



LARIMER COUNTY | ENGINEERING DEPARTMENT

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

FLOOD REVIEW BOARD

Date: January 26, 2023

Time: 8:30 AM, MST

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, Amy White, Morgan Fay

Staff On Line: Hannah Suppes

Board Members Present: Dr. Chris Thornton, Elisabeth Ervin-Blankenheim, Mike Oberlander, Chris Carlson, Jamis Darrow

Board Members On Line: Chad Morris

Call to Order: Dr. Thornton opened the meeting at 8:40 a.m., MST

Item 1: Approval of December 15, 2022, Board meeting minutes

Motion:

Mr. Carlson motioned to approve the December 15, 2022, Board meeting minutes.

Ms. Ervin-Blankenheim seconded the motion.

Further Discussion: None

Vote:

Mr. Hunt – Absent

Dr. Thornton – Yes

Mr. Morris – Yes

Ms. Ervin-Blankenheim – Yes

Mr. Oberlander – Yes

Mr. Carlson – Yes

Mr. Darrow – Yes

Motion passed [6-0].

Introductions



Item 2: Board Chair Election

Discussion of who should be Chair.

Motion:

Mr. Oberlander motioned to nominate Dr. Thornton as the Flood Review Board Chair for 2023.

Mr. Morris seconded the motion.

Further Discussion: None

Vote:

Mr. Hunt – Absent

Dr. Thornton – Abstain

Mr. Morris – Yes

Ms. Ervin-Blankenheim – Yes

Mr. Oberlander – Yes

Mr. Carlson – Yes

Mr. Darrow – Yes

Motion passed [5-0], 1 abstention.

Item 3: Announcement of Board Meeting Notice Publication Location

Dr. Thornton read the following statement: The Flood Review Board designates www.larimer.org as the place for posting notice of public meetings, and if exigent or emergency circumstances prevent the online posting at such location, public notice shall be physically posted at the bulletin boards located at the north and south entrances to the Larimer County Courthouse Offices Building at 200 West Oak, Fort Collins, Colorado in accordance with Colorado's open meetings laws.

Item 4: Tabled from the November 21, 2022, Board meeting – a petition filed by Benton Barleen for a Variance per Section 12.1.6.E of the Larimer County Land Use Code for erosion control measures to stabilize the riverbank and construction of a deck within the Big Thompson River FEMA Floodplain Zone AE (Floodway) Floodplain Overlay District at the following location to wit: Section 15, Township 5 North, Range 72 West, Larimer County, CO also known as 2402 West Highway 34, Drake, CO

Applicants present: Ed Ellingson, Zerrecon

Ms. Kurtz introduced the project to the Flood Review Board (FRB) and stated that this is a Variance request for a proposed streambank stabilization project and a proposed deck. This project is located within the Big Thompson FEMA Floodway. The applicable Larimer County Land Use Code (LCLUC) for the floodplain variance request is LCLUC 12.1.6.E.



The foundation of the house was damaged in the 2013 flood and was subsequently repaired. Now erosion control measures are needed to protect the foundation. In addition, the applicant would like a replacement deck. The previous design was to have the riprap for protection of the foundation. The Board asked for a revised approach. The project engineer is proposing to use polymer/concrete-filled burlap bags and rebar for protection as the revised approach.

The variance is for the work in the channel and a second to allow the deck replacement in the floodway.

Motion to Untable the item:

Dr. Thornton motioned to un-table the item.

Mr. Carlson seconded the motion.

Vote:

Mr. Hunt – Absent

Dr. Thornton – Yes

Mr. Morris – Yes

Ms. Ervin-Blankenheim – Yes

Mr. Oberlander – Yes

Mr. Carlson – Yes

Mr. Darrow – Yes

Motion passed [6-0].

The discussion began by reviewing the conditions of the tabled item from the previous meeting minutes. They were as follows: (a) submission of a vertical based stabilization design, if vertical stabilization is within the footprint of the existing counterforts, no modeling would be required; if it extends beyond, modeling is required to show a no-rise condition is met; or (b) resubmittal of the riprap based design that includes a model to substantiate a no-rise condition, a more streamlined upstream tie-in of the riprap, a revised toe down of the riprap to maintain the slope, and that the riprap sizing include corrections for the channel alignment.

Mr. Ellingson went through his presentation, which included showing the pre-flood deck and building and the current condition. Foundation repair is needed due to the current condition of erosion under the slab. They made some efforts to stabilize the riverbank but have not been very successful. A firm was hired to do the repair which did not include slabs between the buttresses. The buttresses extend under the existing foundation wall.

