



Floyd Hill Design - Technical Team

Meeting Summary

July 22, 2022, 9 AM to 11:30 AM

CDOT Golden Office – Lookout Mountain Conference Room and Virtual (Zoom)

1. Introductions, Meeting Purpose and Project Updates

CDR Associates opened the meeting and welcomed participants.

The purpose of the meeting was to:

- Review Major Innovations and TT recommendations to date
- Present “Narrows” Section Innovations and Preferred Alternative from 2021- discuss key differentiators
- Discuss TT Process to Date

Project Updates:

- **Genesee Wildlife Crossing Update:**
 - CDOT reviewed renderings of the Genesee wildlife crossing area
 - The bridge consists of a single span structure and wildlife fencing that runs from Lookout Mountain Exit to Genesee Exit/Buffalo Overlook (6 miles total)
 - Wildlife fencing is 8 ft high mesh with wooden posts
 - The goal is to create a channel for elk to move safely underneath the bridge while also being mindful of the Bison enclosure/fencing. Currently the Bison enclosure can inhibit wildlife movement forcing elk onto the roadway.
 - Special gates will be incorporated to stay open for wildlife but be able to close for bison when they need it.
 - **Schedule:** winter bridge construction- driving piles, spring- pour deck, goal to get pavement in by the end of 2023 construction season but may wrap into next season due to heat.
 - First official construction related to the Floyd Hill project!
 - Wildlife fencing ties into existing fencing- by HOA and along bison enclosure to blend into existing aesthetics as much as possible.

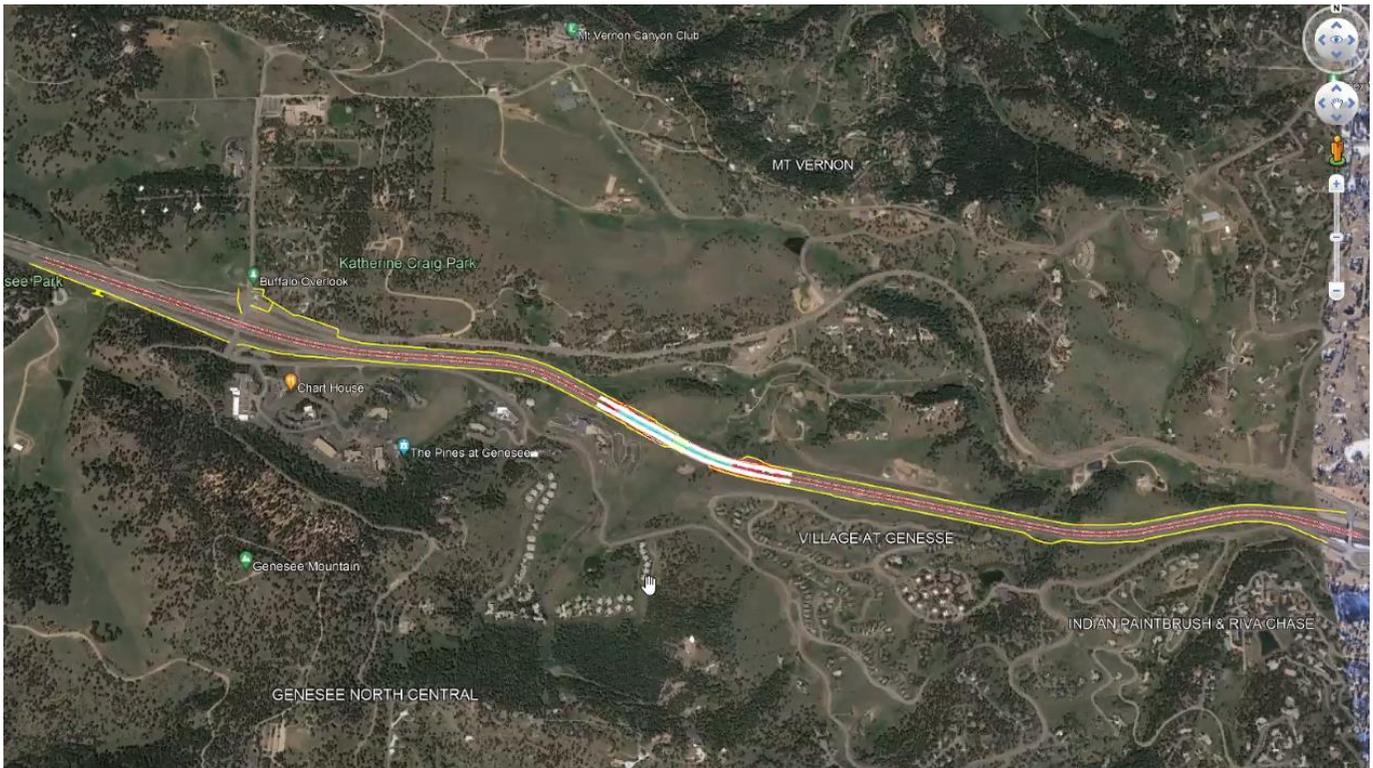
Renderings of Genesee Wildlife Crossing:



