



LARIMER COUNTY | ENGINEERING DEPARTMENT

P.O. Box 1190, Fort Collins, Colorado 80522-1190, 970.498.5700, Larimer.org

FLOOD REVIEW BOARD

Date: June 23, 2022

Time: 8:30 AM, MDT

Location: Lake Estes Conference Room, 3rd Floor, 200 W Oak St., Fort Collins, and Zoom meeting

Contact: Tina Kurtz, Larimer County Engineering Department

MEETING MINUTES

Staff Present: Tina Kurtz, Caryn Nezat, Traci Shambo, Jake Wilson, Alan Kee

Staff On Line: Alan Kee

Board Members Present: John Hunt, Dr. Chris Thornton, Elisabeth Ervin-Blankenheim, Greg Koch, Mike Oberlander, Chris Carlson

Board Members On Line: None

Call to Order: Mr. Koch opened the meeting at 8:45 a.m., MDT

Introductions:

Item #1:

City of Loveland – new 24-inch water transmission line under the Big Thompson River on South Saint Louis Avenue - Floodplain Project Review

Applicants Present: John Faulkner, Tanner Randall, City of Loveland; Colin McKernan, Steve Pool, HDR, Inc.

Ms. Kurtz introduced the project to the Flood Review Board (FRB) and stated that this is a Floodplain Project Review request for a new 24-inch water transmission line under the Big Thompson River along South Saint Louis Avenue. The water line bored under the river is approximately 625 feet and is within the Big Thompson River Floodway. The project will maintain a no-rise condition by matching existing grade. The application must be shown to meet LCLUC Section 12.1.6.H.2 – Floodplain Project Review Approval Criteria.

Mr. Faulkner explained the project in more detail. They are continuing the eastern portion of their waterline system for water quality and water redundancy purposes for that portion of the system. They are planning to be 7' under the box culvert for the Farmers irrigation ditch. He explained the alignment describing that the line will go down S Saint Louis Avenue into the City natural area, staying 30-40' away from wetlands, then back into the northbound lane of S Saint Louis Avenue for about 400', then west



into the Martin Marietta property, and from there the line is routed under the Big Thompson River and will be aligned on the south side of the river west of the AB Automotive property & near the Waterford Apartments. They plan an approximate 650' horizontal directional bore under the river that will be at depths near the claystone material. This bored section will be fusible PVC pipe, meaning there will be no joints or fittings. He noted that there will be a 6' x 8' butterfly valve vault on the Martin Marietta property but the vault will be all below grade with only an access manhole at grade. The work area within the floodplain will cause no change of elevations since everything is to be graded back to pre-project condition.

Mr. Hunt discussed that the bore depth mentioned under the river (approx. 14' depth) appears to be at, or close to, the claystone shale layer. Mr. Falkner confirmed that it is into this layer. Mr. Hunt stated was good since he found in his prior work on other projects in the area that the claystone layer is a very strong layer. They next discussed the bore pit details, such the locations and the planned depth being at 9'-10'. Mr. Faulkner stated that they will be backfilled and compacted to bring the bore pit area back to pre-project grade and will be reseeded and confirmed that nothing will be left above grade when the project is done.

Mr. Koch asked for confirmation that all areas in the floodplain were planned to be returned to the pre-project grades and Mr. Faulkner confirmed.

Mr. Oberlander asked if they the only work in the floodway was related to the bore pits. Mr. Faulkner responded by saying that there will be trenching in the floodway but they would remove all spoils and return to pre-project grades. Mr. Oberlander asked that they ensure that the requirements for the contractor to return disturbed areas to pre-project conditions are clearly in the contract documents.

Mr. Oberlander also mentioned that he had a comment to share even though he said the item was not floodplain related or under the purview of the Flood Review Board. He also pointed out that the Saint Louis grade is very flat at this location and so they might consider deepening the waterline in anticipation of future road improvements that may require the line to be lowered. He pointed out that the need to lower would be more likely as a result of a curb gutter design.

Ms. Ervin-Blankenheim asked if it the line ties into any other lines. Mr. Faulkner said that this project is phase one of a three phase project. He described the other two phases and their alignments and stated that the future completed alignment will be an improved water quality and redundancy system.

Mr. Koch asked if the Board was ready for a motion.

Motion:

Dr. Thornton motioned to recommend approval of the City of Loveland waterline under the Big Thompson River on South Saint Louis Avenue Floodplain Project Review to the County Engineer.

Ms. Ervin-Blankenheim seconded the motion.

Further Discussion:



No further discussion.

Vote:

Mr. Hunt - Yes
Dr. Thornton - Yes
Mr. Morris – Absent
Mr. Koch – Yes
Ms. Ervin-Blankenheim – Yes
Mr. Oberlander – Yes
Mr. Carlson – Abstain

Motion passed 5-0, with 1 abstention.

