



Floyd Hill Design - Technical Team

Meeting Summary

October 14, 2022, 10 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
- Measures of Success
- Design/Construction Decisions and CSS Strategy and Timeline
- Bridge Aesthetics and Greenway Master Plan
- Next TT Agenda & Next Steps

TT members confirmed the meeting agenda with no changes.

2. Project Updates

The Project Team reviewed high level updates from the preceding Project Leadership Team (PLT) meeting. The focus of that PLT meeting was to discuss the Public Information (PI) approach for the design innovation updates. The PLT agreed that the PI approach will focus on information dissemination rather than public involvement. This meeting also focused on the formation of a Project Information Leadership Team (PILT) which will lead the public information campaigns efforts. The PLT would like to convene the PILT by late 2022/early 2023, drawing from members of recent PILTs for associated projects such as the I-70 Westbound Peak Period Shoulder Lane (WBPPL/MEXL) project.

- **TT Question:** Can you share the list of PLT members with this group? As well as potential PILT members?
- **Project Team Response:** Yes.

ACTION: CDR to share list of PLT members and potential PILT members with the TT.



The Project Team also announced the Groundbreaking Event on October 19th. This will be a media event at top of Floyd Hill to celebrate the start of the I-70/Floyd Hill early projects including the Homestead Roundabout and the Genesee Wildlife Crossing. Construction of these early projects is slated to begin in November 2022.

- **TT Question:** Community members around the area are asking about how these early projects will impact traffic. What is the best way to best communicate these impacts?
 - **Project Team Response:** The PILT will be focused on the main I-70 Floyd Hill project, specifically. Information about the early projects can be found on the website.
- **TT Question:** Is there any information about these projects we can disseminate before Oct 19th?
 - **Project Team Response:** The website is the main source of information at this stage in the project. The Groundbreaking ceremony will also be covered by the media.

Hearing no other Project Updates, the TT transitioned to a discussion of the Measures of Success as well as the Strategy and Timeline for the TT moving forward.

3. Measures of Success & TT Strategy and Timeline

The Project Team reviewed Measures of Success as they exist currently (attached at end of document). The primary categories include: Safety, Mobility & Reliability, Implementability, Community, Recreation, Environment, Engineering Criteria & Aesthetic Guidance, Sustainability, Historic Context, Decision Making.

The Project Team outlined how the measures of success will continue to inform the TT process and decisions. As the TT discusses forthcoming design decisions, the group will not necessarily talk through each Measure of Success but rather focus on specific issue areas that relate to the Measures of Success. In this way, the matrix will serve as a guiding and organizational document.

- **TT Comment:** Can we have a printed version of the measures of success for our next meeting? It is difficult to view the whole thing on a computer screen.

ACTION: Print out Measures of Success Spreadsheet for next time



TT Agreement: The Measures of Success act as a guiding document, a lens through which the TT evaluates design decisions.

With this in mind, the TT discussed the TT Strategy and Schedule: What are the major milestones for the design and construction schedule in the coming months and where does the TT fit in?

The Project Team presented and talked through an overview of the construction schedule:

	FIR 30%	DOR 60%	FOR 90%	Estimated NTP Construction	Estimated Substantial Completion
East Section	Jul-22	Sep-22	Jan-23	May-23	Fall 2025
West Section	Oct-22	Feb-23	Aug-23	Oct-23	Fall 2026
Early Central		Feb-23	Aug-23	Oct-23	Fall 2024
Central	Mar-23	Sep-23	Mar-24	May-24	End 2027

- **TT Comment:** The project area map needs to be revised to include Black Hawk on the Exit 244 sign.
 - **Response:** Our team is working on editing the map image.
- **TT Comment:** Should we share some version of this schedule with the public so that they have an idea of the project schedule?
 - **Project Team Response:** That would be something for the PILT to discuss.

There was a general interest from TT members to assist with PILT and information dissemination.

With the overview in mind, the Project Team introduced the specific TT Schedule which outlines: 1) when issues will be introduced, 2) when they will be discussed, and 3) when they will be wrapped up. The goals for this schedule are to: clearly align TT discussions with the Construction/Design schedule, ensure the TT knows what issues are coming up and when they would ideally be finalized, ensure some predictability as we move on from the NEPA phase.