Mr. Ellingson noted how difficult it is to work in this location. They originally proposed putting in riprap between the buttresses. However, this idea was not viable given the constraints of the Board conditions. The new approach is to use concrete filled bags. Mr. Ellingson showed examples of this approach. He noted that rebar is typically not needed unless the slopes get very steep to staple bags together. He then showed the access and parking next to the house and the holding tank next to river behind the house. Support for the holding tank is unstable and fears that bringing a concrete truck onto



this slab to do the work to get concrete and equipment to riverbank for a concrete retaining wall, proposed by Van Horn Engineering, would not work. He then showed a simplified view of how the concrete bags would look after installed. The bags would be stacked between buttresses and up against masonry wall to the end of the buttresses against the riverbank. They plan to pin the bags together by using rebar to tie horizontally every 2' and into the buttresses or rock wall. The bag cover material will be cut off so you will not see it and will not become debris. They will also put in 2" plastic pipe and line the base with geofabric to allow for drainage. The back fill will be gravel behind the wall for safety and so animals cannot get in and become stuck behind the wall.

Dr. Thornton asked is there anything tying the concrete bags back to the into the existing foundation? Mr. Ellingson said that it ties into the buttresses. Dr. Thornton said, so that is going to be its lateral support. Mr. Ellingson said the forces transfer to the buttresses which are made to reinforce the foundation wall. He also said that he's adding stones in-between and then attaching to the buttress on the outside. He said that he thinks the forces are similar on the buttresses and on the wall.

Mr. Oberlander ask Mr. Ellingson if he is confident that the buttresses are tied into bedrock. Mr. Ellingson said the design indicates it is, but they could do more probing to confirm. Mr. Oberlander's concern was the projection of riprap into the channel from the previous design, but this design negates that concern. Mr. Ellingson points out that this plan does not require a new flow analysis. The Board agreed on this point.

Dr. Thornton asks if the bags can be adjusted. Mr. Ellingson said they can be adjusted.

Mr. Oberlander mentioned the size of bags and that these can all be placed by hand. Mr. Ellingson said it is best to drive the rebar into the bags when they are wet.

Mr. Carlson mentioned the water quality impacts of concrete leaching out during placement and asked what the plan is to avoid this situation. Mr. Ellingson said they will divert water with a coffer dam or similar technique.

Ms. Ervin-Blankenheim asked why riprap could not work. Mr. Oberlander and Mr. Morris clarified that the size and design of riprap was encroaching into the channel which would require modeling.

Mr. Carlson said that he likes the current plan.

Dr. Thornton specified that they need to use anti-washout concrete instead of the general concrete for the project.

Mr. Morris said that he likes the vertical component and the tie to bedrock. He asked for clarification on the horizontal rebar being tied into buttresses on each end by a single bar. Mr. Ellingson said the rebar is overlapped.

Ms. White asked if the deck construction will happen simultaneously. If so, they could look at certification of the deck and bag placement at the same time.



Ms. Shambo asked if a condition of the motion should be to remove the burlap bag covering. Dr. Thornton said that it is biodegradable like sticks would be and he is not concerned with this requirement.

Mr. Morris said that the proposed plan is reasonable.

Mr. Darrow asks if the deck is below the 100-year water surface elevation and Ms. Nezat shared that the deck will be discussed as the next item.

Motion:

Mr. Carlson motioned to recommend approval of the streambank stabilization project at 2402 West Highway 34 to the County Engineer with a condition that the plans include a coffer dam design and to keep the construction water separated from the river water.

Mr. Oberlander seconded the motion.

Further Discussion: Ms. Ervin-Blankenheim asked if the Board wanted to add additional certifications to the conditions. The Board members decided that is not needed and would be handled with the building permit and floodplain permit processes.

Vote:

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

Motion passed [6-0].

Variance to the Deck Replacement

Mr. Ellingson explains the variance is needed for the deck construction. Dr. Thornton clarifies that this deck is about 1 foot below what would be required to meet the base flood elevation requirements. However, since it is replacement in kind, the Board agrees it seems fair to allow the deck to be replaced at the pre-flood elevation. They also acknowledge that the deck is projecting approximately 3 feet less than the previous deck, so they consider the replacement as an improvement.

Mr. Oberlander moves to approve the proposed deck at 2402 West Highway 34 to the County Engineer.

Mr. Carson seconds the motion.

Further Discussion: None



Vote:

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

Motion passed [6-0].

