



Meeting Summary

Technical Team #10

January 10, 2018 | 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 #9:

- Developed evaluation and issue specific criteria
- Reviewed Engineering 101
- Reviewed Corridor long foot-by-foot context
- Reviewed Focus Area #1
- Reviewed Safety Tool Box
- Direction from TT to develop design options using safety tools

Floyd Hill – 6th TT Meeting this afternoon

Vail Pass – Next PLT meeting to be held next week.

Fall River Road – had a PLT Dec 28 – the consultant is on board. The scoping meeting will be held in January

Colorado Blvd – With the warm, dry weather, there has been a lot of progress.

Greenway – Greenway is continuing to develop longer term plans and visions. Continuing to look at feasibility of northern alignment at Silver Lakes.

Variable Speed Limit – will be circulating notes soon

USFS – Carol Kruse has retired. Scott Haas is a new District Ranger for Clear Creek. He will be attending TT meetings.

TT Schedule

Added “Project Branding/Re-Branding” for February 14th TT meeting.

Steve Long, HDR Inc., reviewed the Safety Toolbox and how it was used in the development of design options for WBPPSL.

At the December 13, 2017 TT meeting – the TT asked Staff to integrate the Safety Toolbox options into design options that could be evaluated. In developing the design options, Staff considered the problems around compounding safety issues. When FHWA is approached for variances on highway safety standards, there will need to be documentation and a justification for why a variance should be granted. It is important that a wide range of options is laid out and an evaluation of how designs will or will not compound safety issues is done.

The widest option may not necessarily be the best in a context sensitive design – the sweet spot may be moving toward the middle. It may hit a point of diminishing returns for safety (in between 41-43 feet).

TT question - Why aren't we widening bridges? **Answer:** It's very costly and this is an interim project. In addition, if we are doing a non-infrastructure project, widening numerous bridges is likely not consistent with that definition.

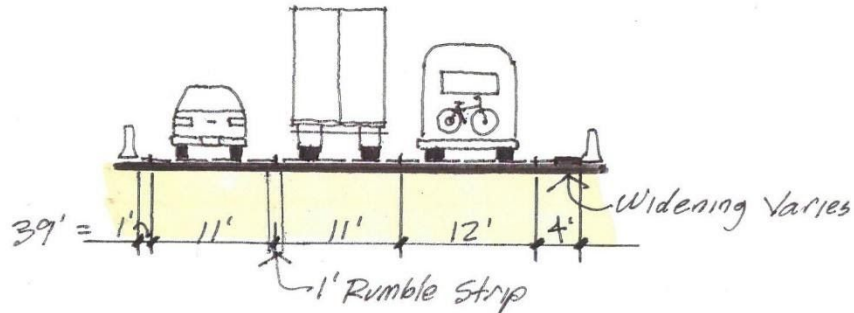
TT question - Are there other items in the “physical” column of the Toolbox that could approach too much infrastructure so that this project is no longer an interim, temporary project – could this threaten the ROD? **FHWA Answer:** Will need to look at this project as a whole. Go through step-by-step to assess if a design works in a particular section. We did this on EB – first develop a project design, and then go back and check in to make sure it is compatible with the ROD.

ROD compatibility is part of the TT schedule. Before we can check for ROD compatibility, we need to develop pieces of the project first.

Design Options

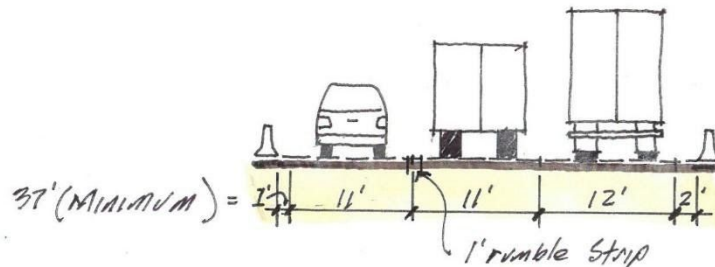
For reference, Eastbound: 39' – 1' shy, 11' PPSL, 11' GPL, 12' GPL, 4' varied shoulder. On EB, the rumble strips eat into lanes – the PPSL and adjacent lane lose effective width.

