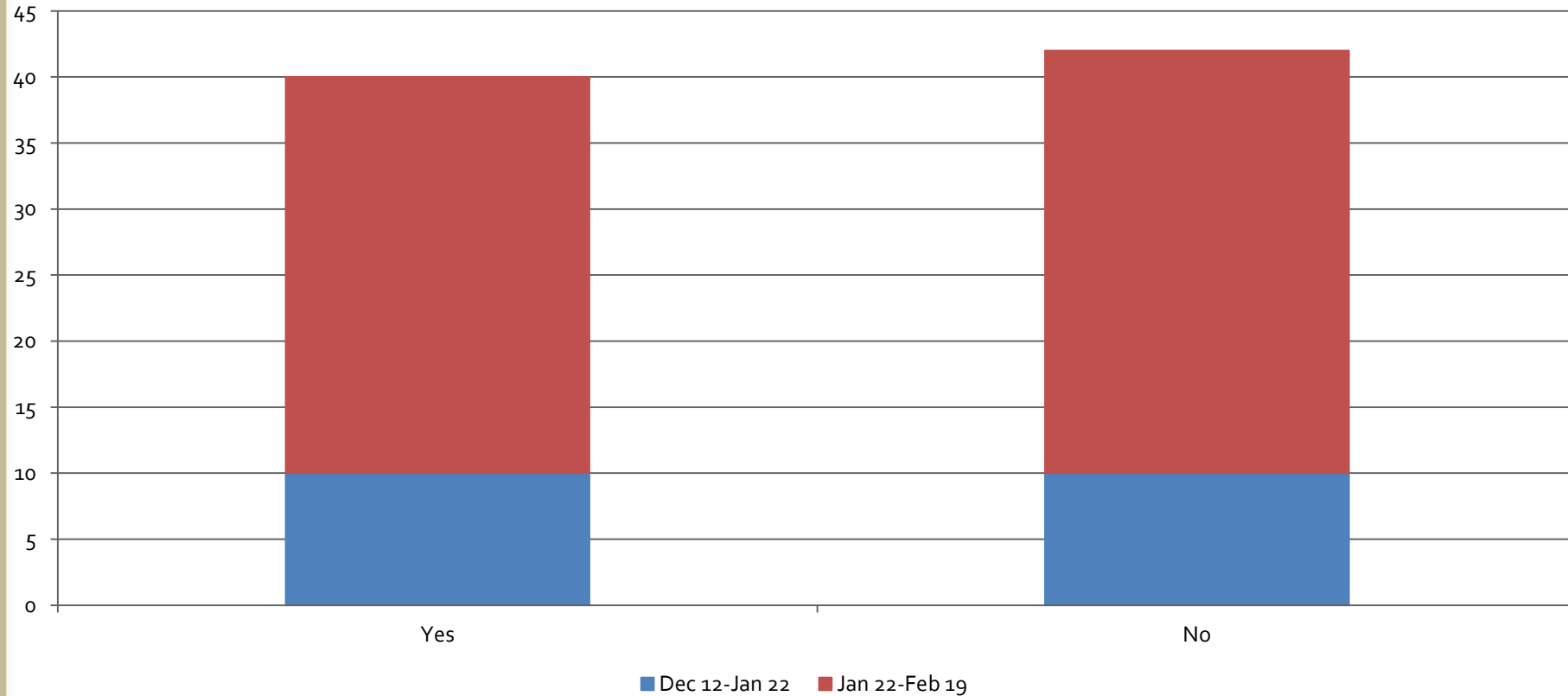
Comment Issues



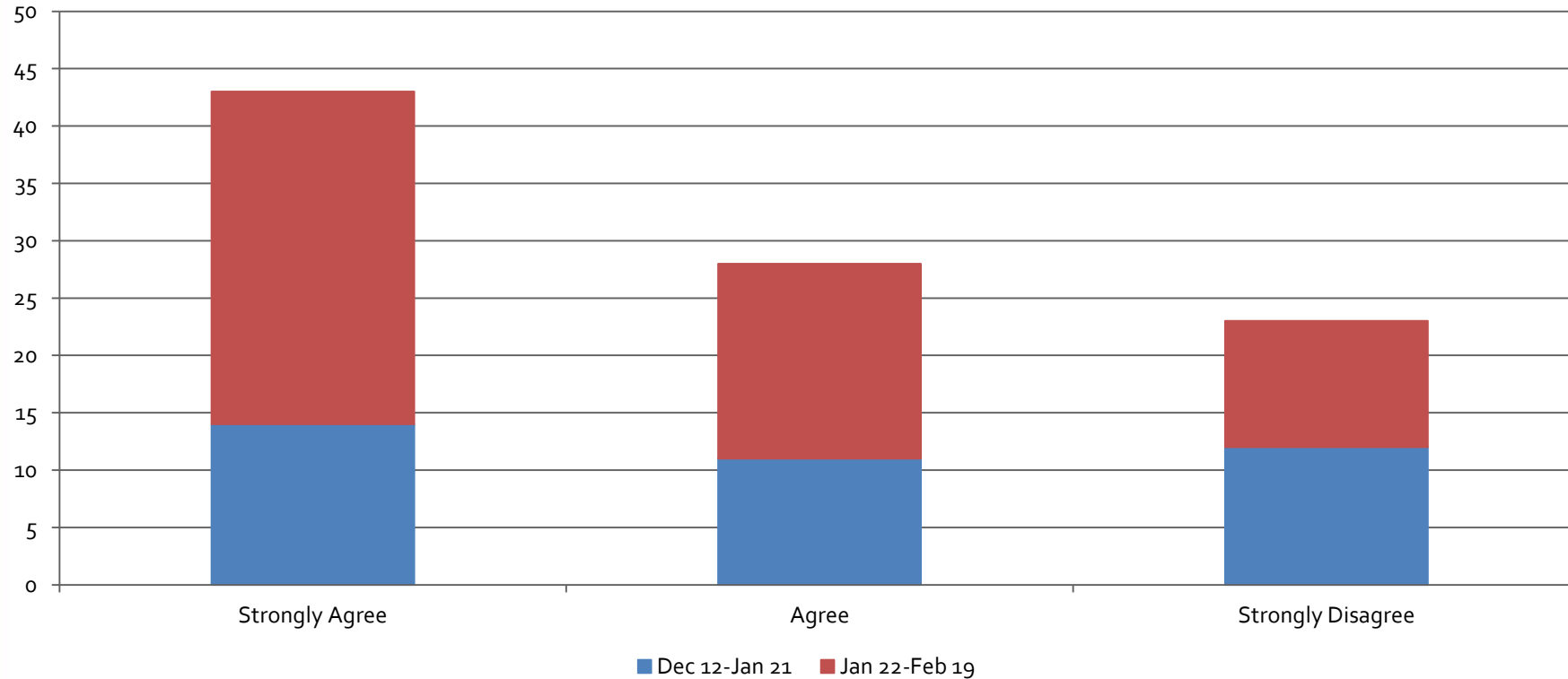
How Did you Hear About This?