Item 5: A petition filed by Alex and Christina Baranga for a Variance to Section 12.1.5 of the Larimer County Land Use Code to allow a short-term rental use within the Fall River Best Available Floodplain Zone AE (Floodway) Floodplain Overlay District at the following location to wit: Parcel number 3516406009, SE ¼ of Section 16, Township 5 North, Range 73 West, Larimer County, CO, also known as 2760 Fall River Road Unit #236

Applicants present: David Bangs, Trail Ridge Consulting Engineers; Randy Ash, Sky Run Estes Park; Christine Baranga; and Alex Baranga

Ms. Kurtz introduced the project and stated that this is a Variance request for a short-term rental at 2760 Fall River Road Unit #236 in the Fawn Valley complex. The applicable Larimer County Land Use Code (LCLUC) Section for the variance request is LCLUC Section 12.1.6.E.2. The structure the unit is in is within the Best Available Zone AE (Floodway). This is a multi-unit structure. There are three foundation slabs for the structure as it is approximately 200 feet long. The unit is on the downstream (east) end of the structure. Multiple base flood elevations were determined for each foundation slab. The unit is 0.6 feet above the base flood elevation for the foundation slab it's on. These units have been historically used as vacation rentals and are in the process of the Pre-existing Lodging Facility (PELF) planning process. Egress from the unit is up a hill to Fall River Road. There is management onsite for emergency notifications.

Ms. White discusses the definition of what a PELF is. She mentioned that they have different requirements and are basically run like a hotel, including checking in and having common corridors. The life safety standards differ slightly since they are pre-existing short term rentals.

The Board discusses the various base flood elevations of the previous applications they have reviewed for another structure in the Fawn Valley complex. They discussed other conditions they have used, such as the egress and emergency access plan, requiring phone land line, and flood related signage. They would like the same requirements to be on all units in this building.

Motion:

Ms. Ervin-Blankenheim motioned to recommend approval of the short-term rental variance for 2760 Fall River Road Unit 236 to the County Engineer.



Mr. Darrow seconded the motion.

Further Discussion: None

Vote:

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

Motion passed [6-0].

Item 6: A petition filed by Brian Tseng for a Variance to Section 12.1.5 of the Larimer County Land Use Code to allow a short-term rental use within the Fall River Best Available Floodplain Zone AE (Floodway) Floodplain Overlay District at the following location to wit: Parcel number 3516406010, SE ¼ of Section 16, Township 5 North, Range 73 West, Larimer County, CO, also known as 2760 Fall River Road Unit #238

Applicants present: David Bangs, Trail Ridge Consulting Engineers; Randy Ash, Sky Run Estes Park; Brian Tseng

Ms. Kurtz introduced the project and stated that this is a Variance request for a short-term rental at 2760 Fall River Road Unit #238 in the Fawn Valley complex. The applicable Larimer County Land Use Code (LCLUC) Section for the variance request is LCLUC Section 12.1.6.E.2. The structure the unit is in is within the Best Available Zone AE (Floodway). This is a multi-unit structure built in 1967. There are three foundation slabs for the structure as it is approximately 200 feet long. The unit is on the downstream (east) end of the structure. Multiple base flood elevations were determined for each foundation slab. The unit is 0.2 feet above the base flood elevation for the foundation slab it's on. These units have been historically used as vacation rentals and are in the process of the Pre-existing Lodging Facility planning process. Egress from the unit is up a hill to Fall River Road. There is management onsite for emergency notifications.

The FRB discusses that this is the same as the last application and there was no further discussion.

Motion:

Ms. Ervin-Blankenheim motioned to recommend approval of the short-term rental variance for 2760 Fall River Road Unit 236 to the County Engineer.

Mr. Oberlander seconded the motion.



Further Discussion: None

Vote:

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

Motion passed [6-0].

Item 7: A petition filed by the Larimer County Engineering Department for a Floodplain Project Review to Section 12.1.6.H of the Larimer County Land Use Code for a replacement culvert on Deer Path Street within the Buckhorn Creek Best Available Zone A Floodplain Overlay District at the following location to wit: SW1/4, Section 15, Township 7 North, Range 71 West, Larimer County, CO

Applicants present: Mike Turner, Anderson Consulting Engineers (Anderson); Morgan Fay, Larimer County Engineering Department

Ms. Kurtz introduced the project to the Flood Review Board (FRB) and stated that this is a Floodplain Project Review request for replacement of a culvert on Buckhorn Creek in a Best Available Zone A Floodplain. The applicable Land Use Code Section for the variance request is LCLUC Section 12.1.6.H.

This project is to replace a culvert due to the burn scar and repeated flooding in 2021 and 2022 which damaged the roadway. The project will put in a larger capacity culvert and depressed roadway over the culvert for overtopping. The new culvert will increase resiliency, provide reliable access, and reduce frequency of flood damage to County Road 44H.