Eastbound Peak Period Shoulder Lane



Option A: Operation Improvement with Existing Pavement

A: EXISTING Pavement
(Operational Improvements)

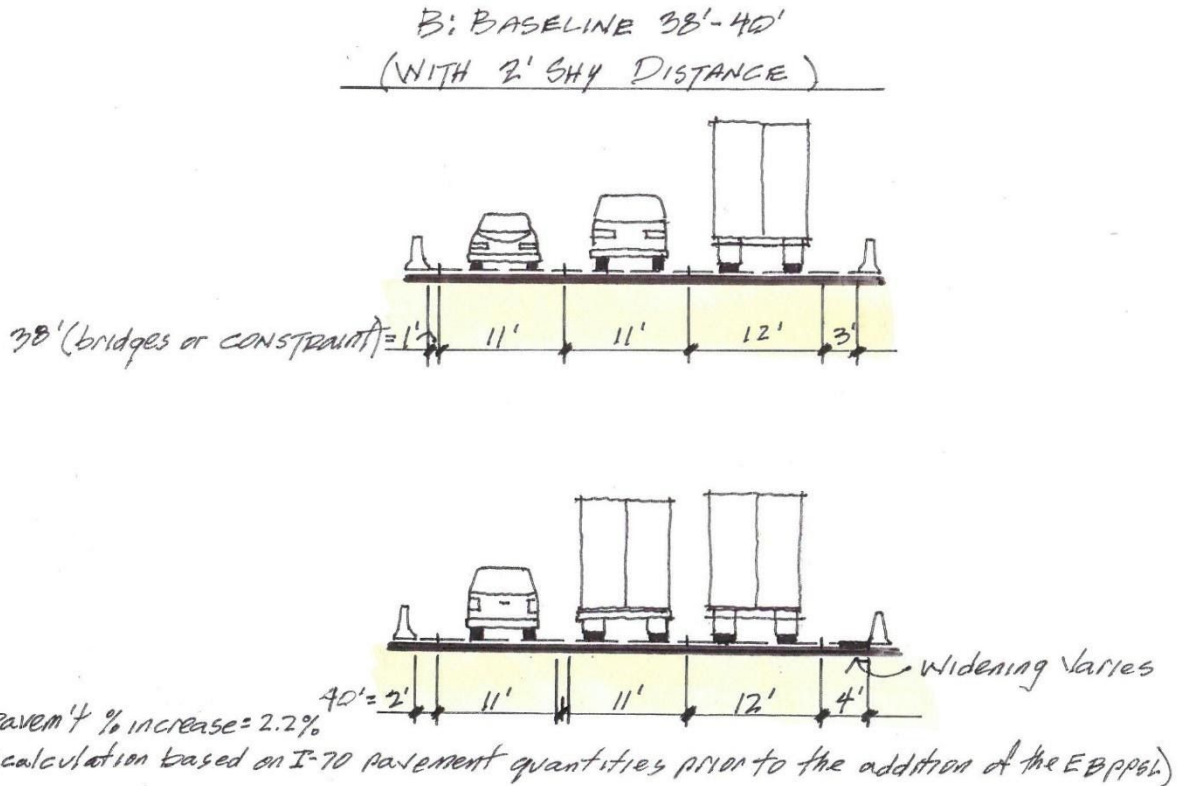


37' (minimum) – same as EB with 2 foot on right shoulder instead of 4. This could result in reduced speeds. Also reduces space for driver error. Some areas are wider (41' at some interchanges). Bridges are 38' wide. Shy on inside is 1' (same as EB).

TT Question: 37' is the narrowest portion in Focus Area 1. Are there other 37' sections in corridor? **A:** Yes. **Q:** If we start setting what we think is appropriate here, then would we be creating a precedent for other areas on the corridor? **A:** This section is unique because it is urban. Many of the decisions we are making here are sensitive to the urban context. Other sections of the corridor have different contexts (i.e. rockfall). So this will not necessarily be the template for the corridor. **Q:** So lane widths could change through the project area? **A:** We will go through each focus areas and then tie it all back together to smooth out lane widths.

Option B: Baseline 38'-40' – this is the section we developed and walked through on maps at two of the TT meetings.

