



Floyd Hill Design - Technical Team

Meeting Summary

December 16, 2022, 9:00 AM to 12:00 PM

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

1. Introductions, Meeting Purpose and Project Updates

CDR Associates opened the meeting and reviewed the agenda.

The purpose of the meeting was to discuss:

- *Project Updates*
- *Confirm* East Section Retaining Wall Aesthetics
- *Discuss* East Section Roadway Barriers, Signing
- *Introduce* US-6 Interchange: WB On-Ramp/Off-Ramp, Bridges, Construction Access for Bridge A
- *Next TT Agenda & Next Steps*

TT members confirmed the meeting agenda with no changes.

2. Project Updates

The Project Team listed the many accomplishments from the past year:

- New consultant team (Atkins/Kraemer) and Project Director (Kurt Kionka, CDOT)
- Completing the innovations phase
- FONSI reviewed and comments provided
- \$100 million CDOT grant
- Floyd Hill Groundbreaking: roundabout and wildlife crossing construction began
- Genesee wildlife crossing is first wildlife crossing on I-70
- Partnered with CU Denver
- Begin 1041 Permit process

Looking ahead, the Project Team noted the plan is to hold an in-person public meeting in March 2023 after the FONSI is signed, but before construction begins.



3. Confirm East Section Retaining Wall Aesthetics

The project team led a discussion about East Section Retaining Wall aesthetics. The goal was to recap the input received between Technical Team meetings and confirm the decision. At the previous TT meeting (12-2), the group recommended Colorado Random Reveal to be applied to walls E-1 through E-3; and Sculpted Shotcrete to be applied to walls E-8 through E-11, pending electronic review from the full group.



I-70 Floyd Hill to Veterans Memorial Tunnel
Retaining Wall E-9 and E-10 (After Improvements) - Shotcrete



Example of Sculpted Shotcrete Rendering - Walls E-9, E-10



I-70 Floyd Hill to Veterans Memorial Tunnel
Retaining Wall E-2 (After Improvements) - CO Random Reveal



Example of Colorado Random Reveal Rendering - Wall E-2

Input received between the meetings included the following questions:

- **TT Question:** The quality of sculpted shotcrete is highly dependent on the craftsmanship of the firm doing the application, and there are recent examples in Clear Creek County of sub standard quality shotcrete. What will be the process and commitments to ensure quality of the sculpted shotcrete?
- **Project Team Response:**
 - There will be a selective process where shotcrete contractors are vetted and reviewed based on experience and work products.
 - The specifications for the work will be written precisely with pictures of the desired outcome.
 - Test panels will be reviewed by project team members and stakeholders prior to broad application. Clear Creek County has reviewed the shotcrete



process for the CR 314 walls and can be involved in a similar way for Floyd Hill. Kraemer, Atkins, and THK have also been involved in many similar projects and can provide guidance and oversight.

- There will be ongoing oversight and milestone check-ins. Since shotcrete application is an iterative process, it is possible to improve areas if they don't meet the quality standards.
- **Project Team Question.** Are you happy with the process from CR 314? We can learn from certain aspects of this project.
 - **TT Response:** I have given feedback and will be reviewing test panels. It has been a reasonable process. Floyd Hill will have different challenges due to visibility. Hopefully there will be more opportunities for deeper relief and variance along the top which will make the shotcrete more successful in mimicking natural rock.
- **TT Question:** What is the rationale for using two different treatments in the same section?
 - **Project Team Response:** There are important differences between the walls receiving different treatments.
 - Infrastructure Walls (CO RR) are closer to the road, connected to the barrier, and are backed into an unconsolidated slope.
 - Landscape Walls (Shotcrete) are set back from the road, are backed into consolidated slopes, and blend better with terrain and netting required in these areas. (This issue was discussed in the previous TT meeting on 12/2 – see notes for full analysis and recommendation).
- **Question:** Will the median barrier have a cap?
 - **Project Team Response:** Based on the specific locations and requirements for barriers and glare screens, we are determining what is possible for the barrier cap. We will look into this further and report back to the TT.
- **TT Comment:** It's important to extend this process into the construction phase. That will be a benefit of the CM/GC process.
- **Action:** Design Team to explore barrier cap options