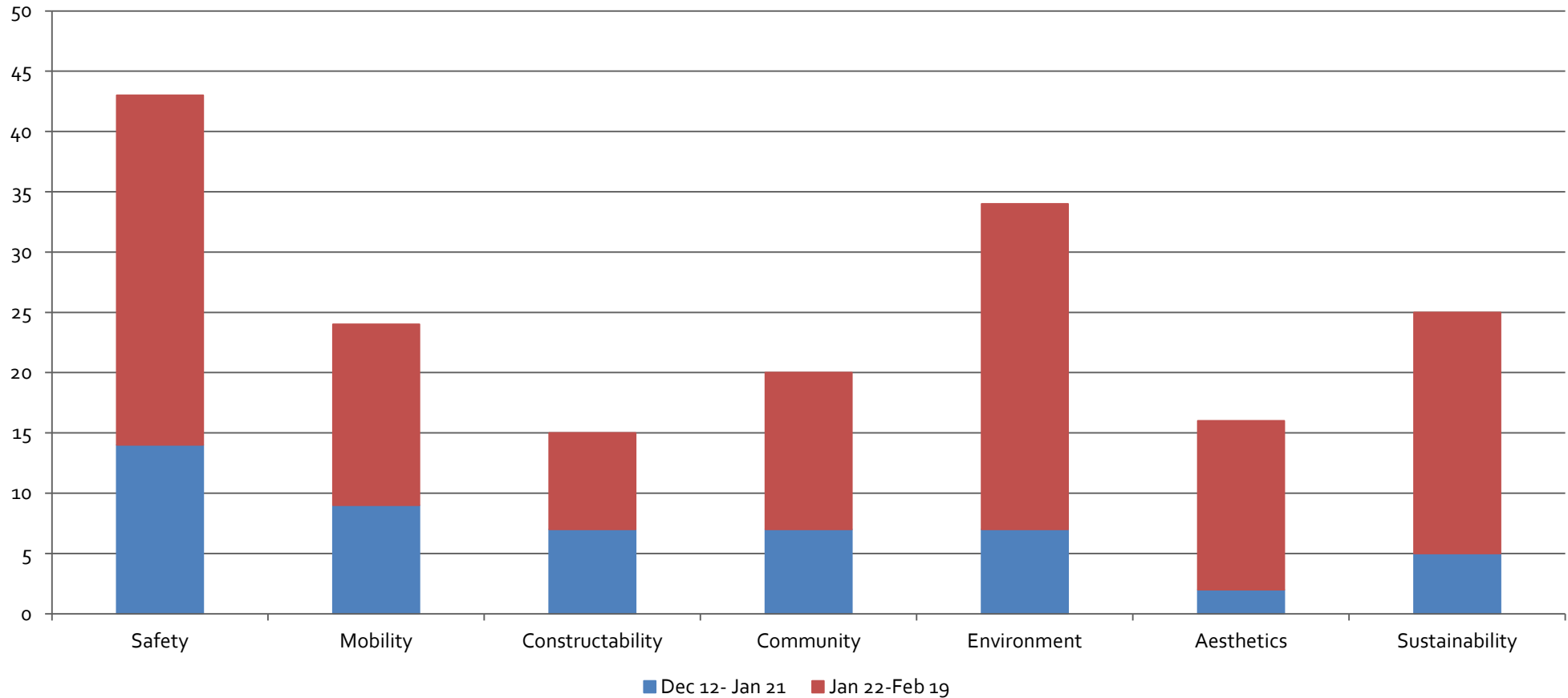
PPSL will provide a benefit for users who are willing to pay a toll to lessen congestion on the normal usage lanes. If this project goes forward do you see yourself using tolled lane?



Is this project a high priority for the state?

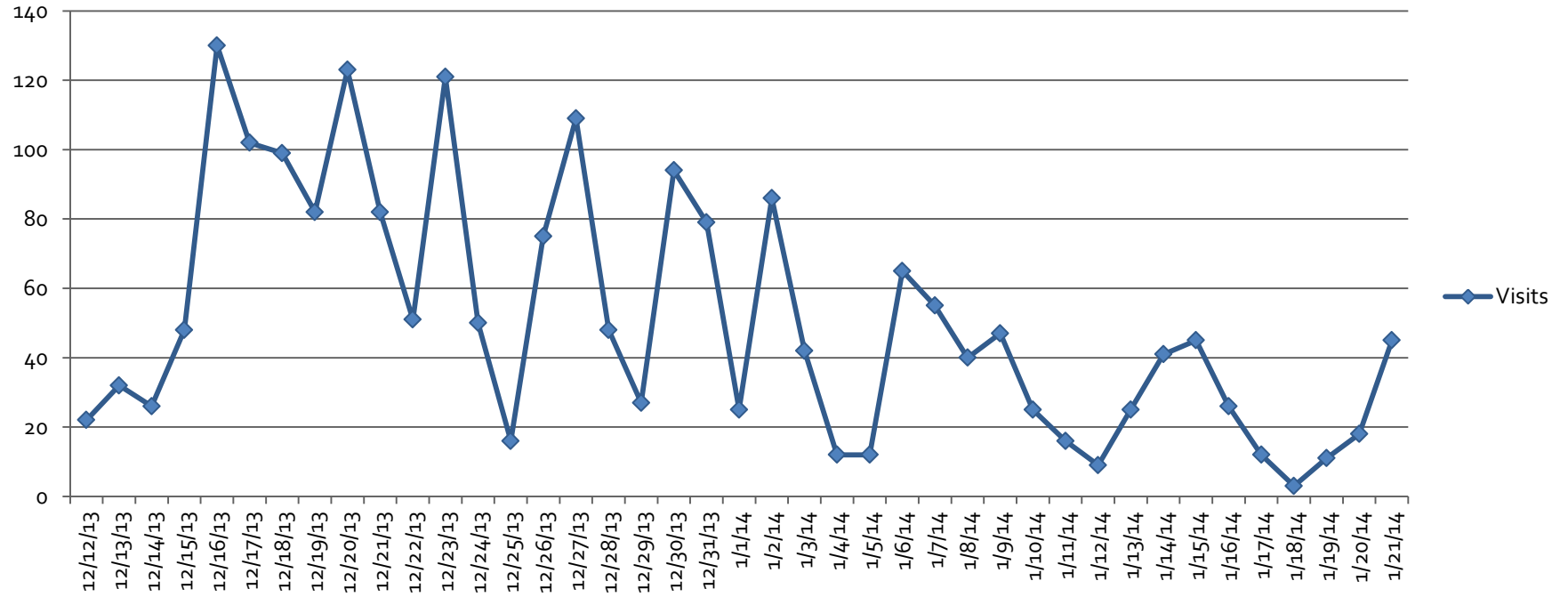


What core value is most important to you?