- Bridges will remain 38' wide as they are today.
- Off bridge – 4' on right hand shoulder and 2' shy on left



CCC Comment: The rumble strip is not a full foot, it is the width of the paint stripe. It is not taking 6 inches out of PPSL and adjacent GP lane. Putting a foot in for the rumble strip is superfluous because the strip is not 12 inches wide.

Tracy Sakaguchi (CMCA)– Would prefer to add a foot to rumble strip for trucks. Without this, there is no room for error. Truck drivers can't see the barrier, can't see the lanes, can't see anything beside them. The rumble strip is very important – it indicates that a driver might be floating on the wrong side of the line.

The only difference between EB and WB Baseline design is the 2' shy instead of 1' shy

Pavement increase is 2.2% with this option

TT question: Is the percent increase in pavement through the entire length of project or just Focus Area 1? **A:** Focus area 1 only and trimming at bridges.

TT question: Shy distance and median barrier – is a taller barrier more of a problem because it cuts off sight distance? Are we talking about adjusting shy distance in relation to height of barrier? **A:** This discussion is specific to Focus Area 1 with concrete barrier. Shy distance could vary based on what is currently striped.

CCC – change from 1' to 2' shy (in reference to jersey barrier and glare).

TT Question: Could we look at 2' shy on the bridges as well: 11' PPSL, 11' GPL, 12' GPL, 2' shoulder **A:** Yes, we could revisit this. We are showing wider shoulder on the right on bridges because the right side is open 24/7 and left side is open only during Peak Periods.

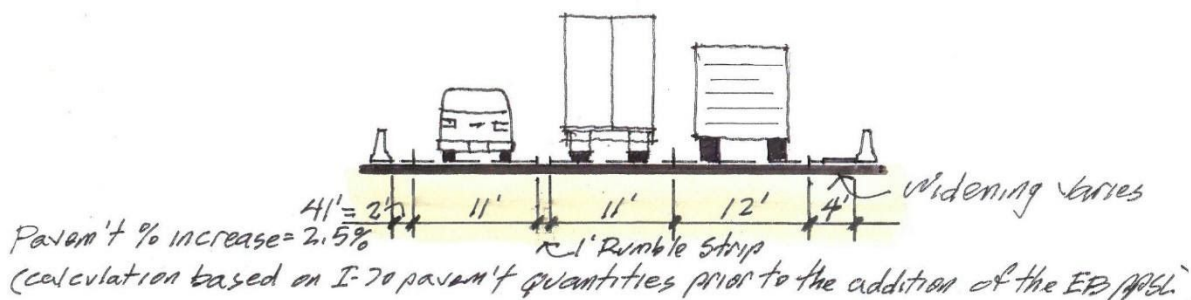
CCC – Operational Plan. Is there a max number of hours that PPSL should operate based on Federal standard? **FHWA Answer:** Need to have flexibility based on conditions and congestion. **Question:** Is it possible that we are building PPSL for 99% of the time? **FHWA** –I would hope not. Could take the time to look at traffic.

CCC: This will trigger latent travel demand.

ACTION: CDOT -Look at hours of operation and relationship to volume of traffic/congestion on WB. TT would like to understand what we are designing this for (i.e. how many hours).

Option C: Add rumble strip buffer- 38-41 feet.

C: 38' - 41'
 (with 2' SHY DISTANCE ≠ 1'
 RUMBLE STRIP BUFFER)

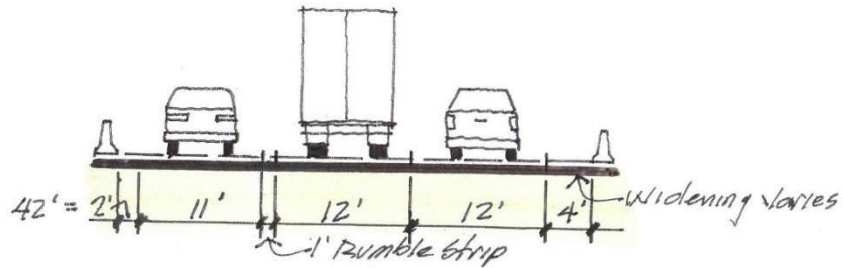
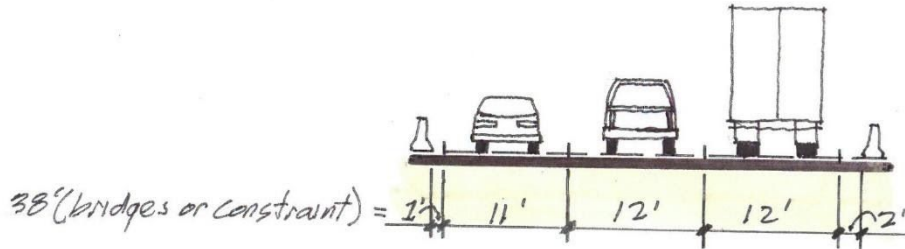


