



PROJECT:	I-70 Frontage Road Improvement (Old US 40/CR 314)
PURPOSE:	Response to Clear Creek County, Comments on County Road 314 FIR Documents, December 14, 2011, Clear Creek County Board of County Commissioners
FROM:	Ben Acimovic and Craig Friesen
TO:	I-70 Frontage Road project team
DATE:	January 19, 2012

Comment Response

Our responses to the memo prepared on December 14, 2011 are offered below:

Retaining/Supporting Walls

Comment:

On December 21, Clear Creek county representatives will look forward to a more in-depth discussion of the rockery walls that are being proposed for Wall 8 and Wall 11. We would like to better understand the engineering issues relating to these walls, and document how they meet the Aesthetic Guidance and Engineering Design Criteria for the I-70 Mountain Corridor. In some areas they appear to be taller than 12 feet and should perhaps be revisited to determine if additional design features should be applied. As provided in guidelines for embankments, we recommend there be some variations incorporated in areas where longitudinal lengths exceed 300 feet. We also recommend incorporating design strategies to accommodate the movement of wildlife through the area of retaining walls, across the creek and over the Twin Tunnels.

Response:

A more in-depth discussion on wall design was held on December 21, 2011. More examples of these rockery walls were presented. Rick Andrew (Yeh) was able to discuss the steps that will be taken in design to ensure proper drainage and structural design. There are areas where the walls will be greater than 12' in height above the roadway. The I-70 Mountain Corridor Criteria recommends placing walls larger than 12' below the roadway, but the design team does not recommend this due to the short distance and steep slope below CR 314 to Clear Creek. To meet the intent of the I-70 Mountain Corridor Criteria, the walls above CR 314 may be terraced. Where possible, variations will be incorporated in areas where longitudinal lengths exceed 300 feet. The Frontage Road team is also coordinating the location and needs of wildlife crossings with Jim Eussen (CDOT). Other wall types will be evaluated as geotechnical investigations provide more details on site specific conditions.

Comment :

We would like to look at some of the other smaller retaining walls in Phase 2 to determine if rockery walls may be appropriate in additional stretches.



Response:

The design team's first priority is construction drawings for Phase I. We will work with Clear Creek County on Phase II items after the Phase I construction documents are completed. The design team recognizes that standards for the walls and greenway will be set with Phase I decisions.

Comment :

We are also interested in the aesthetic details of supporting walls that face the creek.

Response:

The aesthetic details of the cantilever wall (wall 10) have not been fully developed. It is the intent of the design team to follow the I-70 Mountain Corridor Guidelines (p. 7 of Mountain Mineral Belt design segment). Rick Beck has been invited to the design meetings where these details are being discussed. Additionally, current design features will be discussed at PLT #4 on January 18th and compared to the Mountain Mineral Belt Aesthetic Guidance.

Comment:

Long-term success of the rockery walls depends on their design and, most important, their construction. We would assume that contractors selected to build the walls would be prequalified by CDOT for this specific task. Can the wall construction be bid out separately to ensure qualified contractors construct these specific features?

Response:

CDOT cannot pre-qualify contractors based on construction of the Rockery Walls. Jim VanDyne is the construction project engineer for this project. His job will be to ensure that all elements of the construction are built to the design and specifications.

Comment:

Clear Creek County requests that the rockery walls be warranted and maintained by CDOT.

Response:

CDOT cannot warrant or maintain walls as CR 314 is a County facility.

Cross Section Options from Station 79 to 85

Comment:

We note that the cross section to be utilized from Station 79+67.75 through Station 85+34.75 is the widest in the project (up to 55.5 feet). We understand that this is to provide for a requested pull out, however, we are concerned that the road width in this approximate 600 foot section will encourage drivers to speed through the area, accentuating the difference in design speed between this stretch and the curve in the next stretch to the west and contributing to safety concerns. We also noted that the extensive, tall rockery walls in this area require a 10 foot rock fall zone. The paved access area to the creek, at its greatest is 11 feet. Could this width be reduced? Could the length of the access strip be reduced? Could the strip be left unpaved, thus visually narrowing this section of roadway?