- **Decision:** Team will pursue wall aesthetics as recommended last TT meeting

4. Discuss East Section Roadway Barriers, Signing

The Project Team led a discussion on East Section signing, building on the discussion from the 12-2 TT when the topic was introduced. Renderings for signage in the East Section were presented, as shown here:



I-70 Floyd Hill to Veterans Memorial Tunnel
Proposed Cantilever Sign - STA 1320+00





I-70 Floyd Hill to Veterans Memorial Tunnel
Proposed Cantilever Sign - STA 1292+32



I-70 Floyd Hill to Veterans Memorial Tunnel
Proposed Bridge Sign - STA 1282+82





I-70 Floyd Hill to Veterans Memorial Tunnel
Proposed Cantilever Sign - STA 1265+50



I-70 Floyd Hill to Veterans Memorial Tunnel
Proposed Cantilever Sign - STA 1260+00





I-70 Floyd Hill to Veterans Memorial Tunnel
Proposed Bridge Sign - STA 1222+73



I-70 Floyd Hill to Veterans Memorial Tunnel
Proposed Cantilever Sign - STA 2225+00





The discussion centered mainly on new WB Express Lane, which will include two cantilever signs placed 1 mile and ½ mile leading up to the express lane, and one Variable Toll Messaging Sign sign, which is currently planned as a bridge sign but could be a cantilever depending on additional analysis.

- **TT Question:** I was under the impression the toll would be one flat rate. Is this not the case?
 - **Project Team Response:** The MEXL lane will be a flat rate, but the Express Lane will be variable and dependent on the distance traveled. The CTIO Office is working on a tolling study to determine specifics.

The group discussed Proposed Bridge Sign - STA 1282+82 (pictured above). The TT expressed concerns that the bridge sign blocked a desired view from the road. It was noted that a cantilever sign would be preferable in this location because it would have less visual impact from the road. The TT expressed a desire to consolidate visual impacts as much as possible.

- **TT Question:** Could you combine STA 1282+82 with the 1 mile or ½ mile away sign, thereby decreasing the visual impact and sign clutter?
 - **Project Team Response:** Signs indicating approaching toll lanes have specific distances required by FHWA regulations. There is not a lot of flexibility on spacing requirements. A lot of work was done leading up to this meeting to minimize signage. There were at least three additional signs in this area that we have eliminated to reduce signing in the East Section.
- **TT Question:** Any flexibility on the height?
 - **Project Team Response:** The sign is required to have 17.5 ft of clearance.
 - **Project Team Comment:** This image was created to highlight the sign, but the image may overemphasize the visual impacts because this is a still image and drivers will be moving at speed when approaching and passing the sign.
- **TT Question:** Are sign colors required by guidelines?
 - **Project Team Response:** Yes. The white background is required to create high contrast. However, the renderings are probably making the white starker than it will appear in real life.



The team then discussed STA 1222+73, which is a Bridge Sign that will be removed and replaced. It is intended to be a variable message sign warning of the steep grade.

- **TT Question:** Can this sign indicate a crash ahead? There tends to be many crashes at the exit just below the hill.
 - **Project Team Response:** We will have to look at the options for this sign. It is intended to be a warning of the steep grade.
- **TT Question:** Is the diamond sign in this rendering warning trucks of the steep grade? Is there a reason we need both that sign and the VMS?
 - **Project Team Response:** We can check on that. The VMS sign may not always be turned on; it may mainly be necessary when weather conditions are bad. We can confirm how that sign will operate to ensure these signs aren't redundant.
- **TT Question:** Drivers go 80 mph on this corridor, and we're expecting folks to read all these signs?
 - **Project Team Response:** That certainly is a difficult issue. We are aiming to minimize signage while meeting the requirements. We can't control folks driving dangerously fast but must incorporate the required signs.