CCC: Can we just put the rumble strip outside the outside stripe like it is done in other locations? **A:** We need to place it between the lanes because if we placed it on the outside of the stripe it would encroach even more into an already narrow PPSL lane making the PPSL lane even more uncomfortable than it is already.

Wendy Koch (Empire): Even if we put the rumble strip outside the line, we need to add some space to make sure we have at least an 11 foot lane.

Option D: 38-42'

D: 38'-42'
 (WITH 2' SHY DISTANCE, 1' RUMBLE STRIP BUFFER & 12' CENTER LANE)

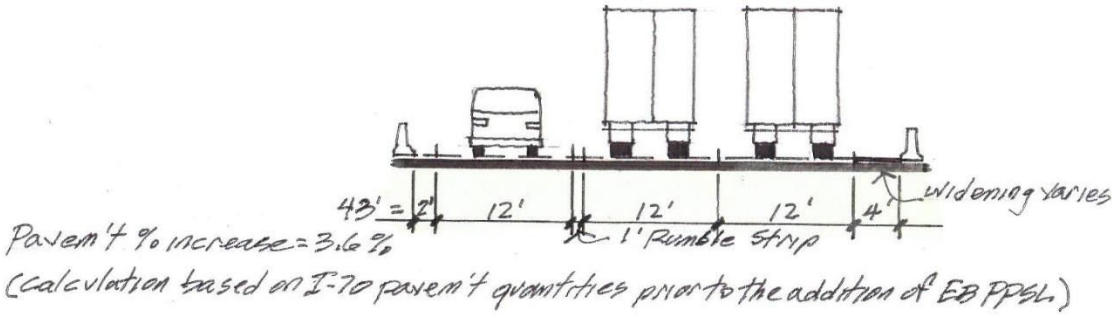
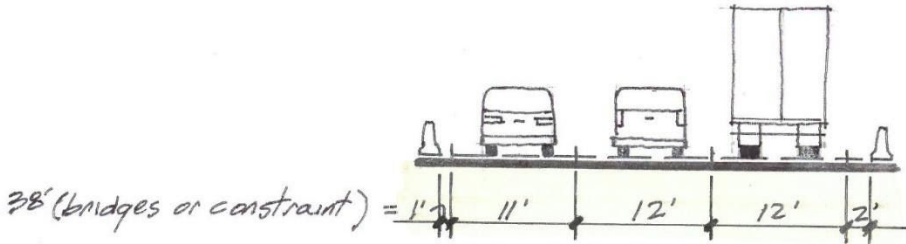


pavement % increase = 2.9%
 (calculation based on I-70 pavement quantities prior to the addition of EP PPSL)

CCC is concerned that if traffic and population grows, will there be pressure with 42 feet to just change the operation so that it becomes three lanes in use at all times? Then Clear Creek County never gets the high quality highway section we deserve. **FHWA:** For FHWA to sign off on this section being 3 general purpose lanes all the time, it would need to be a lot wider. There is no place for traffic to go if there is an incident. There is little room for driver error. **CCC:** This could become the maximum project if we start laying down a ton of pavement. Unpaved, hardened shoulders are part of this problem – could just pave them later – the footprint is set. CCC wants this to be an interim, 10-20 year solution.

Option E: 43' – top range, all 12 foot lanes. Do not get as much safety value out of the additional foot as compared to previous options . Adds a foot to the shoulder lane.