Web Activity December 12, 2013 – January 21, 2014

Visits

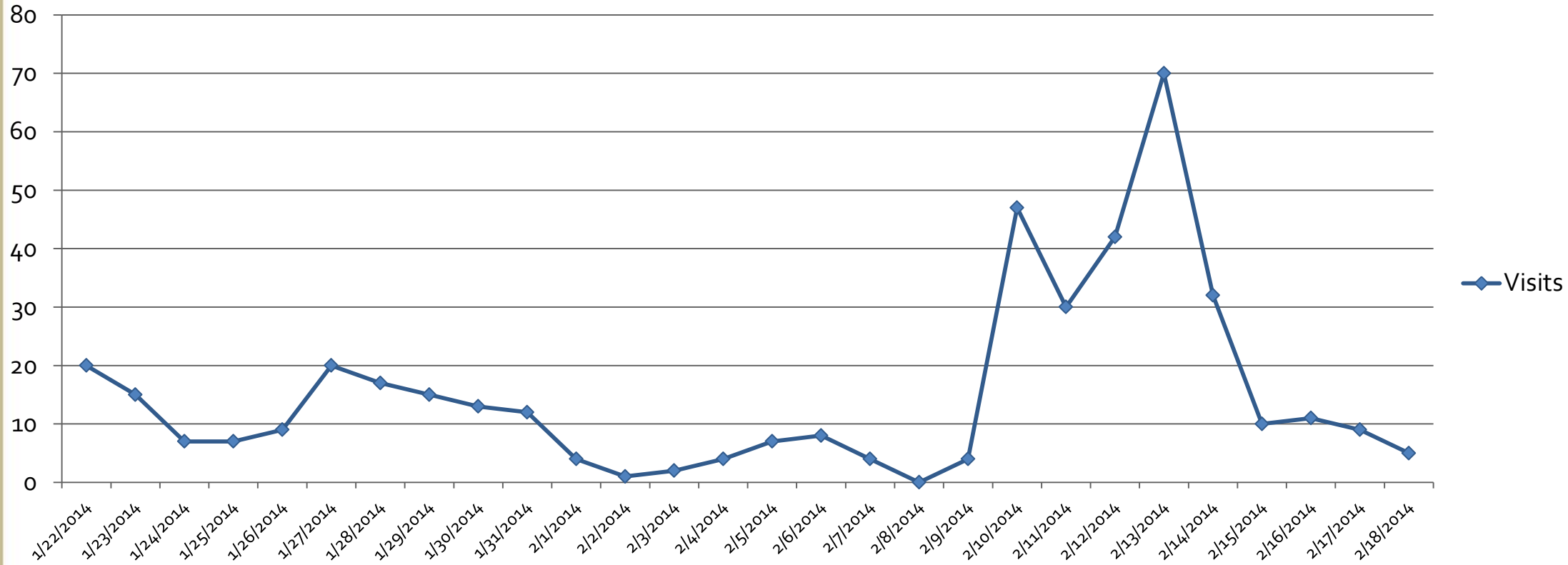


Web Activity

January 22, 2014 – February 18, 2014

OUTREACH SUMMARY

Visits





INITIAL ENVIRONMENTAL FINDINGS



SIGNAGE

NEW SIGNAGE CONSIDERATIONS

WHAT	ACCESS	TOLLING	ATM
HOW	FHWA Compliance	Static vs. Dynamic	Lane Use



Steps to Refinement

- Reviewed Intent of ATM
- Created Full Coverage Plan Based on Line of Sight
- Cross Referenced and Revised location based on Important Views and Historic Properties
- **Sign Consolidation Exercise**
- **Revised Full Coverage Plan to Address CSS Process and meet Intent of ATM**





EXPRESS LANE ENTRANCE

2MILE WARNING SIGN

MP 229.7

STA. 175+00

- No historic viewshed concerns
- Minimal Impact to Mountain Viewshed



PROPOSED SIGNAGE



EXPRESS LANE

TOLL SIGN

MP230.5

STA. 202+00

- No historic viewshed concerns
- Minimal Impact to Mountain viewshed





EXPRESS LANE ENTRANCE

1 MILE WARNING SIGN

MP 230.7

STA. 217+20

- No historic viewshed concerns
- Minimal Impact to Mountain viewshed





EXPRESS LANE ENTRANCE

½ MILE WARNING SIGN

MP 231.25

STA. 245+00

- No historic viewshed concerns
- Minimal Impact to Mountain viewshed





EXPRESS LANE ENTRANCE

MP 231.75
STA. 270+00

- No historic viewshed concerns
- Minimal Impact to Mountain viewshed



PROPOSED SIGNAGE



EXPRESS LANE

TOLL SIGN

MP 232.4

STA. 320+20

- No historic viewshed concerns
- Reservoir and Saxon Mt. viewshed





EXPRESS LANE ONLY SIGN

MP 232.9
STA. 327+50

- No historic viewshed concerns
- Reservoir and Saxon Mt. viewshed



PROPOSED SIGNAGE



ATM SIGN

MP 233.65
STA 370+00

- East of Lawson Historic District
- Minimal Mountain viewshed impact



PROPOSED SIGNAGE



ATM SIGN

MP234.55
STA 419+00

- No historic viewshed concerns
- Minimal Impact to Mountain Viewshed



PROPOSED SIGNAGE



ATM SIGN

MP 235.5

STA 468+20

- No historic viewshed concerns
- Minimal Impact to Mountain Viewshed



PROPOSED SIGNAGE



ATM SIGN

MP 236.1

STA 495+30

- No historic viewshed concerns for Dumont Train Depot
- Minimal Impact to Mountain viewshed



