WB I-70 PPSL

Meeting Summary

Technical Team #9

December 13, 2017 | CDOT Offices – Golden

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Jonathan Bartsch, CDR Associates, opened the meeting with a brief overview of the agenda. Self-introductions followed.

The TT reviewed the process to date and outcomes from TT Meeting #8:

- Information from mapping exercise integrated into baseline contextual design
- Reviewed baseline contextual design
- Reviewed project elements, specifically Clear Creek Greenway Trail

[redacted]

Colorado Blvd – Moving along with this project. It is on schedule, or slightly ahead of schedule. When finished, this project will be a great asset to the community.

Bridge hit – West of Empire Junction. The driver left the WB lanes, went through the median and ran into the bridge. No repairs needed to the bridge. The stiffener was impacted but the bearings are fine. Guard rail needs to be fixed. CDOT was complemented for good response time and coordination.

Variable Speed Limit Concept of Operations and Development of Algorithm Project – TT members suggested adding this project to the list of project updates. This project area is from Copper Mountain to C-470. The purpose of the project is to improve safety and travel reliability time by looking at variable speed limits. Automated enforcement was discussed as enforcement is one of the key components for a successful implementation of VSL. It was noted that automated enforcement involves state policy level changes that are

not part of this project but should be considered. Automated enforcement is used quite effectively in Australia.

Ben Kline, CDOT, is leading the project.

Fall River Road: PLT Meeting coming up – Dec 28

Vail Pass: PLT meeting coming up.

CCC Greenway: Met and walked Silver Lakes area. Explored opportunities for alignments on the north side of I-70 and discussed timing. Alignment options will be developed after the consultant team is under contract. An additional neighborhood meeting will be held.

ACTION: **THK** – Add Variable Speed Limit Concept of Operations and Development of Algorithm Project to project list on PowerPoint

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Joe Mahoney, CDOT, discussed the differences between the Safety Assessment Report data and the Mountain Express Lane data. The Mountain Express Lane data only gathers data when the PPSL is OPEN – looks at the many things that might be impeding traffic during this time from situation reports (everything from a chair falling off the back of a truck to flat tires and crash incidents). This data is going to look different than the Safety Assessment Report data which is done for five year periods and includes 24hrs of data (off peak and on peak). These capture the crashes reported to law enforcement. These reports include 44,000 hours of data, whereas the Mountain Express Lane data is very specific and looks at a few hundred hours of data just when the PPSL is operating.

Dave Millar, HDR, reviewed the Safety Toolbox. This toolbox applies to any corridor, but some tools, like ones to counteract curvature, might specifically apply to the WB PPSL improvements. The physical tools are the basic foundation for a project. The operational tools are typically are used to increase safety and operational benefits of the physical tools. They add to safety but do not take the place of a good foundation.

Physical Project Elements

- **Widths** – The Highway Safety Manual shows a correlation between lane width and safety. 12' is the safest lane width, and safety diminishes as the lanes get narrower. On a curvy road, lane width is even more important.
  - Lanes, Shoulders, Buffers, Shy Distance
- **Lighting** – there are some dark segments in the corridor that could be lit. Balance this with light pollution to residents/environment.
- **Pullouts** - these give people refuge in break down or flat tire incidents. If there is a pull out, this can help prevent full lane closures. These are also used for law enforcement.

- **Rumble Strips** – warnings if the car is moving into another lane.
- **Bridge Treatments** – consider crash barriers, transitions. As a narrower road approaches, need to taper the road as it approaches a bridge.
- **Clear Zones/Unpaved hardened shoulder** – provide recovery if a car goes off the road.
- **Curvature** - not much we can do on this interim project, so need to look toward other tools to provide safe passage through curves.
- **Acceleration and Deceleration Lengths** – there are standards for lengths to ensure safe merges and exiting.
- **Ramp Terminal Designs** – standards for designs to ensure safety to the driver.
- **Vehicle-Wildlife collision mitigation** – signage will be important along the corridor.
- **Signage –** curve warnings, speeds, pedestrian crossings, etc.

Operational Project Elements

- **Variable Speed Limits** – Some implementation efforts have failed around the US. More successful in Europe because of stricter enforcement, photo enforcement and heftier fines.
- **Enforcement**: this is cultural and political (Photo enforcement is currently not allowed under State Statute). The US is not as strict with enforcement as some other countries.
    - Speed
    - Lane Violation
- **Winter Operations Plan:** There is a huge manual guiding the Winter Operations Plan.
    - Plowing
    - Courtesy Patrol
    - Traffic Incident Mgmt
    - Other (such as adequate traction on tires)
- **Speed Harmonization –** This is very hard to do and is not consistent with U.S. drivers' expectations. Can cause driver aggravation.
- **ITS: VMS, DSRC, Ramp Meters –** looks at how technology can be used in safety.