Detail: Wildlife Fencing



Aerial View of Fencing Extent- indicated by yellow line



Shifting Gears to ground the TT, CDR Associates reviewed the Innovation Recommendations to date:



- **Central Section:** Terraced Alignment, Bottom of the Hill
- **West Section:** North Option

The TT then focused on “the Narrows,” a segment of the Central Section which connects the Bottom of the Hill Option to the Terraced Alignment. The traffic information associated with the impact of removing the US 6 On Ramp is forthcoming.

The TT noted the complexity of this section of the project and reiterated the group’s task of evaluating which alignment designs are best to take through the NEPA process and environmental assessments to come.

At the end of this meeting the TT will check in about the CSS Process to make sure everyone is on the same page moving forward.

2. Project Team presents “Narrows” Section Innovation Options

The TT turned their attention to understanding the key constraints and implications of the Narrows Section by understanding the key differences between the Preferred Alternative (‘21 PA) and the Innovations.

Discussion:

Before the design team’s presentation of the Narrows Innovations, the facilitators reminded the TT that in the near future elected officials would be updated on the Innovations generated through this process. It will be necessary to synthesize all the material the TT has been covering in order to provide an effective overview in one meeting.

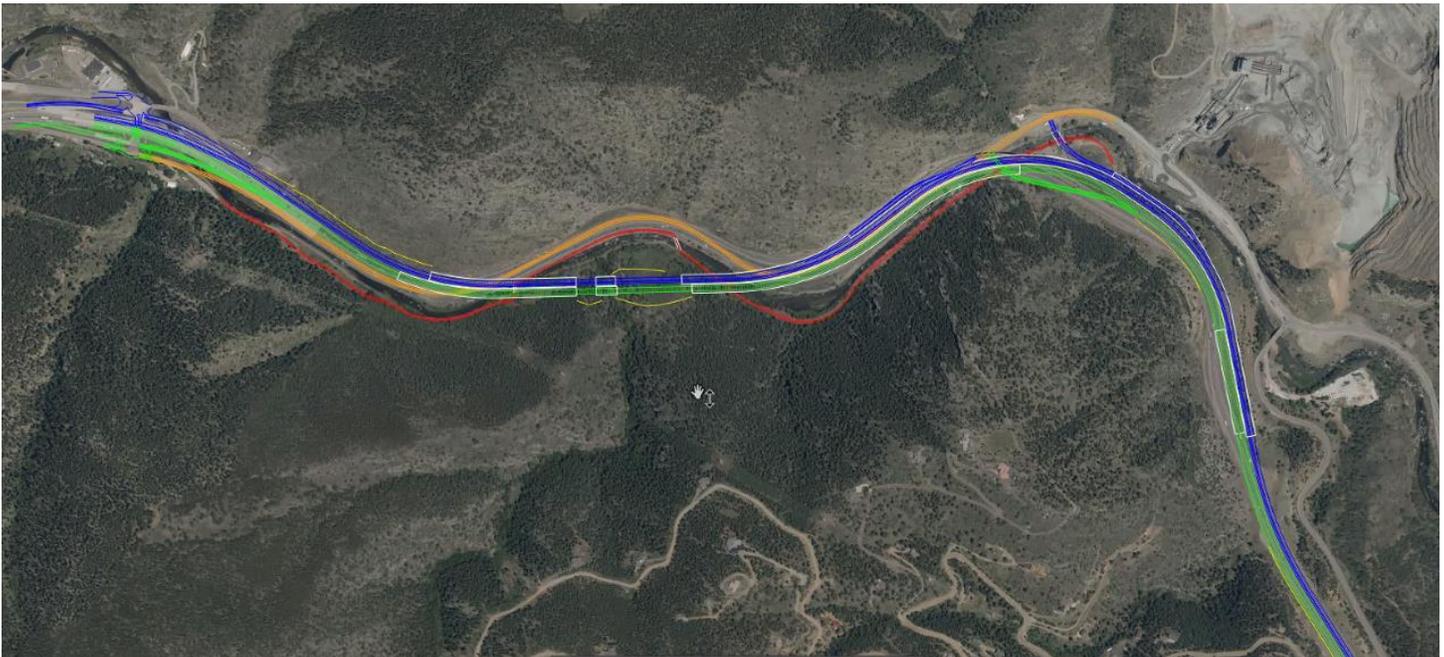
- **TT Comment:** I wanted to bring attention to the language we are using such as “consensus” and “recommendations” to discuss the Innovations. These words may suggest different connotations than what the TT is actually working on and the group should ensure we are not getting ahead of the CSS process.
 - **TT Response:** I appreciate this point, but I think we all understand that no decision is final until the NEPA decision document has been written and approved. The TT is making incremental recommendations that must be endorsed for environmental assessment.