Item #2:

Larimer County Engineering – Improvements to County Road 70 and County Road 9 – Floodplain Project Review

Applicants Present: Dusty Robinson, Ayres Associates; Jake Wilson, Larimer County Engineering Department

Ms. Kurtz introduced the project to the Flood Review Board (FRB) and stated that this is a Floodplain Project Review for improvements to County Road 70 and County Road 9, including a new bridge on CR 70 over Boxelder Creek, a new local drainage culvert under CR 9 and utility relocations all due to overtopping of the road and limited capacity issues. She stated that the utilities will be buried a minimum of four feet under the channel through the CR 70 bridge. This is in the Boxelder Creek Zone A floodplain.

The consultants created a 2-D model of the area due to multiple split-flow locations and multiple culverts at different angles. A change to the CR 9 culvert is to upsize it and change the direction to a NW-SE configuration with a double 4 feet by 8 feet culvert.

The project will remove flow from the area southwest of the intersection, remove overtopping on CR 70 and CR 9, not impact insurable structures and provides greater than 2.1 feet of freeboard on the CR 70 bridge. This project will have less than a 0.3-foot rise, but it will have a greater than 0.3 foot drop. This condition will require a Letter of Map Revision (LOMR). She reminded the Board that this is a floodplain project Review that needs to meet 12.1.6.H.2 – Floodplain Project Review Approval Criteria.

Mr. Robinson stated that SEH originally performed most of the design and the County brought in Ayres review and complete the hydraulic component of the design. He explained that this work is part of a roundabout design and other improvements that are needed to improve the haul route to the new County landfill. He stated that the existing box culvert on CR 70 over Boxelder Creek will be upsized to a bridge. A local drainage culvert, the first culvert north of the intersection on CR 9 is only draining agriculture area from the Northwest. He pointed out that the northern culvert is not changing but



noted that it is undersized at this time and contributes to overtopping the intersection of CR 9 and CR 70. He explained that the initial design used 1-D modeling in HEC-RAS and the result was causing a rise large enough to need a CLOMR, which was not desired, and there were also some concerns with the model. The County then hired Ayres to evaluate the design using a 2-D model in an effort to optimize the hydraulics but still use most of the existing design by SEH. Ayres tried many changes to the culvert configuration and size to get rid of the change in elevations. When considering the head differentials from each side of the crossing, they decided to apply an NW-SE angle to the design, which ultimately got rid of the overtopping and the rise on the upstream end. The result was using 2 – 4' x 8' boxes that caused a slight decrease in the water surface upstream but there will be more than a 0.3' decrease downstream, which is why a LOMR is needed after the project is complete. He mentioned that when they remap the floodplain it is going to shrink significantly. He pointed out that there are a few insurable structures upstream and west of CR 9 but the impacts of this project does not extend to these structures. There are a few rises downstream of 0.2' due to the project concentrating the split flow downstream of the bridge but a rise of 0.2' is within Zone A tolerances where LOMR is not needed.

Mr. Oberlander asked about not upsizing the north culvert and said it seems ideal to upsize this culvert now. Mr. Wilson stated that work was not in scope of project. The project on CR 9 included mainly a widen and overlay for the haul road and did not include major structural improvements. The County plan is that, when the structure needs to be replaced in future because is it functionally obsolete or failing, then the County will upsize it. He pointed out that the final design of the bridge already includes the future flows expected when the northern culvert is upsized and that it will still have about 1.8' of freeboard at the bridge and the velocity will only be slightly higher. Mr. Robinson confirmed that there will no longer be overtopping at CR 9 with this project. Mr. Koch pointed out it would be nice to upsize north culvert now because there will be a rise when all of the flows are in one alignment as a result of the northern culvert being upsized and, at that time, another LOMR will be required and rise impacts on private property will need to be addressed at that time, but he understands that the big priority was eliminating the intersection overtop.

Mr. Koch also asked about their method for obtaining hydrology using the area weighting option rather than using the hydrologic model. Ayres used the 2018 model Ayres did for east side detention facility. He asked if they know how the flows used compares to the prior model. Mr. Robinson responded that Ayres scope for this project did not include hydrology. Mr. Koch suggested that it might be worth Ayres looking at the flows that were used in the prior model to be sure they are using the most accurate and best number. Mr. Wilson said they did research hydrology to some degree but agreed it was worth looking at hydrology again.

Ms. Ervin-Blankenheim asked about elevation controls. Mr. Wilson said they used LIDAR and ground survey. She mentioned that there is a rise in topography to the east of the intersection and asked about the flow coming off the road. Mr. Robinson said that they didn't do the road drainage. Mr. Wilson said that there will either be inlets or curbs to convey the water to the ditches. She pointed out that roundabout on Owl Canyon is too small for the large trucks. Mr. Wilson said he has been working with the agriculture community and trucking companies to get additional detail to ensure it will function properly for trucks, and their other goal is also to improve safety by slowing speeds. He described a



variety of improvements they have incorporated into the new design since the Owl Canyon design such as different angles, truck aprons, roll over curbing, moving light poles & signage.