TT Discussion:

- **Question**: Is there a mountain driving certificate for truckers? **A:** No. However, many local companies require mountain driving skills, but this is not a legal requirement.
- **TT suggestions to add to safety toolbox**: **1)** maintenance of PPSL during off-peak; **2)** traction – enforcement of treads, chains, 4WD; **3)** choice of speed limits, i.e. express speed limits should not be 80 mph – would a lower speed limit ensure people drove slower in the PPSL?; What is our target speed and how do we communicate this? It is noted that speeding is a bigger question around changing human behavior and culture and is hard to solve from an operation standpoint; **4)** driver education could be part of the safety toolbox. Outreach, public education campaigns, websites; **5)** striping and re-striping; **6)**over the lane signage to indicate

when the lane is open or closed – need to balance this with aesthetics. The Technical Team for EB PPSL chose not to have signage over all lanes.
- Consider not using the name "Express Lane." How do we balance the idea of "express" with speeds? Driver expectation is important to consider too since "Express Lane" was used in the EB.
- The signs on EB were not too bright for the community on EB. Need to consider the number of signs that are erected, the potential to block sight distance and other critical views. For the EB project, we looked at this for each sign.
- Can existing billboards be used to educate drivers or used as signs? How can we integrate existing infrastructure to help with a campaign to enforce and educate drivers? "65 mph means 65 mph" on a billboard might help.

ACTION: **HDR**: Add TT suggestions to Safety Toolbox.
ACTION: **THK/HDR**: Look at visual impact of signs.

Clear Creek County noted that it will be important to assess these safety tools and find a way to work with different TT members' pre-determined positions as we move forward. It is important not to compound safety issues (i.e. narrow lanes, on a curve, going under a bridge, at the end of an acceleration lane. . .)

FHWA notes that we need to report on how we are using all of the safety tools and elements, and what we are compromising on, in order to get a variance from FHWA. A variance is a formal deviation from transportation design criteria that on an Interstate Facility, like I-70, FHWA needs documentation and adequate information to be able to approve anything not meeting current standards. All options need to be evaluated to grant a variance. The FHWA starts at the standard, it is our job to explain why we are changing the standard, or a variance will not be granted. We need to compile information and explain our rationale for making changes to the federal and state standards. Why is the "non-standard" solution safe and better?

TT members acknowledged that everyone at the table will need to compromise to come to a solution.

TT Agreement: Evaluate all the solutions while using the safety tools. Look foot-by-foot at different road widths - 39' up to 42' - with safety tools overlaid over corridor widths to see how mainline alignment and safety toolbox work together. The TT will provide the needed information and evaluation to back up the solution in the case that a variance needs to be granted by FHWA.

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Adam Parks, CDOT, reviewed the Idaho Springs Concept Design on both a map and a corresponding video. The TT members provided comment, questions and feedback. The

group determined future decision points that will need to be made. The decision points from the map discussion are noted below:

1. **Turn outs.** The TT will need to determine 1) where and 2) how big the various turn outs will be. The lesson learned from EB was that some of the turn outs were too small and there was not enough room for drivers or trucks.
    a. CMCA is concerned about first turn out (on east side of Idaho Springs just west of VMT). Although it isn't an official turn-out, it needs to be preserved, trucks use it as a chain-down. There was a concern about air pollution from trucks idling. By law, they are not allowed to idle more than 5 minutes.
    b. The proposed turn out by the Welcome to Idaho Springs sign seems like a good location.
    c. Idaho Springs notes that the one by the sign isn't a safe turn out and need to look at another chain down area that has better lighting and safety. Important to save this as an emergency pull out though – but it is not a good place to chain down.
    d. The proposed turn out on the east side of Idaho Springs (just west of McDonald's) might conflict with on-ramp. Also, the sight distance is not good (hard to see trucks pulling out). It is not likely that trucks would use this pull-out. It is a good spot for enforcement vehicles.
2. **Sediment basins.** The TT will need to determine where new sediment basins might go to the West of Idaho Springs. The ones East of Idaho Springs seem like good locations.
3. **PPSL start location.** Where does Floyd Hill additional lane transition to PPSL? Need to consider the best place to do this and how local traffic is impacted. CDOT Traffic engineers will be consulted to bring recommendations to this group in January.
4. **Off ramp lengths.** Idaho Springs and other TT members note that they prefer a longer off-ramp to make a safe, easy transition for traffic.
5. **Truck Chain down.** Will a Westbound truck chain-down station be provided east of Idaho Springs? What type of safety features need to be included?
6. **Rumble strips.** Need to consider 1) rumble strips, 2) "mumble strips" (Region 4 CDOT is considering these), 3) impact on lane width, and 4) elimination of rumble strips in the matrix.
    a. CMCA notes that the trucks are currently riding on rumble strips over the entire length on EB due to the narrow lane. That is a noise problem.
7. **Walls and Guardrails.** Need to consider 1)height, 2)location, 3)glare screens, 4)type of wall, 5)viewshed, 6)wooden sound wall - noise mitigation needs and PPSL width
8. **Idaho Springs Exits**. How do we make exits 240 and 241 easy and safe to use?