Design Team Presentation:



Review of the challenges identified in the Preferred Alternative ('21 PA) to remind the TT of the thought process behind each Innovation so far.

- Large rock cut
- Viaducts crossing US 6
- Multiple viaducts crossing existing lanes and creek
- Long complicated bridges
- Skews crossing river
- Geotechnical risks building viaducts into steep slopes.



Above: Overview of '21 PA

The major areas for potential improvement were **Constructability, Infrastructure needs, and Disruption to existing traffic**. Each of these factors correlate to increased time for construction and increased costs.

The **West Section** Innovation, the North Option, reduced rock cut which reduced geotechnical hazards. This Innovation also moved construction to the opposite side of the creek, allowing for offline construction which reduces disruption to existing lanes.

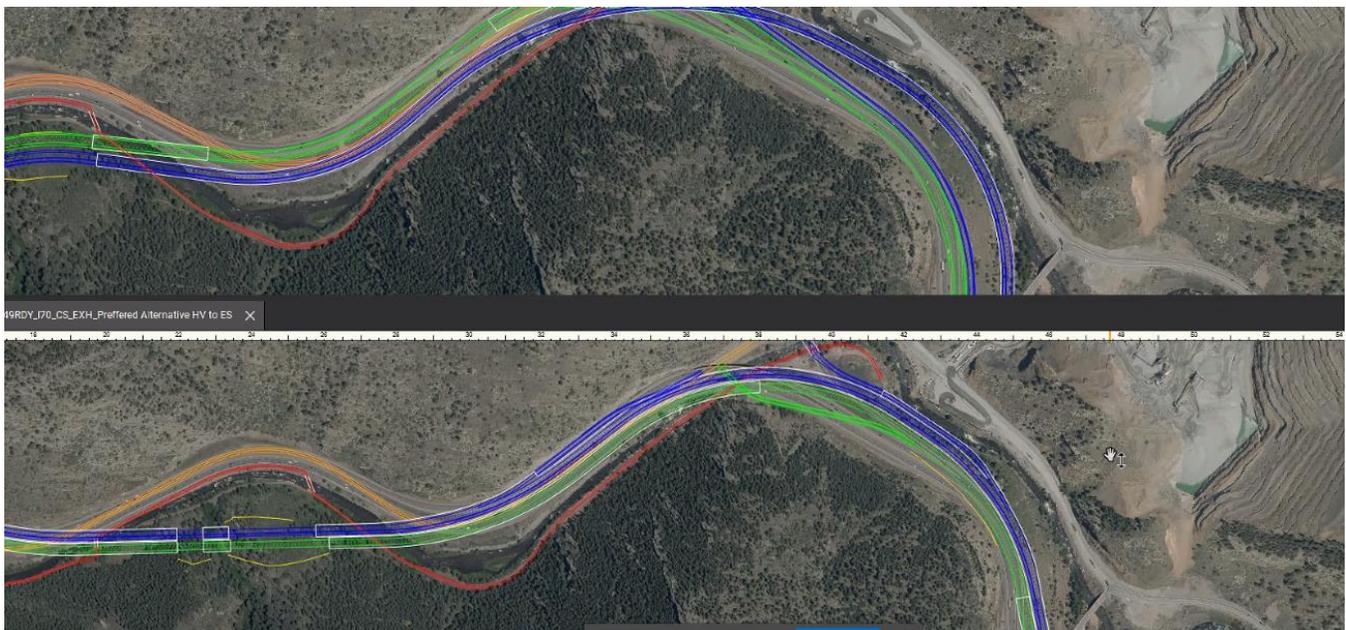
The **Central Section** Innovations, Bottom of the Hill and Terraced Alignment, reduced geotechnical hazards, created a better fit for the geometry of the canyon, aligned viaducts into more ideal angles, reduced disruption to existing lanes, and increased overall constructability.



