



Floyd Hill Design - Technical Team

Meeting Summary

April 29, 2022, 9 AM to 12 PM

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

1. Introductions, Meeting Purpose and Project Updates

CDR Associates welcomed the Technical Team (TT) members, most of whom were present in person with some participating virtually. Participants introduced themselves and stated their organization. Attendees are listed at the end of the meeting summary.

The group was reminded that the Technical Team will meet every other Friday, with meeting materials being distributed on the alternate Fridays. The project is in the Preliminary Design phase, therefore the discussion should remain focused on major decisions related to applying the Measures of Success developed by the TT to the Major Alignment Innovations (see Section 4, below) to stay on track for a Decision Document, slated to be finalized in the fall of 2022. It is anticipated that some construction will start in summer 2023.

Project Kickoff Meeting Review: CDOT provided an update on the Floyd Hill Project Kickoff Meeting that occurred on April 19 and 20, 2022 and was attended by several Project Leadership Team (PLT) members. CDOT described the relationship between the project's Design Working Groups, which are charged with moving forward the design aspects of the project, and the TT. The Design Working Groups focus on the technical details of the project. When issues surface where community and stakeholder input is needed, these issues will be brought to the TT and/or an Issue Task Force (ITF) will be formed. The Design Work Groups will regularly update the TT on issues for discussion and evaluation.

A TT member who attended the Project Kickoff Meeting noted that the Design Working Groups are what “make the CMGC process.” They help translate the input from the CSS process into design decisions that can be implemented and allow for collaborative problem solving. The TT supports decision-making through the evaluation process via evaluation matrices. While CDOT and FHWA are the final decision makers, CDOT emphasized this is a collaborative process and the TT is integral to decision making.

2. Discuss and Refine TT Charter

CDR Associates presented the TT Charter document for editing and commenting, and facilitated the discussion. The TT had been tasked with providing feedback on the Charter at the previous meeting and that some feedback had been received. CDR emphasized the importance of ensuring the group was supportive of the Charter before moving forward.



TT Comment: Idaho Springs is generally supportive of the Charter as written, but wants to ensure new TT members have an opportunity to review the language and content in detail before the Charter is finalized.

Suggested Charter Updates: The following updates were suggested by TT members and are reflected in the latest draft of the Charter, attached.

- Purpose of the TT: Should state the TT “brings together an array of perspectives and expertise,” emphasizing collaboration.
- Purpose of the TT: Should mention “prioritization” of context specific issues as part of the TT role.
- Context Statement: Appears to prioritize travelers from Denver over Floyd Hill area residents. This section should be rewritten to reflect the importance of residents and balance these interests of non-residents and residents.
 - TT suggestion: avoid prioritizing one user group over another – both travelers and residents are important.
- Context Statement: Should include mention of Clear Creek and the importance of the watershed.
- TT Role: Should include mention of TT members being charged with sharing information to and from their constituents and colleagues.
- Include mention of CDOT’s use of chemicals, fire protection, and future maintenance.
 - Project Team suggestion: include “sustainability” and “resiliency” to address the issues in the previous bullet.

Additional Discussion: Most of the issues being suggested for the Charter were also captured in the CSS Considerations (Evaluation Criteria and Measures of Success). Many CSS materials related to Floyd Hill had been developed and evaluated throughout the previous years. Clear Creek County emphasized the challenge and importance for the TT to stay disciplined and focused on the decisions at hand, which currently are evaluating the Preferred Alternative against the Major Alignment Innovations through the Evaluation Criteria and Measures of Success.

- **TT Decision:** Important topics that arise but are not relevant to the current decisions will be documented in a “parking lot” to be tracked and addressed at a later time. Currently, the parking lot is housed in the [Meeting Briefing](#) sheet that is distributed to the TT between meetings.



3. CSS Flow Chart: Evaluation Criteria & Measures of Success

Clear Creek County provided an overview of the Issue Task Force (ITF) that met to review and implement the TT's suggested changes to the CSS Considerations Flowchart. The group went through the red-lined version of the Flowchart and worked to ensure all items were captured and updates were consistent with previous TT discussion. FHWA said the ITF added content to include the construction period in the Evaluation Criteria and Measures of Success. Additional updates were captured in the flowchart, which is included as a separate attachment.