ACTION: **Design Team (THK)** – simulate what viewsheds would look like with different types/heights/designs of walls – and signs. Ensure that commercial district viewshed will not be lost. The views to the Argo Mine and Mill are particularly important to preserve.

9. **240 EB Entrance Ramp.** Consider EB improvements, recovery area, longer ramp, sight distance, no impact to Water Wheel park, drainage issues. The plan is to hold the south edge along Water Wheel Park and shift the mainline to the north to allow for a longer acceleration area..
10. **Exit ramp sight distance when stopped at new bridge.** Will evaluate the benefits of cutting back the bridge railing at the top to improve sight distance. The exit ramps could also be elevated higher at the stop signs to provide better sight distance across the bridge.
11. **Exit 240 Parking Spaces.** What will the reconfiguration look like? CDOT will provide design for re-striping the spaces within the ROW. CDOT will also provide suggestions for increasing the total number of parking spaces beyond the ROW.

ACTION: CDOT Design Team to lay out parking reconfiguration ideas.

12. **Idaho Springs Parking Structure/Transit Center/Bus Slip ramps.** Ensure that this is not precluded.
13. **Noise Wall.** Since this is an interim project, project staff recommended that we may not need to replace the wall. The options for this wall will be evaluated in a future TT meeting.
14. **Right of Way impacts.** If we modify the current noisewall rather than replace with a new one, CDOT can avoid ROW impacts. A Temporary Easement is being considered which may reduce I-70 lane closures during construction. The proposed wall location and sight distance analysis is nearly complete
15. **AGS impacts.** The TT asked for a refined analysis of the hybrid alignment of AGS from the 2014 study for integration. The team will examine the location from the 2014 AGS study and review it with the various options to make sure it is not precluded.

ACTION: refined analysis of AGS. The team will look again at the AGS location to make sure it is not precluded.

[redacted]

1. Continue to advance the Idaho Springs design using Safety Toolbox elements and consider changes in operations.

2. Begin to develop the Idaho Springs (Focus Area #1) evaluation matrices – to be reviewed at the January 10 TT meeting. The project staff will begin to develop specific matrices for Focus Area #1 based on decision points identified in this meeting. Specific to the Safety Toolbox discussion, the team will begin to develop three general design concepts which include different combinations of safety tools. These will all be discussed at the next TT meeting.
3. Evaluate each of the options for AGS compatibility
4. Conduct study of visual impacts of walls and signs in Focus Area #1
5. Begin to Design Focus Area #2

[redacted]

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ACTION: Design Team - refined analysis of AGS. The team will look again at the AGS location to make sure it is not precluded.

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Andy Marsh, Mike Hillman (Idaho Springs); Carol Kruse, Scott Haas (USFS); Randy Wheelock, Jo Ann Sorensen, Cassandra Patton, (Clear Creek County); Gary Frey (Trout Unlimited); Amy Saxton (CCC Greenway); Tracy Sakaguchi (CMCA); Margaret Bowes (I-70 Coalition); Kelly Galardi, Shaun Cutting (FHWA); Wendy Koch (Town of Empire); Steve Long, Gina McAfee, Keith Borsheim, Dave Millar, Wendy Wallach (HDR); Kevin Shanks (THK); Tyler Brady, Bobby VanHorn, Kevin Brown, Stephen Harelson, Neil Ogden, Joe Mahoney, Adam Parks, Ben Kiene (CDOT); Jonathan Bartsch and Taber Ward (CDR)