The Narrows Section is the last piece of the puzzle to connect the Bottom of the Hill to the Terraced Alignment.

Note about process: the Design Team is bringing ideas here to discuss and problem solve. These are not fully baked ideas and the TT input is an integral part of the problem solving process, identifying concerns and ideas that the design team can use to develop better Innovations.

- **TT Question:** Can you clarify the locations and differences between '21 PA and Bottom of the Hill?
 - **Design Team Response:** Bottom of the Hill (top) is shifted farther down the hill from the '21 PA (bottom), maintaining the height of the roadway and 55 mph design for curves.



As requested by the TT, the Design Team provided aerial views of the full Central Section (shown above) in addition to the specific innovations being considered.

Narrows Innovations

Guiding questions for problem solving in the Narrows:



- How do we make this more constructable?
- How do we reduce impacts to existing lanes, to the Greenway, and to the creek?

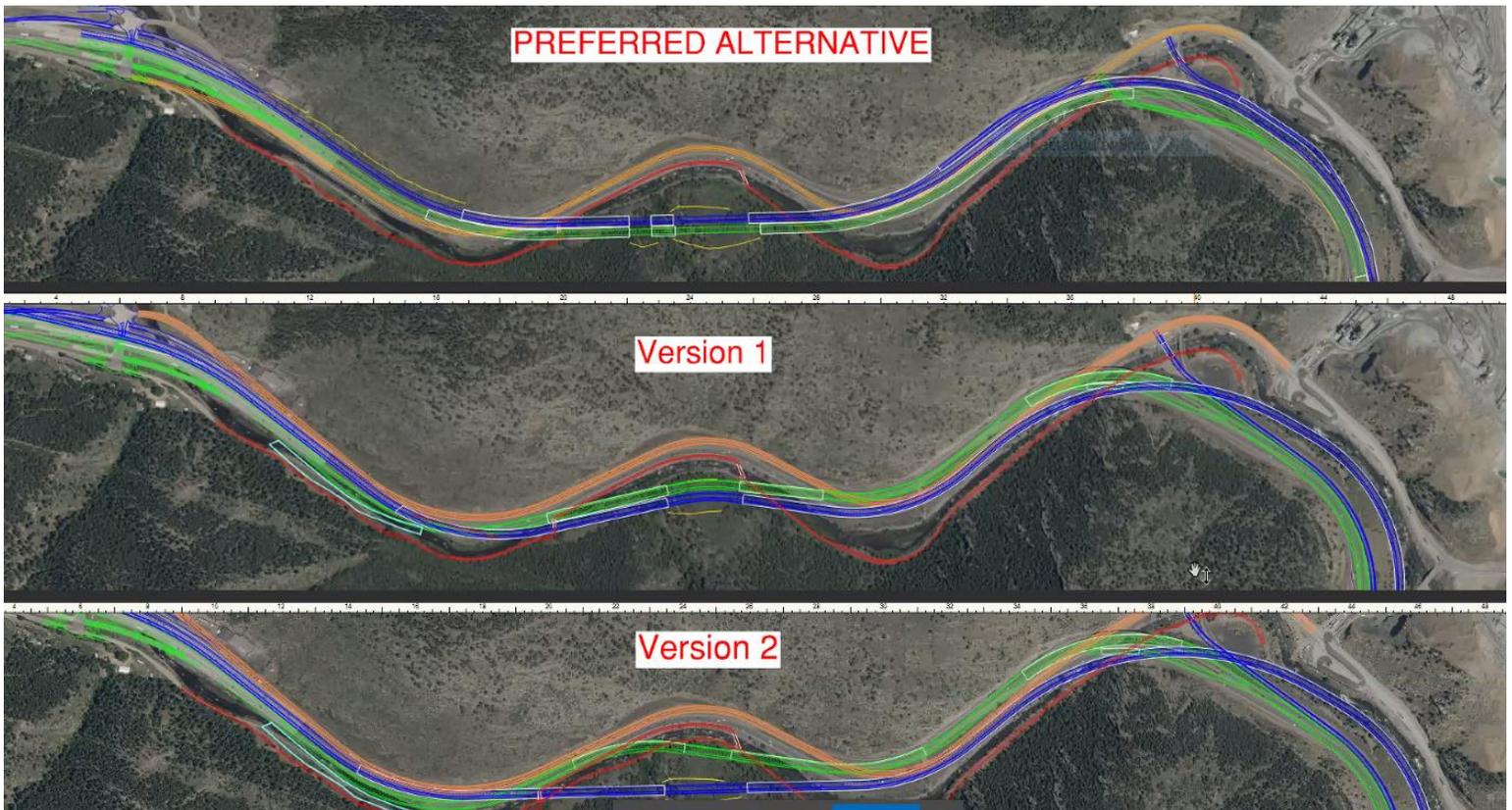
The Design team noted that concerns were expressed during the last TT meeting about moving the WB lane South of the creek. Through further analysis between meetings, it was determined there were not enough benefits to outweigh these concerns so current Innovations have both EB and WB lanes north of the creek. There will be temporary impacts to the Greenway and the creek, however, no permanent impacts like those that accompanied moving WB S of the creek.