PROPOSED SIGNAGE



ATM SIGN

MP 237.1
STA 548+80

- No historic viewshed concerns for mine tailings
- Minimal Impact to Mountain viewshed



PROPOSED SIGNAGE



ATM SIGN

MP 238.1
STA 602+00

- No historic viewshed concerns
- Minimal Impact to Mountain and Continental Divide viewshed
- Minimal Impact to Residences



PROPOSED SIGNAGE



ATM SIGN

MP 239
STA 653+30

- No historic viewshed concerns
- Minimal Impact to Mountain Viewshed and Maude Monroe Mine viewshed



PROPOSED SIGNAGE



ATM SIGN

MP 240.05
STA 707+30

- Minimal historic viewshed concerns for Idaho Springs Historic District
- Minimal Impact to Mountain viewshed



PROPOSED SIGNAGE



ATM SIGN

MP241.1
STA 758+80

- Minimal historic viewshed concerns for Idaho Springs
- No Impact to Mountain viewshed





**EXPRESS LANE ENTRANCE SIGN
FOR RE-ENTRY AFTER IDAHO SPRINGS**

MP 241.1

STA. 780+00

- **No historic viewshed concerns
Minimal Impact to Mountain
viewshed**





**EXPRESS LANE TOLL SIGN
FOR RE-ENTRY AFTER IDAHO SPRINGS
MP 241.7
STA. 792+70**

- **No historic viewshed concerns for Idaho Springs**
- **Minimal Impact to Mountain viewshed**



PROPOSED SIGNAGE



EXPRESS ONLY SIGN

MP 242

STA. 808+00

- Minimal historic viewshed concerns for Idaho Springs
- Minimal Impact to Mountain viewshed



PROPOSED SIGNAGE



SMALL SIGN EXAMPLE

MP 233.65
STA 370+00



PROPOSED SIGNAGE



CAMERA EXAMPLE



PROPOSED SIGNAGE



CAMERA AND OVERHEAD SIGN EXAMPLE

**MP 232.4
STA. 320+20**



PROPOSED SIGNAGE



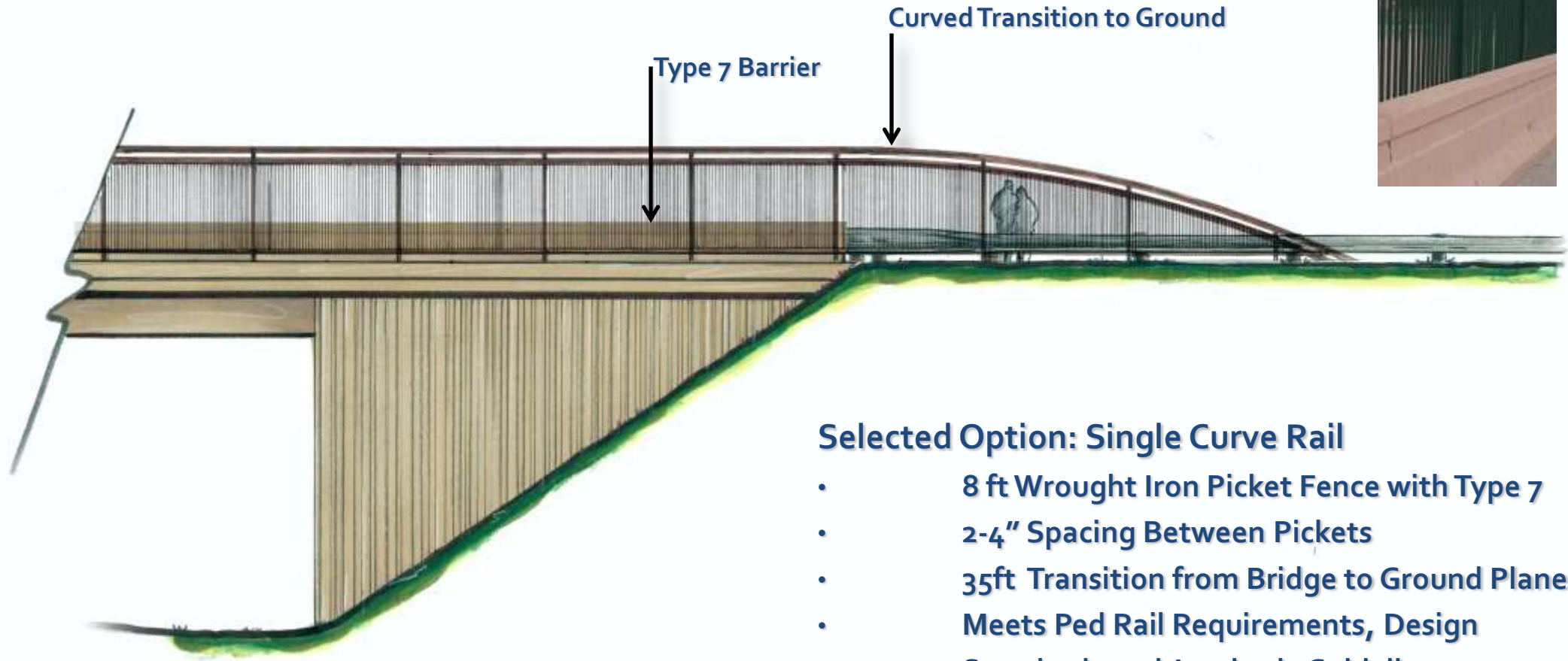
WESTBOUND VIEW EXAMPLE





SH 103 Interchange

SH 103-INTERCHANGE Pedestrian Railing on SH 103





EAST IDAHO SPRINGS

Exit 241 Interchange

EAST IDAHO SPRINGS BRIDGE
Exit 241 Interchange



EAST IDAHO SPRINGS BRIDGE
Exit 241 Interchange

Existing Conditions



EAST IDAHO SPRINGS BRIDGE
Exit 241 Interchange

Roundabout Option





NOISE



GREENWAY



DRAINAGE

EXISTING CONDITIONS

- Minimal drainage infrastructure along EB I-70
 - Inlets in median along left turns
 - Most runoff sheet flows directly to Clear Creek