The schedule is in working draft form, The Project Team asked the TT to review the topics listed to see if there was anything missing.

ACTION: TT to review topics/issues incorporated into the Draft Schedule by next meeting.

The Project Team explained that this is intended to be a living document as the project progresses but also aims to create a sense of organization and predictability.

Regarding topics discussed previously like Emergency Response, Fire Mitigation, Operational/Maintenance Questions: these are not listed out separately but are contained within the Measures of Success. Those Measures of Success will guide all conversations around design issues, and should therefore be incorporated into each relevant decision.

- **Colorado Motor Carriers Association (CMCA) Comment:** One issue that has come up during previous construction projects is that it can be difficult to get through the project area with wide load trucks. There are often 11-12ft width restrictions while we have 14 ft loads on that roadway. Is there any way to incorporate that into the planning and communication? Could we plan ahead for communicating to wide load trucks where they can or cannot travel?
 - **Response:** We can add that to a list of issues to keep in mind for communication and construction.
- **TT Question:** Is a topical tracking sheet like this available for the early projects like the roundabout?
 - **Project Team Response:** Not at the moment. This TT's task is really about the design and construction of the main project.
 - **TT Response:** Ok, good to know. I will talk with CDOT about this at a different time.
- **TT Comment:** Another issue that comes to mind is that construction areas can be too tight to allow for safe enforcement. For example, monitoring and enforcement at chain stations.
 - **Response:** There are no chain stations within the project area, but this is an important consideration, ensuring space not only for emergency access but for routine enforcement.



- **TT Question:** When you put together the table, how were SWEEP and ALIVE integrated?
 - **Response:** The Environmental Measures of Success will be integrated into all topics. Topics within certain sections like the Greenway will lean heavily on ideas discussed by SWEEP and ALIVE. These groups can also continue to meet as ITFs when needed.
 - **Response:** Additionally, the Design decisions have to reach a certain level of specificity before the TT or specific ITFs could have a discussion of the exact impacts. We will keep this in mind as designs advance and continue the conversations that have started in the previous SWEEP and ALIVE conversations.
- **TT Comment:** The schedule could specifically include touchpoints to review the Measures of Success toward the completion of each design stage for each section.

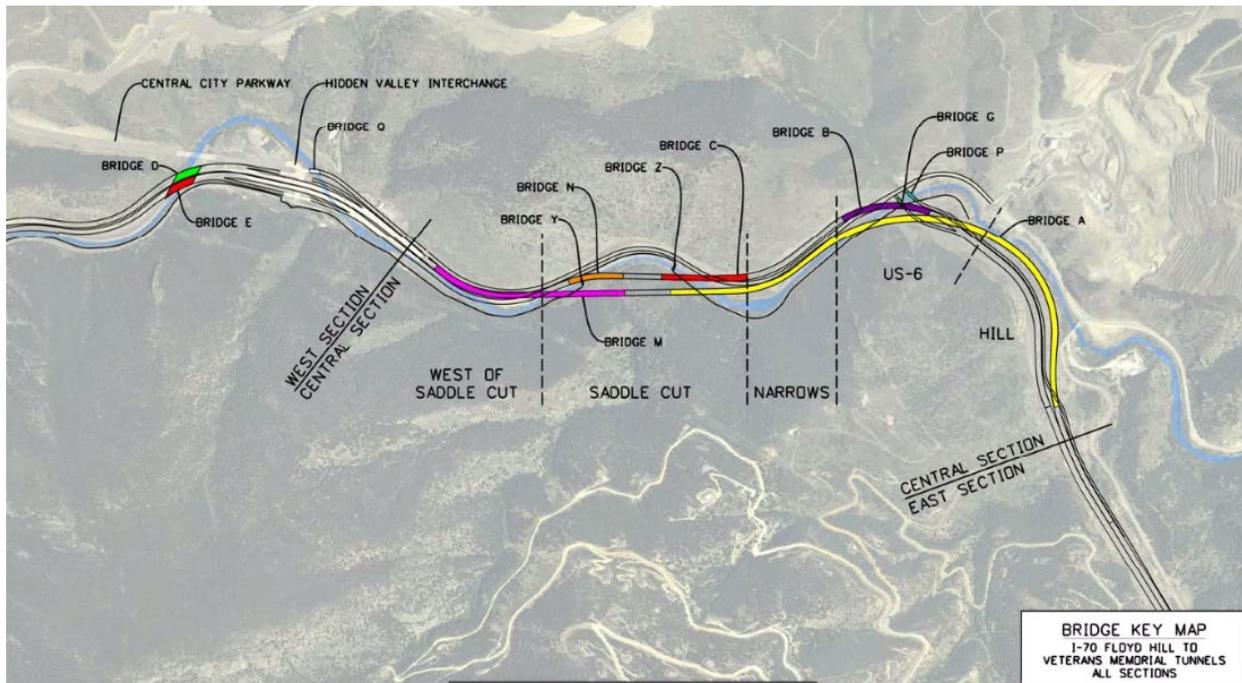
ACTION: Update the topical schedule to include dates toward the completion of each design stage for each section for the TT to review the decisions via Measures of Success.