Benefits of having both EB and WB lanes N of the creek:

- Reduced EB Structure and better alignment for EB
- More daylight for Frontage Rd.

The Design Team identified span length and the angle between lanes as a remaining challenge with how the proposed North of Creek option connects into the Saddlecut area. Ideally, there would be a 90 degree angle where the WB and EB structures cross to minimize structure and impacts on the creek. This would also reduce costs and more closely follow existing roadway aesthetics using typical structures.

The Design Team created two versions of the design with WB and EB N of the creek:



- **TT Question:** What is the overall difference in the amount of viaduct and bridge between these alternatives?
 - **Design Team Response:** The PA '21 incorporates the most bridge structure in this area. Between the refinements, Version 2 currently incorporates more bridge structure than Version 1- specifically the EB lane, E of the saddle cut. However, through further refinement, the two versions could ultimately have the same amount of bridge structure.
- **TT Question:** Between version 1 and 2, what is the difference in the height or location of the WB viaduct. How does it impact the creek and shading the creek?
 - **Design Team Response:** Same between alignments- vertically and horizontally, height to get over existing WB lane. Shade study to continue.
- **TT Question:** Do all three designs move a segment of the creek? Is that the same segment?
 - **Design Team Response:** Creek is moved in all options, but Version 1 and 2 move a different part of creek, to the same degree.



- **TT Comment:** From the rafting perspective, both sections that are being moved are fun segments of the creek, however, the section of creek being moved by both Innovations would be more preferable and reduce impacts to recreation.
 - **Design Team Response:** That is good to hear. Hopefully, moving either section of the creek provides an opportunity to make that segment of river better for rafting after relocation, or at least not make it worse.
- **TT Comment:** in Version 2, the area where the EB lane crosses the creek is a critical area- there is a lot going on down there. We should go out and visually see what that area looks like in person.
 - **Project Team Response:** That is a great idea. We can organize a site visit to see that section in person. This could be a great kickoff for the Greenway ITF.

ACTION: Organize site visit to examine Greenway and creek at this area of the Narrows as a kickoff to Greenway ITF.

- **Question:** Were both Version 1 and 2 shared with the Emergency Response ITF? Did they have a preferred option?
 - **TT Response:** Not yet, but that will be a key step in comparing these options. Each of these options are conceptual and we would need to take them forward through further refinement: there will be more work and refinement to be done based on the Emergency Response ITF, Governing Bodies, and Environmental Assessment feedback.

The facilitators asked which version the TT would like to carry forward for further evaluation. They asked if there were any additional comments or concerns.

- **TT Comment:** There is enough going for Version 2 that this should be carried forward for further consideration. The Design Team's hard work has shown through.

DECISION: The TT recommends carrying forward Version 2 of Narrows, along with the Bottom of Hill Option and the Terraced Alignment as the Recommended Preferred Alternative ('22 RPA) for the **Central Section**.



