

# Meeting Notes



## I-70 Floyd Hill to Veterans Memorial Tunnels

**Date: October 3, 2018**

**Location: CDOT – Golden**

### **Technical Team – Meeting #14**

[Ctrl +Click HERE or paste link below into your browser for Shared Floyd Hill Project GDrive](#)

<https://drive.google.com/open?id=0B5g5iHKBVK6OR2tpb1J0OUNkNU0>

#### **Introductions and Overview**

Taber Ward welcomed the group and reviewed the agenda. The difference between the terms ‘accident’ and ‘crashes’ was highlighted. The appropriate terminology is ‘crashes’ as only 6% crashes are caused by vehicle malfunction/weather while the term ‘accident’ minimizes human error and implies that there is no fault. Self-introductions followed including multiple references to the former Roman gladiator, Spartacus.

#### **Other Project Efforts**

**Bridge Deck Repair** – Project completed for the season.

**Colorado Blvd** - Reconstruction is complete and the public has responded positively.

**Greenway** - Hosting a large event entitled “Feast on the Creek” on October 7.

**Smart 70/Road X** - A PLT meeting was held that discussed the project’s security issues among other topics. A security plan is being developed. At the October 2018 Transportation Summit, the keynote speaker from Ford Automotive mentioned that they are now a partner on the Smart 70 project.

#### **Follow-up**

Mandy Whorton noted that the wetland at the top of Floyd Hill, previously discussed, does not qualify as a fen (ancient wetland fed by surface and groundwater); it remains an important wetland. It is likely that it has been developing for hundreds of years and is “on its way to being a fen.” All the wetlands have been delineated in the study area. The wetland delineation process and conclusions will be reviewed at the October 25th SWEEP meeting.

**ACTION: Provide a wetland data collection process and conclusion update at the October 25 SWEEP meeting; distribute the wetland delineation report to Clear Creek County Planning staff when finalized.**

### **Floyd Hill Project Comments Summary from WB PPSL Public Meeting**

Anthony provided an overview of the input received about the Floyd Hill project at the WB PPSL public meeting, which was September 13. Input included a desire to see improvements sooner than later and questions about how long the project will take to construct. Some were concerned that shoulder widths would be reduced, similar to the WB PPSL project, but the design includes typical sections for the mountain corridor permanent infrastructure detailed in the ROD.

### **Project Delivery Update**

Steve Harelson outlined the project delivery approach and rationale. A delivery selection panel met to evaluate the various project delivery approaches and recommend a preferred approach. A selection matrix was used to organize and evaluate the options. Based on the evaluation, a Construction Manager General Contractor (CMGC) delivery method was recommended. The recommendation was made because CMGC provides CDOT more control of the design and risks with intermediate milestone evaluation measures built in, encourages innovation and best practices, provides the opportunity to fulfill the CSS commitment, and an ability to solicit contractor input early. Steve summarized the approach by noting that the CMGC approach allows the contractor to advise on the process and constructability issues but not control the project design.

The CMGC delivery approach was detailed further including the independent design and financial review aspect that ensures the greatest project benefits. The CMGC approach was used successfully on the Twin Tunnels project and less successfully on the EB PPSL, highlighting that the delivery approach doesn't solve all potential construction issues. The CDOT Chief Engineer must still approve the recommendation, which is contingent on funding; funding for the project is included in both Proposition 110 and 109. If one or both of the measures passes, procurement of the CMGC (and final design) will likely occur in January of 2019.

**Q:** How far do you go in terms of design with a CMGC contract? **A:** 100% construction plans.

**Q:** CMGC - what level of design do you provide the CMGC contractor **A:** The CMGC engages from about 20/30% design through final design.

### **Follow Up**

#### **Frontage Road Design Option**

The frontage road options between Hidden Valley and US 6 were reviewed, and the pros/cons of a potential frontage road south of the creek were discussed. The TT was asked to identify issues, not to make a recommendation on which option to choose.

Anthony discussed the frontage road alignment comparing the north and south alignments, using both cross sections and plan view (see attached). Neither frontage road location option affects the Hidden Valley interchange or the tunnel location. If the frontage road (US6) was moved south of the creek, the intention is to have a horizontal or vertical separation between the Greenway and US 6 (frontage road) with no shared use with US 6. For either option, it is likely that US 6/frontage road would be built earlier in the construction schedule to help maintain traffic through the project

The pros and cons of the south alignment were discussed including the desire to frame most of the pros/cons as “issues to explore” further. A number of pros/cons including wildlife conflicts, visual impact, and Greenway access are subjective in that whether it is a ‘pro’ or ‘con’ depends on how one approaches them. It was also noted that rock cuts and impacts on the travelling public, however, have been quantified objectively. The Project Staff team will evaluate the “issues to explore further” and determine the best approach to advance this issue with the TT; an ITF and/or matrix evaluation were discussed as potential options.

### **Discussion Notes**

The following are TT discussion notes regarding the frontage road options. As noted, because most issues need further investigation, they are not presented as pros and cons of the two options but rather as discussion notes.