PPSL EFFECTS ON DRAINAGE

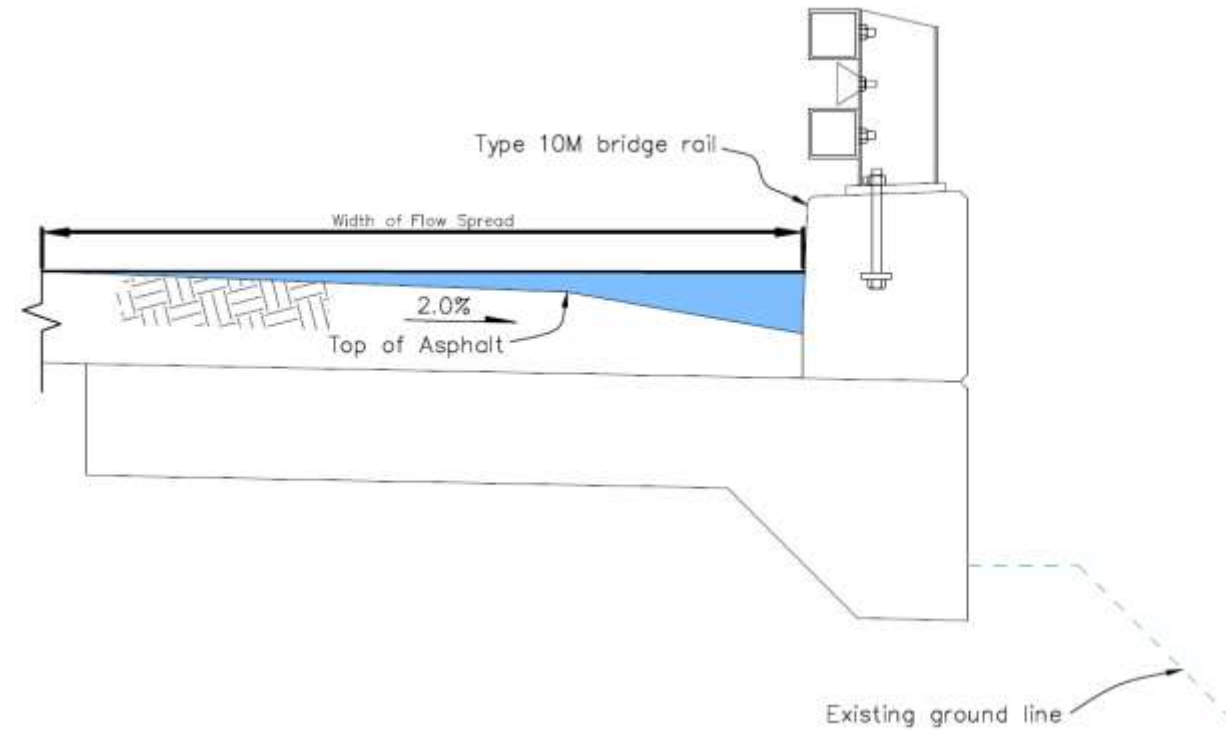
- 1.5 acres of additional asphalt on project
- Amounts to +3% increase to existing asphalt
 - Minor effects on amount of roadway runoff
 - Focus on existing capacity of highway culverts and drainage of proposed structures



RETAINING WALLS

- Act as curbs to keep flow carried in the street
 - CDOT allows flow to spread across the shoulder for 5-year rainfall event
 - 10 proposed walls
 - Water quality inlet vaults capture sediment

CROSS SECTION SHOWING FLOW ALONG PROPOSED RETAINING WALLS



CHANNEL SCOUR

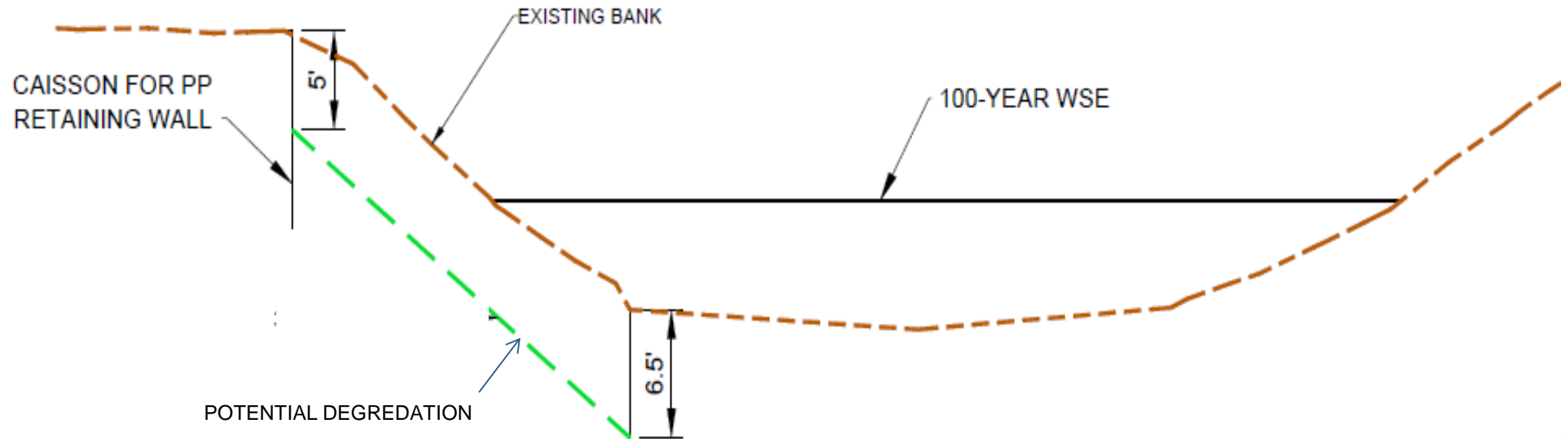
- Probable maximum scour:
 - 6.5' depth at channel bottom
- Revetment:
 - SH 103 retaining wall would require 24" boulders for scour protection during 100-year event
 - Recommend 36" boulders for foundation protection from scour during larger events



CHANNEL SCOUR

- Probable maximum scour of channel bottom = 6.5'
- Avoid armoring the channel
- Address structural integrity of the walls
- Accommodate recreational uses