TT Agreement: Presentation to Council and Commissioners on Aug 2 will tell the story of this process as well as the Innovations as a way to orient and organize all the information.

3. Project Team reviews WB US 6 On Ramp Innovation Options

This discussion was postponed until traffic models are complete.

The Design team pointed out that there is a path forward in Version 2 with or without the On Ramp so the TT can still feel confident in carrying that option forward pending the traffic information.

ACTION: Decide whether the Narrows Innovation includes the On Ramp or not after traffic information is available.

4. Wrap Up, Schedule Review, Confirm Next Steps

As indicated earlier in the meeting, the facilitators circled back to a discussion of the TT process and the Role of the TT moving forward.

- **TT Comment:** This is a complex project. We don't need to know every aspect of construction, however we do need to know the key points to continue evaluating the innovations.
- **TT Question:** What is the role of the Matrices moving forward? We are currently using it as a way to document differences between the Innovations rather than as a discussion prompting document. That's ok but it would be good to be more intentional about it. We should also be more conscious of how we are using our values documents.
 - **Project Team Response:** These are important points. It is important to understand how the TT will contribute moving forward. Moving beyond the major alignment innovations, there is an ideal balance, bringing together our different experiences to the table to continue working on details: the aesthetics and the Greenway.
- **TT Comment:** We're doing what TT's do- the work we've been putting in is reflective of the size of the project. I want to congratulate everyone on a job very well done. I have been in the CSS process since the beginning. TTs have moments when we don't all agree, but that's what TT's are for. This might be



time to ask the PLT to make process decisions for how to continue our work moving forward.

ACTION: Schedule a meeting with the PLT to guide our process.

The group checked in about the Council and Commission Presentations on Aug 2nd. How do we tell this story and bring our work to external groups?

ACTION: CDR will develop slides for Council and Commission Presentations

- **TT Comment:** I want to express my gratitude to the group for working to ensure the community will have a better experience in this corridor.

The facilitators then reviewed the Draft Agenda for the next TT meeting:

- Confirm design innovations
- US 6 on ramp traffic analysis and decision making process
- Brainstorming of aesthetic guidelines- application to structures
- Environmental assessment status and decision making

The group identified there will be lots of new issues coming up including:

- New ITFs
- Greenway Design
- Sawmill gulch
- Creek restoration
- Treatment of rock cuts
- SWEEP Meeting on Monday (8/1)

Final Thoughts:

- **TT Comment:** We should revisit the Emergency Response/Maintenance ITF with what we have now (Bottom of Hill, Narrows Version 2), especially considering the potential removal of the US 6 On Ramp. The Perspectives in this room may not be enough to understand the full effects of removing that On Ramp.

REMINDER: In the near future, schedule an Emergency Response/Maintenance ITF to review the current alignment innovations and potential removal of US-6 On Ramp.

- **TT Question:** Should we convene a Greenway/Recreation ITF to review the entire section?



- **Response:** SWEEP is meeting on Monday. As we dial in the creek and Greenway changes, we will convene an ITF and bring in Emergency Response to give their thoughts on access.

- **TT Comment:** In addition to safety, we will need to discuss things like how to keep the underside of the bridges/roads pleasant so that people want to use the Greenway and Creek? How can we make sure the bridge doesn't get gross in 10 years?

- **TT Comment:** We should have an ITF to discuss both design and environmental details for the Greenway. Features have been identified but we haven't gotten them on paper- we will need a group to solidify the opportunities and specify where they can be implemented.

- **FWHA Comment:** In regards to the US 6 On Ramp elimination, FHWA is interested/concerned with any change that doesn't satisfy certain requirements. However, the On Ramp is not ideal currently, so removing it does seem like a viable option.
 - **Project Team Response:** In addition to traffic models, is there anything else we would need?

 - **FWHA Response:** The FHWA is mostly interested in impacts on traffic so that should be a good plan.

CDR Associates closed the meeting by thanking the TT for their great work and continued dedication to the project.



ACTION ITEMS

- **ACTION:** Organize site visit to examine Greenway and creek at this area of the Narrows as a kickoff to Greenway ITF.
- **ACTION:** Schedule a PLT meeting to guide process and role of TT
- **ACTION:** CDR will develop slides for BOCC Presentations
- **ACTION:** Decide whether the Narrows Innovation includes the On Ramp or not after traffic information is available.
- **ACTION:** Schedule an Emergency Response/Maintenance ITF after the next TT meeting, once we've had a chance to review traffic information.

