



## Floyd Hill Design - Technical Team

### Meeting Summary

December 2, 2022, 9:00 to 11:00 AM

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* Roadway Integral Components:
  - East Section Retaining Wall Aesthetics
  - East Section Rock Treatment Aesthetics
- *Introduce* Roadway Integral Components
  - East Section Drainage Elements
  - Update on East Section Signing
- Next TT Agenda & Next Steps

TT members confirmed the meeting agenda with no changes.

#### 2. Project Updates

- Idaho Springs Presentation
  - Idaho Springs City Council is very excited about this project and liked the rendering of the Sound Wall presented.
  - CDOT is appreciative of the City Council's support.
  - Next steps for the proposed Sound Wall are to send out a survey to impacted residents by end of Dec/early Jan
- ASCE (American Society of Civil Engineers) Presentation
  - Presentation was well received.
- Early Projects:
  - Genesee Wildlife Crossing: construction is underway. There were some issues with the detour set up but those have been mitigated to ensure drivers follow the detour correctly.
  - Roundabouts: some challenges have delayed the start of construction; construction should start by mid-Dec.



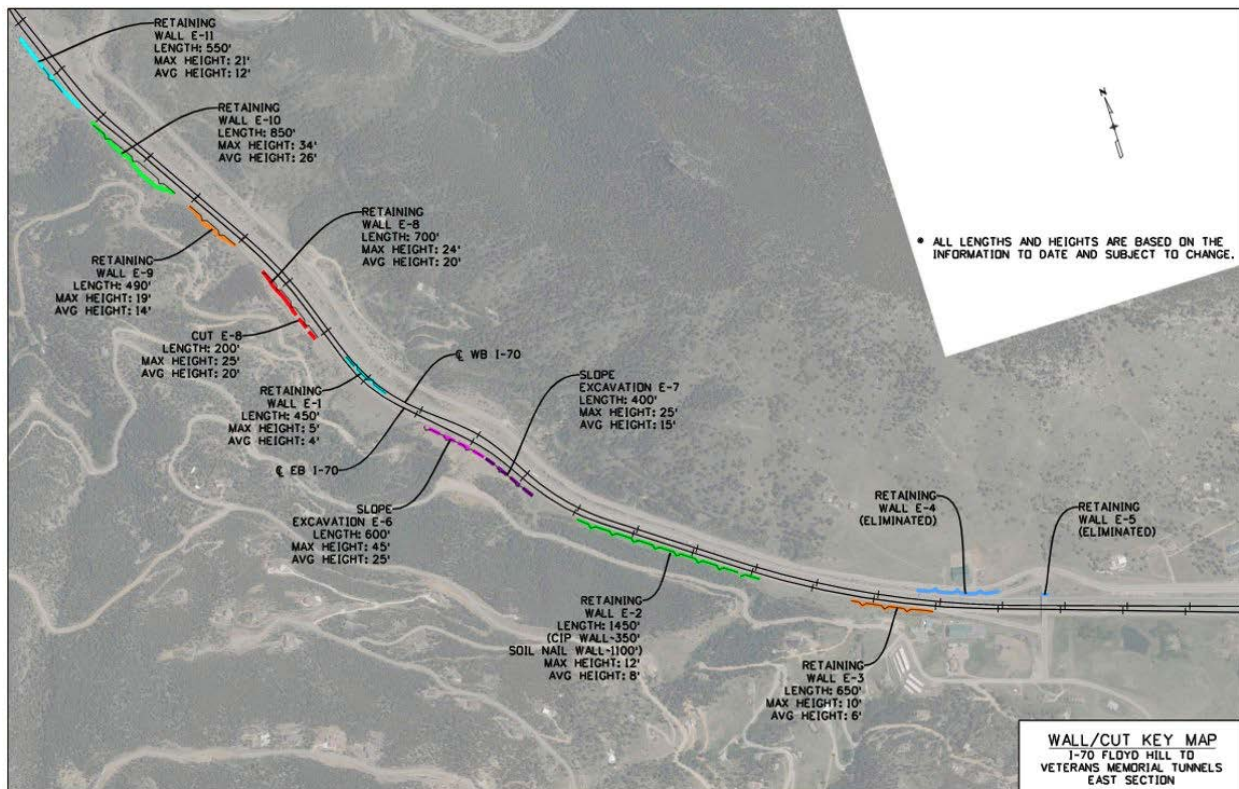
- FONSI: Received comments from FHWA and CDOT, no fatal flaws just slight revisions. Comments to be integrated and documents to be signed/finalized by Jan 1.
- CDOT shared that East Section Design is progressing past 60%, 90% design is scheduled for Jan. which indicates the project is progressing on schedule, construction is set to begin in April/May.