5. Introduce US 6 Interchange Factors



The Project Team introduced a proposed refinement to the design of the US 6 Interchange (WB off ramp and EB on ramp), pictured above. Geometric issues led to the proposed updates.

- Currently the on ramp from US 6 has a left-hand entrance which is substandard and difficult to navigate.
- The updated design would maintain the WB main line on a viaduct, increase the length of the WB off ramp to decrease the grade, and remove the WB on ramp and EB off ramp. Drivers would use the Hidden Valley interchange for entering and exiting I-70 in these directions.
- The WB off ramp will go under the westbound viaduct (Bridge A).
- Bridges G and B would be combined to facilitate riverbank rehabilitation and other opportunities. The bridge will include a pedestrian sidewalk from the parking area.
- The Greenway will go under the bridges. Further design of the trail will be required, which will be discussed in the forthcoming Greenway ITF.

The goal of the current TT discussion is to introduce the proposed refinement and understand the TT's interests.



- **TT Comment:** Can we enhance bicycle safety where possible?
 - **Project Team Response:** We will look at opportunities for this once the design is confirmed.
- **TT Comment:** This stretch of river was highlighted as having increased salinity. Are there some specific water quality features that will be included in this area?
 - **Project Team Response:** Not sure yet. We are not far enough in design to identify locations, but we can talk about this during the upcoming SWEEP meeting. We'll need to get the roadway components set to determine the range of possibilities.
- **TT Comment:** We anticipate Fry Quarry trucks may use I-70 to get to the Metro Area. Has that been taken into consideration?
 - **Project Team Response:** Yes.
- **TT Comment:** This refinement presents opportunities for better parking and creek access that we should work to capitalize on.
 - **Project Team Response:** Yes - our goal will be to capitalize on these opportunities. First, we wanted to share the concept and get initial feedback.
- **Decision:** The TT is in favor of moving forward with the refined US 6 Interchange concept.

6. Next Steps

The first meeting of 2023 will be on January 13, 2023, and meetings will continue every two weeks. Heading toward 90% design for the East Section, the TT plans to review the decisions made using the Measures of Success. This review will likely take place in February.

- **TT Comment:** The goal of reviewing the Measures of Success will be to identify decisions and commitments to carry forward into the construction period. We should use a tracking sheet similar to the one used on the PPSL project.
- **Action:** Project Team to prepare template for Measures of Success Review



Other updates heading into 2023:

- SWEEP is aiming for a late January meeting on water quality
- PLT to be scheduled before March public meeting

The Project Team closed the meeting by thanking the Technical Team for its hard work and accomplishments in 2022.

Summary of Action Items, Agreements, & Decisions:

- **Action:** Design Team to explore barrier cap options
- **Action:** Project Team to prepare template for Measures of Success Review
- **Decision:** Team will pursue wall aesthetics as recommended last TT meeting
- **Decision:** The TT is in favor of moving forward with the refined US 6 Interchange concept.

6. Attendees

Cindy Neely, Amy Saxton (Clear Creek County); Mike Raber (Clear Creek Bicycle User Group); Margaret Bowes (I-70 Coalition); Brian Dabling (FHWA); John Curtis, Jo Ann Sorensen (Upper Clear Creek Watershed Association (SWEEP)); Gary Frey (Trout Unlimited); Jonathan Cain (Idaho Springs); Lisa Wolff, Bill Coffin (Floyd Hill POA); James Proctor (Bridge Enterprise/AECOM); Tracy Sakaguchi (CMCA); Kurt Kionka, Jeff Hampton, Tyler Brady, Badr Husini, Margo Mcinnis (CDOT, CTIO); Anthony Pisano, Matt Aguirre (Atkins); Matt Hogan, Koichiro Shimomura, Tim Maloney, Brandon Simano (Kraemer); Mandy Whorton (PEAK Facilitation); Tammy Hefron (HDR); Kevin Shanks (THK Associates); Jonathan Bartsch, Daniel Estes, Cara Potter (CDR Associates).