CDR asked CDOT and the Project Team if the updates to the Measures of Success make sense from a design perspective and can translate into metrics where applicable, to which there was general agreement. Atkins noted that when using the evaluation matrices, Measures of Success applied will be those that are differentiators on the particular issue at hand – the full list of Measures of Success will be taken forward as commitment tracking items. A TT member noted that if a design innovation changes the relationship between the highway and Clear Creek, then it is likely a differentiator. If a TT member thinks something should be a differentiator then it can easily be added.

CDOT asked the group if the current CSS Evaluation Criteria and Measures of Success could be considered close to a final draft, to which there was general agreement.

- **TT Decision:** TT to move forward with the CSS Considerations with the opportunity to provide additional feedback.
- **TT Action:** Provide any additional comments or suggestions to the Evaluation Questions and Measures of Success before the Friday, May 13 meeting.

4. Major Alignment Innovations

Kraemer and Atkins presented on the Major Alignment Innovations. These are innovations proposed for the East, Central, and West Sections by the Construction (Kraemer) and Design (Atkins) teams to improve the Preferred Alternative alignment put forth in the [Environmental Assessment \(EA\)](#). The Central and West sections are the main focus in the immediate term. The full slide deck from the presentation, including graphic depictions and video renderings, has been distributed to the TT as a **separate attachment**.

Section Limits:

- EAST Section: Beaver Brook to US 6 Intersection
- CENTRAL Section: Hidden Valley to US 6 Off-ramp
- WEST Section: VMT to CC Parkway (with restriping to Idaho Springs – Exit 241)



- **TT Question:** Is the intersection between US 40 and US 6 part of the Central Section? The Floyd Hill HOA has brought this up as a problematic area.
 - **Response:** This intersection is not part of the project at this time and there are no planned improvements to that location.

Major Alignment Innovations Central Section:

The most significant proposed innovations are in the Central Section. Kraemer shared the following depictions of the Preferred Alternative to remind the TT of what was proposed in the EA. The reason innovations to the Preferred Alternative are being considered is to help save time, decrease environmental impact, and save money, along with other potential benefits. If the group doesn't agree on a design innovation option, the Preferred Alternative will be advanced.

Preferred Alternative

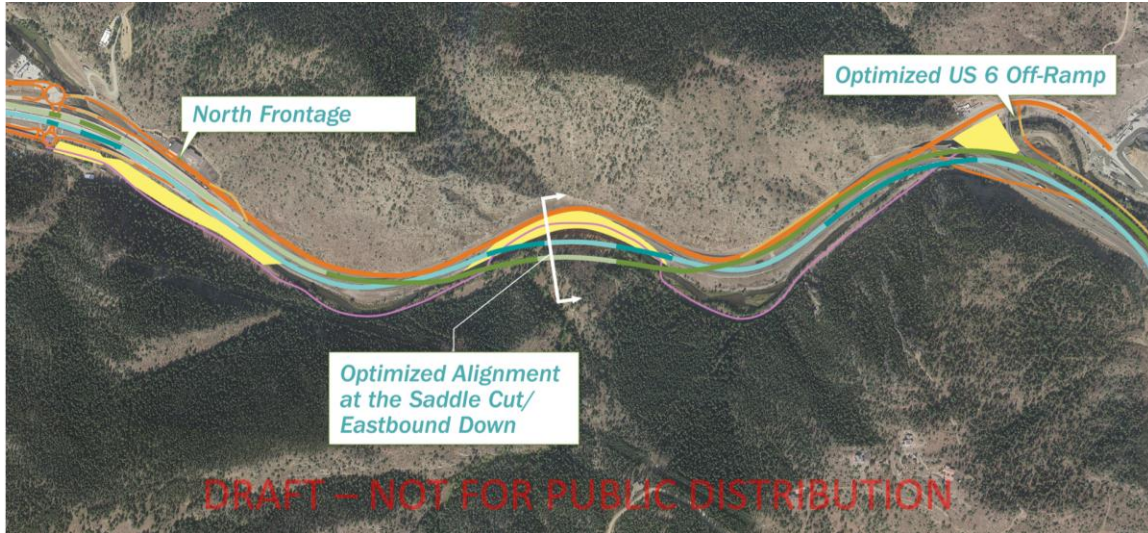


The Preferred Alternative features twin structures where both EB and WB are parallel and at the same elevation. At the bottom of FH, the alignment goes through the Saddle