RETAINING WALL AT FALL RIVER ON-RAMP: MP 235.6



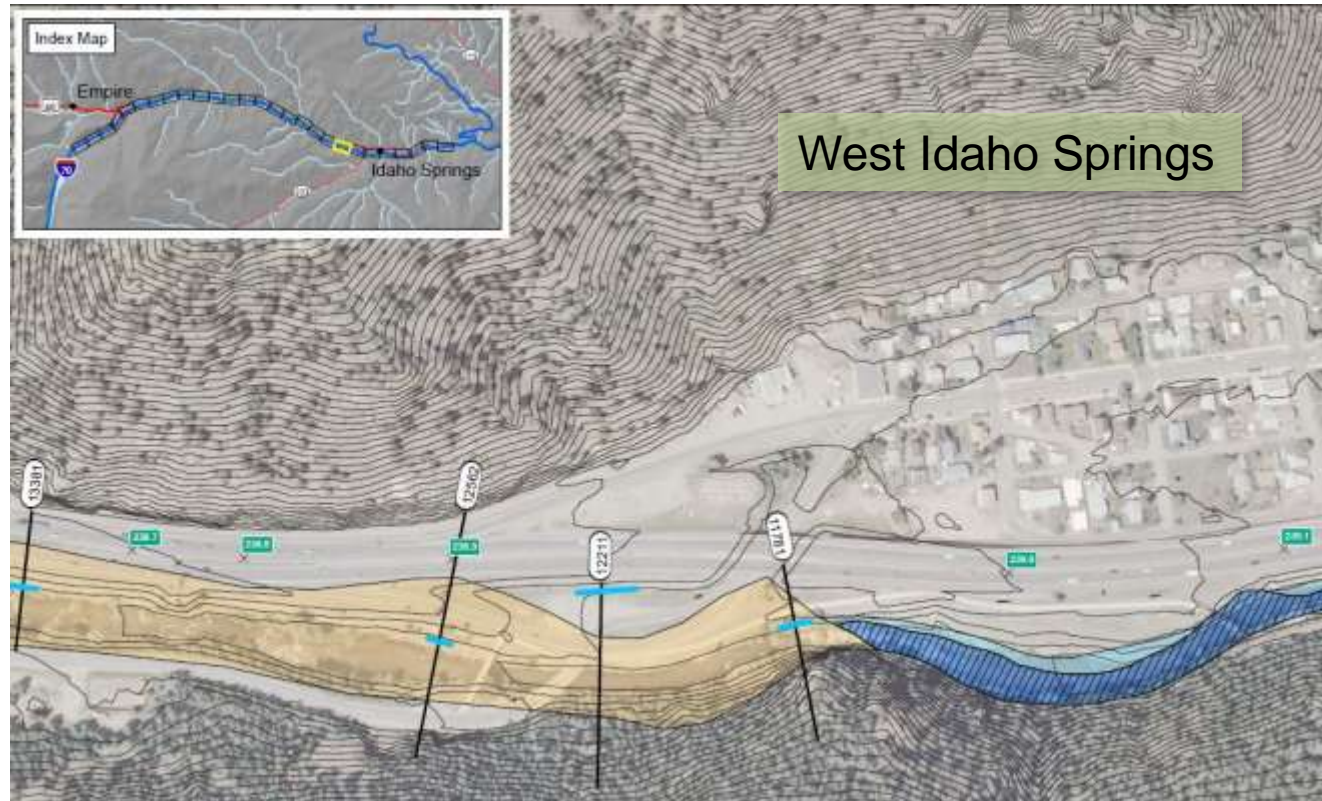
I-70 CULVERTS

- 160 existing culverts within the project area
- 45 culverts cross under I-70
- PPSL project little effect on culverts capacity
- Over half cannot convey the design flow of a 50-year storm event
- In general, due to the interim nature, this project will not replace culverts under the roadway
- Two culverts have corroded and may be replaced



CURRENT CLEAR CREEK REGULATORY FLOODPLAIN

- Approximate (Zone A) and Detailed (Zone AE) floodplain today
- In 2015, the floodplain will be remapped to be all Detailed
- Roadway is entirely above the floodplain





➤ PPSL EFFECTS ON REGULATORY FLOODPLAIN

Areas of floodplain encroachment:

- Idaho Springs at SH 103, minimal rise expected will require mitigation and a No-rise Certification
- Water Wheel park provides more conveyance, no mitigation necessary



Water Quality

EXISTING CONDITIONS

- Most EB I-70 roadway runoff sheet flows directly into to Clear Creek
 - Highway winter maintenance material (sand and salt) affects water quality
 - Hillside and fill slope erosion also a concern for water quality



PPSL EFFECTS ON WATER QUALITY

- **1.5 acre (3%) increase in asphalt anticipated to have negligible effects on runoff to Clear Creek**
- **Slight increase in winter highway maintenance material usage**
- **Proposed BMPs**
 - **10 inlet sediment basins**
 - **9 sediment basins**
 - **3% increase in impervious area vs. proposed capture of runoff from 23% of roadway**