E: 38'-43'
 (WITH 2' SHY DISTANCE, 1' RUMBLE STRIP
 BUFFER & THREE 12' LANES)



The TT expressed concern that the highway could be changed, restriped, shoulders hardened, etc – slowly scabbing on a bigger footprint over time. The result would be a highway that was “good enough” and a maximum program will not happen.

CDOT responded: A change in operations like this would require a new CSS process and Tier 2 NEPA documentation for all operational changes (including striping, paving shoulders, etc). Nothing could be changed without going back through NEPA/CSS.

It is important to recognize CCC’s concerns: 1) project creep - scabbing onto the highway in the future due to change in policy, administration or funding problems. This would become the final project and an inferior solution for 50 years. 2) want to be sure that the project design fits into the ROD and MOU commitments.

TT Comment: EBPPSL opened with a set number of hours that it could operate. Then FHWA was asked to expand these hours. What is this process for FHWA to expand and do they talk to local jurisdictions? **FHWA Answer:** In EBPPSL, the signatories to the MOU - CDOT, HPTE and FHWA, were consulted to change the number of hours. This was a lesson learned. In the future, it would be better to reach out to local jurisdictions and look beyond the names on the MOU.

ACTION: HDR/CDOT - Acknowledge what issue/concern is and then make commitments that would be added to MOU and CatEx that says “this will not be done unless the following process is followed.” CCC’s concerns and agreed upon solutions would then be documented in two legal documents.

THK handed out copies of the Evaluation Matrix and projected a matrix on the screen. The TT was asked to look at the criteria and cells and make suggestions if anything was missing or mischaracterized. THK made edits to the Matrix based on TT comments.

The TT made the following comments:

HDR asked: Which of these criteria captures the threat of the ultimate project not happening? **A:** It was suggested that “meets the needs of the present without compromising the future?” could be one place to capture this concern.

CCC expressed that Criteria 1 “Accommodates safety during peak times?” suggested text is only comparing the PPSL to a full-size highway and the maximal program standards. Seems like a narrow perspective. **A:** “Substandard” terminology is based on the Traffic Safety analysis process, which considers predicted crash rates for a standard-width roadway as the base point. Can replace “substandard” with “narrow” to avoid the misconception that we must meet all standards.

TT edited Safety cells to include:

- Wider lanes could encourage a higher speed.

Wider options may create a bottleneck effect at the three narrow bridges in Idaho Springs from the perceived narrowing of the roadway, similar to a tunnel.

The TT was asked: When you think about safety during peak times – what are things we should be thinking about?

- CCC responded: Need to think about context of EBPPSL. Look at this in terms of speed differentials.

ACTION: CDOT - obtain information on EB to see if corridor speeds have changed.

Rumble strip – is it normal to have strip? **A:** The rumble strip was added on I-70 because of narrow lanes. When a lane is non-operational (shoulder), it is common. When it is operational, it is not common.

Variable Speed Limits – This means that all lanes have a different speed and/or speed limit changes based on congestion. Without enforcement, this is not effective and people don’t follow the limit. This is why it’s not a differentiator. It would only be impactful if there was automated enforcement or more width on right shoulder.

Overhead speed limit signs – this is not confined to variable speed limit model. People don't know they are driving in a PPSL, how do we communicate with them how fast to go in the PPSL? Additional full gantries are needed with overheard signs. These are electronic signs. This could help out-of-towners understand what is a passing lane and what the speed limit should be in each lane.

Naming – rebranding would be less successful if lanes are wider because of driver perception that they can go faster if wider. Therefore, rebranding would not be as effective if lanes are wider.

Width of lanes - By making the road narrower, we don't know that people will move slower; it is not a proven fact, nor does Eastbound observation seem to support

Speed harmonization – typically do this through variable speed limit signs. Track how traffic is moving through corridor and slowing them at certain points to reduce congestion/crashes. **Q:** Could we use a pace car for enforcement? **A:** Does CSP have enough officers? This was a PR nightmare last time it was tried. Not sure if it was proved to work. How is this manpower different than other officers working on enforcement from the shoulder?

Safety during non-peak times: This is M-F when the shoulder is a shoulder. Bring comment down about bridge bottleneck.