Response:

To minimize width and encourage consistent driving speeds, the access/parking for the creek can be left unpaved and the width of the area between the wall and the shoulder has been narrowed to 8'. This 8' area is now called a "Maintenance Zone" since the specific width required for rock debris falling to the roadway has not been determined from a scientific rock fall analysis. The intent of this area is to function for drainage flow as well as minor rock debris that may accumulate on the roadway and require removal by the County. In addition, the area is also available for snow storage and emergency pull off/response.

Comment:

We would like to review options to narrow the cross section, narrow the appearance of this cross section and/or construct a cantilevered section of roadway in this area. By narrowing the cross section or selecting a cantilevered design and moving it toward the north, would the need for retaining walls be reduced?

Response:

The FIR plans (from the 12/1/2011 FIR meeting) reflect the Greenway criteria of a barrier separated bikeway. With the barrier in place, 12' lanes were required to gain the roadway width requested by EMS. Since the FIR submittal the design team developed a detail that removed the barrier. The removal of the barrier allowed for a 5' buffer zone between the County Road and the Shared Use Path. This buffer may have a granular surface which would allow for a vehicle to drive on when making room for an EMS vehicle to pass. This revision was presented and approved by the PLT at PLT #3 on December 15th. Additional support for this cross section was provided at the 1/9/2012 Clear Creek County Commissioners meeting. The design team has revised the design with to 11' provided PLT and EMS approval. The removal of the barrier and reduction to 11' lanes has allowed for a reduction in the height of the retaining walls.

Comment:

We were unable to determine the proximity to the creek throughout the length of this project. Perhaps adding the creek to these drawings would help us understand the possibility of shifting the alignment in this section to the north.

Response:

The 2 and 100 year water surface elevations have been determined with the new mapping. These lines will be included and labeled in the revised FIR Plans.

Phase 2 Concerns

Comment:

As a safety consideration, the Phase 2 Alignment should be designed for speeds ranging from 30 to 35 mph. Once the road is paved, speeds will increase and long distance bikers will continue to use the road in lieu of the bike path. Acceptable sight and stopping distances should be a goal of the design and consideration given to the heavy truck traffic on the road.

Response:

In general, CR 314 currently has a design speed of 40 mph with a posted speed of 35 mph. The intent of the preliminary design is to remain on existing grade and existing horizontal alignment as much as possible. In doing this, we are unable to meet 40 mph design speed stopping sight distance vertically in all locations while



the horizontal geometry exceeds the lower design speed. In addition, the constraints of Clear Creek and the steep grade on the south do not allow for much latitude in adjusting the alignment. As a result, the CR 314 design was based on the restrictions of the existing corridor. As applicable, these issues can be addressed in the final design of phase II.

Comment:

We understand that decisions relating to the exit ramp at Hidden Valley will be dependent on the Twin Tunnels project, so firm answers may not soon be available. Nonetheless, we are very interested in questions relating to the ultimate design of Wall 12 and changes to the exit ramp at this location. We would like to understand the space between the exit ramp and County Road 314 and in the need for ROW that ultimately may be required in this vicinity.

Response:

Clear Creek County will be updated as design progresses and more detail is known.

Issues Yet to Be Resolved

Comment:

We understand guardrail details will be forthcoming. Due to both aesthetic and safety concerns, we desire to remain engaged in the selection and placement decisions relating to these barriers. Will their placement inhibit emergency equipment from rescues in Clear Creek by preventing emergency equipment from being able to drive to the edge of the creek's banks? Perhaps periodic spacing between the guardrails could be provided for emergency vehicle access.

Response:

At this time, there is a short section (~200') that will have barrier in the vicinity of retaining wall 10. The type of barrier and its aesthetic treatments will be discussed at PLT #4. No other guardrails are anticipated at this time.