#### **“Issues to Explore” Raw notes from TT Discussion (Recorded on easel paper)**

- Impact on the Greenway?
- Clear Creek Valley – amount of pavement needed on south alignment, how will this impact the valley?
- Preference for leaving the south side of the creek undisturbed
- Share the road locations with bikers?
- What are the conflict points on the south side, i.e. Greenway users and roadway users?
- Option for pedestrian bridges at the creek bend?
- Rockfall mitigation options
- Options for natural/vegetative screening between Greenway and I-70
- EMS Access- Meadow 1 and Creek emergency response
- Truck operations, impact and accommodation

- When frontage road is elevated above the Greenway, or parallel to the Greenway, the physical distance between the Greenway and road is important to minimize run-off and sediment
- Maintenance of Greenway
- Experience of Greenway user
  - Visual
  - Sense of openness
- Drainage options
  - Basins?
  - We don't want a "Greyway"
- Greenway corridor development, will this be eliminated with south side alignment?
- Access points on the north/south?
  - Rafting access
- South side alignment – bikers will only be able to get on and off at one place, if you miss the ramp, then you peddle up with traffic
- Interference with bikers
- Rock on road and rockfall issues
- Cumulative impact issues (i.e. visual impact of quarry near more rockcut?)
- How will the sheep and wildlife access water – which alignment would be better for (1) wildlife crossing and (2) access to water/food?
- Rock cut evaluation on south side of creek
- Access to creek could be a pro or con (some want more access, some like fewer access points)
- South Side – how will this impact the vertical profile of US 6?

### **Visual Impacts and Greenway Experience**

Moving the frontage road from the north to the south side of the creek would reduce rock cut and visual impacts on I-70 and reduce the complexity and duration of construction.

If the south side option is implemented, impacts to the Greenway experience are a concern. At present, the Greenway is isolated from the adjacent roadways. Moving the frontage road on the same side of the creek as the greenway changes the character of the greenway experience in this area. Ideas to explore include opportunities to implement natural screening between greenway and roadway, such as planting trees between the Greenway and the frontage road.

One downside of moving the frontage road south of clear creek is that the south side of the canyon is relatively undisturbed now.

One benefit to the north option is that the geology of the rock on the north side may be more stable than on the south side.

If the south option is chosen, it would create more room on the north and reduce the height of rock cuts and reduce rock fall risks.

The frontage road will cross over the trail if the south option is chosen, diminishing the experience. Clear Creek County has advocated for a 'robust' trail that can be converted to emergency access when necessary.

It seems that a lot is given up by moving the frontage road to the south, especially a sense of openness and future Greenway development.

The visual impacts are complicated to quantify because you either leave one side untouched and have a serious visual impact on the north side or have smaller cuts over a larger area.

Rock cut will still be required for the south option (although shorter in height); the south option rock cut issues and visual impact need to be evaluated.

Consider the cumulative aesthetics and visual impacts with the rock cut, especially with the quarry operations at Frei in the WB direction.

Consider raising the vertical profile of US 6 along with potential structures of the south option (walls/pedestrian bridges) to improve the visual experience.

Not sure how the south alignment makes for a better Greenway experience.

One of the differences between the Glenwood Canyon comparison is that trail users are confined to the trail; in Clear Creek it would open up more access to the creek and hillside which may be both a pro and con. In this section currently, you have the creek to yourself, without vehicles.

The trail experience is compromised with a south option. The south option eliminates opportunities that could be developed into a 'real' greenway area.

### **Emergency Response**

There is a need for emergency vehicles to have bi-directional access (ability to cross from eastbound to westbound I-70 and US 6); don't put a barrier that would prevent this. Explore creek access for emergency responders and where will they be able to respond to rafting emergencies (floaters).

### **Maintenance**

Consider the erosion from the roadway on to the Greenway; keep as much physical separation between the road and bikeway as possible as it is better for trail maintenance and noise. It was noted that sand does wash onto the Greenway regardless of road location although proximity may cause a greater impact.

When considering these two options, examine drainage and maintenance; we don't want the Greenway to be the 'Grayway'. It was noted that the south option may provide more room for sediment basins.

Q: What does the 2007 study of vegetation impacts from mag chloride say about the maintenance impacts? A: It considered affected vegetation from aerosols, chlorides. Ground up road sand sticks to the leaves.

### **Constructability and Rock Cut**

Q: How much rock cut is saved by moving the frontage road south? A: Approximately 200,000 cubic yards.

Just because rock cut is easy to quantify doesn't mean it should dominate the evaluation. We need to find a way to achieve the constructability of the project while improving aesthetics.

### **Partnerships**

Partnership opportunities may be greater with the south option, i.e. parking or access to the creek, trailheads and rafting put-ins.

Freight - are there implications to hazmat vehicles and truck operations? There might be partnering opportunities with freight vehicles looking to stop for rest on the south option.