Mr. Carlson asked how the erosion protection looks for the 4'x 8' box culverts. He noted that he saw abutment protection on the bridge but did not see any for the culverts. Mr. Wilson said they have plans for erosion protection on both ends of the 4'x 8' box culverts but the details did not make it into the plans. He also noted head cutting from the flows off the field is a concern, so they do plan to include erosion protection. Mr. Koch added that protection both upstream and downstream would be a good idea. Mr. Koch pointed out that the contours show the alignment coming straight into Boxelder Creek and asked if this will cause erosion. He thought it was worth considering putting a curve into the design to have more of a bend into the local channel. Mr. Robinson said that given the grade is so flat from the outlet to the channel and the velocity is very low, he expected the erosion potential to be minimal in most flow situations.

Mr. Koch asked if a 1-D or 2-D model will be used for the LOMR. Mr. Robinson said they planned to use the 1-D model for the final LOMR, because all you are doing is updating the floodplain map with the as-built conditions.

Mr. Hunt asked when you evaluated the rise and the drop did you do it on the BFE contour evaluation lines? Mr. Robinson said that in the report there is a plot of actual differences, so it is the true differences. In the table they took the existing BFE lines and took an average water surface of those for the existing cross-sections, so it's averaged. Mr. Hunt mentioned that the culvert has a slope at 0.15% and functions as an outlet control culvert so very little water surface runs across so whatever erosion protection is needed will be small. Mr. Robinson said that they are anticipating vegetation to grow in the channel which is also sufficient for the velocities.

Mr. Koch asked again how the final model submittal to FEMA would work and if they would accept a final 1-D model from a 2-D design that was based on an effective Zone A map. Mr. Carlson thought that it would be considered a standalone model based on the post-project condition and that he would expect that FEMA would not require a comparison model. They wondered if FEMA would accept 2-D model data, what limits the model will need to go to, & if FEMA would ask for the LOMR to convert the entire Zone A to a Zone AE. Given this, Mr. Koch suggested they look for bounding roadways tie-in. Mr. Robinson pointed out it might be difficult when they try to tie-in to the split flow that still exists within the Zone A model downstream. Mr. Hunt offered that there could be only a segment of a LOMR that is based on a 2-D model but the County will need to decide if they want to regulate to a small segment as 2-D at this location. In summary, the group decided that FEMA & CWCB should accept that the 2-D model was used to support the no rise condition but the final submittal can be a 1-D model for final mapping for the FIRM.

Motion:

Mr. Carlson motioned to recommend approval of the Larimer County Engineering improvements to County Road 70 and County Road 9 Floodplain Project Review to the County Engineer.

Mr. Oberlander seconded the motion.



Further Discussion:

Several members of the Board asked if they should consider conditions based on the discussion related to hydrology and erosion protection. The Board agreed and came up with the following conditions that should be added. They noted that all conditions could be addressed by Staff review and the project would not need to go back to the Board:

Conditions that need to be addressed and can be reviewed by Staff:

1. A LOMR must be prepared at the end of the project construction and submitted to CWCB & FEMA.
2. The design team shall check the hydrology used and confirm the accuracy that it is best available.
3. Evaluate in more detail the erosion protection needs at the 4' x 8' box culverts and ensure that the additional design and specifications are included in the design package.

Revised Motion:

Mr. Carlson motions to recommend approval of the Larimer County Engineering improvements to County Road 70 and County Road 9 Floodplain Project Review to the County Engineer.

Mr. Oberlander re-seconded the motion with conditions.

Vote:

Mr. Hunt - Abstain
Dr. Thornton - Yes
Mr. Morris – Absent
Mr. Oberlander – Yes
Ms. Ervin-Blankenheim – Yes
Mr. Carlson – Yes
Mr. Koch - Yes

Motion passed 5-0, with 1 abstention

Item #3:

Approve Minutes from the Board meeting on May 26, 2022.

Motion:

Dr. Thornton motioned to recommend approval of the minutes.

Ms. Ervin-Blankenheim seconded the motion.

Further Discussion:

None



Vote:

Mr. Hunt - Yes
Dr. Thornton - Yes
Mr. Morris – Absent
Mr. Oberlander – Abstain
Ms. Ervin-Blankenheim – Yes
Mr. Carlson – Abstain
Mr. Koch - Yes

Motion passed 4-0, 2 abstentions

Other items:

- Discussed upcoming agendas
 - July Meeting is cancelled
 - August Meeting may have updated By-Laws for review
- Mr. Koch announced that he plans to retire from the Board in August and August will be his last meeting. He said he has mentioned the position to others in his office that may apply.

Meeting adjourned at 9:50 a.m., MDT.