“Create infrastructure investments that are reasonable to construct and provide the best value for their life cycle, function and purpose?” CCC noted that it doesn't make sense to put a ton of money into a temporary solution. CDOT responded that the cost increase is negligible for addition of a few feet.

Create opportunities to "correct past damage" to the community? What does this mean? CCC responds that it alludes to the insensitivity of previous projects, including how communities are treated. This is broader than sight line and drainage. From a community perspective “less is more”.

Suggestion to add something around the “threat of perpetuating past damage” or the “impact on communities.”

Need to be careful not to have a contest of “who can get the most on the matrix” as things become double counted.

What does “impact to communities” mean since there wouldn't be any ROW taken?

Idaho Springs responds: For Idaho Springs, it is not so clear cut that narrower is less impactful and wider is more impactful. We want to develop a transportation center. Down the road, we would like to lessen the impact of construction. Do more now. We don't want to be re-doing retaining walls in 10 years. Not quite so simple in Idaho Springs that wider is a negative impact.

CCC does not disagree with anything Andy said.

Question: How do we rate these cells when they have mixed commentary? Do we need to reorganize the questions, so we have one clear answer? **A:** The cells can be colored the same in the case of mixed commentary. Also, the colors don't give us the answer – these discussions give us answers.

Idaho Springs – the key safety issue on EB is the 1 foot shy. Can we change EB to 2' and take it from shoulder? We need to focus on lessons learned. We have talked about this center being shifted in Idaho Springs to improve onramp at Exit 240. Let's look at big picture to improve operations both ways. **A:** This is not a simple striping solution, we are pretty maxxed out on pavement. This is not in the Purpose and Need, but CDOT can take a look at what this would mean.

TT request for estimates on the retaining wall height. This will impact how wildlife deal with crossing the highway and separation of habitat

ACTION: CDOT to estimate retaining wall height.

Recreation – RVs are 1%. The recreation cells are not effectively answered. Need to add busses, CMVs, rafting companies. Recreation is really a matter of everyone – not just recreational vehicles. If there is a wider width – may provide more opportunities for people pulling RVs to go up because they don't like the narrow width.

Since recreation and tourism is CCC's primary economic activity – Recreation as accommodating RVs is too narrow a focus.

ACTION: CDR to send updated Matrix to TT in Excel format.

ACTION: TT will provide additional edits and comments on the Matrix by Wednesday, January 17. TT will think about how they would rate the cells as fair, better and best. This will be the goal of next meeting.

The TT reviewed the Focus Area 2 Map. This area is entering the rock fall area. The rock fall context will change our exercise as we create the next matrix. This will be more about the rock than the city landscape. Widest pavement we have is 40 feet.

Everywhere else in Focus area 2 is 38'-39'. There are also some proposed turnouts.

Spring Gulch – box culvert to Dumont. Spring Gulch is a one-lane undercrossing that cars used. If we widen that box, we will be looking at closures here. Either widen box to north or median widening (might help rockfall but hurt aesthetics).

USFS asks that wildlife movements be considered if widening the box culvert. The culvert could be used for crossings (tapered).

ACTION: Project Staff to begin to create Focus Area 2 Matrices.

There will be an ALIVE meeting next week.

TT to send comments on the Matrix and CDR will send out the Matrix prior to the next meeting.

ACTION: CDOT -Look at hours of operation and relationship to volume of traffic/congestion on WB. TT would like to understand what we are designing this for (i.e. how many hours).

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ACTION: Project Staff to begin to create Focus Area 2 Matrices.

Andy Marsh,(Idaho Springs); Adam Bianchi (USFS); Randy Wheelock, Jo Ann Sorensen, Cassandra Patton, (Clear Creek County); Amy Saxton (CCC Greenway); Tracy Sakaguchi (CMCA); Margaret Bowes (I-70 Coalition); Kelly Galardi (FHWA); Wendy Koch (Town of Empire); Steve Long, Gina McAfee, Wendy Wallach (HDR); Kevin Shanks, Julie Gamec (THK); Tyler Brady, Bobby VanHorn, Neil Ogden, Adam Parks, Kevin Brown, Vanessa Henderson (CDOT); Jonathan Bartsch and Taber Ward (CDR)