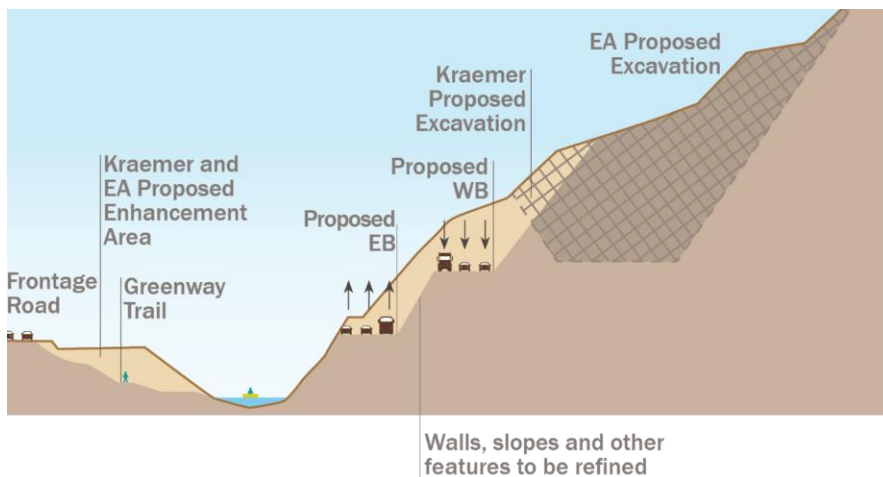
Cut area (sometimes referred to as “the Knob”) and transitions to on-grade at the bridge near Sawmill Gulch.

Major Innovations: Option A - Braided Bridges



- Legend
- Blue: EB
 - Green: WB
 - Orange: Frontage Road/US 6
 - Pink: Existing Trail
 - Yellow: Creek Enhancement Opportunities

Option A- Braided Bridges Cross Section



On Option A - Braided Bridges, EB and WB separate, with the vertical height of the WB alignment lowering and connecting to Central City Parkway. EB slides under WB and crosses over the saddle cut at a lower elevation than proposed in the Preferred



Alternative then returns to its alignment. The crosshatching in the image above depicts the reduction in rock cut that The Project Team is proposing for this option and the different elevations of the EB and WB lanes.

It was noted that Option A - Braided Bridges:

- Saves 2800 lineal feet of bridge when keeping the EB at grade alignment
- Supports wildlife connectivity
- Adds additional opportunity for creek enhancements.

Clear Creek County emphasized the importance of ensuring recreational activities and fire access. In a 2018 study, Clear Creek County plotted and planned for a fire access road in the area.

- **TT Question:** How much are EB and WB being lowered in elevation for this option?
 - **Response:** The Project Team isn't sure of the specific elevation yet, but can report back to the TT.
- **TT Question:** Will you be altering the Clear Creek channel?
 - **Response:** In the Central Section, the Preferred Alternative does not move the creek; the West Section does move the creek.
- **TT Question:** Will this information be distributed?
 - **Response:** Yes
 - **ACTION:** CDR to distribute slides post-meeting
- **TT Question:** The existing bikeway comes out on the existing bridge and ramp at the I-70/US 6 interchange. What happens to this bike lane with the Option A - Braided Bridges innovation?
 - **Response:** The trail goes under the new bridge, but it will continue on in its current alignment and go under the new off ramp at the I-70/US 6 interchange.
- **TT Question:** Would this innovation lead to significant cost savings?
 - **Response:** Potentially, yes.
- **TT Question:** Does Option A go through the CDOT maintenance yard?
 - **Response:** Yes, the yard would get smaller.



Option A - Braided Bridges (snapshot from video rendering):



Option A: Braided Bridges - Eastbound look at the Central Section (snapshot from video rendering):