### **Creek Access**

The south option may introduce additional conflicts with greenway trail users, for example traffic that pulls over on the side of road; look at access points on the north option.

We need a comparison of access points depending on where the frontage road is; how does it change rafting access? Can we access the creek from the north side or is the bank too steep?

If the frontage road is on the north side, you don't have vehicle access to the creek except at the two ends; if the frontage is on the south side you can access the creek from more locations.

Q: Do you preserve the option to connect EB 70 - WB 6 and not pass through the Hidden Valley interchange? A: Yes, nothing changes with the frontage road design option, it preserves this movement.

Q: Why aren't we moving everything north in a tunnel; US 6 ramps to connect A: TT eliminated that alternative due to impacts.

**ACTION: Share tunnel evaluation notes with Mike Raber.**

**ACTION: Project Staff to explore issues and propose a process approach to TT regarding how to proceed.**

### **Bridge Design and Aesthetics**

Anthony outlined bridge design requirements and how they will be integrated into the I-70 aesthetic guidelines. Kevin outlined the aesthetic guidelines and reviewed the bridges/types that exist in the corridor today. The TT was asked to provide comment on the approach.

### **Discussion Notes**

Consider the structural compatibility of bridge designs with the integration of utilities, lighting, signage, and other electronics needs. Determine the compatibility of the bridges with gantries/barriers. The 'prettiest' bridge might not be able to accommodate the infrastructure needed. Think through utilities signage, drainage issues in the bridge selection process.

Q: Are there new bridge safety standards regarding bridge structures? A: There are new barrier types for bridges - new crash standards and concrete barrier from type 7 to type 9 is a transition. It was noted that all guardrails mitigate hazards but don't eliminate the crashes.

Ensure bridges are high enough to provide adequate clearance for the Greenway.

Place utilities inside the U-tub bridge as a way to hide the infrastructure; likely fiber optics will be the main infrastructure in these bridges.

In summary consider general utilities, street lights and signing, fire code, color and potentially automatic deicers. Integrate disciplines up front to avoid problems later and ensure clearance under bridge for the high water and the trail.

What are the maximum spans? Individual span lengths for a segmental bridge are up to 500 ft; steel U-tub designs are up to 400 ft. Segmental bridges are the longest followed by steel U-tubs and concrete U-tubs. There are no bridge piers expected in the creek.

We reviewed recent bridges constructed with the Twin Tunnels project and in Idaho Springs. Concrete box and I-girder bridges have been acceptable for shorter less visible bridges. The TT then reviewed the new bridges proposed for the project. Less visible bridges like the new ramp bridges at I-70 and US 6, and the new EB I-70 over Clear Creek bridges could be concrete box girders or I-girders like those recently constructed.

Longer more visible bridges may use U-tubs to meet the aesthetic guidelines. These bridges may also require longer spans which would also require a girder type such as U-tubs. These bridges include the two longer WB I-70 bridges and the new EB I-70 bridge just before the tunnel as well as the WB US 6 to WB I-70 flyover bridge just east of the Hidden Valley interchange.

TT members indicated support for the approach and noted that there is a nice convergence with aesthetic guidelines and bridge selection; the more visible bridges suit a more elaborate bridge type. Consider economies of scale for similar bridge types.

The bridge types are evaluated so far in the design process because of the use of CMGC approach. In essence, the team is conducting a feasibility analysis or putting something forward that is reasonable to the contractor based on what has been built already and compatibility with the aesthetic design standards.

**ACTION:** Project Staff will initiate work on bridge design and bring issues back to TT as necessary.

**ACTION:** Ensure slide packets distributed to the TT are printer compatible.

### Next Steps

- ALIVE Meeting 10/16/18
- SWEEP Meeting 10/25/18
- TT Meetings
  - 10/31/18 - Traffic Analysis, Intersections, Roadside Barriers, Frontage Road
  - 11/28/18
  - 12/19/18

### TT Member Attendees

JoAnn Sorenson, Tim Mauck (Clear Creek County); John Muscatell, Bill Coffin (Community Rep from Floyd Hill); Sam Hoover (Central City); Stephen Stohminger (Gilpin County); Mike Raber (CCC Bicycle Users Group); Gary Frey (CO Trout Unlimited); Julia Jung (Wood); Lynette Hailey (I-70 Coalition, City of Black Hawk); Kelly Galardi (FHWA); Patrick Holinda



(Bridge Enterprise); Yelena Onnen (Jefferson County); Kevin Brown, Vanessa Henderson, Lauren Boyle, Steve Harelson, (CDOT); Kevin Shanks (THK), Anthony Pisano, Tyler Larson, Joe Zufall (Atkins); Gina McAfee (HDR Inc.); Taber Ward, Jonathan Bartsch (CDR Associates); Mandy Whorton (Peak Consulting Group); Andy Marsh, Mike Hillman, Jonathan Cain (Idaho Springs); Amy Saxton (Clear Creek Greenway); Wendy Koch (Town of Empire); Mitch Houston (CCC School Board).