DECISIONS

- **DECISION:** The TT recommends carrying forward Version 2 of Narrows, along with the Bottom of Hill Option and the Terraced Alignment as the Recommended Preferred Alternative ('22 RPA) for the **Central Section**.

5. Attendees

Cindy Neely, Amy Saxton (Clear Creek County); Bill Coffin (Saddleback POA), Lisa Wolff, (Floyd Hill POA); Jessica North (Clear Creek School District); Mike Raber (Clear Creek Bicycle User Group); Margaret Bowes (I-70 Coalition); Elizabeth Cramer (FHWA); Steve Cook (DRCOG); Dale Drake (Clear Creek Rafting); JoAnn Sorensen (UCCWA); Sam Hoover (Central City); Jonathan Cain (Idaho Springs); James Proctor (Bridge & Tunnel Enterprise); Steve Durian (Jefferson County); Tracy Sakaguchi (CMCA); Ashley Giles (Trout Unlimited); Gary Frey (Trout Unlimited); Vanessa Halladay, Kurt Kionka, Jeff Hampton, Tyler Brady, John Gregory (CDOT, CTIO); Anthony Pisano, Matt Aguirre, Alan Carter (Atkins); Matt Hogan, Koichiro Shimomura, Brandon Simao, Austin Knapp, Tim Maloney (Kraemer); Tammy Hebron (HDR); Mandy Whorton (Peak Consulting Group); Kevin Shanks (THK Associates); Jonathan Bartsch, Daniel Estes, Cara Potter (CDR Associates).



Floyd Hill Design // CMGC

Technical Team

July 22, 2022

- 1. Introductions, Meeting Objectives, Project Updates**
- 2. Project Team presents “Narrows” Section Innovation Options**
- 3. Project Team reviews WB US 6 On Ramp Innovation Options**
- 4. Wrap Up, Schedule Review, Confirm Next Steps**



Project Updates

- Genesee Wildlife Crossing
- Other Updates?



Major Alignment Innovation Recommendations to Date

- **Central Section: Terraced Alignment (prev. “Braided Bridges”)**
 - Reduces rock cut, least risk to traffic impacts from excavation work; fewer total rock blasts
 - Opportunity to create additional trailhead - parking and creek access point
 - Best opportunity for creek enhancements, improved habitat and wildlife
- **West Section: North Option**
 - Avoids creek relocation
 - No impacts to CR 314

Ongoing Evaluations

- Narrows Section Innovations
- US 6 WB On Ramp



Updated “Narrows” Section Innovation Options

Objectives:

- TT understands the key constraints, implications for subsequent decisions
- TT understands key differences between Preferred Alternative and “Narrows”
Section Innovations

Key Issues:

- Impacts to Creek and Greenway
- Constructability

****Project Team presents visuals for “Narrows” Section Innovation Options****



WB US-6 On Ramp Discussion

ITF/TT Input to Date:

- Reduces structures at US 6 interchange
- Provides space for improved geometry of EB lanes
- Improves constructability
- Reduces cost

Issues:

- Pending FHWA Approval
- Quarry and truck traffic info
- Additional traffic modeling ongoing



TT/Process Check-In

- CMGC is a dynamic, complex, and evolving process
- TT is a forum for idea sharing, analysis, and refinement
- Opportunity to identify challenges, collaborate toward shared solutions
- Need for efficient decision making
- Focus on issues that impact TT values

Discuss: *General feedback on process to date? How to maximize the opportunities built into the CMGC delivery approach, i.e. collaboration and efficiency?*

Next TT **DRAFT** Agenda

1. Confirming Major Design Innovations
2. WB US 6 On Ramp Traffic Analysis and Decision-Making Process
3. Brainstorming Aesthetic Guidelines, Application to Structures
4. General Conversation about how Aesthetics will be Applied in Context
5. Environmental Assessment Status and Decision Making



COLORADO
Department of Transportation

Draft Meeting Agenda

August 5, 2022



Next Steps

- Transition away from major alignment issues
- Council and Commission Presentation Check-In
- Upcoming ITFs (Greenway, others)
- Review Action Items



Thank You!

July 22, 2022