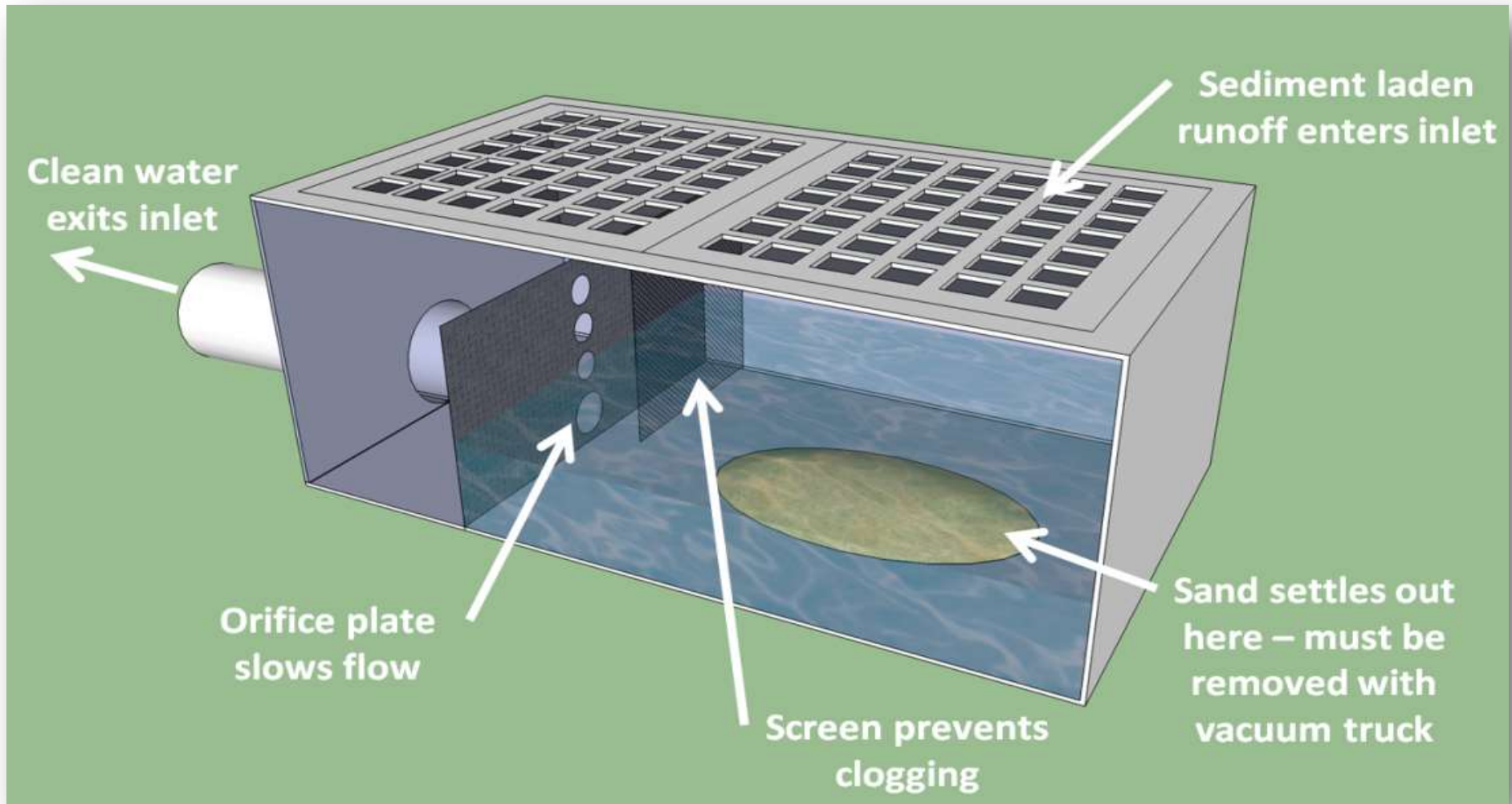
Water Quality Overview



WATER QUALITY POND



Water Quality Overview



WATER QUALITY VAULT



BMP Locations and Details



BMP	Mile Post	Location description	Impervious Area Draining to BMP (AC)	BMP Volume for Sediment (CY)	Est. Annual Sand Volume (CY)	Est. Maintenance Cycle (yrs.)
Sed. Basin	231.8	West of Empire Junction	1.3	79.0	33.6	2.4



BMP Locations and Details



BMP	Mile Post	Location description	Impervious Area Draining to BMP (AC)	BMP Volume for Sediment (CY)	Est. Annual Sand Volume (CY)	Est. Maintenance Cycle (yrs.)
Sed. Basin	232.3	Adjacent to EB I-70 on-ramp	0.6	31.7	15.2	2.1



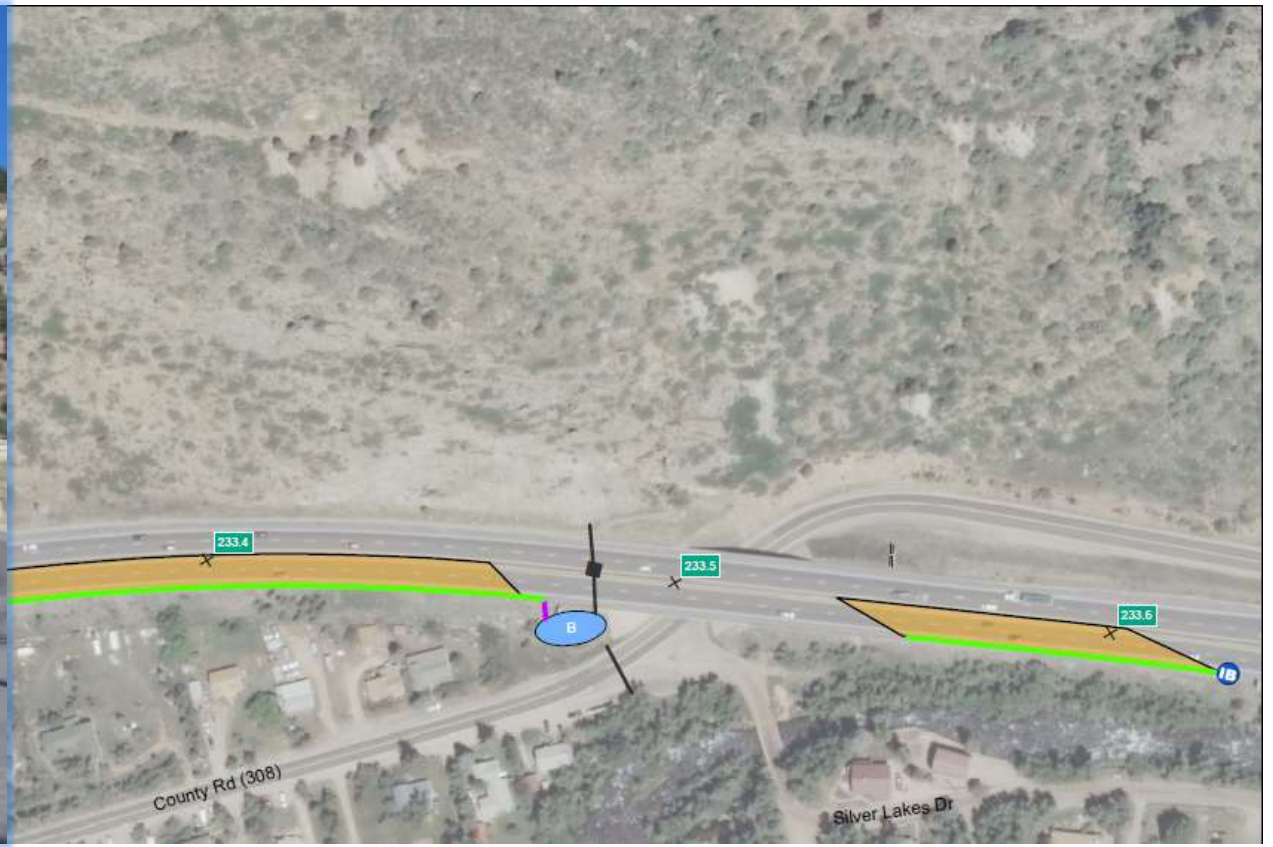
BMP Locations and Details



BMP	Mile Post	Location description	Impervious Area Draining to BMP (AC)	BMP Volume for Sediment (CY)	Est. Annual Sand Volume (CY)	Est. Maintenance Cycle (yrs.)
Sed. Basin	233.1	Lawson - EB I-70 off-ramp	0.8	40.1	20.8	1.9