### 3. Confirm Roadway Integral Components

#### East Section Retaining Wall & Rock Treatment Aesthetics

In light of the updates, the project team directed the TT to the primary topic of discussion: reaching consensus on the Walls and Rock Cuts in the East Section, pending electronic review from those members not in attendance.

HDR presented an updated Key Map:



The adjustments from the first draft include:

- Retaining wall E4 and E5 have been eliminated
- E6 and E7 no longer require walls, only slope excavation



- E8, E9, E10, and E11 require retaining walls in addition to rock cut.

Hearing no questions regarding those adjustments, THK moved to the updated renderings to compare wall aesthetic treatments: Sculpted Shotcrete vs. CO Random Reveal.

The primary goal for this discussion was to reach consensus around wall treatments for Walls E2, E3, E8, E9, E10, and E11. THK started off by showing renderings for the Homestead Roundabout, to consider wall types along this corridor and discuss this early project as an example where Sculpted Shotcrete was chosen.



This example displayed how Shotcrete works well for landscape walls, blending in without the hard lines of an architectural wall.

THK then provided an example of how the blended shotcrete is also preferred when mesh is required to control natural rock fall and erosion (see next page). The project team noted that they were unable to find an example of a CO Random Reveal wall with mesh along this corridor or nearby. THK described that the mesh would stand out starkly against the lighter colored surface of CO Random Reveal and drape noticeably over the corners and straight lines of an architectural wall.



*Example of how mesh blends in with a Sculpted Shotcrete wall.*

THK proceeded to lead the TT through a comparison of Shotcrete vs. CO Random Reveal renderings for walls in question (*for all comparative renderings, see the meeting slides*).

Walls E2 and E3 are located along “unconsolidated” slopes, meaning that the edge of the road does not meet a rock wall, but a gentle slope of unconsolidated soil and vegetation (see below). At these wall sites, a concrete barrier along the road will be placed directly adjacent to the wall structure.

For these locations, the TT discussed the comparison of Sculpted Shotcrete vs. CO Random Reveal. Discussion comments included:

- CO Random Reveal walls, as architectural walls, tie into the existing infrastructure like the concrete barrier better than Shotcrete.
- These locations do not require a wall with varying height, so the straight lines and capped surface of CO Random Reveal will be aesthetically pleasing.
- The unconsolidated slope does not present a natural rock feature for sculpted Shotcrete to tie into.



**I-70 Floyd Hill to Veterans Memorial Tunnel**  
Retaining Wall E-2 (Before Improvements)



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





Moving along to walls E8, E9, E10, and E11, the TT discussed the comparison of Sculpted Shotcrete vs. CO Random Reveal.

- These locations require walls directly up against more consolidated slopes (more rock), with varying heights, and require mesh to control rock fall. The TT agreed these aspects favor Shotcrete over Random Reveal, for the ability to blend in with the natural rock face and mesh, as discussed previously. (See images below)
- The barrier is separated from the wall location, meaning the wall does not need to tie into this infrastructure aesthetically.
- Production differences: Sculpted Shotcrete requires less time and money to construct so, for longer walls, Shotcrete will be more efficient to build.



I-70 Floyd Hill to Veterans Memorial Tunnel  
Close up of Retaining Wall E-10 (After Improvements) - Shotcrete



- **TT Question:** Do the aesthetic finishes change the quality of the wall?
- **Project Team Response:** No, the wall structure is the same, just the aesthetic treatment varies.
- **TT Comment:** Shotcrete is favorable in locations where weathering may be an increased concern. Weathering on the straight lines and hard angles of CO Random Reveal would be much more noticeable over time. However, Shotcrete will just look more and more natural as weathering occurs.



- **TT Question:** will there be any difference in water seepage through the two aesthetic treatments?
- **Project Team Response:** No, drainage elements are the same.