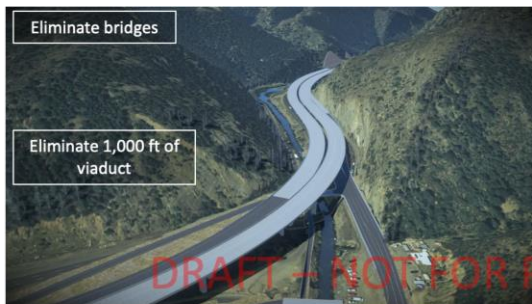
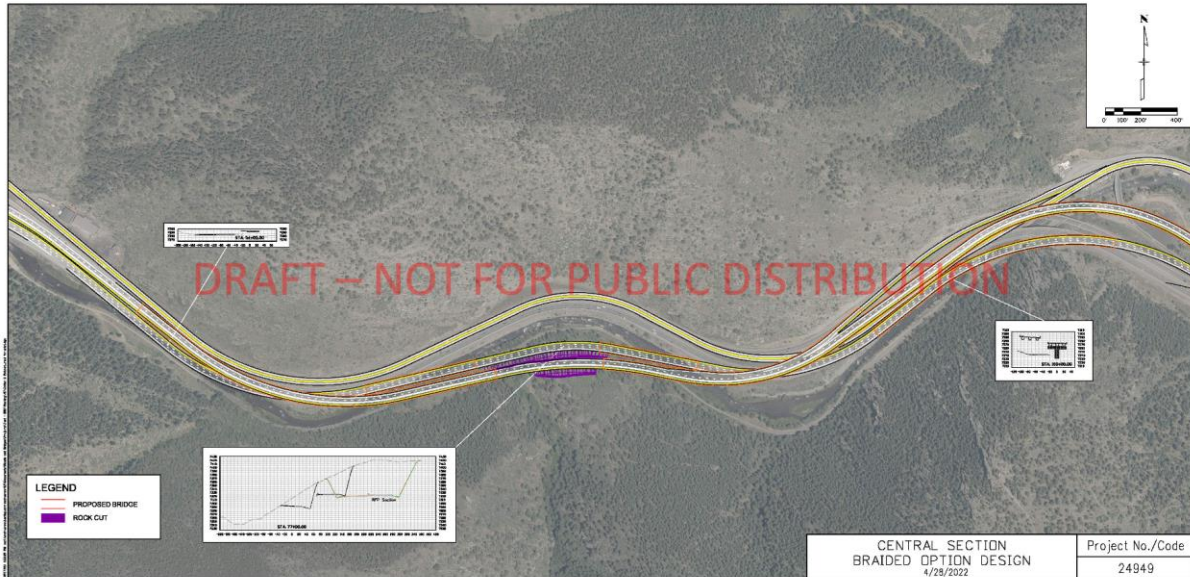


The Project Team noted Option A - Braided Bridges provides another connection to the Greenway complex, with the trail placed on both sides of the Creek (as shown above). The Kraemer team said benches would still need to be provided for rockfall and long term rockfall mitigation would be required. It was also noted that Option A - Braided Bridges creates a scenario where all roadways view the canyon from a different angle – a potential benefit.

Major Innovations: Option B - Eastbound Down



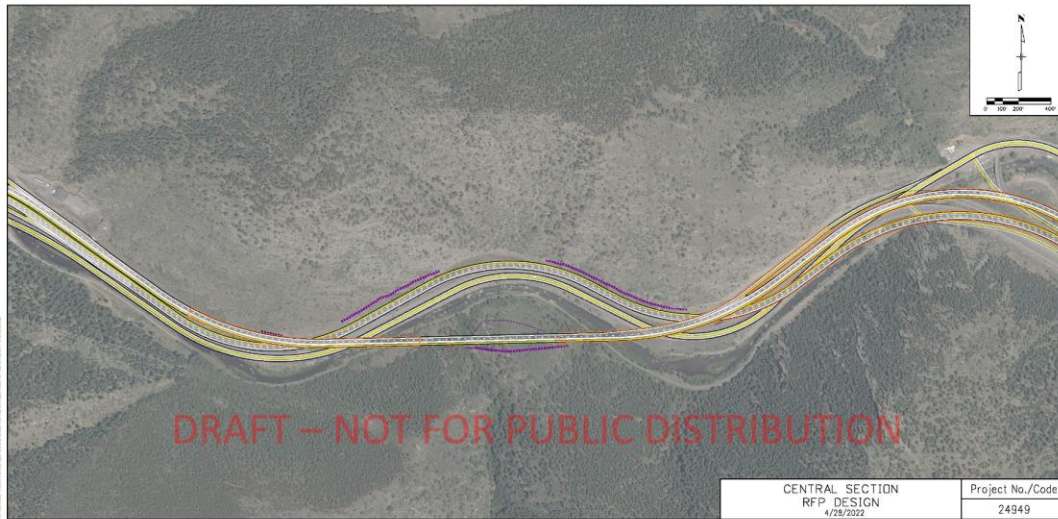
Kraemer and Atkins presented on the proposed Atkins Innovation in comparison to the Preferred Alternative. The innovation may reduce the amount of structure, rock cut, and maintenance. For this option, EB would stay in the canyon; WB would remain unchanged.