BMP Locations and Details



BMP	Mile Post	Location description	Impervious Area Draining to BMP (AC)	BMP Volume for Sediment (CY)	Est. Annual Sand Volume (CY)	Est. Maintenance Cycle (yrs.)
Sed. Basin	233.5	Lawson - RD 308	0.6	38.8	16.0	2.4
Inlet Sed. Basin	233.6	East Lawson retaining wall	0.3	9.7	8.0	1.2



BMP Locations and Details



BMP	Mile Post	Location description	Impervious Area Draining to BMP (AC)	BMP Volume for Sediment (CY)	Est. Annual Sand Volume (CY)	Est. Maintenance Cycle (yrs.)
Inlet Sed. Basin	234.2	Median near Downieville	0.8	9.7	22.4	0.4



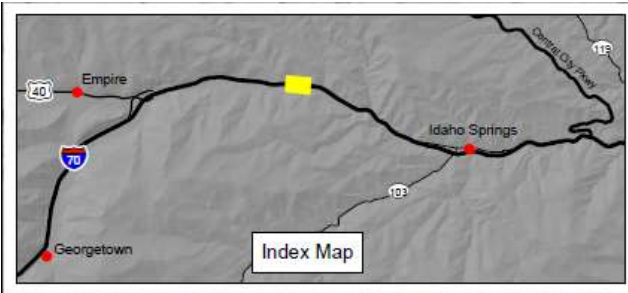
BMP Locations and Details



BMP	Mile Post	Location description	Impervious Area Draining to BMP (AC)	BMP Volume for Sediment (CY)	Est. Annual Sand Volume (CY)	Est. Maintenance Cycle (yrs.)
Sed. Basin	234.9	Dumont	0.2	27.3	6.4	4.3
Inlet Sed. Basin	235.1	Median near Dumont - EB I-70 on-ramp	0.9	9.7	25.6	0.4
Inlet Sed. Basin	235.2	East Dumont Retaining Wall	0.3	9.7	8.0	1.2



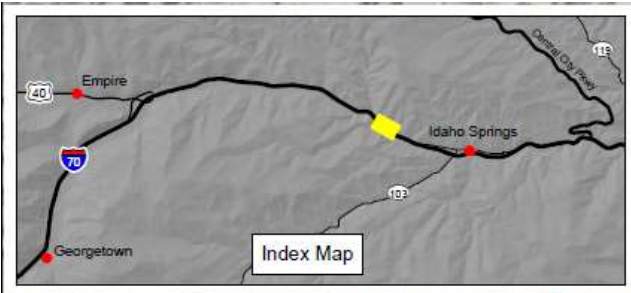
BMP Locations and Details



BMP	Mile Post	Location description	Impervious Area Draining to BMP (AC)	BMP Volume for Sediment (CY)	Est. Annual Sand Volume (CY)	Est. Maintenance Cycle (yrs.)
Inlet Sed. Basin	235.6	Retaining Wall between Dumont and Fall River	0.8	9.7	20.8	0.5



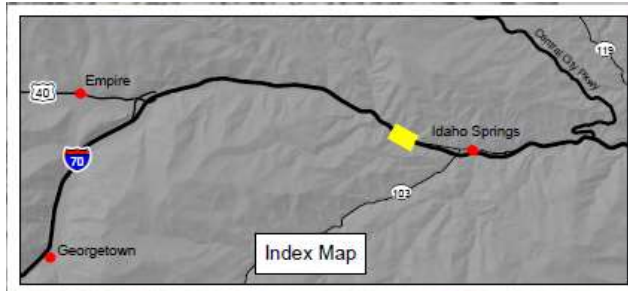
BMP Locations and Details



BMP	Mile Post	Location description	Impervious Area Draining to BMP (AC)	BMP Volume for Sediment (CY)	Est. Annual Sand Volume (CY)	Est. Maintenance Cycle (yrs.)
Inlet Sed. Basin	238.0	Retaining Walls at Fall River on-ramp	0.8	9.7	21.6	0.4



BMP Locations and Details



BMP	Mile Post	Location description	Impervious Area Draining to BMP (AC)	BMP Volume for Sediment (CY)	Est. Annual Sand Volume (CY)	Est. Maintenance Cycle (yrs.)
Inlet Sed. Basin	238.3	Median between Fall River and SH 103	1.4	9.7	37.6	0.3
Inlet Sed. Basin	238.5	Median between Fall River and SH 103	0.6	9.7	16.8	0.6



BMP Locations and Details



BMP	Mile Post	Location description	Impervious Area Draining to BMP (AC)	BMP Volume for Sediment (CY)	Est. Annual Sand Volume (CY)	Est. Maintenance Cycle (yrs.)
Inlet Sed. Basin	239.5	Upstream of SH 103 Retaining Wall	0.9	9.7	24.0	0.4
Sed. Basin	239.6	SH 103 off-ramp	1.8	45.4	47.2	1.0



BMP Locations and Details



BMP	Mile Post	Location description	Impervious Area Draining to BMP (AC)	BMP Volume for Sediment (CY)	Est. Annual Sand Volume (CY)	Est. Maintenance Cycle (yrs.)
Inlet Sed. Basin	239.9	Retaining Wall at I-70 over Clear Creek	0.3	9.7	8.8	1.1



BMP Locations and Details



BMP	Mile Post	Location description	Impervious Area Draining to BMP (AC)	BMP Volume for Sediment (CY)	Est. Annual Sand Volume (CY)	Est. Maintenance Cycle (yrs.)
Sed. Basin	241.0	At Shelly/Quinn Fields	1.3	53.5	34.4	1.6





ROCK CUTS

ROCK CUTS



ROCK CUTS

POTENTIAL ROCK CUT LOCATION MP 240



ROCK CUTS

POTENTIAL ROCK CUT LOCATION MP 240.4



ROCK CUTS

POTENTIAL ROCK CUT LOCATION MP 240.8



OUTSTANDING ISSUES

- **Snow Removal/ Maintenance**
- **Barrier/ Guardrail**
- **Aesthetics**



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.**



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)**



- Public Meeting April 14, 2014
- FOR May 2014



FUTURE TECH TEAM MEETINGS

➤ DATES

- Monday 3/24 at Clear Creek School Commons Area

All meetings are scheduled from 8:30am to **12:00**pm.



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)

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Project Code: 19474

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