Comment:

Throughout the project area we recommend identifying specific areas where public access to the creek can be added and/or enhanced.

Response:

There is one location where the access is enhanced with gravel pull out parking access. (Sta. 79+ to 85+). This area currently functions as a parking/pull out and the Phase I design will formalize and improve this access. The addition of other formalized access points in Phase I and Phase II is limited due steep slopes and narrow right of way. There is a location where access will be limited compared to existing conditions, this is the short section (~200') where there will be a cantilever retaining wall. All other locations will match the existing condition and will remain the same.

Comment:

We request participation from CDOT in planning for the rehabilitation of the detour route as it passes through the Game Check area. Because this area has both public recreational value and commercial potential, we are interested in seeing a well-thought-out rehabilitation plan that sets the stage for future possibilities.



Response:

Work in this area will be a part of the Twin Tunnels final design effort. Clear Creek County will be included in discussions pertaining to this matter.

Comment:

The County would like to request an inspection of the Doghouse Bridge and Phase 1 before and after the detour route has been implemented in order that any required rehabilitation can be carried out by CDOT before it is returned to its normal use.

Response:

This will be part of the Twin Tunnels construction effort.

Comment:

Pavement should be warranted for a minimum period of 1 to 2 years in accordance with standard County policy.

Response:

CDOT does not provide warranties. Jim VanDyne will be responsible for ensuring the contractor is constructing the project according to the design and specifications.

Comment:

Provisions for drainage throughout the project corridor still needs be addressed in the FIR plans.

Response:

Typically, FIR plans only include major drainage crossings (large culverts and structures). Detailed drainage features will be addressed in the final design documents. Rick Beck will be included in conversations regarding the drainage design elements.

Comment:

It is our understanding that pavement widening details will be provided as well as other technical details with regard to the construction of the project walls.

Response:

As part of the final design effort and the details are developed, Rick Beck will be included in conversations regarding these details.

Comment:

It is also our understanding that these FIR plans do not reflect the recently performed survey and that a new set of plans will be issued in the near future which reflect the new survey. If those plans could also include property ownership, we would find that helpful.

Response:

Property Ownership, as it is available, will be included on the plans.

Typos and Editing Issues for the Next Set of Plans



Comment:

On the cover sheet of the plan set, the callout labeled "Begin Phase 3" should be labeled "Phase 2."

Response:

Will correct.

Comment:

We would find it helpful to have a key for the symbols used on the plans.

Response:

Typical CDOT plan sets utilize the Standard Plans of the Department. These plans detail everything from symbology (Standard plan M-100-1) to inlets, sign details, etc. As a matter of standard practice, the standards required for any project are not included with the set but designated on a Standard Plans List. We will gladly provide copies of the required sheets on this project to any PLT member for reference in reviewing the plans. Additional information can also be found at:

<http://www.coloradodot.info/business/designsupport/standard-plans>

Comment:

On Sheet 7 of 16 (between Station 50 and 53) there is a wall that does not appear to match any of the walls on the Retaining Wall Key Map.

Response:

We will address this issue.

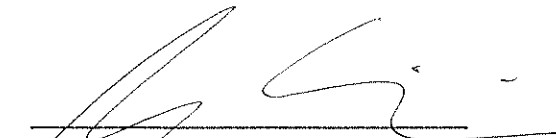
Comment:


The Retaining Wall Stations and Match Line stations do not agree on the retaining wall sheets. It would be helpful to show a typical section and detail for each of the 12 (13?) walls proposed.

Response:

Inconsistencies in match line stations will be checked. Typically, wall layout stationing is independent of the roadway stationing for layout and length purposes. Equation stations will be provided at the ends to tie them back to project control. Typical section and details are not developed at this time due to accelerated project schedule. Wall type selection will be documented and specific details will be included in final design drawings.

For questions or additional comments please contact Ben Acimovic, PE benjamin.Acimovic@dot.state.co.us (303) 512-5814 or Craig Friesen, PE, CFriesen@mbakercorp.com, 720.479.3173


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