4. Bridge Aesthetics & Greenway Master Plan

HDR reviewed Bridge Aesthetics and presented some draft renderings to discuss with the group.

The presentation aimed to get the conversation around bridges started by talking about three things: 1) where the bridges are, 2) aesthetics and engineering guidelines, 3) a few preliminary renderings.

An overview of all bridges within the current project design:



- The bridges are named by letters, which were used in the original EA
- In addition to bridges, the designs incorporate many other structures like retaining walls, however this preliminary discussion focused specifically on bridges
- The most prominent bridge structure is WB Bridge A (yellow) which runs from the Hill section all the way through US-6 interchange, through the Narrows, into the Saddle Cut
- Bridge M (pink) picks up on the other side of the Saddle Cut on WB I-70 and touches down before the Hidden Valley interchange
- Going EB, Bridge N (orange) carries I-70 over creek to Saddle Cut
- Bridge C (red) picks up from the saddle cut to the other side of the creek
- Bridge B (purple) carries EB over US 6 interchange
- Bridge D (green) and E (red) are the only bridge structures in the West Section, and carry the highway over the creek
- All other bridges on peripheral



- Bridge Q is just the rebuilding of an existing bridge (a.k.a. Doghouse bridge) at the Hidden Valley Interchange
- Bridges Y and Z are pedestrian bridges over the creek
- Bridge P and G are incorporated into the US-6 interchange area

Certain areas present more challenges than other and are still under consideration, for example:

- How to weave the WB On ramp under Bridge A
- Maneuvering many factors at the US 6 interchange
- Bridge M West of Saddle Cut incorporates a particularly long span length

These difficult areas may deviate from the other aesthetic elements throughout the project area but are still within the Aesthetic Guidelines for the I-70 Mountain Corridor. The engineers and designers will keep things as consistent as possible but, for example, longer span distances will require larger piers.

The presentation then reviewed some images of Bridge design criteria, reminding the group of key goals like ensuring shadows move and light reaches vegetation underneath bridge structures.



MOUNTAIN MINERAL BELT design segment

03 | STRUCTURES THAT SUPPORT TRANSPORTATION FACILITIES

Visual design continuity should exist throughout the corridor, linking existing and new transportation facility structures. Bridges should be of similar proportion and structural components should be designed using like materials and finishes.

Each retaining wall should be constructed of single material with a visually simple texture that renders a shadow pattern on the surface. Retaining walls that include decorative, pictorial patterns, and multiple materials, shapes, and styles create visual confusion and should not be used in the I-70 Mountain Corridor.