Preferred alternative



Atkins innovation



- **TT Question:** What is the 100-year flood level? Two Bears flooded in 2019.
 - **Response (Atkins):** The trail might be a 10-year flood level design. CDOT will verify what the County criteria is for the trail.

Option B - Eastbound Down. Looking West





Atkins said the options for this section include a) keeping the EB and WB lanes next to each other at elevation or b) WB remains on the Preferred Alternative alignment, while EB moves to the canyon and is removed from viaduct structure.

Clear Creek Rafting advocated for improvements to the Creek, with the caveat that maintaining the rapids is important for the rafting tourism industry. Whether there will be negative impacts will depend on the specific section and types of changes to the Creek. Atkins has a whitewater engineer on the Project Team who would be tasked with analyzing these types of impacts.

- **TT Question:** What is the stability of the area?
 - **Response:** There is an active landslide nearby, closer to US 6 and further to the east of the innovation area. The team is very aware of the active landslide and will need to monitor it going forward. However, it does not impact the Central Section.
- **ACTION:** The TT requested the following items to assist in their understanding and analysis of the innovations:
 - Visuals
 - Fly-by animations
 - Consistency in terminology
 - Labels on slides
 - Compass, Labeling and scales need to be added
 - Plan sheet and cross sections

The Project Team shared the following slides describing the benefits and drawbacks of Major Alignment Innovations:



Major Alignment Innovations

Central Section: Option A – Eastbound weaves below WB, Crosses to South Side of Creek, North Frontage Road

Benefits

- Reduces structure needs
- Reduces rock cuts on North side
- Reduced rock cuts on saddle cut
- Opportunity for stream restoration
- Maintain creek access and improvement opportunities
- Preserves greenway access
- Raised profile from creek reduces noise at creek level
- Maintains access to CC Open Space

Drawbacks

- EB and WB at different elevations reducing emergency access on viaducts



Major Alignment Innovations

Central Section: Option B – Eastbound weaves below WB, stays north of creek, Frontage Road south of EB on north side of creek

Benefits

- Reduces structure needs
- Opportunity for stream restoration
- Maintains access to CC open space
- Reduces rock cut required at saddle cut

Drawbacks

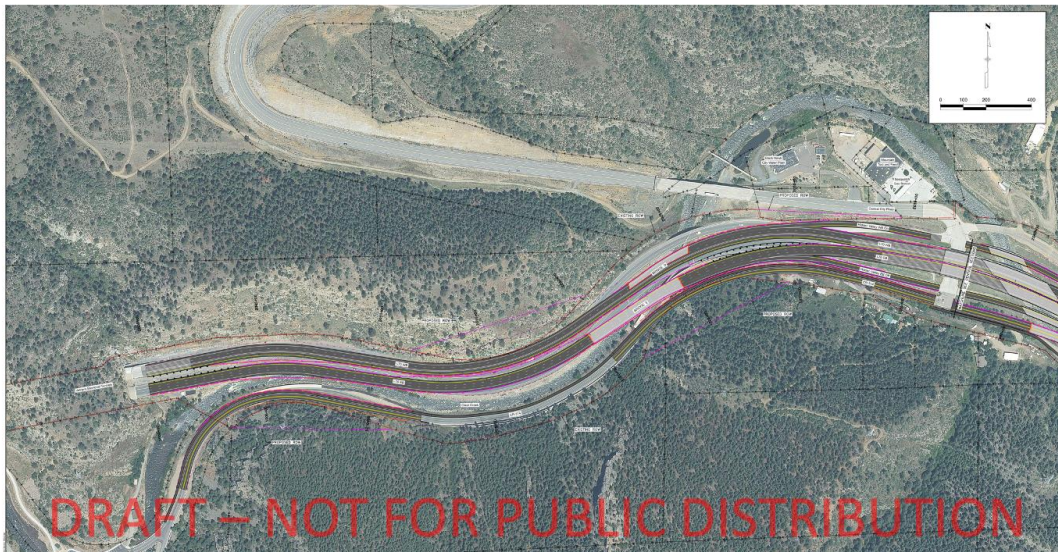
- Increased rock excavation north of creek
- EB at same level as frontage road increasing noise
- EB and WB at different elevations reducing emergency access on viaducts

The Project Team added that these ideas were submitted through the proposal process, and that there are opportunities for hybrid options that would combine elements from different innovations.

Major Alignment Innovations: West Section

Atkins and Kraemer presented the Major Alignment Innovations for the West Section, noting these are generally less significant changes than the Central Section. They said the frontage road has a major utility (power and communication line) that would need to be relocated in advance for the Preferred Alternative and there would be difficult rock cuts on both the north and south sides.