**TT Agreement:** Through the discussion, the TT members present arrived at unanimous consensus that CO Random Reveal will work better for Walls E2 and E3, blending with the barrier and roadway infrastructure elements. On the other hand, Sculpted Shotcrete is preferable for Walls E8, E9, E10, and E11 as it will blend in better to existing consolidated rock features and the necessary mesh.

**ACTION:** Project Team to send email to full TT with summary of discussion and recommendation on wall aesthetics for further review to reach consensus/finalize the decision.

## 5. Introduce Roadway Integral Components

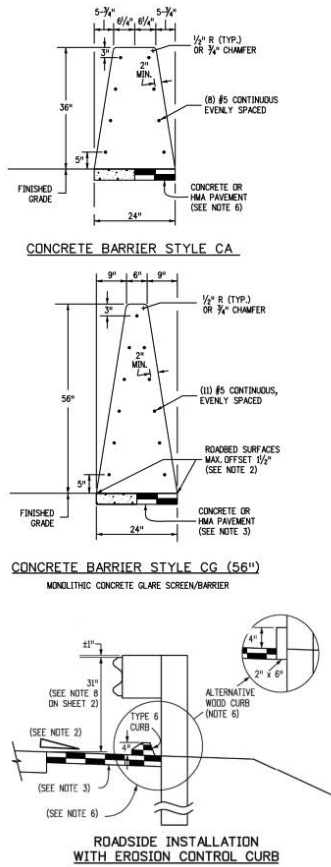
### East Section Drainage Elements & East Section Signing

The Project Team gave an overview on the standard barrier types that will be used in the East Section as well as introduced plans for erosion and embankment protection.

Barrier types include:

- Guardrails
- Concrete Barrier types- style CA and CG. CG is taller in order to block headlight glare from oncoming traffic.

Guardrails are considered a flexible barrier whereas Concrete barriers are rigid. Guardrails are preferable wherever possible as they better facilitate drainage and allow light through/increase visibility.



The standard Guardrail aesthetics include a Type 6 curb, a .25 in curb, to aid in water management and erosion protection. This curb will direct water to embankment protection drainage pipes, planned in three locations along the E Section (see below). This will ensure water drains along designated routes down to US40, preventing sheet flow onto the roadway.





Lastly, the Project Team introduced the high level overview of signage through the E Section. In terms of ground mounted signs, 22 will be removed and 23 new signs will be added, for a net increase of 1 sign. Plans indicate 1 new Sign Bridge and 1 to be replaced for a net increase of 1 sign. Of note, plans indicate 5 new cantilever signs, mainly for the new tolling lanes. The topic of signage will be fleshed out and discussed further in the next TT meeting.

## 6. Next Steps

**Scheduling:** Next meeting is scheduled for Dec. 16th in order to navigate the Christmas holidays. The first meeting of the new year would then be on Friday 13th of January.

**TT Agreement:** The revised TT meeting dates around the holidays work for all in attendance.



### **Summary of Action Items, Agreements, & Decisions:**

**ACTION:** Project Team to send email to full TT with summary of discussion and agreement on wall aesthetics to reach consensus/finalize the decision.

**TT Agreement:** Through the discussion, the TT arrived at unanimous consensus that CO Random Reveal will work better for Walls E2 and E3, blending with the barrier and roadway infrastructure elements. On the other hand, Sculpted Shotcrete is preferable for Walls E8, E9, E10, and E11 as it will blend in better to existing consolidated rock features and the necessary mesh.

**TT Agreement:** The revised TT meeting dates around the holidays work for all in attendance.

### **6. Attendees**

Mike Raber (Clear Creek Bicycle User Group); Margaret Bowes (I-70 Coalition); Brian Dabling, Liz Cramer (FHWA); John Curtis (Upper Clear Creek Watershed Association (SWEEP)); Jonathan Cain (Idaho Springs); Lisa Wolff (Floyd Hill POA); James Proctor (Bridge Enterprise/AECOM); Tracy Sakaguchi (CMCA); Kurt Kionka, Jeff Hampton, Tyler Brady, Badr Husini, Margo Mcinnis (CDOT, CTIO); Matt Aguirre (Atkins); Matt Hogan, Koichiro Shimomura (Kraemer); Tammy Hefron (HDR); Kevin Shanks (THK Associates); Daniel Estes, Cara Potter (CDR Associates).