BRIDGE STRUCTURES

Design Strategies to Be Employed

- Utilize closed end abutment designs which have a minimum vertical height of 8' as described in the [Design Criteria](#).
- Simple and elegant bridge design is more appropriate than complex shapes and geometries. The elegant design provides an aesthetic contrast to the complexity of the surrounding mountain landscape (A, D).
- Create a clean, uncluttered appearance below the bridge and eliminate the exposed support pier face condition. The Aesthetic Guidance recommends a box girder design.
- Incorporate thoughtful and deliberate shadow patterns on super structures and abutments. The overhang of the bridge deck should be equal to 2/3 the height of the girder to produce the desired shadow on the superstructure (B, D).
- Treat the color of bridges and other structures in a manner consistent with this segment's color palette. Fussy and jarring color schemes are inappropriate for this segment. See section 06 | Color Selection and Consistency for additional details and color palette.
- Consider attached metal rails or 24"-high concrete wall with attached metal rail rather than solid concrete barrier for bridge rails (C, D).
- Slope paving is not allowed in this segment as described in the [Design Criteria](#). The intent is to extend the existing landscape underneath bridges (D). See Section 07 | Earthwork, Embankment, and Restoration of Existing Disturbance and Section 09 | Landscape Planting, Revegetation, and Topsoil Management for strategies to accomplish this.
- Use a consistent material for approach rail and bridge rails. Ensure the point of attachment between the two does not sacrifice the appearance of continuity (E).
- Utilize a concrete wall face with a simple vertical or horizontal texture pattern on bridge abutments.
- Plant trees on the bridge embankment slope to anchor the ends of the bridge and connect the span to the embankment (D).
- Avoid disturbing the natural landscape below bridges except in places where a pier is constructed.
- Avoid locating piers in a stream or river where scour could occur.



A | Bridges with simple forms, color, and shadow patterns exhibit an aesthetic contrast to the complexity of the natural landscape.



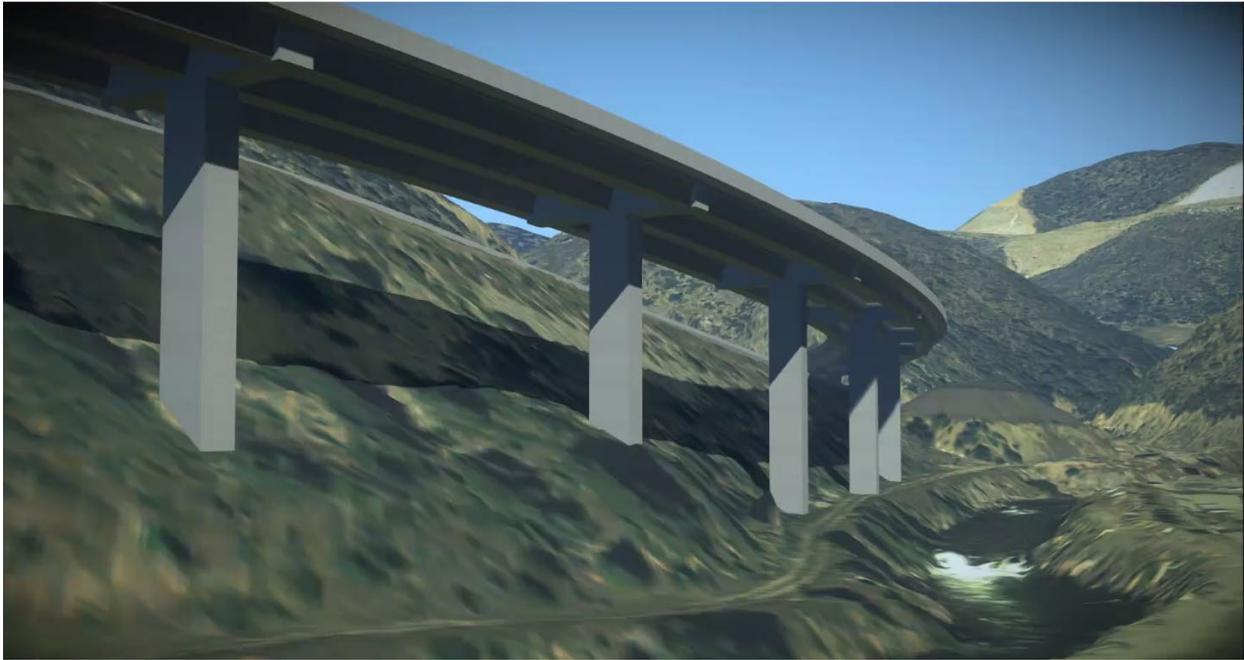
B | Deep overhangs and shadow lines add visual depth and give the bridge superstructure a thin appearance.