West Section Preferred Alternative:





West Section Innovation:



- **TT Question:** Does this section need to match up with the Central Section innovations?
 - **Response:** No, these are independent. The West Section and Central Section innovations can be mixed and matched. Hidden Valley is the one constraint.

The Project Team shared the following benefits and challenges for the West Section Innovations and noted that more discussion would take place at subsequent meetings.



Major Alignment Innovations

West Section: Option A – All Rock Cut moved to North

Benefits

- Eliminates need to rock excavation on CR314
- Eliminates need for utility relocation on CR314
- Eliminates reconstruction of CR314
- Opportunity to create riparian bench on north side of creek

Drawbacks

- Large increase to overall Rock excavation on the North
- Possible issues with Xcel transmission tower on North



Major Alignment Innovations

West Section: Option B – Optimized South and North Rock Cuts

Benefits

- Reduces rock excavation on CR314
- Reduces utility relocation on CR314
- Reduces reconstruction of CR314

Drawbacks

- Increase to overall Rock excavation on the North

4. Next Steps, TT #3 Agenda Topics

CDR closed the meeting by reviewing the action items and looking ahead to the next meeting’s agenda. The next meeting will include making any changes to the Charter and CSS Considerations, reviewing specific elements of the Major Alignment Innovations, and introducing the evaluation process and matrix to compare the innovations to the Preferred Alternative.

- **ACTION:** CDR to update Charter based on additional PLT input, will distribute back to group for further review and confirmation at the next TT meeting on May 13.
- **ACTION:** CDR to update CSS Considerations based on additional PLT input, will distribute back to group for further review and eventual confirmation on May 13.
- **ACTION:** PMT to update Major Alignment Innovations slides with 1) Graphics and maps to include labels, legends, and compass where applicable; 2) Updated terminology for the innovations (for clarity and so as to not imply preference between "A" vs. "B" or Atkins vs. Kraemer); 3) Plan sheet and cross sections

8. Attendees

Cindy Neely, Amy Saxton (Clear Creek County); Bill Coffin (Saddleback POA), Lisa Wolff, Will Cassidy (Floyd Hill POA); Jessica North (Clear Creek School District); Mike Raber (Clear Creek Bicycle User Group); Margaret Bowes (I-70 Coalition); Melinda Urban (FHWA); John Curtis, Jonathan Cain (Idaho Springs); Dale Drake (Clear Creek Rafting); JoAnn Sorensen (UCCWA); Sam Hoover (Central City); James Proctor (Bridge & Tunnel Enterprise); Steve Cook (DRCOG); Tracy Sakaguchi (CMCA); Vanessa Halladay, Jeff Hampton, Tyler Brady (CDOT); Anthony Pisano, Matt Aguirre, Alan Carter (Atkins); Jeremy Johannesen (McNary Bergeron & Associates); Koichiro Shimomura, Brandon Simao, Austin Knapp, Tim Maloney (Kraemer); Tammy Hefron (HDR); Mandy Whorton (Peak Consulting Group); Jonathan Bartsch, Taber Ward, Daniel Estes (CDR Associates)



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Floyd Hill Design // CMGC Technical Team

April 29, 2022

- 1. Introductions, Meeting Purpose and Project Updates**
- 2. Finalize TT Charter**
- 3. CSS Flow Chart ITF**
- 4. Break**
- 5. Introduce Major Alignment Innovations**
- 6. Next Steps, TT #3 Agenda Topics**



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Meeting Agenda

March 14, 2022



Finalize TT Charter



Technical Team Chartering Agreement I-70 Mountain Corridor

I-70 FLOYD HILL PROJECT DESIGN

1. Purpose of the I-70 Mountain Corridor – Floyd Hill Technical Team

The Technical Team (TT) members help define the specific context of the segments and then identify the specific critical issues (technical, environmental and social/economic) in a segment.

2. Context Statement, Core Values, Critical Success Factors and Desired Outcomes for the I-70 Floyd Hill Project Design:

Objective: Confirm TT Charter including membership



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BREAK

April 29, 2022



Major Alignment Innovations

Objectives:

- TT understands the major alignment innovations that affect the NEPA document
- Determine what measures of success are applicable to evaluating major alignment innovations



Next Steps & TT Agenda Topics

Next Steps and Actions

- Review Action Items
- Discuss next TT agenda items