Mr. Turner shares his power point presentation. He stated that Anderson also designed the stormwater components of the Wild Song Rd crossing that is just downstream. He shared images of the post-flood condition that had erosion areas and sediment deposition. He pointed out that there are currently 4 large, corrugated metal pipes placed since the 2022 post-fire flood. The capacity is about 750 cfs, but the culverts are likely going to create debris and sediment issues. The project team is out to make improvements to the crossing since the project was granted Emergency Watershed Protection (EWP) funding. The criteria for using EWP funding includes certain design criteria such as designing capacity for a 25-year post-fire flood event and design the erosion/scour protection for a 50-year post-fire flood event. However, these standards are not possible at this location with the grant funding available. The design flow needed would be over 5,000 cfs to meet EWP criteria. The project team considered the funding available and the primary goals to achieve the maximum capacity and resiliency. They have determined that an aluminum box culvert is the ideal structure for this location, like the Wildsong Rd design. It is generally larger than other installed private crossings and that is dictated due to road grades



and bank geometry, as well as other hydraulic considerations. He went through details on the riprap analysis and design and explained that they are putting multiple lifts of Class 24 riprap and Class 6 riprap and base course material for stabilization. They also performed scour analysis that determined that they have approximately 20 feet until reaching bedrock. They also noted that they have not seen much evidence of substantial scour depths in the area, and they expect scour potential to be in the ballpark of 5 feet. He finds the crossing to meet the criteria as described and with the dipped low water crossing that has a hardened overtopping surface.

Mr. Morris stated that it appears there is the ability to add additional conveyance such as relief culverts and he is wondering why they decided to not put those into the design. Mr. Turner stated that cost was the primary reason. He noted that they could design a crossing that spans the whole channel to carry the entire 5,000 cfs but the cost would be very high. He stated that relief culverts were determined to not be necessary since the design can capture most events carrying close to 2,000 cfs, which is a majority of the events it will see. Ms. Fay, Bridge Engineer/project manager, clarified that part of using the EWP is to balance costs and maximize the dollars available and that any added costs would be from County funding and the County does not fund private crossings.

Mr. Turner then explained the hydraulics analyses of the pre-fire versus post-fire flood events. The results are that the non-over topping capacity is 1,950 cfs. He noted that it will almost carry the 25-year post-fire discharge and they could show no-rise to pre-fire and post-fire conditions using updated existing conditions models.

Dr. Thornton talks about the riprap detail from Contech that does not need the 6' over-excavation and asked if they have evaluated this option. Mr. Turner said that Contech puts that on all plans and the design team is more comfortable with the riprap solution.

Mr. Carlson states that on Page 9 of the report it mentions that there are several feet of difference between the proposed condition water surface compared to the Colorado Hazard Mapping Program (CHAMP) effective model and a decline in water surface compared to the existing conditions. He asked Mr. Turner to share the difference between existing conditions vs the CHAMP model. Mr. Turner said the CHAMP model is an approximate study, and they don't have bridges and culverts in it. They just have a cross-section that's cut across the embankment. They think the cross-section was misplaced. So they see a pretty sizable drop in water surface elevations between their model and existing conditions. They have updated survey data and 2014 LiDAR from Ayres Associates.

Mr. Oberlander asks about the grade beam going parallel with the water for the arch and asks if the wing walls are embedded in the riprap on either side. Mr. Turner says he is not very familiar with it since AVI, the structural engineer, has done the design but they have stated AVI are comfortable with it. Ms. Fay says the wingwalls are cantilevered and the tiebacks provide some level of support, so they don't rotate. They believe the riprap is providing enough stabilization and they will not be sitting on concrete foundations.

Ms. Ervin-Blankenheim announced she had to leave and asked if there could be further discussion on if there is a need for signage given the overtopping potential.



The Board made comments that the scour was the main component of concern in the prior Wildsong Rd review, and it seems they did a good job with this analysis and design.

Motion:

Mr. Oberlander motioned to recommend approval of the Floodplain Project Review for the replacement of the Deer Path Street culvert on Buckhorn Creek to the County Engineer.

Mr. Carlson seconded the motion.

Further Discussion:

They talked about signage needs and they do not think it is needed from a consistency standpoint.

Vote:

Mr. Hunt – Absent

Dr. Thornton – Yes

Mr. Morris – Yes

Ms. Ervin-Blankenheim – Absent

Mr. Oberlander – Yes

Mr. Carlson – Yes

Mr. Darrow –Abstain

Motion passed [4-0], with 1 abstention.

Other items:

- Discussed upcoming agendas:
 - Ladera LOMR
 - Ladera Raw Water Outfall
 - W CR 54 & CR 13

Meeting adjourned at 10:10 a.m., MST.