D | Open pedestrian connection, transparent bridge rail, veri abutment, deep shadow line, and landscape planting strategie

With those criteria in mind, the presentation displayed two draft Lumen models:

- Bridge A WB Hill Section: (140ft highest point)



- WB Bridge M, West of Saddle Cut

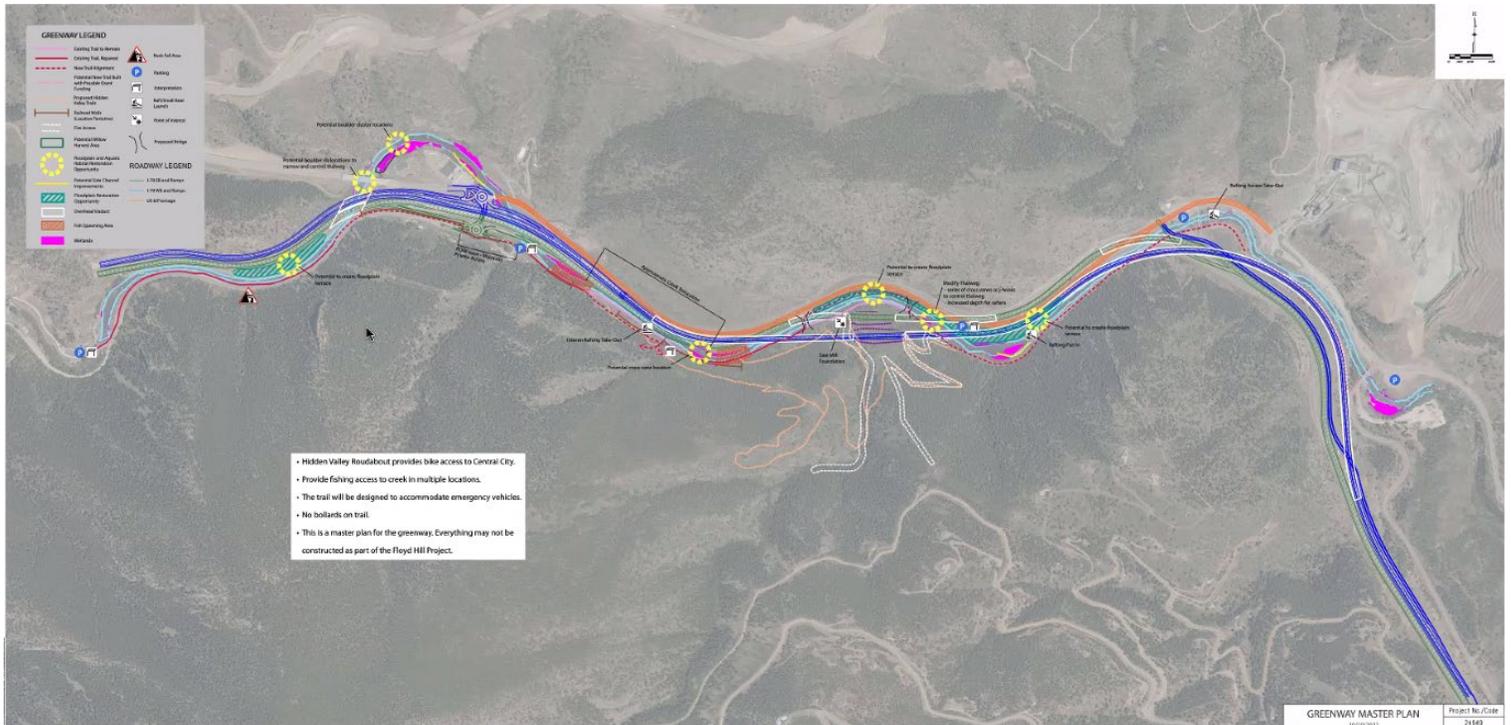


TT Agreement: The TT is supportive of the direction of bridge design development.



Greenway Master Plan

THK Associates, introduced the Greenway Master Plan. The Plan is designed as a summary of what the Project Team has heard thus far about goals for the Greenway. Everything in the plan may not be incorporated into the Floyd Hill Project, but paints a complete picture for the goals discussed for the Greenway.



A few elements of note:

- Solid red line vs. dotted = where the existing trail will be resurfaces vs. new trail building
- Yellow circles = Habitat improvement areas
- Green hatched areas = new space for floodplain restoration areas
- Bright purple areas = wetland habitat areas
- ID locations for interpretive signage

Detail of Greenway Master Plan:



Key features of the trail in general:

- Hidden Valley Roudabout provides bike access to Central City.
- Provide fishing access to creek in multiple locations.
- The trail will be designed to accommodate emergency vehicles.
- No bollards on trail.
- This is a master plan for the greenway. Everything may not be constructed as part of the Floyd Hill Project.

- **TT Question:** Should this map incorporate/indicate relative height of trail/roadway to approximate sound impacts?
 - **Response:** We will be pushing to keep the trail as low as we can get it, to keep it alongside the creek but we could keep that in mind as more of the design specifics take shape.
- **TT Question:** Where are the walls along the trail/road and what will they look like?



- **Project Team Response:** We have not incorporated those into this map yet, but will aim to minimize wall structures and keep the materials as natural as possible, matching surrounding rock.
- **Project Team Comment:** Looking at this Master Plan alongside the topical TT Schedule, this is just a starting point. We will revisit and continue to refine this plan as the designs progress.

TT Agreement: The TT is supportive of the Greenway Master Plan as a starting point for further discussion.

- **Trout Unlimited:** We are planning to discuss formal river access trails on Monday in our internal meeting as well as determining what kinds of mitigation are most needed. Those will be valuable updates to fold into this conversation.

5. Next Steps

The Project Team thanked the TT for their participation and reminded the group that the group will resume regular meeting times every other Friday. The anticipated list of topics for the next TT meeting are outlined in the Topical Schedule and include:

- **Wrapping up:** Overview of Bridge Aesthetics, Pier shapes, and Abutments
- **Discussing:** roadway integral components for the East Section, Bridge M, WB Bridge at US 6, and Creek Bridge Alternatives
- **Introducing:** Creek Access, Recreational Access, and Pedestrian Bridges

Summary of Action Items and TT Agreements:

ACTION: CDR to share list of PLT members and potential PILT members with the TT.

ACTION: CDR to print out Measures of Success Spreadsheet for next meeting

ACTION: TT to review topics/issues incorporated into the Draft Schedule by next meeting.

ACTION: Update the topical schedule to include dates toward the completion of each design stage for each section for the TT to review the decisions via Measures of Success.



TT Agreement: The Measures of Success act as a guiding document, a lens through which the TT judges design decisions.

TT Agreement: The TT is supportive of the direction of bridge design development.

TT Agreement: The TT is supportive of the Greenway Master Plan as a solid foundation for further discussion.

6. Attendees

Cindy Neely, Amy Saxton (Clear Creek County); Lisa Wolff (Floyd Hill POA); Mike Raber (Clear Creek Bicycle User Group); Lynnette Hailey (City of Black Hawk); Brian Dabling (FHWA); Sam Hoover (Central City); JoAnn Sorenson (Upper Clear Creek Watershed Association); Dale Drake (Clear Creek Rafting Company); Steve Durian (Jefferson County); Steve Cook (DRCOG); James Proctor (AECOM/Bridge Enterprise); Tracy Sakaguchi (CMCA); Gary Frey, Ashley Giles (Trout Unlimited); Kurt Kionka, Jeff Hampton, Tyler Brady, John Gregory, Margo Mcinnis, Badr Husini (CDOT, CTIO); Anthony Pisano, Matt Aguirre, Alan Carter (Atkins); Matt Hogan, Koichiro Shimomura, Brandon Simao, Austin Knapp, Tim Maloney (Kraemer); Tammy Hefron (HDR); Mandy Whorton (Peak Consulting Group); Kevin Shanks (THK Associates); Jonathan Bartsch, Daniel Estes, Cara Potter (CDR Associates).